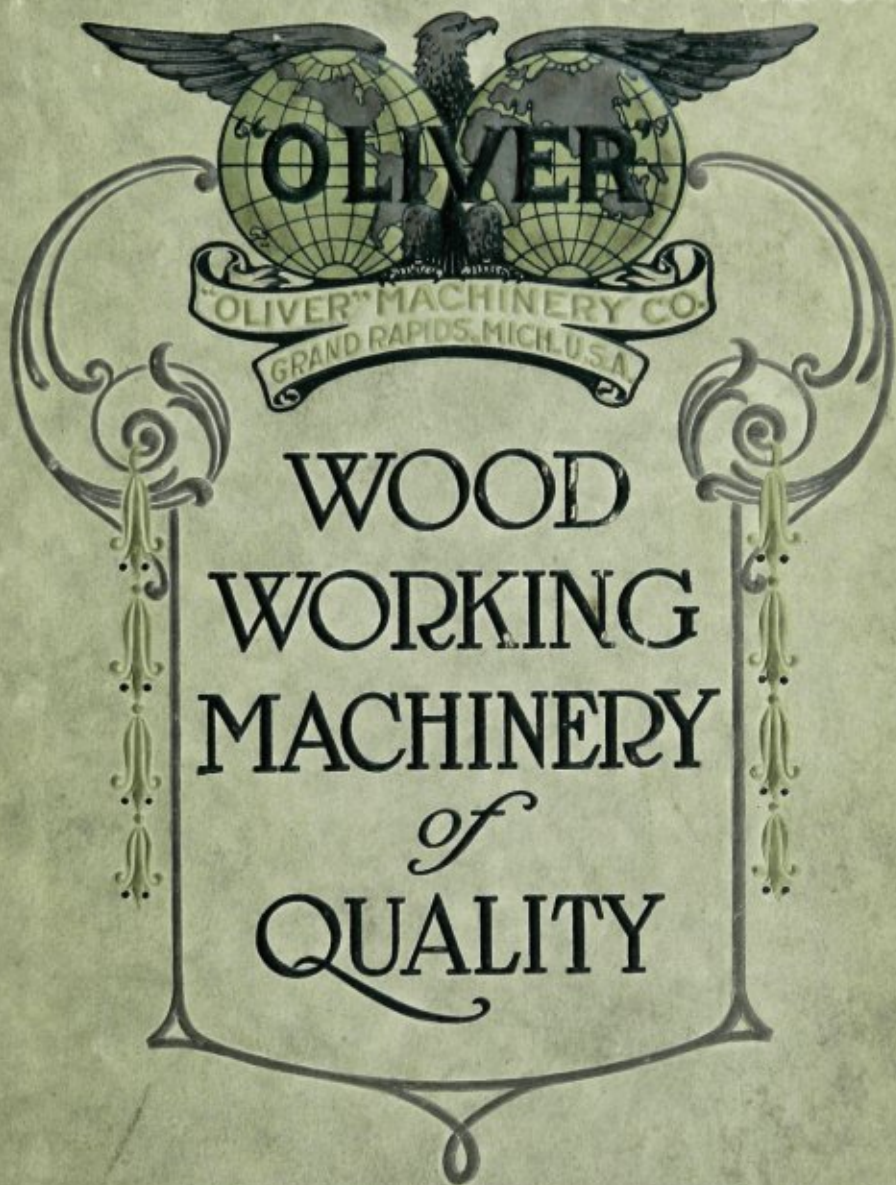




WOOD
WORKING
MACHINERY
of
QUALITY

Quality Woodworking Machinery and Factory Supplies

for

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SHIP YARDS, AEROPLANE FACTORIES,
ARSENALS, BUREAUS, COLLEGES,
TECHNICAL SCHOOLS, STEEL
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MOBILE PLANTS, RAILROADS AND
ALL OTHERS WHO USE HIGH GRADE
WOODWORKING MACHINERY

Engine and Turret Lathes
for Metal Workers

Catalog No. 20

10750

MANUFACTURED BY

OLIVER MACHINERY CO.

GRAND RAPIDS, MICH., U. S. A.

DEDICATION

TO THE USERS OF WOODWORKING
MACHINERY THROUGHOUT THE WORLD.
TO THE CAUSE OF INDUSTRIAL AND
VOCATIONAL TRAINING IN THE HOPE THAT
THE IDEAS EXPRESSED HEREIN MAY
RECEIVE ENDORSEMENT.



"QUALITY" Our Watchword
"SATISFACTION" Our Guarantee
"SUCCESS" Our Ambition



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201-203 Deansgate, Manchester, England



HIGHEST AWARD
Gained at Paris,
France, in
1900.

SEVENTEEN YEARS
OF STEADY PROGRESS
SINCE.

IT ISN'T SO MUCH TO
WIN A MEDAL—THE
DESIRE TO DO
IT IS WHAT
COUNTS.



NEW YORK MEDAL FOR SAFETY GUARDS AND SAFETY APPLIANCES

Our exhibit, for which this medal was awarded, was chosen by the Aetna Life Insurance Co. (Accident Department) for display at Panama-Pacific Exposition, San Francisco and at Panama-California Exposition, San Diego. Highest Award.



Telegraph Code

We are users of the "Liebers Code, or Western Union Code" and domestic or foreign messages transmitted by this Cipher will receive prompt attention

Prices and Terms

Craot.....	At what price can you furnish?
Craox.....	How soon can you furnish?
Crapo.....	At what price and how soon can you furnish?
Craut.....	Free on board.
Craux.....	Free alongside steamer.
Crave.....	Give us the best price.
Cuba.....	Quote your lowest price for.
Cubac.....	Quote price by telegraph on the following.
Cubfo.....	Send specifications in detail.
Cuca.....	Telegraph lowest prices and delivery of.....

Orders

Cuga.....	Enter our order for.....
Cugib.....	Enter order for.....specifications by mail.
Cugly.....	Has our order been shipped?
Cuhel.....	Have you received our order?
Cuimi.....	Ordered in our letter of.....
Cuis.....	Sent order by mail.
Cuka.....	Ship entire order in one lot.
Culad.....	Will confirm order by mail.
Cue.....	Advise if order is accepted.
Cufmo.....	Duplicate our order.

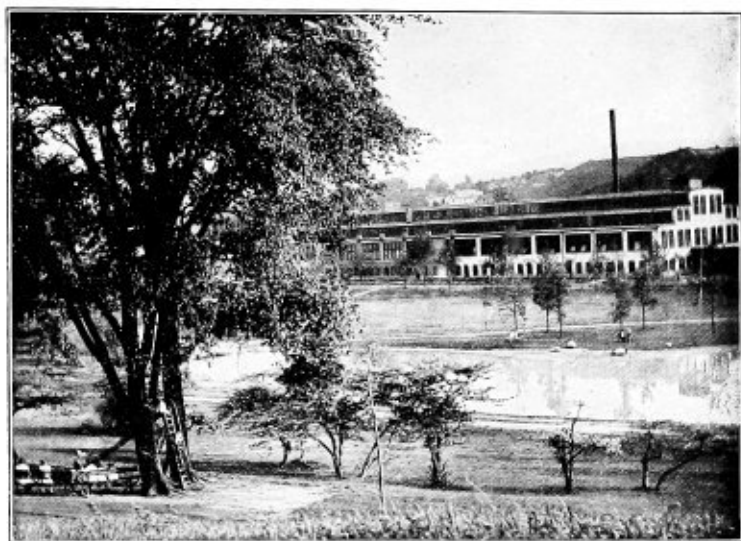
Delivery and Shipments

Cuxfa.....	Get ready for immediate shipment.
Cuxme.....	Have you on hand ready for immediate shipment?
Cuxna.....	How soon can you ship if ordered at once?
Cuxy.....	Must guarantee delivery.
Cyu.....	Prompt shipment will determine order.
Cyude.....	Ship via express.
Cyuen.....	Ship via rail.
Cyufu.....	Ship via steamer.
Cyuhf.....	Ship via sailing vessel.
Cyuhy.....	Ship via cheapest route.
Cyullo.....	Ship via New York.
Cyump.....	Ship via Boston.
Cyuno.....	Shipment not yet arrived.
Cyup.....	Ship any portion of our order at once.
Cyupa.....	Trace by wire.
Cyuvo.....	When will you ship?

Miscellaneous

Dabna.....	When did last carload leave factory?
Dabnab.....	When will next carload leave factory?
Dabnik.....	Cable delivery on.....
Dabnot.....	Message not clear please repeat.

Introduction



OUR PLANT

102,000 Square Feet of Floor Space, Surrounded by Fifty Acres of Parks

WE RECOMMEND to your favorable judgment, the mechanical appliances illustrated and described in this catalog, knowing from past experience that you will find them properly designed and correctly made from the best materials and by skilled workmen.

Men in high places, heads of departments, able engineers and high class mechanics have given our tools their unqualified endorsement. Our tools are found in daily service in the most progressive plants in the world.

The tools we produce are subjected to the closest scrutiny and inspection of material and workmanship. Each department head is instructed to spare no expense in developing perfection of output.

Our plant is modern, well lighted and ventilated, and equipped with up-to-date tools, giving us greater opportunity to manufacture along ideal lines. We invite all our friends to visit us and observe the methods employed in producing the highest grade machinery for working wood.

We have introduced our product into a large number of the progressive concerns of the United States, Canada, Great Britain, Europe, South and Central America, Australia and the Orient, and we attribute our success in all these great markets to the conscientious discharge of our duty to those who have given us their confidence.

We solicit a continuance of your valued patronage with the assurance that we will exert every effort to subserve your interests with unwavering fidelity.

No. 60

"Oliver" Universal Saw Bench

General Construc- tion

In the construction of this machine we have adopted that refinement characteristic of high class machine tools. Self-locking devices, self-oiling features, fine micrometer adjustment for the various gauges, machine cut gears, and correct workmanship, serve to give it durability, ease of operation and adjustment, accuracy and efficiency that is not found on the ordinary wood working tools not constructed on the metal tool principle.

Frame

This is made in the cored form, well ribbed and with a strong flange at the base for ample floor support. At the front the casting is curved to give the operator the required foot room. A cast partition divides the inside into two chambers, separating the rotating mechanism from the saws and directing the saw dust from the working parts.

Table

We supply a metal table composed of a stationary and a rolling section. It is strongly ribbed with a double rib around the outside edge for the dual purpose of preventing warp and acting as a clamping surface for special forms that may be required. An extension bracket on the stationary side receives and supports the ripping fence to permit ripping stock of extra width. Beginning at the saw line, this section of table is graduated its entire width into eighths.

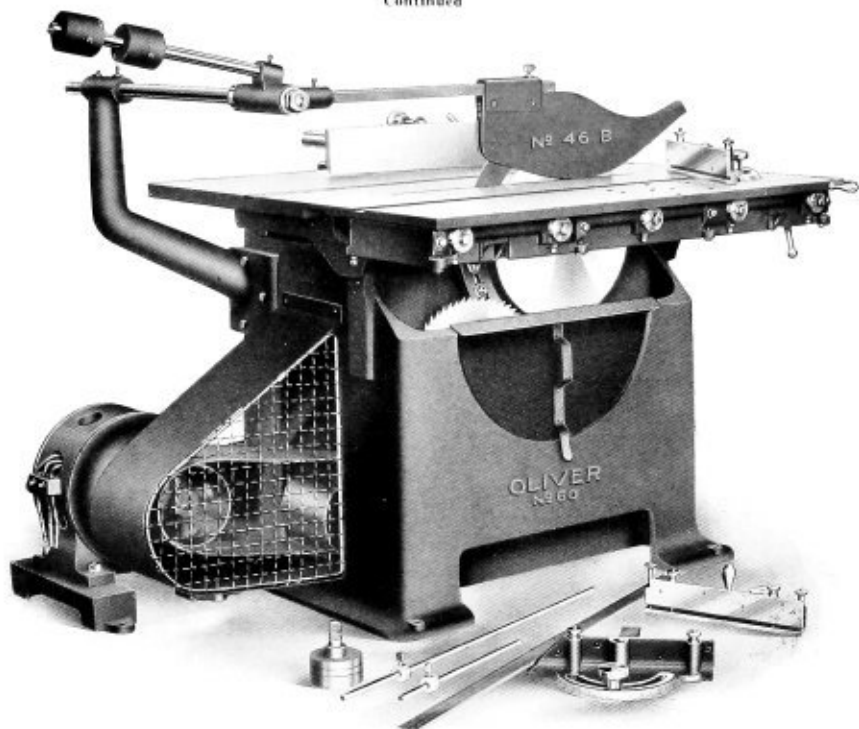
Rolling Section of Table

This is cross ribbed for strength and is mounted on roller bearings that eliminate friction in moving it past the saw. A lateral adjustment is provided to permit drawing the table away from the saw to aid in substituting dado heads and thick grooving saws. Adjustments are provided for retaining the table at the proper bearing on the rollers.



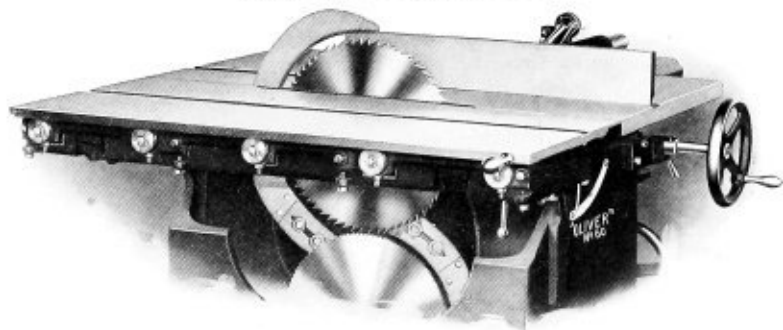
No. 60 "Oliver" Universal Saw Bench

Continued



No. 60 "OLIVER" UNIVERSAL SAW BENCH

Showing Self Contained Motor Drive



Showing rolls for sliding table and splitter guards which go with each machine

No. 60

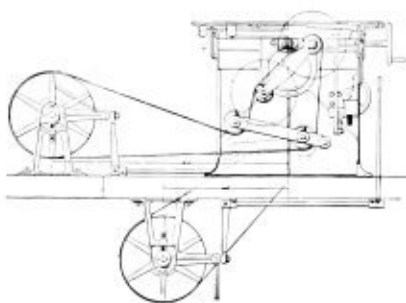
"Oliver" Universal Saw Bench

Continued

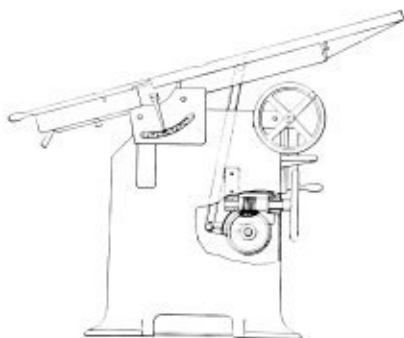
- Table Tilting Mechanism** This is operated by hand wheel and worm and gear enclosed in cast iron box and is self locking, holding the top firmly at any angle up to 45 degrees, as indicated on the dial provided. The rocker cap is adjustable for wear.
- Saw Arbors** These are two in number, of crucible steel and machine ground. They are fitted into perfect self-oiling bearings that are made to compensate for wear. End thrust is taken up by threaded thrust collars drawing pulley against babbitted end of bearing. The arbor pulleys are solid steel, of the pneumatic type, machined all over and properly balanced.
- Die Castings** Die castings of these babbitt bearings may always be obtained from us for replacements, so it does not mean trouble to you to re-babbitt—just slip in what we send you at small cost.
- Saw Arbor Yoke** This supports the two saw arbors. Its front end is held by a disk bearing 19" in diameter. Its rear end is held in a shoulder bearing of large diameter. End motion is prevented by the worm gear securely bolted to the outer end of the shoulder bearing, thus locking the entire yoke to the frame. The yoke is revolved readily when the saws are stationary or in motion and is accomplished by a hand-wheel engaging worm and worm gear mechanism encased in a dustproof cover.
- The revolving mechanism is clamped in any desired position by a lever clamp acting on the worm shaft.
- Automatic Idler** This forms one of the vital parts of the machine, and is located to automatically provide a leverage on both the tight and slack side of the belt. The idler pulleys are secured to steel shafts which run in babbitted self-oiling bearings.
- Universal Ripping Fence** This may be used on either side of the saw, or secured at any angle not in line with the saw, on either the stationary or rolling table. It has a quick adjustment of 12" without changing the locating pins to the next set of holes. A micrometer device is supplied which will adjust the fence to and from the saw for fine and extremely accurate adjustment. It may be tilted to an angle of 45 degrees and it has a parallel adjustment whereby it may be set to or from the operator 9". A metal block is provided for attachment to the fence to serve as a stop and give clearance when cross cutting.

No. 60
"Oliver" Universal Saw Bench

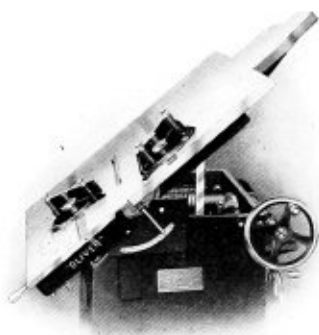
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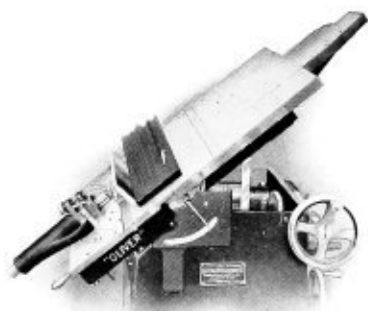
Showing two methods of countershaft belt drive



Showing method of tilting the table



View showing table tilted and exposing a part of the internal mechanism. Also showing the universal miter gauges in correct position.



View showing table tilted to angle of 45 degrees and the universal ripping fence in use at the left of the saw.

No. 60
"Oliver" Universal Saw Bench

Continued

GENERAL DIMENSIONS

Frame	Base 30" x 39". Height of Main Casting from the Floor 32".
The Table	Working Surface 41" x 44". Extension Bracket 12" x 16½". Stationary Table 24" x 44". Rolling Table 17" x 44". Total Height from Floor 36". Tilts to an Angle of 45 degrees. Throat in Table can be opened to 4".
The Yoke	Front Arbor Bearings 5¼" long, 1⅝" diameter. Rear Arbor Bearings 4½" long, 1⅝" diameter. Main Yoke Bearing 6½" diameter, 1¾" wide. Auxiliary Yoke Bearing 19" diameter, ¾" wide.
Saw Arbors	Machine Ground to 1⅝" diameter in bearings and 1" diameter where saws are applied. Arbor Pulley 4½" diameter, 6¼" face. Arbor Speed 2435 revolutions per minute. A 16" Saw will Project 4¾" above the Table.
Idler	Self-oiling Pulleys 6" diameter, 6½" face.
Countershaft	1½" diameter, 42" long. Two hangers 14" drop. Bearings 6" long, 1⅝" diameter. Tight and Loose Pulleys 10" diameter, 7" face. Driving Pulley 18" diameter, 6½" face. Speed 575 revolutions per minute.
Floor Space	Machine Alone 4' 5¼" x 3' 9". Machine with Countershaft 4' 6" x 8' 0". Machine with Motor Bracket 4' 5¼" x 5' 6".
Horse Power	Does not Exceed 5.
Capacity	Will rip to 26" wide. Will cut off to 36" wide up to 1½" thick. 16" Saw projects through the table 4¾". Can use saws 20" diameter but only one at a time. 16" Saws are sent with machine.

No. 60

"Oliver" Universal Saw Bench

Continued

Miter Cut-off Gauge

This is supplied for use on the rolling table and has capacity for cutting at angles from 30 to 135 degrees. It is used when cutting off very wide stock. It has an auxiliary rod and stop which adjusts in the groove in face of the fence for cutting to various lengths. Two stop rods, one 18" and one 36" long, are supplied and these may be used on the universal gauges.



Universal Gauges

These are two in number and operate in the table grooves as shown in accompanying half-tones. They are graduated from 30 to 150 degrees and may be set accurately. When the gauges are not used, the grooves in the table are fitted with steel strips provided.

Countershaft

This is secured to the floor on which the machine rests or hung below the floor. Hangers are of ring oiling type. The loose pulley has a self-oiling bronze sleeve which runs loose both on the shaft and inside the pulley.

Motor Drives

These are sometimes preferable to countershaft. We recommend the use of a 5 H. P., constant speed, fully enclosed motor, either attached to the machine by means of a bracket or placed upon the floor.

Equipment

This consists of one 16" rip saw, one 16" cross-cut saw, one universal ripping fence, one miter cut-off gauge, two universal miter gauges, one clearance block, two filling strips for table grooves, one dado sleeve with collars.

CODE, WEIGHT AND CUBIC MEASUREMENT

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dabber	No. 60-A Machine with Countershaft.....	2200	2400	67
Dabbing	No. 60-B Machine without Countershaft.....	2000	2200	59
Dabble	No. 60-C Machine with Motor Bracket....	2100	2300	59

EXTRAS

Dablo Dabmi

One Endless Leather Belt to drive Saw Arbors.
One Special Dado Head, 12" diameter, to work grooves from $\frac{1}{8}$ " to 2" wide.

No. 90

"Oliver" Universal Saw Bench

Frame We supply this in the cored form, ribbed for strength, with a wide flange at the base. A metal partition divides the saws from the balance of the working parts and prevents the saw dust from penetrating to them. The side of the frame where the saws are applied is cast to form a natural chute for the saw dust and carries it to the pipe connection at the base. A column guard fills the space opposite lower saw.

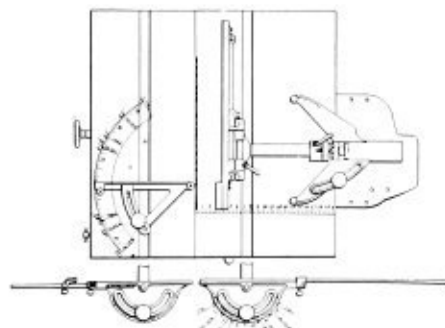
Table A metal table of ample proportions is supplied in two sections, one stationary and the other to slide past the saw. It is well ribbed and is very rigid. An extension bracket at the right supports the fence when ripping stock the maximum width. Table tilts to an angle of 45 degrees by means of hand wheel engaging worm and gear.



No. 90 "Oliver" Universal Saw Bench Showing Table Tilted to 30 degrees

Sliding Table This is mounted on a tongued cross slide and moves past the saw for use in cutting off and for dado work. The cross slide is gibbed to the main table frame and has provision for drawing 4" away from the saw line, so dado heads and grooving saws may be used. The sliding table will not lift up nor tip when drawn to its maximum limit.

Table Graduations The stationary section of the table is graduated its entire width into eighths, and the sliding section is graduated into degrees that cover all the possible acute and obtuse angles.

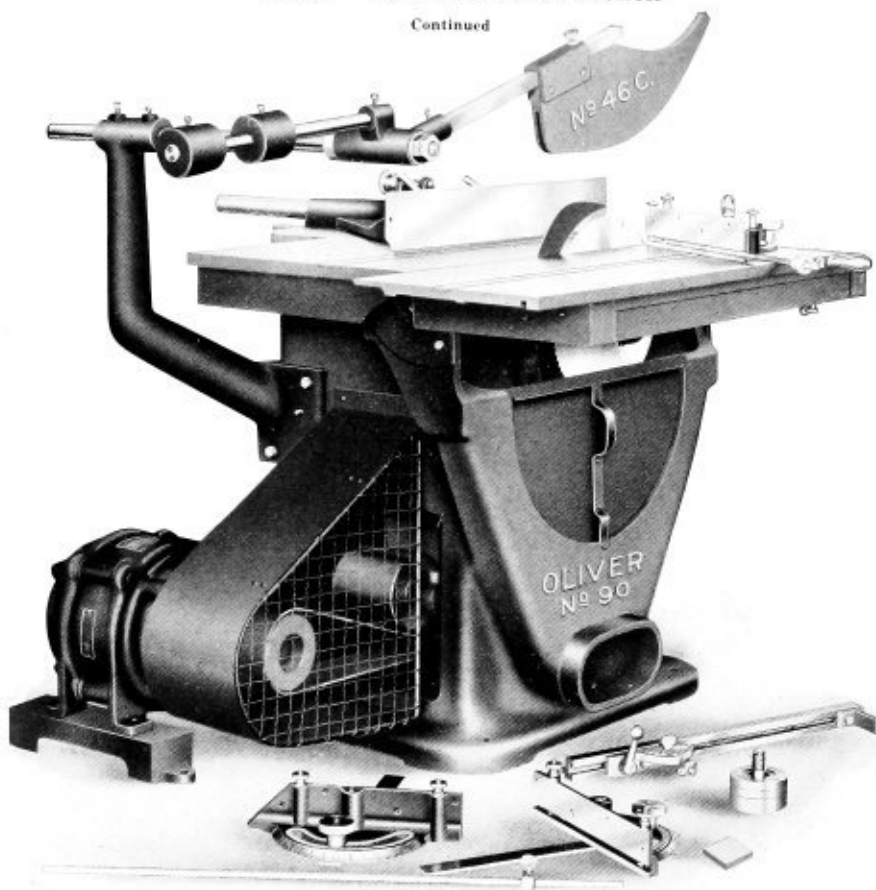


Etching Showing Table Graduations

Saw Arbors Two crucible steel, machine ground arbors are accurately fitted into bearings that are lined with "Genuine" babbitt and have oil wells and wick conveyors that keep them flooded with oil continuously. End thrust through wear is taken up by means of a threaded thrust collar drawing the arbor pulley against the end of the bearing. Arbor pulley is solid steel, machined all over and is of the pneumatic type.

No. 90
"Oliver" Universal Saw Bench

Continued



General View of Motor Driven Machine.

This Saw Bench fills a demand for a somewhat smaller machine than our No. 60 Saw Bench. The two principal points of difference being a smaller table top and 14" instead of 16" saws.

The general accuracy of the machine as a whole is apparent in even the smallest detail and for general everyday use, with its various appointments, lends itself to quick change from one class of work to another. The indexing of the gauges, the graduations on top of table, the degree of pitch when the table is tilted are all true; the saws "track right." The gauges will cut square with the saw; it won't run hot and no substitutions of poor for good workmanship or material have been resorted to. It's a quality tool of the "Oliver" kind.



No. 90

"Oliver" Universal Saw Bench

Continued

- Die Casting** Die casting of these babbitt bearings may always be obtained from us for replacements, so it does not mean trouble to you to re-babbitt—just slip in what we send you at small cost.
- Arbor Yoke** This is supported on the front end by a disk bearing $16\frac{3}{8}$ " diameter accurately fitted into a seat in the metal partition of the frame. The rear end is held in a shoulder bearing, thus locking the yoke firmly but freely in the frame. The yoke revolves easily by means of a hand wheel engaging a worm and gear.
- Automatic Idler** This is a valuable feature, so located as to automatically provide a leverage on both the slack and tight side of the belt. The idler pulleys are secured to shafts that run in self-oiling bearings.
- Ripping Gauge** The ripping gauge consists of a slide mounted on the ripping table and carrying the tilting fence, supporting it at the front on a segment and at the rear by a link, permitting an adjustment to any angle to 45 degrees. A hand lever locks the fence in the required position. A clamping lever secures the fence rigidly at any point in the width of the stationary section of table acting as an eccentric cam against a friction locking plate.
- Miter and Cut-Off Gauge** This gauge is used on the sliding table and swings to angles of 30 to 135 degrees. It has 18" and 36" auxiliary rods and stop which are used for determining lengths to cut off. They are held by a yoke attached to the end of the fence.
- Universal Gauges** Two are supplied operating in the table grooves, each side of the saw. They are graduated from 30 to 150 degrees. When the gauges are not used, the grooves are fitted with steel strips. They receive same rods and stops as are used on the Cut-off gauge.
- Counter-shaft** This is detached from machine. Hangers are of wick oiling type. Loose pulley is fitted with a self-oiling bronze bushing and wears a lifetime.
- Equipment** We furnish one 14" rip saw, one 14" cut-off saw, one clearance block, two filling strips for table grooves, dado sleeve, one universal bevel ripping gauge, one miter cut-off gauge for sliding table section, two universal miter gauges, two stop rods, countershaft with hangers and pulleys.
- Capacity** Machine will rip 22" wide, cut off 34" wide up to $1\frac{1}{2}$ " thick. Can use one saw 18" ing table section, two universal miter gauges, two stop rods, diameter not revolving the yoke. Will work a dado 4" wide.
- Motor Drives** We can furnish electric drive when desired, eliminating the countershaft. There are a variety of drives applicable to it and we will be glad to furnish special estimates upon request.

No. 90

"Oliver" Universal Saw Bench

Continued

GENERAL DIMENSIONS

Frame	Base 28" x 31". Height to table 32".
Table	Length 38", width 35 3/4". Stationary Section 38" x 20 3/4". Sliding Section 38" x 15". Height from floor 35". Tilts to angle of 45 degrees. Throat in table opens 4".
Saw Arbors	1 1/8" diameter in the bearings and 1" diameter where saw is applied. Arbor pulley is 4" diameter 5 1/4" face and should make 2725 revolutions per minute.
Arbor Yoke	Front Bearings are 6" long and rear bearings 3 1/2" long, all 1 1/8" diameter. Main Yoke Bearing is 16 1/8" diameter. Auxiliary Yoke Bearing 4 1/2" diameter.
Idler Pulleys	6" diameter, 5" face.
Counter-shaft	Length 42", diameter 1 1/2". Bearings 6" long, 1 3/8" diameter. Hangers, 14" drop. Tight and Loose Pulleys 10" diameter 5" face. Driving Pulley 18" diameter, 5 1/2" face. Speed 600 revolutions per minute.
Floor Space	Machine alone is 4' 2" x 3' 0". Machine with Countershaft on floor is 4' 2" x 7' 6". Machine with Motor Bracket is 4' 2" x 5' 6".

Horse Power Five.

CODE, WEIGHT, ETC.

Code	Machine	Domestic Weight	Export Weight	Measurement in Cubic Ft.
Dacat	90-A With Countershaft	1845	2025	60
Dace	90-B Without Countershaft	1645	1825	52
Dad	90-C With Motor Bracket	1745	1925	52

EXTRAS

Daddle	One Endless Leather Belt to drive saw arbors.
Daft	One Special Dado Head, 12" diameter, to work grooves from 1/8" to 2" wide.

No. 135

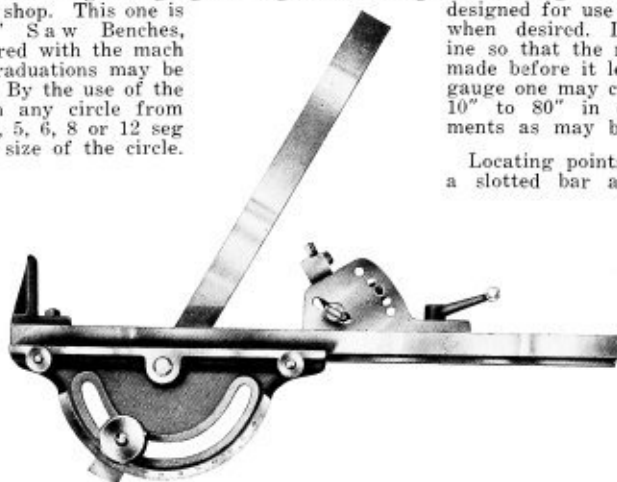
"Oliver" Improved Circular Segment Gauge

For use on "Oliver" No. 60 and No. 90 Universal Saw Benches

A circular segment gauge is of great advantage on a sawing machine in a pattern shop. This one is "Oliver" Saw Benches, be ordered with the machine graduations may be works. By the use of the ment in any circle from using 4, 5, 6, 8 or 12 seg for the size of the circle.

on a sawing machine in a designed for use with the when desired. It should ine so that the necessary made before it leaves the gauge one may cut a seg- 10" to 80" in diameter, ments as may be proper

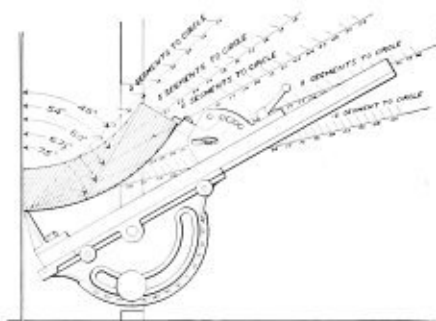
Locating points held in a slotted bar are made



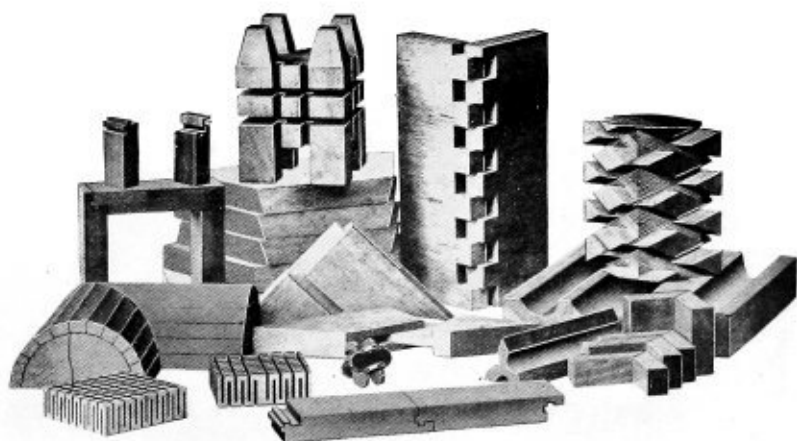
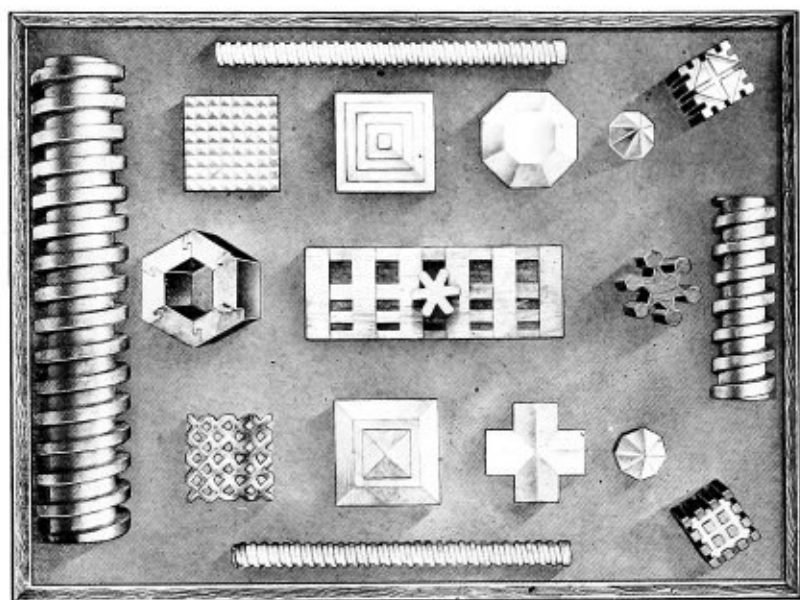
adjustable to meet the necessary changes. The segments can be placed at points on the ends for locating the outside of the circle. This does away with all inaccuracies.

Instructions for properly handling the gauge accompany each one, rendering it easily understood by the operator.

When not using the parts (bar and locating points), the miter gauge remains for use with all its important functions. It being graduated on the front, can be set accurately to any angle desired from 30 to 150 degrees.



Code	Description	Weight
Dairz	Gauge complete with miter gauge, bar and locating points.....	20 lbs.



Samples of special work done on "Oliver" No. 60 and No. 90 Universal Saw Bench

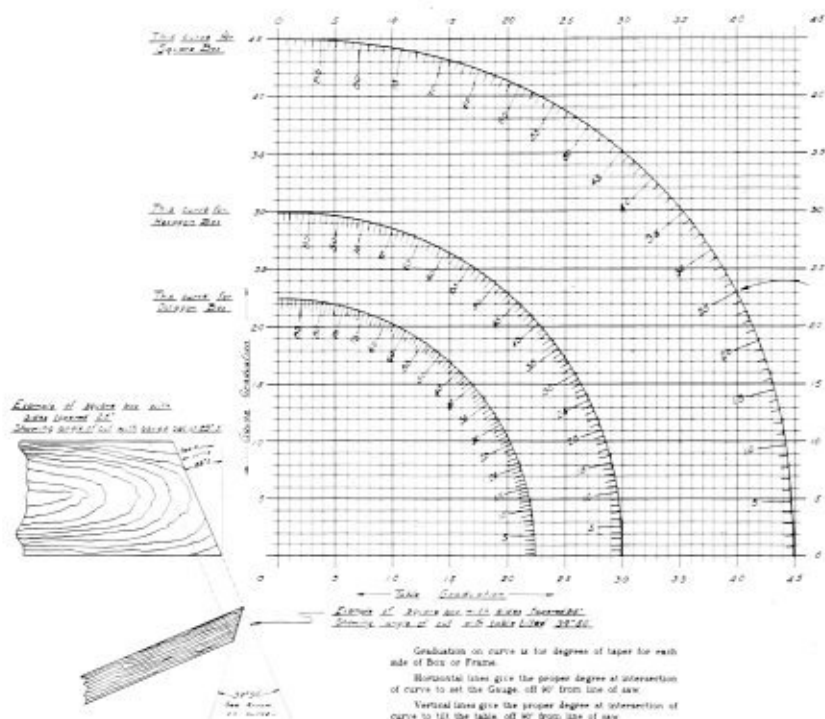
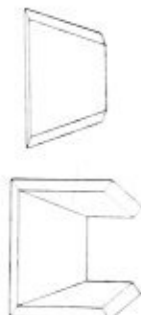


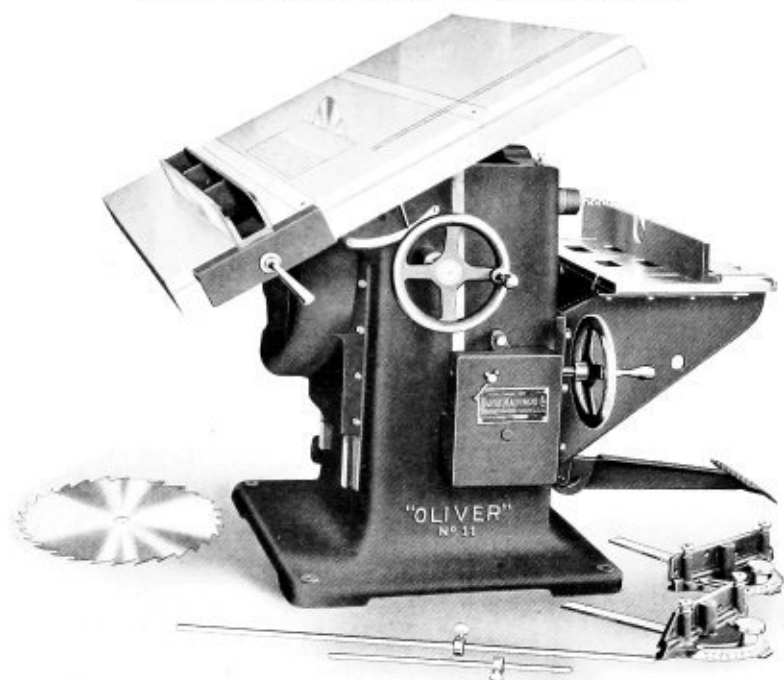
Diagram illustrates method of setting saw gauge and table top to obtain necessary compound angles required in a pyramid-shaped column or hopper box having 4, 6 or 8 sides. Example illustrates a four-sided box with sides flaring 25 degrees. First, determine degree of flare. For 25 degrees, as illustrated, set miter gauge on left hand side of the saw to 23 degrees 5 min. as illustrated by arrow on curve. Second, tilt table to 39 degrees 50 min. as illustrated by arrow on curve. Graduations on curves represent flare of box. Table graduations represent number of degrees from normal horizontal position. Gauge graduations represent number of degrees from normal position, viz.: 90 degrees from line of saw. Horizontal lines represent gauge graduations. Vertical lines represent table tilting graduations.



No. 11

"Oliver" Variety Saw Bench

With Hollow Chisel Mortising and Boring Attachment



"OLIVER" NEW No. 11 VARIETY SAW

General View Showing Universal Miter Gauges and Standard Table with Plain Ripping Fence

Introduction This machine is known as our New Improved No. 11 Variety Saw Bench and Hollow Chisel Mortiser. The new features are the ball bearings, hollow chisel mortiser and boring attachments, worm and gear device for tilting the table, and standardized top to take plain two-sided ripping fence useable on either side of saw.

The No. 11 is a quality machine through and through and strong enough to work up to full capacity on hard woods. Self-locking devices, self-oiling features, fine micrometer adjustment, cut gears and correct workmanship serve to give durability, ease of operation and adjustment.

Base Is cored one-piece casting, heavy, well-ribbed, and has ample floor support. The rocker seats, which carry the tilting top, are cast solid with the base and properly machined to insure perfect alignment and ease of operation.

No. 11

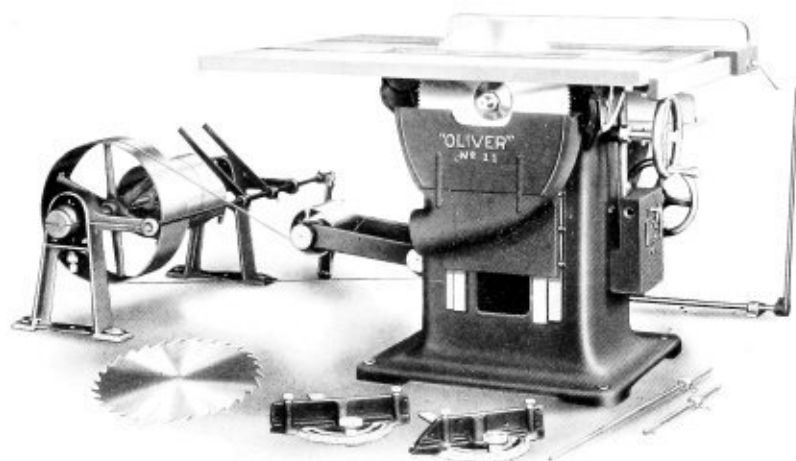
"Oliver" Variety Saw Bench

Continued

- Table Top** Is 39½" x 48" accurately machined with two parallel slots equi-distant from the saw line which guide the miter gauges. A scale is graduated into the top to determine ripping widths. This in connection with the easy method of setting the plain ripping fence affords convenience to the operator and minimizes danger from using a rule by hand.
- Utility** It has one saw arbor carrying an 18" saw on one end and the other end fitted to use the hollow chisel mortising and boring bits. A dado head 12" in diameter to cut up to 4" wide may be used upon the saw end of arbor. It will rip 20" wide, cut off 18" wide; saws from 10" to 18" may be used; 18" saw projects through table 5½".
- Tilting Mechanism** Operated by hand wheel worm and gear, is self-locking, holding top at any angle up to 45 degrees. All gears covered.
- Saw Arbor** Crucible steel 1¼" diameter where saw is applied, revolves in highest quality ball bearings; arbor pulley is solid steel 5" diameter, 6¼" face. A 4" wide cutter head may be carried on dado sleeve furnished for saw end. The hollow chisel end of arbor is fitted to receive the various boring bits.
- Saw Arbor Yoke** This is a one-piece casting, including the ball bearing housing, is machined to fit the gibbed ways planed upon the face of the column. It has a vertical adjustment of sufficient length to admit of ripping 6" stock with 20" saw, or boring or mortising 7" above the boring table. The adjusting mechanism consists of hand wheel, as illustrated, operating a screw by means of bevel gears.
- Hollow Chisel Mortising and Boring Attachments** These are operated by foot lever feed, can be used as a plain boring machine or as a hollow chisel mortiser; provided regularly with one ¾" hollow chisel with bit and one ½" regular boring bit. Will mortise to depth of 3½". Width of mortising table, 28".
- Boring Attachment** Should the hollow chisel attachment not be desired, the mechanism may be operated as a boring attachment in the ordinary way. Deepest depth of boring is 7". Boring and mortising fence is adjustable for angular work.
- Ripping Fence** The ripping fence regularly furnished and highly recommended is the so-called plain double-sided type. On a machine of this type, and particularly for heavy work for which this machine is admirably suited, plain ripping fence is more accurate, easier handled and, in connection with the tilting table, does all kinds of useful work. It may be used on either side of the saw.
- Universal Gauges** Operate in the table grooves as shown on first page. They are graduated to read from 30 to 150 degrees from the line of the saw and may be set accurately. When the gauges are not used, the grooves in the table are filled with steel strips.
- Countershaft** Hangers are of ring oiling type. The loose pulley has a self-oiling bronze sleeve. Tight and loose pulleys 10" diameter, 6½" face. Driving pulley 18" diameter, 6½" face. Speed, 600 revolutions per minute.

No. 11 "Oliver" Variety Saw Bench

Continued



FRONT VIEW OF "OLIVER" No. 11 VARIETY SAW BENCH
Showing Countershaft Drive, Mechanism for Raising or Lowering the Saw and
Table Tilting Mechanism.

Motor Drives

These are sometimes preferable to countershaft. We recommend the use of a 5 to 7½ H. P. constant speed motor. Speed of motor should not exceed 1200 R. P. M.

Equipment

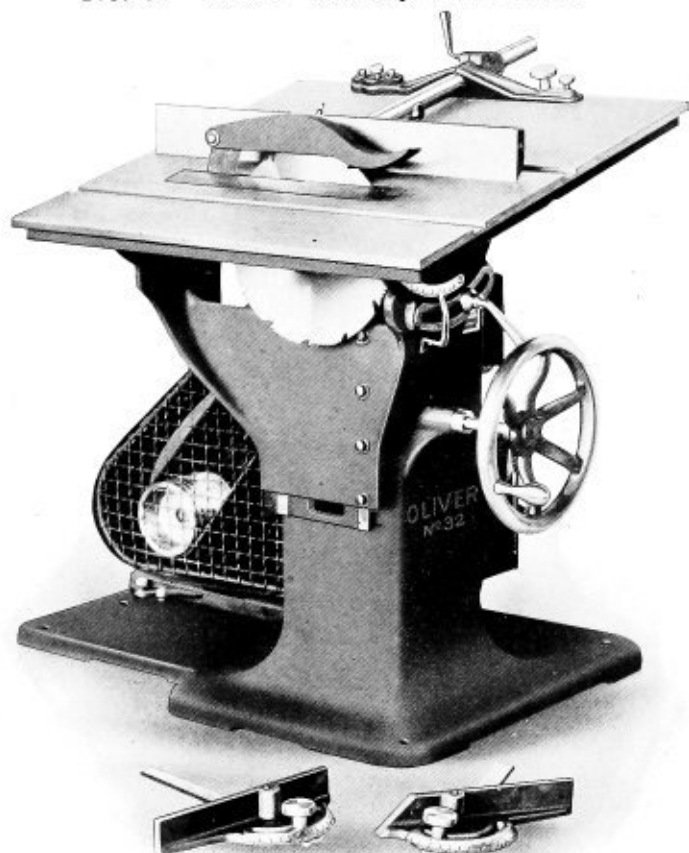
This consists of one 18" rip saw, one 18" cross cut saw, one double faced lever-locked ripping gauge, two universal miter gauges, two filling strips for table grooves, two stop rods, and also one ¾" square hollow chisel with bit to suit and one ½" boring bit when mortising attachment is ordered.

Code	No.	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dagob	11-A	Complete Machine	2000	2300	88
Dahlia	11-B	Without Countershaft	1900	2200	88
Daily	11-C	Machine without Mortiser, but with Countershaft	1800	2000	84
Dairy	11-D	Machine without either Mor- tiser or Countershaft	1600	1900	65

EXTRAS

Daish	One endless leather belt to drive saw arbors.
Daiso	One special Dado Head 12" diameter to work grooves from ¼" to 2" wide.
Dabzyt	One No. 46 Universal Saw Guard with cast iron tripod stand, counterweights and adjustable hood for use with this machine. Weight, 200 pounds.

No. 32 "Oliver" Variety Saw Bench



No. 32 VARIETY SAW BENCH

Motor Driven as shown or Belt Driven with Self-contained Countershaft

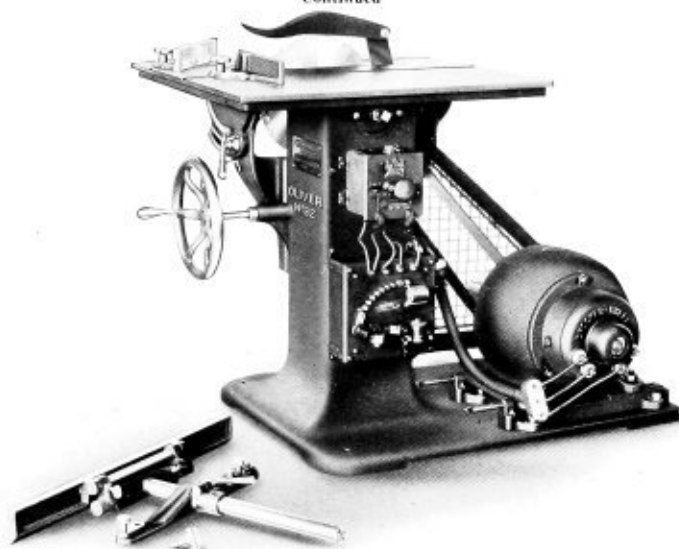
Introduction This machine is a prime favorite in both educational and industrial fields. The various grade manual training centers in the Pittsburgh district regard it as possessing especial merit. While it is a small machine in size and moderate in price, its general adaptability to light service is very marked.

The design is very clever, simple in construction, not easily put out of order, thoroughly well made, accurate and convenient. It is not altogether a boy's tool, as the various industrial shops take more than one-half of a large output.

Frame Cast iron molded in cored column form with floor support of ample proportions, being 22" x 30". Entire working mechanism is mounted on it, making the machine self-contained.

No. 32 "Oliver" Variety Saw Bench

Continued



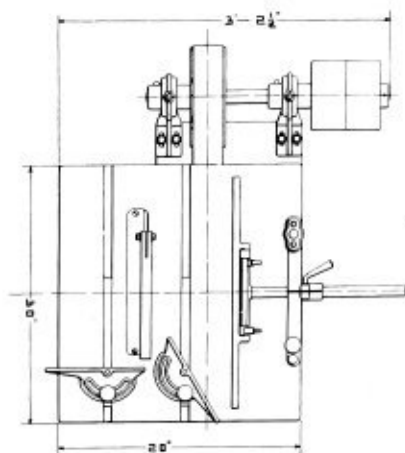
No. 32 VARIETY SAW BENCH

Electrical equipment shown is merely suggestive; we will furnish any motor, starter, switch and wiring that you may desire

Table

Cast iron, strongly ribbed, correctly planed and fitted, dimensions 28" x 30". Two grooves equi-distant from the saw line

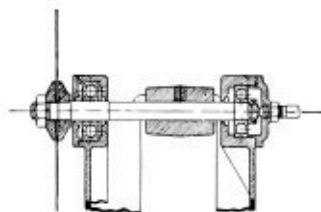
and 8" apart are milled into its top to serve as slide ways for cutting off and angle gauges. A recess is cast about the saw for applying and removing the blade and this is filled with a removable throat. A vertical rise to the table of 4" maximum is provided by mounting it in a machined dovetail slideway 7" wide and controlling it by hand wheel and bevel gearing actuating a substantial screw and nut. It will tilt to any angle of 45 degrees through the slotted rockers that connect the top portion of the table to the elevating yoke. It is held at the desired position by means of a locking lever. At its minimum height, the top of the table is 32" from the floor.



No. 32 "Oliver" Variety Saw Bench

Continued

Saw Arbor Is 1" diameter where the saw is applied and 1 $\frac{1}{8}$ " diameter in the bearings. It is of fine crucible steel, ground to accurate form and revolves in ball bearings of the highest type. Saw Blade is held between collars 3 $\frac{1}{2}$ " diameter by a hexagonal nut. End motion is removed by a nut at the rear. Arbor pulley is 3" x 4" and runs at 2800 R. P. M.



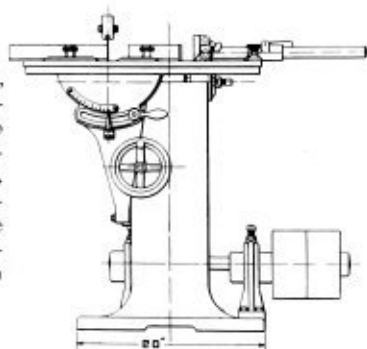
Ball Bearings

Ball Bearings These are made of the essential dimensions to insure best results at high speed, are practically impervious to wear, run in a lubricating grease that prevents cutting, and are encased so completely that no dirt can come in contact with them.

Power Conservation Through the introduction of the ball bearings for the saw arbor the amount of friction caused by contact with the bearings has been so reduced that practically the full pulling power of the belt is directed to the saw and its cutting efficiency largely increased over that of any saw not constructed on this principle.

Ripping Gauge

This is entirely of metal, tilts to angle of 45 degrees, can be set to rip 14 inches wide, is of suitable height and length, and has a simple adjustment for paralleling the saw for clearance, regularly furnished as shown in the etching opposite.



Miter Gauges

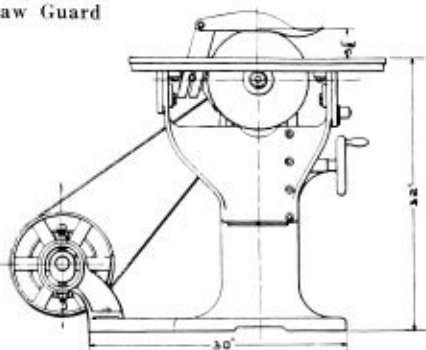
Two in number, made entirely of metal and fitted to slide in the table grooves each side of the saw. Permit cutting right and left angles with but one handling of the stock. By means of the graduations in front the angling of the guide is instantly accomplished from 30 to 150 degrees.



No. 32 "Oliver" Variety Saw Bench

Continued

Saw Guard



This is attached to the column and is easily removable when desiring to rip extra wide stock. A clamping nut secures the vertical bar or splitter at any position for raising or lowering the entire guard. The hood is made of wood of ample width, and can be adjusted to within $\frac{1}{8}$ " of the material being sawed, thus reducing hindrance to the operator to a minimum.

Countershaft Located on the machine base at the rear and mounted in ring oiling, adjustable bearings, and carries a driving pulley 12" x 4" and a pair of tight and loose pulleys 8" x 4" that should make 700 R. P. M. Loose pulley is bushed with bronze and self-oiling. Countershaft is not furnished if machine is to be motor driven, unless especially ordered.

Capacity Largest saw that can be used—12" in diameter. Will project $3\frac{1}{2}$ " above table. Can rip to 14" wide. Using the miter gauges will cut off 11" wide, material being 1" thick. A dado head 12" diameter and $1\frac{1}{2}$ " wide may be used (not regularly furnished.)

Equipment Consists of one 12" miter saw with cleaner teeth and fitted for both ripping and cutting off—arbor wrenches—and one endless belt for saw arbor.

Horse Power Three.

Floor Space 39" x 44".

CODE, WEIGHT, ETC.

Code		Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Damsi	No. 32-A	Machine with self-contained countershaft for belt drive....	750	850	30
Damson	No. 32-B	Machine without countershaft; but with base for motor drive	700	850	30

EXTRAS

Damt One Special Dado Head to work grooves up to $1\frac{1}{2}$ " wide.

No. 45
"Oliver" Hand Feed Rip Saw

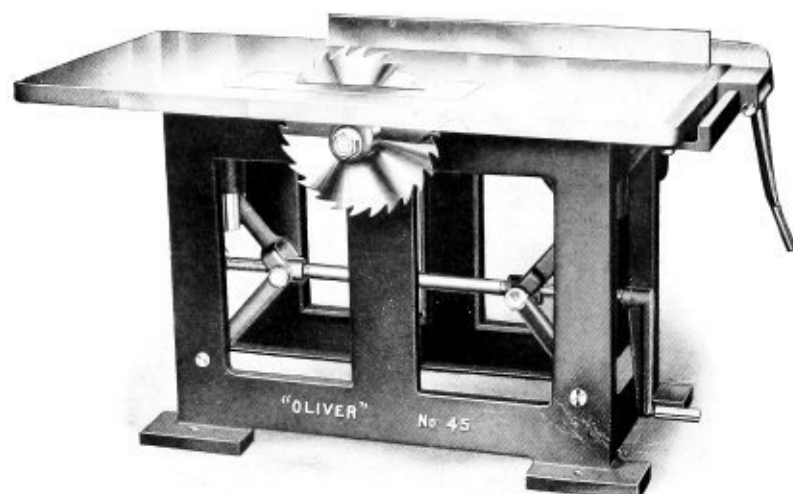
- Type** This machine has been designed especially for general utility purposes. Its adaptability for either light or heavy work is its main feature. It will be found invaluable in the shops of large industrial institutions where the requirements of a carpenter shop are to take care of every job that comes along whether it is a case of one inch boards, planks or timbers.
- Capacity** Will take a saw 26" diameter that will saw to 9" in thickness. An 18" saw projects 5" through the table. Extreme distance between saw and fence, 30".
- Table** It is mounted on two cylindrical guides, vertically adjusted by a toggle joint operated by a screw. It has a removable plate at the saw.
- Saw Arbor** It is of crucible steel, machine ground and runs in long self-oiling bearings. Arbor pulley is the pneumatic type, giving increased belt contact and power. Where saw is applied the arbor is extended 6", so can rip extra width. Is provided with filling collars.
- Fence** This is made of metal, held parallel to the saw. Can be instantly set to graduations and locked by a lever cam.
- Guards** Back of the saw we furnish a steel blade splitter or "back guard;" under the table we furnish a removable saw guard; above the table no guard is regularly furnished but "Oliver" No. 46-A Full Automatic Saw Guard with its own floor stand can be furnished when so ordered.



"OLIVER" No. 45 HAND-FEED RIP SAW TABLE
With No. 46-A Saw Guard

No. 45 "Oliver" Hand Feed Rip Saw

Continued



"OLIVER" No. 45 HAND-FEED RIP SAW TABLE
All Guards Removed to Show the Machine

SPECIAL DATA

Table	32" x 56", will rise 5½".
Saw Arbor	1¾" where saw is applied. Pulley is 7" x 7"; speeds 18" saw, 2143 R. P. M. 26" saw 1450 to 1500 R. P. M.
Capacity	Will rip to 21½" wide with saw next to rigid collar, and 26½" wide with saw next to loose collar. 18" saw projects through table 5¼".
Countershaft	Has 10" x 7" T & L pulleys and 20" x 7" drive pulley. Speed 750 R. P. M. for 18" saw. 525 R. P. M. for 24" saw.
Floor Space	With Countershaft—Single, 4' 10" x 8' 3". Double, 6' 0" x 8' 3". Without Countershaft, 3' 8" x 6'.
Horse Power	6 to 10.

CODE, WEIGHT, ETC.

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dance	No. 45-A Machine with one 18" Rip Saw, one ripping fence, saw guard under the table, one splitter guard and countershaft with hangers and pulleys	1530	1800	78
Dander	No. 45-B Machine as above except with 26" saw	1600	1900	82

EXTRAS

Dandy	Countershaft hangers and pulleys omitted when not wanted.
Dangle	One Endless Leather Belt, to drive saw arbor from countershaft or motor on floor back of machine.
Dango	No. 46-A "Oliver" Full Automatic Saw Guard with Floor Stand.
Dangol	Two-speed countershaft with hangers and pulleys.

No. 97 "Oliver" Heavy Swing Cut-Off Saw

Carries Either 36" or 48" Saw

Description This machine is similar in design to the No. 36 swing cut-off saw, shown on page 30, and differs only in the fact that every part of it is made heavier to meet the needs in using a saw 36" in diameter.

GENERAL DIMENSIONS

Frame	Length between hangers 51". Length from center of arbor to base of hanger 8'.
Saw Arbor	Length over all 24½". Out to out of boxes 20½". Diameter in bearings 2". Where saw is applied 1½". Saw Collars 5". Bearings 6" long. Arbor Pulley 8" x 8½" face. Speed 1125 revolutions per minute. Adjustment for tightening belt 1".
Trunnion Hangers	Vertical adjustment for keeping saw cutting line 4".
Countershaft	Length 55", diameter 2". Bearings 6" long. Hangers 18" drop. Driving Pulley 20" diameter, 8½" face. Tight and loose Pulleys 10" diameter, 8½" face. Speed 450 revolutions per minute.
Horse Power	Maximum 10.
Equipment	We furnish one 36" saw with the No. 97-A machine. We furnish one 48" saw with the No. 97-B machine.

CODE, WEIGHT, ETC.

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Deaf	No. 97-A 8' long, with 36" saw.....	1400	1500	86
Deag	No. 97-B Same, with 48" saw.....	1600	1700	86

EXTRAS

Deal	Endless Leather Belt, 8" wide, suitable length.
Deala	Special Wire Mesh Belt Guard, with supporting brackets.
Dealac	Wall Brackets in place of Ceiling Brackets.
Dealam	Motor Bracket bolted to frame in yoke of machine.
	Special quotations made on motor driven machines.

No. 97

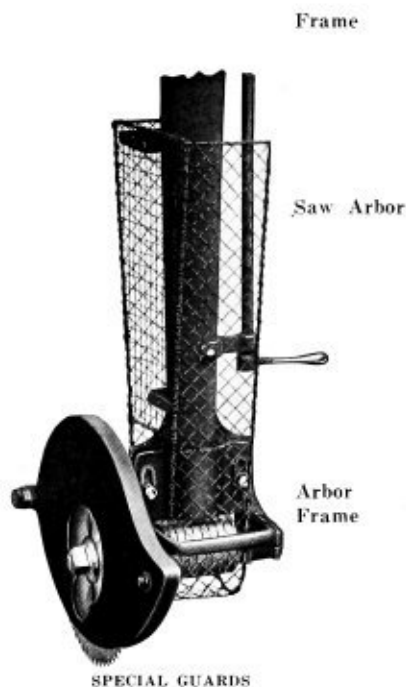
"Oliver" Heavy Swing Cut-Off Saw

Continued



No. 97 "OLIVER" HEAVY SWING CUT-OFF SAW
Fitted for either 36" or 48" Saw

No. 36
"Oliver" Swing Cut-Off Saw



Frame

It is made in the cored form, with a single arm centrally located. It supports the countershaft above, and the saw arbor frame in a tongue and groove bearing below. Total length between hangers is 44" assuring a good support.

Saw Arbor

This is made of crucible steel, machine ground to accurate size. It is mounted in two self-oiling split bearings, $4\frac{3}{4}$ " long, $1\frac{1}{8}$ " diameter, and carries a grooved pulley $5" \times 6\frac{1}{4}"$. End play is cared for by babbitt grooves in the front bearing; speed of arbor 2000 R. P. M. Length 24" and diameter $1\frac{1}{4}"$ where the saw is applied. Adjustment for tightening the belt is $1\frac{1}{2}"$.

Arbor Frame

This is detachable from the main frame, held securely in position by heavy bolts. It is adjustable vertically 4", for taking up stretch of the belt, and may be removed from frame for rebabbiting the bearings. A strong handle bolted to this frame is very convenient for the operator.

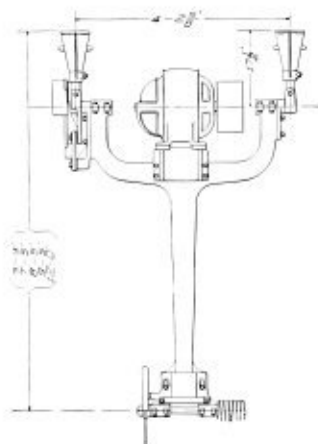
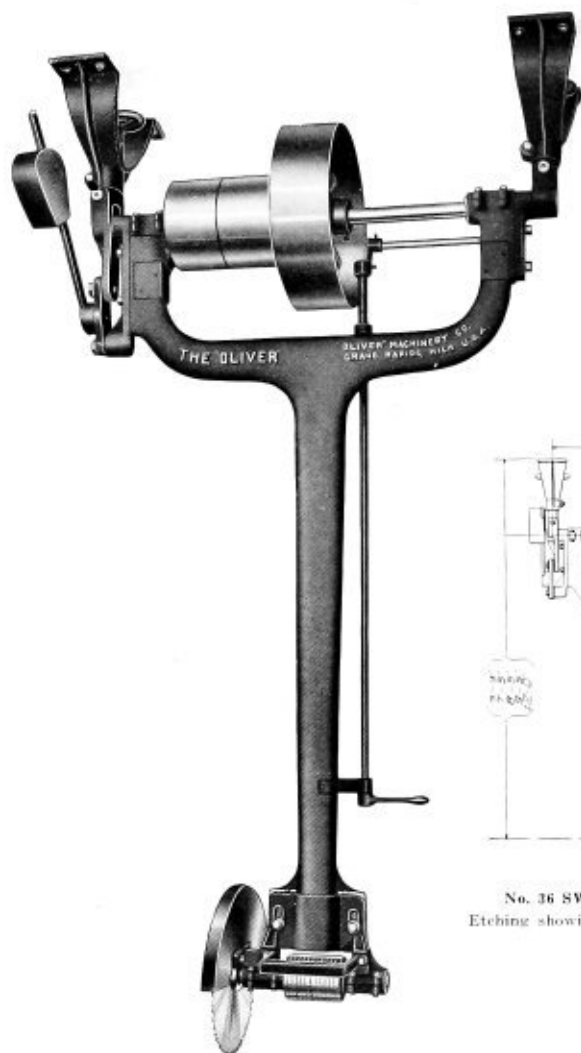
SPECIAL GUARDS

Countershaft This is 44" long, $1\frac{3}{4}"$ diameter and supported in babbitted bearings 5" long with removable caps, and they are well lubricated by constant flow of oil through capillary attraction. Pulleys are machined and balanced properly. The loose pulley is provided with a self-oiling bushing having a double wearing surface. A belt shifter for the driving belt is carried on the machine frame convenient to the operator. Tight and loose pulleys 10" diameter, 6" face; driving pulley 20" diameter, $6\frac{1}{4}"$ face; speed for 18" saw 500 revolutions per minute.

Hangers These have $17\frac{1}{2}"$ drop and are fitted with trunnion bearings, which receive and sustain the main frame. Hand wheels and screws are provided for vertical adjustment of 5", thus maintaining the same cutting line as the saw wears to smaller diameter.

Horse Power Maximum with 18" saw, 5; with 24" saw, $7\frac{1}{2}$.

No. 36 "Oliver" Swing Cut-Off Saw



No. 36 SWING CUT-OFF SAW
Etching showing motor driven machine.

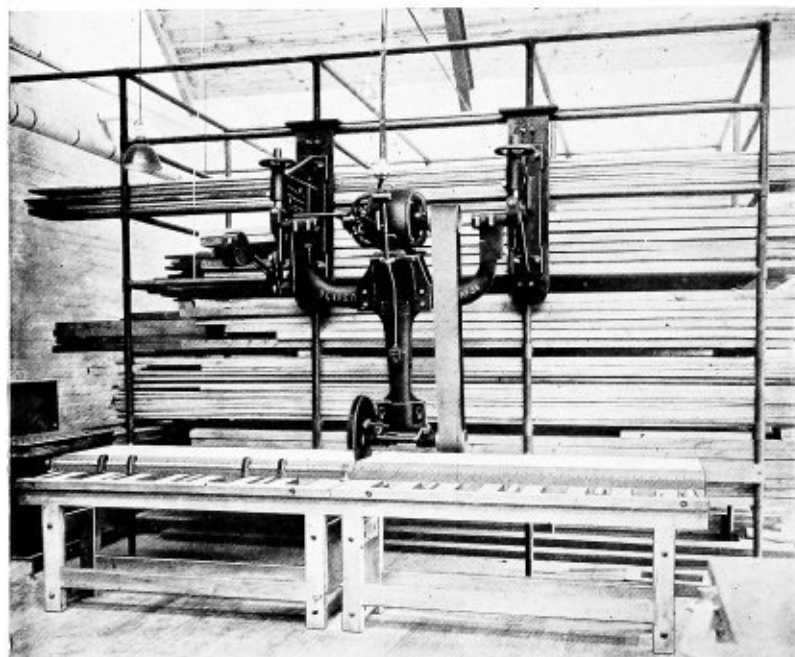
No. 36 "OLIVER" IMPROVED SWING CUT-OFF SAW

In five lengths—5 ft. 5 in., 7 ft. 5 in., 8 ft. 5 in., 9 ft. 5 in. and 12 ft. long.

This machine is successful not only for rough cutting, but also in producing accurate results in hardwood for interior finish, cabinet and pattern work.

No. 36 "Oliver" Swing Cut-Off Saw

Continued



This cut shows "Oliver" No. 36-A Swing Cut-Off Saw mounted on "Wall Brackets" and having No. 37 Swing Cut-Off Saw Table and No. 419 Patent Swing Saw Gauge—all in use at the South High School, Grand Rapids, Mich.

CODE, WEIGHTS, ETC.

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dean	No. 36-A 5' 5" long, with one 18" diameter saw, saw shield and countershaft	740	820	43
Dear	No. 36-B 7' 5" long as above.....	810	910	55
Dearly	No. 36-C 8' 5" long, as above.....	830	930	67
Dearth	No. 36-D 9' 5" long, as above.....	860	960	76
Deary	No. 36-E 12' 0" long, as above.....	970	1085	100

EXTRA

Debam	Motor Bracket bolted to frame in yoke of machine.
Debar	Endless Leather Belt for driving saw arbor.
Debase	Machine arranged with pulleys, shield and 24" saw.
Debax	Special Wire Belt Guard.
Deban	Special Adjustable Saw Guard.
Debap	One Pair of Wall Brackets as per above picture.

No. 37 Swing Cut-Off Saw Table



Table

Made 12' or 14' long as ordered, with bed 14" wide and 30" high. They are made from kiln dried rock maple of splendid quality. The frame is made of 3" x 4" stock and joint bolted. Rollers are inserted in every third opening the full length of the table. The scaleboard is plainly marked and accurate.

Code	Table Description	Weight
Dealer	No. 37-A Swing Cut-Off Saw Table, to be 12' long, 16 1/4" wide, and 30" high, made from 3" x 4" selected rock maple and joint bolted.....	375
Dealt	No. 37-B Swing Cut-Off Saw Table, same as above, except 14' long.....	425
Dealt	No. 37-C Swing Cut-Off Saw Table, same as above, except 16' long.....	500

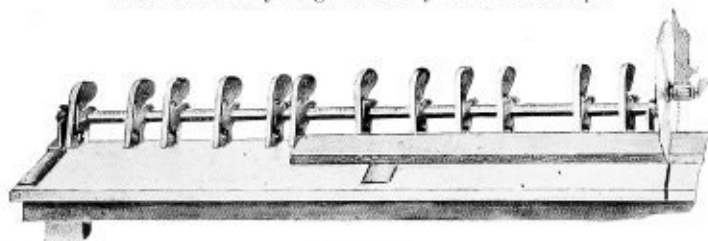
No. 419 PATENT SWING SAW GAUGE FOR CIRCULAR SAWS



Users of Swing Saws for cutting up stock should not ignore the saving in time and money, and the increase of output that may be accomplished by using our Automatic Swing Saw Gauge.

Stops

The stops are made of malleable iron, hung on a square steel polished rod. This is the only swing saw gauge so constructed. We make it any length and any number of stops.

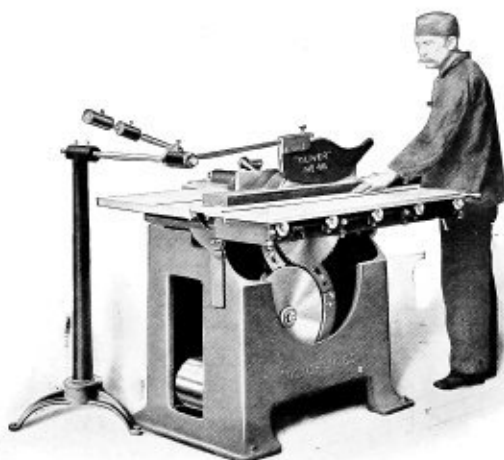


Code
Deam

Description

No. 419 Automatic Swing Saw Gauge, with graduated steel rod, and malleable iron stops; specify length and number of stops desired.

No. 46
"Oliver" Automatic Saw Guard



The "Oliver" No. 46 Saw Guard shown in the cut is suitable for almost any sort of saw, of any make. The location of the tripod is optional on account of the length of shaft going through the body. The location of the guard, which fits over the saw, is optional with the operator, as shaft over which it slides is square, allowing the wooden guard to be located in the precise spot above the saw to suit the operator. The shaft upon which is hung the saw guard and counterbalance, is provided with collars, between which are placed friction washers, regulated by a nut on the end. This allows the guard to be set at any positive height from the table and held securely in this one position, or by loosening the nut and adjusting the counterbalance, the guard may revert to the table itself after every piece has been passed beneath it. These various adjustments make the guard almost universal in its application, and one that will readily suit the ideas of the individual operator.

Code	Style	Shipping Weight	Measurement in Cubic Feet
Defny	No. 46 Saw Guard complete with Floor Stand, for use on any make of Saw Bench carrying saws up to 18" diameter	200	10
Defnz	No. 46-A As above, except for saws 18" to 24" diameter.....	225	12

Circular Saw Fitting Tools

No. 409 Adjustable Circular Saw Filing Vise

Code—Defend



For all diameters of saws up to 18". This is a very popular design and we recommend it very highly. Weight, 35 pounds.

No. 407 Circular Saw Filing Vise and Jointer

Code—Deery



For saws up to 20" diameter. Weight, 35 pounds.

No. 416-B Circular Saw Setter with Spring Hammer

Code—Dela

For Saws up to 30" diameter.

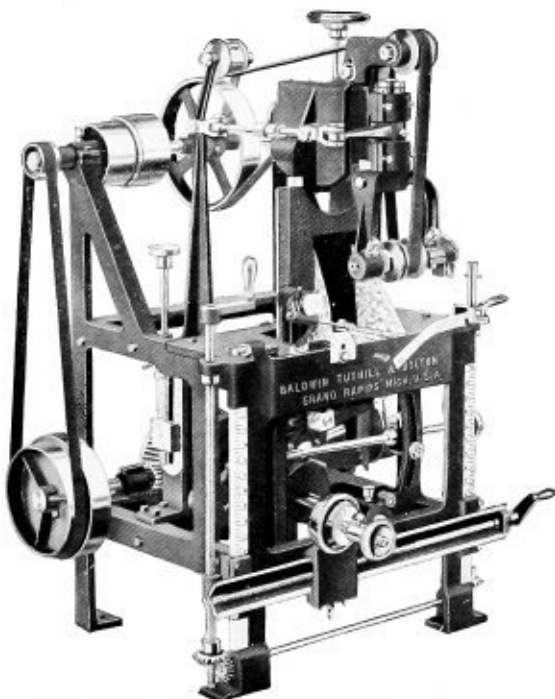
Force of blow depends on height to which setting hammer is lifted and on whether 1, 2 or 3 springs are employed. The farther the teeth extend over anvil and the harder the blow, the greater the set given. The blows are always alike and a uniform set is bound to result. This is the most rapid, powerful and efficient circular saw set manufactured, so simple and exact working that a boy can do perfect work.



No. 423 Automatic Rip and Cross Cut Saw Sharpener

Adaptation is almost universal. With suitable wheels of proper shape on edge, a saw can be kept in perfect round and balance and the teeth perfectly sharpened. The saw holder may be quickly set to accommodate any set of saw or tooth and the assortment of cams as sent or by special dressing will enable the operator to produce any desirable gullet outline.

Operation The emery wheel swings so as to give the desired bevel on crosscut saws. On saws with fine teeth, the feed pawl pushes the gullet just ground, making the spacing uniform and jointing the saw. The sharpener is automatic in every movement. Will operate on saws with as many as eight or nine teeth to the inch.



Belt Driven or Motor Driven. Send for Special Circular

Experimental Sharpening

Will be done free of charge for customers to show the adaptation of the machine for their particular needs. Send us your sample saw.

Equipment

Regular equipment consists of one 8" x 3/8" corundum wheel, all necessary internal belting, blower and piping for dust, assortment of cams, saw holder suitable for arbor hole from 1 1/2" to 3 5/8".

CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Deiset	No. 423-A Belt Driven Machine for cross-cut saws 6" to 30" and rip saws 8" to 30".....	490	625	27
Deiso	No. 423-C Same as No. 423-A except arranged with 1/2 H. P., 1800 R. P. M., motor drive	540	675	27

Special Attachments for Circular Sawing Machinery

Code, Delai

Our experience in the building of high class woodworking machinery enables us to furnish saws which are entirely satisfactory for all classes of work.



GROOVING SAW

Sizes: 4" diameter to 16"
by sixteenths

The name "Oliver" on a saw is a guaranty of its perfection and your protection against an inferior article. You cannot afford to take chances with poor saws.

Code, Dele



MITRE SAW

Hollow Ground. Sizes from
4" diameter to 24" inclusive

Code, Delaine



**SOLID TOOTH CIRCULAR
SAW**

Sizes from 8" diameter to
36" inclusive

Code, Deled



**MITRE SAW WITH
CLEANER TEETH**

Hollow Ground. Sizes from
4" diameter to 24" inclusive

When ordering, specify kind (or work to be done), gauge, diameter, size of mandrel hole and any other information needful. Write us for prices.

Patent Dado Head

Can be used on any Circular Saw Mandrel



Outside Cutter



Inside Cutter



Outside Cutter

The Groovers are arranged in sets, as follows:

- No. 1 Set, cutting grooves, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$.
 No. 2 Set, cutting grooves, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$.
 No. 3 Set, cutting grooves, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1 .
 No. 4 Set, cutting grooves, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1 .
 No. 5 Set, cutting grooves, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1 .
 No. 6 Set, cutting grooves, $\frac{1}{8}$ to 2 inches by 16ths.
 No. 7 Set, cutting grooves, $\frac{1}{8}$ to 3 inches by 16ths.
 No. 8 Set, cutting grooves, $\frac{1}{8}$ to 4 inches by 16ths.



Furnished jointed and filed, ready for use.

Will cut a perfect groove with or across the grain.

For cutting any width groove from $\frac{1}{8}$ to 4 inches or over.

This groover consists of two outside saws, each of which is a groover in itself, and as many inside cutters as required.

The inside cutters are made $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{8}$ inch thick, so that any width groove measurable in sixteenths may be cut.

The outside cutters are made $\frac{1}{8}$ inch thick.

It will cut a perfect groove, either with or across the grain, and will not leave a rough edge as is the case with ordinary groovers.

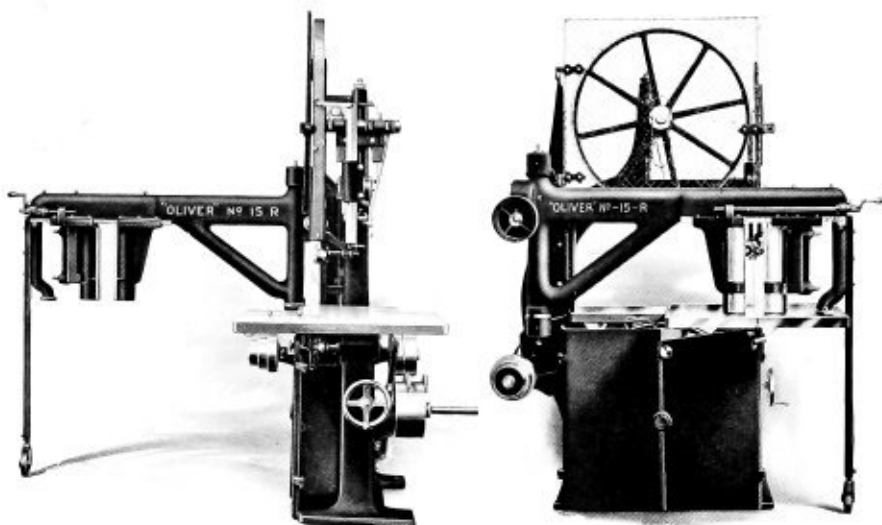
This tool is recommended to any person in need of a perfect Groover, Dado or Gaining Head.

The outside cutters can be used singly, together or in connection with as many or as few inside cutters as required to cut the necessary width groove.

We will guarantee to sell you the best Dado on the market, and will send on approval to any responsible party, and if not satisfactory in every respect it can be returned at our expense.



"Oliver" No. 15-R Combination Band Re-Saw and Scroll Saw



Outboard Bearing of Lower Shaft Omitted
Preparatory to Motor Drive

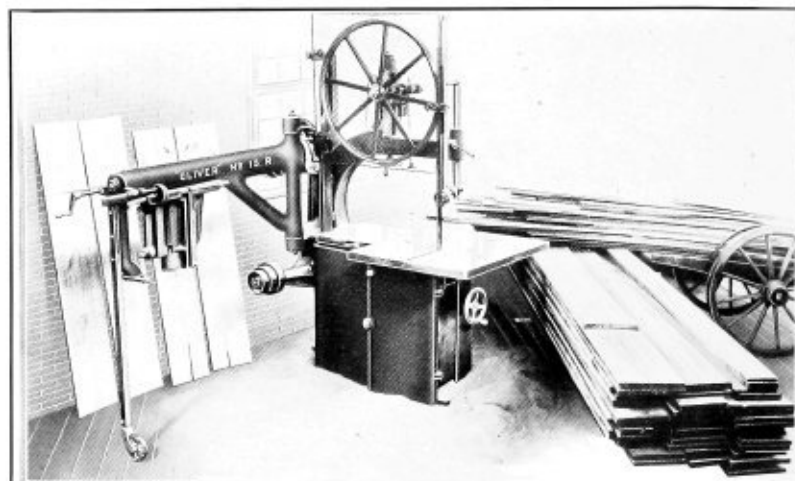
Re-sawing Attachment in Place. Capacity
16" high, 8" thick

Introduction We recommend this as a general utility tool of more than the ordinary merit. Its adaptability to every job that presents itself makes it well nigh indispensable. With its 2½" re-saw blade, expensive lumber, such as white pine, cherry, mahogany, etc., can be made thin without making shavings of over half of it. The almost universal rule in practice today is to plane down a 1" board (or 2" if you haven't a 1" in stock) to get ¾", ½" or ⅜" thickness, and with pattern or other lumber at one hundred dollars or more per thousand feet, the economy is enormous if the waste may be avoided.

Three Speeds 10', 15', 20' per minute is its capacity. From 600 to 1000 feet of lumber per hour is its saving by having the reduction in thickness represented by lumber instead of shavings. No further argument should be needed to close a sale.

**Economy
Change from
Re-sawing to
Ordinary
Band Sawing** Is instantly effected by swinging the arm carrying the two corrugated power-driven rolls out of the way and changing saws. All the little refinements of detail that have made "Oliver" reputation for quality world wide, are all here, such as proper proportion, correct diameters of spindles and journals, genuine babbitt, a great abundance of material to absorb vibration, and good workmanship, are the points that make our machines last a lifetime.

"Oliver" No. 15-R Combination Band Re-Saw and Scroll Saw—Continued



Safety

A Power Driven Band Re-Saw is the **only** safe way. Many a man has gotten into trouble by trying to re-saw by hand upon an ordinary band saw, and, as a general rule, they don't try to save the lumber that way but once. Note that all the gearing and saws are absolutely guarded and danger from this source eliminated.

Frame

The frame is cast in cored form, with a base 46" x 23". It is 7' 1½" high. Floor space, 60" x 47".

Table

It is 40" x 36" and 40" from the floor, tilts 45 degrees one way and 5 degrees the other. It is heavy double ribbed and supported on rockers for angle adjustments. The tilting is done by means of a worm, gear and hand wheel at the right of the operator. The rockers are machined all over and tongued and grooved firmly to seats. The angles are indicated in degrees, upon the dial at the front of the machine.

Auxiliary Table

The auxiliary table is 21" x 22" and is bolted to the frame. It increases the surface of the work table almost half. It is vertically adjustable.

Outboard Bearing

This supports the end of the lower wheel shaft and is self-oiling. The tight and loose pulleys are located between this and the main bearing if machine is belt driven. If direct connected to motor, it is dispensed with.

Dimensions Capacity

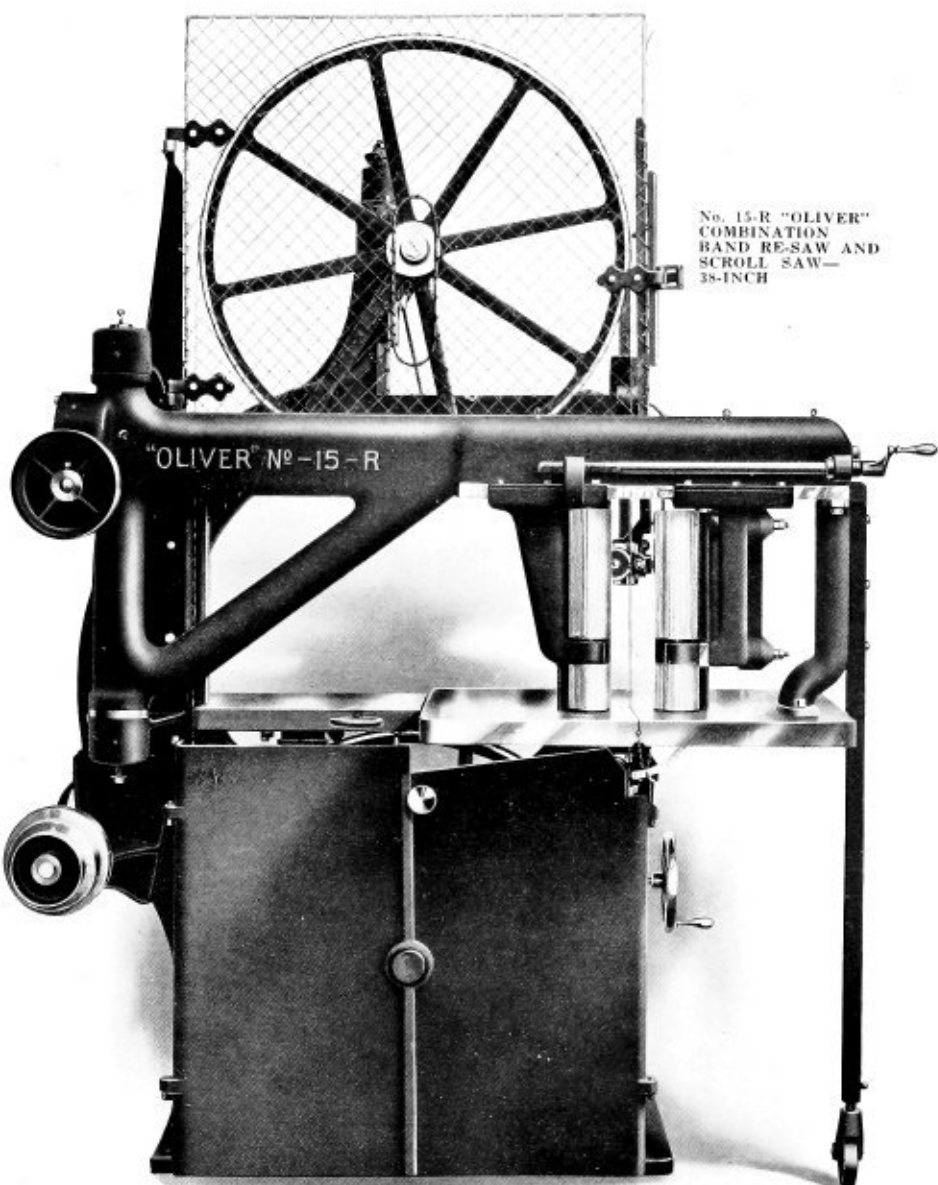
Same as No. 15 Band Saw. (See page 45.)

Will re-saw 16" wide, 8" thick. Takes saws up to 2½" wide, 18" to 20' long.

Countershaft Horse Power

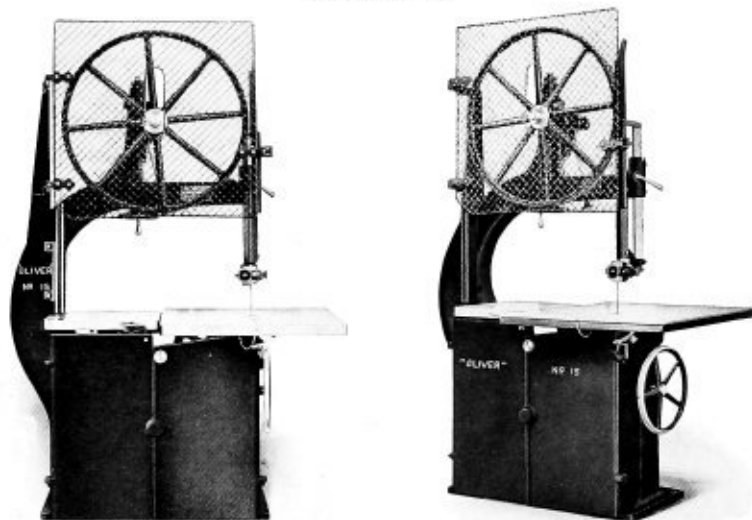
Tight and loose pulleys, 16" x 5". Speed, 500 R. P. M. 7½ to 10. 5" Belt.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dellie	No. 15-R Machine with self-contained countershaft for belt drive.	4000	4600	128
Dellish	No. 15-S Machine without countershaft, with motor bracket.	4000	4600	128



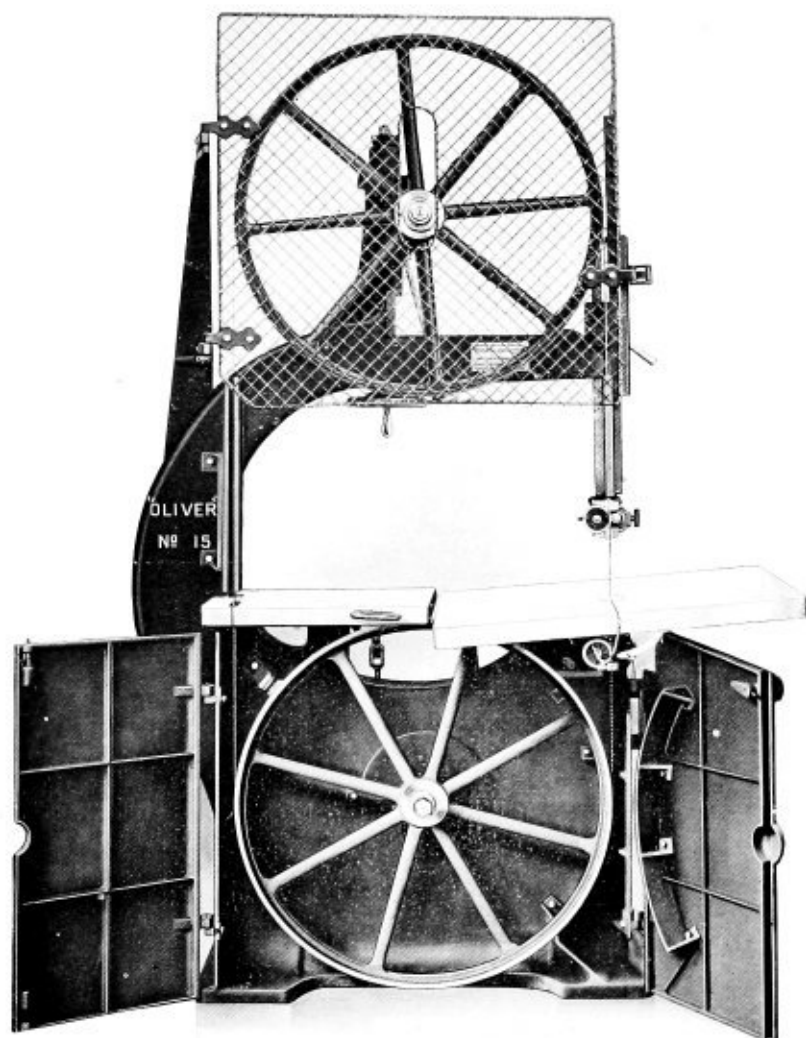
No. 15-R "OLIVER"
COMBINATION
BAND RE-SAW AND
SCROLL SAW—
38-INCH

No. 15 "Oliver" Band Saw
38-inch Wheels



- Introduction** The construction of this Band Saw is along lines of greatest economy to the users, not in its first cost (for it is not cheap in that sense), but in its strength, abundance of material in the right places, correct design, convenient adjustments, fine workmanship, perfect details and steadiness in running.
- Base** This comprises the entire frame—column, arm, etc.—cast in cored section on symmetrical lines, and the most desirable for great strength.
- Table** This is heavy, strongly ribbed and carried on rockers for the angle adjustments; has necessary throat and slot to disengage saw. A double rib around the edge of table serves as a grip for hand screws for clamping special forms to the table. Device for tilting both ways by means of worm, gear and hand-wheel, located at the right of operator. The angles are indicated in degrees, upon the dial at the front of the machine. Table is always locked at any point without the use of hand clamps or bolts of any kind. A device for preventing the sagging of the table where it is cut through to receive the saw is provided.
- Rockers** These support the table and have all surfaces machined to fit and are tongued and grooved firmly to their seats with accurate results. The rocker caps may be taken up to eliminate wear.
- Auxiliary Table** This is between the column and the work table, and bolted to the frame. It increases the surface of the work table almost half. It is vertically adjustable.

No. 15 "Oliver" Band Saw 38-inch



No. 15 "OLIVER" BAND SAW—38-INCH
View showing encasing doors open

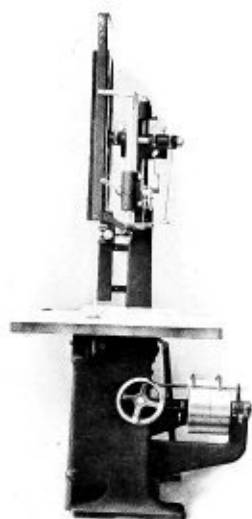
No. 15

"Oliver" Band Saw 38-inch

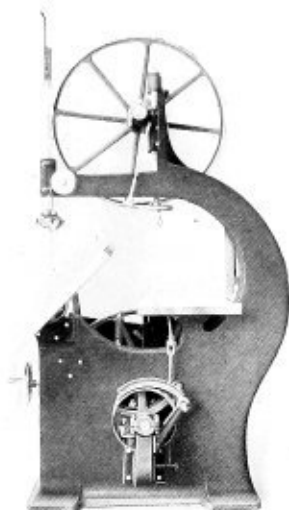
- Wheels** They are of cast iron, 38 inches in diameter, are machined all over and have the web between the spokes milled concentric with the rims. This removes all unnecessary weight, and gives a running balance. Leather bands of the best quality are cemented to the wheels. They are very sensitive and so adjusted in connection with the steel spring cushion that sudden strains are instantly cared for.
- Lower Wheel** This is enclosed in a metal casing having two doors. These open in the center and swing each way, allowing the operator to put on or remove the saw. It is provided with a device whereby the dust is collected and thrown to the front of the machine. When necessary to attach this machine to an exhaust fan all that is necessary is to bring the pipe to the opening in the frame and attach it.
- Upper Wheel** This is fitted to a taper bearing on a large shaft carried in a long split box lined with "genuine" babbitt. End thrust is taken up by end collar.
- Wheel Shafts and Bearings** These are of our special spindle steel with journals machine ground and receive the wheels on taper bearings and they are held by hexagonal nuts. The bearings are designed with oil wells, and are fitted with caps to machined surfaces. The upper shaft and bearing is vertically adjustable to suit varying lengths of blades. It is also tilted by hand-wheel for tracking the saw. The lower main bearing is cast to and forms a part of the frame, insuring rigidity.
- Outboard Bearing** This supports the end of the lower wheel shaft and is bolted to the frame. It has a babbitted box with oil chamber below. The tight and loose pulleys are located between this and the main bearing. It assists in counteracting the tendency of the belt to pull the shaft out of alignment.
- Saw Tension** This is accomplished by a telescope spring of correct strength and elasticity, automatically adapting itself to the varying tension required for light or heavy saws. It is very sensitive.
- Guide Post** It is made of square steel and counterbalanced by an encased coil spring. It is readily locked to a fixed position.
- Guides** The post carries a frictionless roller guide, adjustable for varying widths of saws and another similar guide is located below the table.
- Encasing Doors** These cover the lower wheel and serve to confine the saw-dust, and prevent danger from contact with the wheel. The dust is carried to an opening at the base fitted to receive an exhaust pipe.
- Saw Guards** A grooved wood saw guard is located on the column receiving the saw and protecting it both sides. A front guard made of steel with a wood facing is carried on the guide post and covers the saw above the guide.
- Loose Pulley** This is bushed with bronze, free to turn on the shaft or in the pulley and is fitted with oiling devices that automatically keep it well lubricated.

No. 15 "Oliver" Band Saw

38-inch Wheels



No. 15 "OLIVER" BAND SAW, 38-INCH
Side View of Machine



No. 15 "OLIVER" BAND SAW, 38-INCH
View Showing Rear of Machine

- Capacity** Will take 18 inches under the guide; will saw 38 inches between saw and column; will saw to 45 degrees to the right and 5 degrees to left. Saws from 18' 8" to 20' 6" long may be used and up to 2½" wide.
- Equipment** This consists of one saw ½" wide, pair of brazing tongs and clamps, saw guard for both front and back saw, and belt shifter.

SPECIAL DATA

- Table** 36" x 40"—tilts 45 degrees to the right and 5 degrees to left.
- Auxiliary Table** 21" x 22", finished the same as main table.
- Pulleys** Tight and Loose are 12" diam. x 4½" face. Speed, 500 R. P. M.
- Horse Power** 3 to 5.
- Floor Space** 68" x 54".

CODE, WEIGHT, ETC.

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Delete	No. 15-A R. H. for Belt Drive	2800	3500	117
Delight	No. 15-B L. H. for Belt Drive	2800	3500	117
Dell	No. 15-C R. H. for Motor Drive	2800	3500	117
Deltaic	No. 15-D L. H. for Motor Drive	2800	3500	117

No. 16 "Oliver" Band Saw

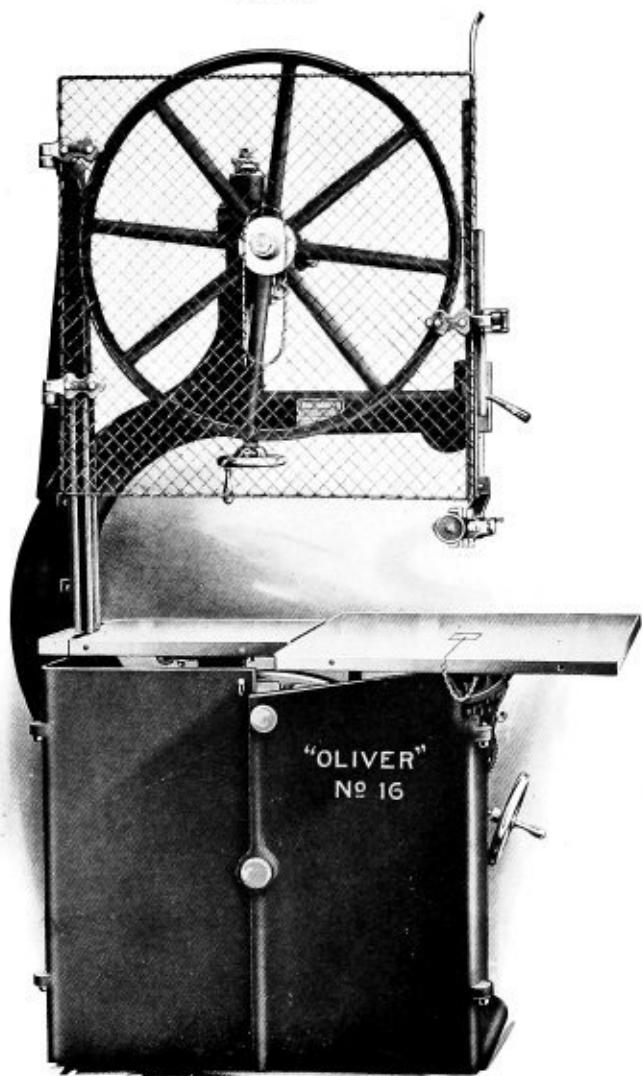
36-inch Wheels

Our aim has been to produce a medium size of Band Saw embodying the excellent qualities of the No. 15-38" machine. We are correct in our statement that this is the most perfect 36" machine marketed.

Frame	It is made in the cored form, is strong, durable and free from vibration when machine is in operation.
Table	This is metal, well ribbed and machined, and is mounted in a substantial rocker, that is milled on all surfaces and tongued to its seat and is provided with take up for wear. It tilts either to the right or left by means of a large hand wheel, worm and worm gear self-locking device. It remains at any angle one may put it. It is provided with a device for leveling the top, where it is slotted to receive the saw. A double rib around the edge of the table serves the dual purpose of stiffening it and providing a means for readily clamping forms to table.
Auxiliary Table	This is located between the column and main table mounted on a pillar and adjustable vertically, for alignment with main table.
Upper Wheel	This is metal and forced on the shaft on a taper bearing and secured by hexagonal nut. It is machined to a running balance, has vertical adjustment and may be tilted for tracking the blade.
Lower Wheel	This is metal, fitted to taper bearing and is rigidly held in a fixed position. It is given a running balance.
Bearings	These are long, lined with "genuine" babbitt and have ample oil chambers and are made adjustable to wear. The cap joints are machined, and there are milled seats for the bolts, which pass down through the boxes and held by lock-nuts.
Wheel Shafts	They are of fine steel, ground accurately in the journals. Upper shaft is supported in a housing that is provided with devices for regulating the saw tension and for making the blade track on the wheel properly, and controlled by hand wheels and screws.
Tension	For the saw is regulated by means of a telescope spring. The larger of the two springs regulates the tension for light saws, and when the smaller spring within the large one exerts its resistance, the combined strength gives sufficient pressure for larger saws.
Guide Post	Is finished square steel, counterbalanced by an encased coil spring. A very substantial clamping device is provided. The guides are of the frictionless roller type, latest pattern—one above and one beneath the table.

No. 16 "Oliver" Band Saw 36-inch

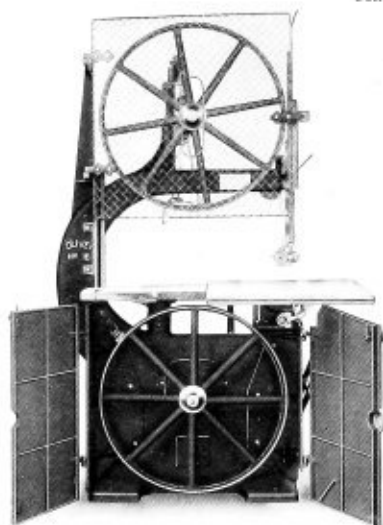
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No. 16 "OLIVER" BAND SAW—36-INCH WHEELS
"Oliver" Machines Safely Guarded

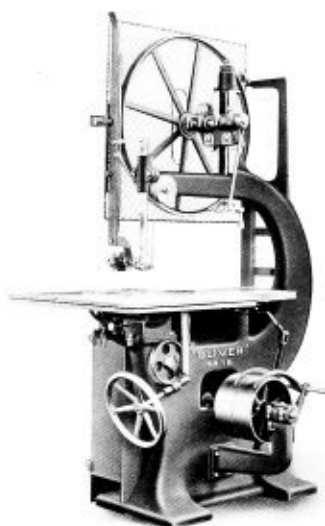
No. 16 "Oliver" Band Saw 36-inch

Continued



FRONT VIEW—DOORS OPEN

Note the various guards, lower and upper roller guides and index dial



REAR VIEW

Note large hand wheel and out-board bearing

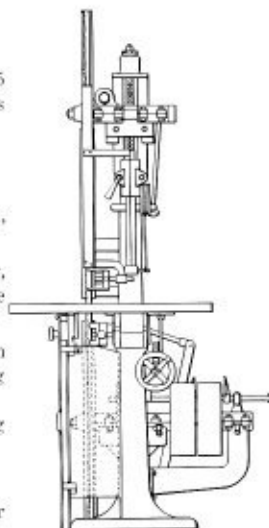
- | | |
|-------------------------|---|
| Index Dial | It is located conveniently for the operator; is graduated by a special fixture for that purpose and will register correctly. |
| Guards | Wire mesh guard for the upper wheel, also two safety saw guards are supplied; one at the rear, made of grooved wood protecting it both sides, and the other on the guide post, made of steel with wood facing and covering the saw above the guide. |
| Encasing Doors | The lower wheel is covered and the saw dust is prevented from scattering about the room, and danger of contact with the wheel is avoided. |
| Outboard Bearing | One of these is bolted to the frame and supports the extreme end of the lower wheel shaft, which carries the T & L pulleys. It is babitted, has oil chamber and serves in keeping the lower wheel shaft in alignment. |
| Loose Pulley | It is bushed with a self-oiling bronze sleeve that revolves freely on the shaft as well as in the pulley, proving most satisfactory and durable. |
| Capacity | Will take 18" under the guide; saw 36" between the blade and column; saw to 45 degrees to the right and 7 degrees to the left. Saws from 17' 5" to 19' 3" long may be used. |
| Equipment | This consists of one blade $\frac{1}{2}$ " wide, pair of brazing tongs and clamps, saw guards and belt shifter. |
| Motor Drives | There are a variety of motor drives applicable to this machine. General data on these drives will be supplied upon request. |

No. 16 "Oliver" Band Saw 36-inch

Continued

GENERAL DIMENSIONS

Base	40" long, 22" wide, 6' 7½" high.
Table	36" long, 30" wide, 40" high, tilts 45 degrees to the right and 5 degrees to the left.
Auxiliary Table	19" long, 23" wide.
Wheels	36" diameter and 2" wide on rim, carry saws to 1½" wide.
Guide Post	1½" square with bearing 6½" long, maximum between guide and table 18".
Wheel Shafts	Lower shaft 1½" diameter, main bearing 13" long, outside bearing 5" long. Upper Shaft 1½" diameter, bearing 11" long.
Saw Blades	19' long—maximum.
T & L Pulleys	12" x 4¼". Speed 500 revolutions per minute.
Floor Space	4' x 5'.
Horse Power	Maximum 4.



No. 16 BAND SAW, End View
Showing T & L Pulleys and
Out Board Bearing

CODE, WEIGHT, ETC.

Machine for Belt Drive

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Delude	No. 16-A Right	1900	2300	98
Delve	No. 16-B Left	1900	2300	98

Machines with Motor Bracket for Electric Drive

Demarch	No. 16-C Right	1900	2300	98
Dement	No. 16-D Left	1900	2300	98

EXTRAS

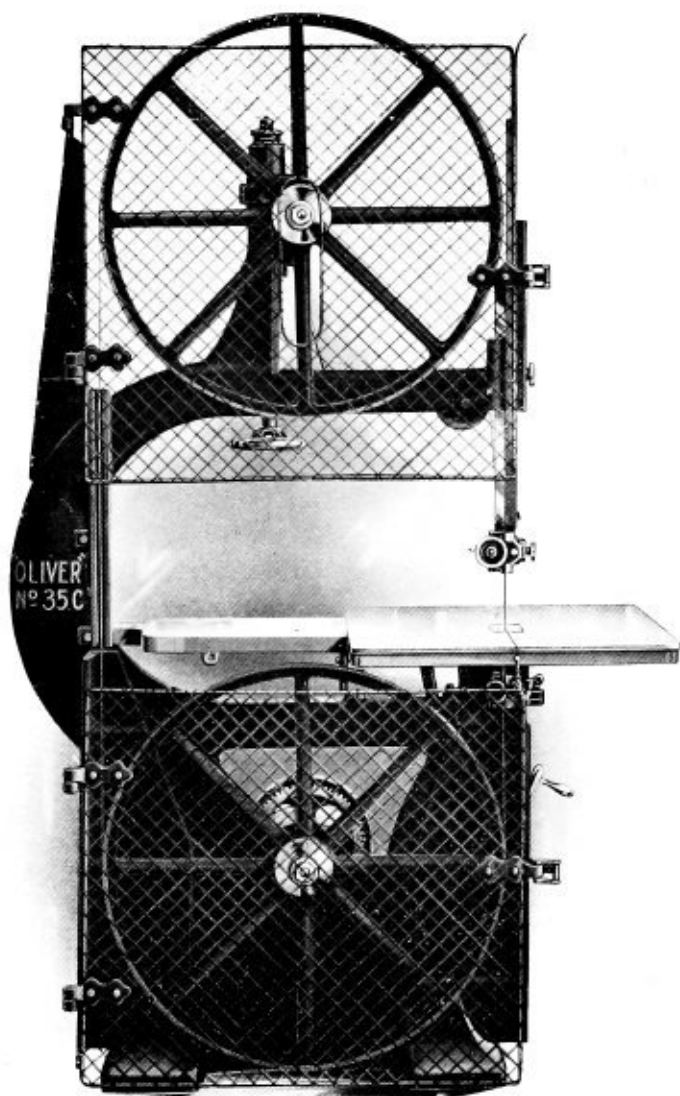
No. 137	Hand Ripping Fence 4" high.
No. 138	Hand Ripping Fence 6" high.
No. 139	Hand Ripping Fence 3" high operated from front of the table. See following pages for detailed description.
No. 239	Spring Roll for holding material to the ripping fence when resawing by hand. See page 58 for detailed description.

The machine is furnished without the encasing doors for the lower wheel at a suitable reduction in the price.

No. 35
"Oliver" Band Saw 36-inch

- Introduction** This band saw is a machine lighter than those described on the preceding pages, yet made with faithfulness to the "Oliver" quality. A "good" Band Saw is a machine of great importance and it is a novelty to find in a medium priced machine the elements that make our phenomenal success in the larger machines.
- Frame** It is cast iron, in the cored form, strong and durable, with wide base.
- Table** This is of iron, strongly ribbed and tips to an angle either to the right or to the left. The rockers supporting it are perfectly machined and it is held in any position by the self-locking worm and worm wheel tilting device. The auxiliary table next the column supports long stock and is kept in perfect alignment, with the main table in its normal position.
- Wheels** The wheels are made of cast iron, machined all over for a perfect balance, are rimmed with the best leather cemented thereto. The tilting device for upper wheel is sensitive, under control of the operator, and the saw can be made to track properly.
- Wheel Shafts** Wheel shafts are of fine steel, run in long self-oiling bearings, and receive the wheels over a taper journal, secured by a heavy nut. All the bearings are lined with "genuine" babbitt, and the caps and bolts made after our most approved method.
- Guide Post** The Guide Post is of square steel, supported in a perfect babbitted bearing, split to take up lost motion, and it is held in position by a heavy encased spring mechanism located at back of column.
- Guides** These are of the frictionless roller type and used above and below the table. They are adjustable.
- Saw Guards** We supply two guards, one of grooved wood at the back and one of steel faced with wood placed at the front and covering the saw above the guide.
- Sliding Yoke** This supports the upper wheel shaft, is very sensitive and automatic in operation, retaining the proper tension to the saw under all the varying conditions. This is done through the telescope spring device at the top of the column.

No. 35 "Oliver" Band Saw 36-inch



No. 35 "OLIVER" BAND SAW—36-INCH WHEELS
"Oliver" Machines Safely Guarded

No. 35 "Oliver" Band Saw 36-inch

Continued

Tracking Saw	We accomplish this by means of a hand nut and screw and a pivot device on the housing that supports the upper wheel shaft and tilts the wheel.	
Equipment	This consists of one $\frac{1}{2}$ " saw, pair of brazing tongs and clamps, saw guards and belt shifter.	
Capacity	Will take 16" under the guide, saw 36" between the blade and column, saw beveling 45 degrees to the right and 5 degrees to the left. Saws 17' to 19' long can be used.	
Frame	36" long, 20" wide, 6' 8" high.	
Table	34" long, 28" wide, 40" high, tilts 45 degrees to right and 5 degrees to the left.	
Auxiliary Table	14" long, 18" wide.	Upper Bearing Wheel, Etc.
Wheels	36" diameter; carry saws to $1\frac{1}{2}$ " wide.	
Wheel Shafts	$1\frac{1}{2}$ " diameter upper bearing 11" long; lower bearing 11" long.	
Guide Post	$1\frac{1}{4}$ " square, post bearing $6\frac{1}{2}$ " long.	
Saw Blade	Maximum 19' long and $1\frac{1}{2}$ " wide.	
T & L Pulleys	12" x 4". Speed 500 revolutions per minute.	
Floor Space	60" x 35".	
Horse Power	3.	

CODE, WEIGHT, ETC.

Machines with Belt Drive

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Denit	No. 35-A Right Hand	1600	1900	90
Denizen	No. 35-B Left Hand	1600	1900	90

Machines with Motor Bracket for Electric Drive

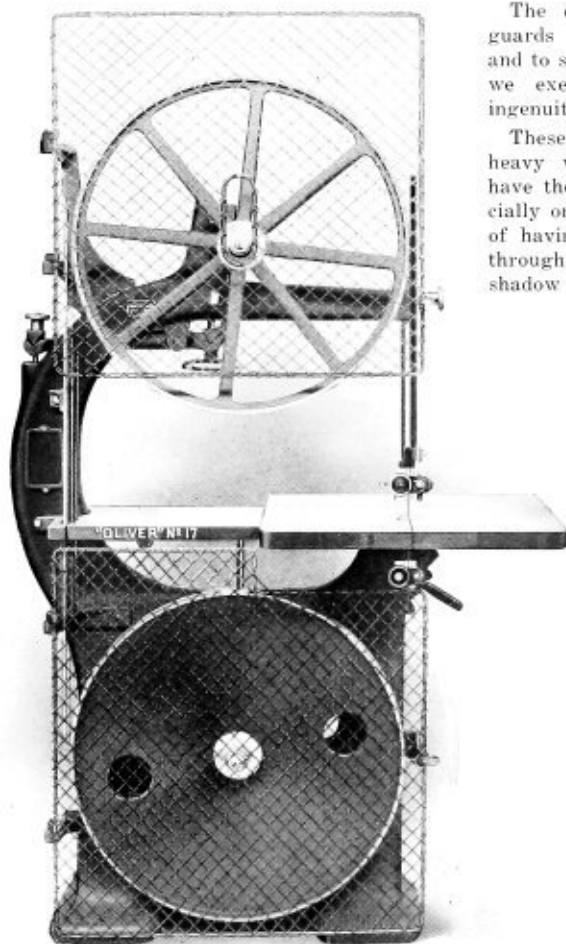
Dense	No. 35-C Right Hand	1600	1900	90
Dental	No. 35-D Left Hand	1600	1900	90

EXTRAS

- No. 137 Hand Ripping Fence, 4" high.
 No. 138 Hand Ripping Fence, 6" high.
 No. 139 Hand Ripping Fence, 3" high, operated from the front edge of table.
 No. 239 Spring Roll for holding material to the ripping fence when re-sawing by hand. See page 58.

"Oliver" No. 17 Band Saw 30-inch

"Oliver" Machines Safely Guarded



The demand for safeguards is very insistent and to supply this demand we exerted our utmost ingenuities.

These Guards shown are heavy wire mesh, which have the advantage, especially on the upper wheel, of having the light come through without casting a shadow upon the work.

The web wheel illustrated is a very effective guard against breakage of saw blades. Any sudden starting of the machine allows the belt to slip upon the pulley in order to get this heavy lower wheel in motion and thus eases starting torque upon the upper wheel through the medium of the band saw blade. If the blade be very fine, it might easily be snapped by the sudden shock of the belt, setting the machine in motion too quickly.

"OLIVER" No. 17 PATENT BAND SAW—30-INCH WHEELS

I would rather run the "OLIVER" Safely Guarded Kind

No. 17
"Oliver" Band Saw 30-inch

Continued

This machine is lighter in construction, with smaller wheels, etc., but it is designed and manufactured with the same regard for quality that characterizes our larger band saws.

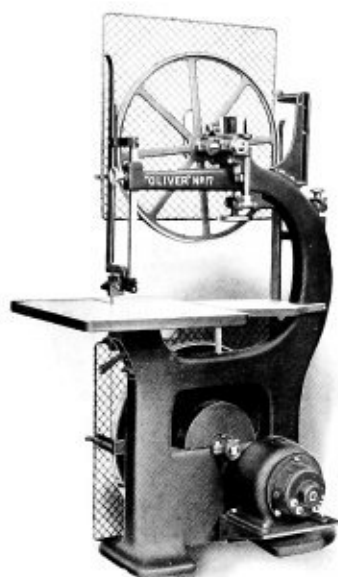
- Frame** This is cast iron, molded in the cored form, with wide base. It is stiff and strong.
- Table** It is metal, strongly ribbed and planed true, is supported in a machined rocker and held in position by a lever clamp. The rocker is held firmly in its seat. Tilts to both right and left.
- Auxiliary Table** This is of metal and is held securely to the column. A stop below prevents it from sagging.
- Wheels** They are of iron, milled and balanced correctly and held on taper bearings. The upper wheel is vertically adjustable to compensate for short saws and may be tilted for tracking blades. The lower wheel has a solid metal web, which gives it extra weight and the functions of the fly wheel.
- Shafts and Bearings** The shafts are of steel, the proper diameter, tapering for the wheel bearings and ground true in the journals. Bearings are long, lined with "genuine" babbitt and have self-oiling devices. They are split and adjustable for wear.
- Guide Post** This is a square steel bar mounted in a babbitted box, and has locking lever for holding firmly in the required position.
- Guides** Improved frictionless roller guides are used, both above and below the table.
- Saw Guards** These cover the saw at front and next the column. The front guard is steel, faced with wood and covers the saw above the upper guide. It lifts with the guide post. Also wire guards as illustrated.
- Tracking Saw** This is accomplished by hand wheel and screw and pivot device which tilts the upper wheel.
- Equipment** It consists of one $\frac{1}{2}$ " saw, pair of brazing tongs and clamps, saw guards and belt shifter.
- Capacity** Will take 14" under the guide; saw 30" between the saw and column; table tilts 45 degrees to right and 30 degrees to the left. Saws 15' 6" long can be used.

No. 17 "Oliver" Band Saw

Continued

GENERAL DIMENSIONS

Frame	34" long, 17" wide, 6' 8" high.
Table	28" long, 26" wide, 38" high, tilts 45 degrees to the right and 10 degrees to the left.
Auxiliary Table	16" wide, 14" long.
Wheels	30" diameter; carry saws to 1½" wide.
Wheel Shafts	1½" diameter, bearings 10" long.
Guide Post	1" square. Post bearings 4" long.
Saw Blade	Maximum 15' 6" long.
T & L	12" x 3½", speed 600 revolu- tions per minute.
Pulleys	
Floor Space	28" x 49".
Horse Power	Maximum 3.



No. 17-C BAND SAW—Motor Driven

Motor Drives

A variety of motor drives are applicable to this machine. Detailed information will be supplied on request. Be sure to give the voltage, phase and cycles of your electric current.



Application of Worm and Gear Tilting Mechanism. This is extra.

CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Denude	No. 17-A R. H. Machine, belt drive	1200	1400	65
Deny	No. 17-B L. H. Machine, belt drive	1200	1400	65
Depart	No. 17-C R. H. Machine, with Motor Bracket	1300	1500	65
Depict	No. 17-D L. H. Machine, with Motor Bracket	1300	1500	65

EXTRAS

No. 137	Hand Ripping Fence 4" high.
No. 138	Hand Ripping Fence 6" high.
No. 139	Hand Ripping Fence 3" high operated from the front edge of table.
No. 239	Spring Roll for holding material to the ripping fence when resawing. See page 58.

Band Saw Motor Drives

The question of how best to motor drive a band saw is a matter of opinion. A comparison, however, of the various ways of doing it is illustrated upon the opposite page and listed below. Any of these methods is applicable to any "Oliver" band saw.

S—Illustrates a direct current slow speed motor mounted upon a bracket and connected with the lower wheel shaft by means of a flexible coupling. This is ideal, but a 550 r. p. m. motor is about as expensive as the machine it drives.

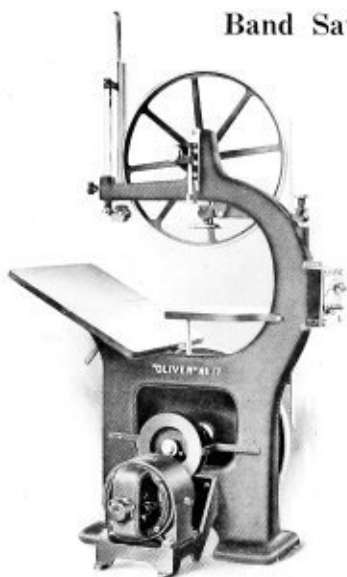
G—Illustrates any type of motor the speed of which is reduced by spur gears (one of which is raw hide). Gear drive, however, is not as noiseless as the belt drive and on this account the belt drive as illustrated by "F" is preferred by many. Bracket may be bolted to main frame forming a self-contained motor drive. This is called type "C."

M—Illustrates slow speed direct current motor. This is quite pleasing to look at but has its drawbacks. The strain of the saw blade is always up. The armature shaft of the motor is the shaft that carries the lower wheel. Motor trouble is bad enough but if it occurred upon any of the others illustrated, another standard motor could be used without dismantling the machine.

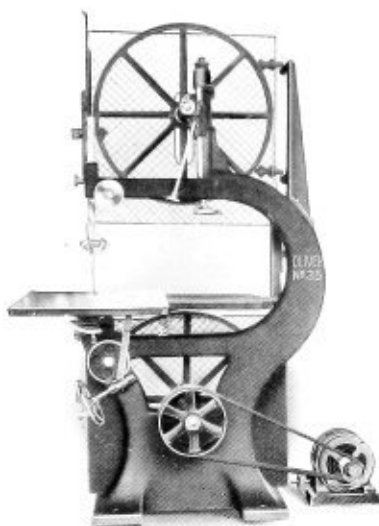
F—Illustrates any type of motor mounted upon the usual base rails with belt tightening features. Belt drive is noiseless and effective.

K—Not illustrated, but consists of motor with its own base rails, mounted on a cast iron bracket at the rear of machine in a self-contained manner, and belted to lower wheel shaft. This arrangement is like "F" except with the addition of the motor bracket to connect the motor to the band saw frame in a self-contained manner.

Band Saw Motor Drives

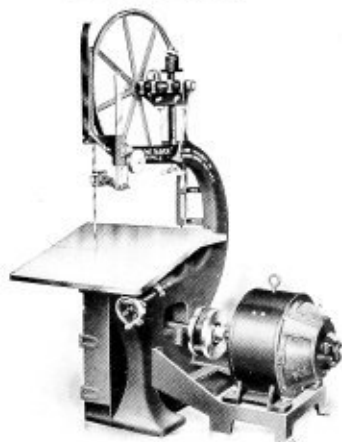


ARRANGEMENT G

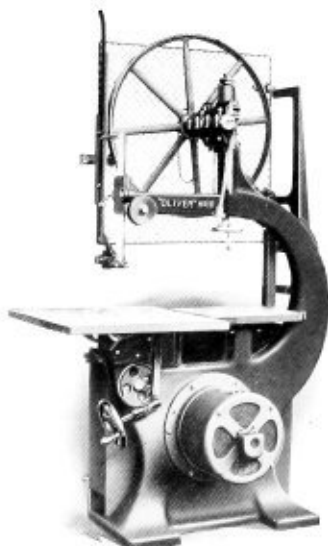


ARRANGEMENT F

S—Coupled direct to Motor.
G—Geared to Motor.
M—Lower Wheel on Motor Shaft.
F—Belted to Motor.



ARRANGEMENT S



ARRANGEMENT M

Hand Ripping Fences For Band Saws

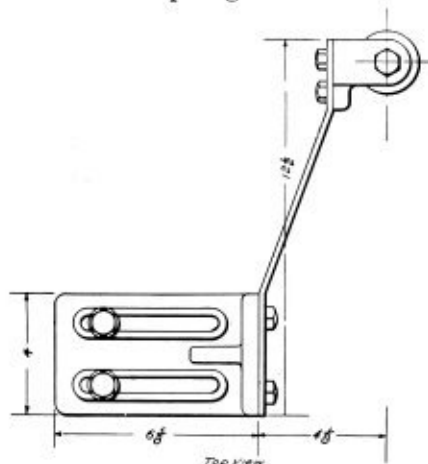


As it is frequently required that our various sizes of Band Saws must be fitted with a hand ripping fence we have designed one that may be applied to the table of any size built. This is furnished at a small extra cost.

CODE, WEIGHT, ETC.

Code	No.	Description	Boxed Weight	Measurement in Cubic Feet
Deport	137	4" high 12" long	12	1
Deprave	138	6" high 12" long	15	1½
Depute	139	3" high operated from front edge of table	30	3

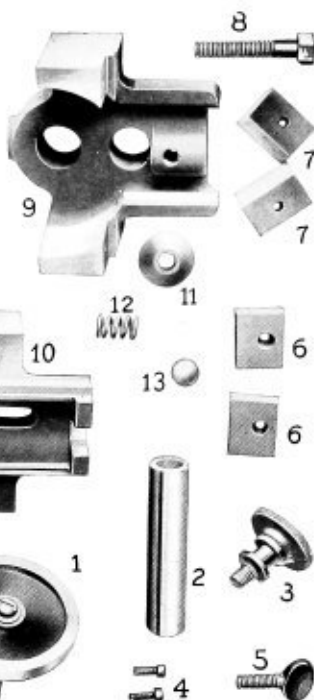
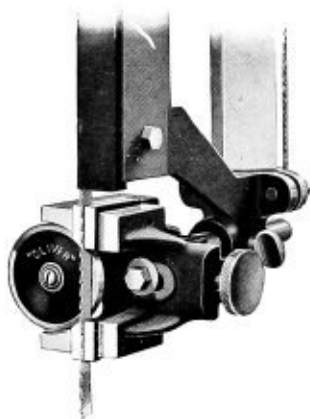
No. 239 "Oliver" Spring Roll for Band Saws



When users of band saws have an occasional need to resaw material in small quantities and the quantity would not warrant the purchase of a special Band Resaw, they can simplify the work by providing a spring roll device similar to the above etching to be attached to the table of the Band Saw in such manner as to use it in holding material in a vertical position and against a ripping fence while pushing the board to the saw by hand.

Code	No.	Description	Boxed Weight	Measurement in Cubic Feet
Derby	239	Special Spring Roll Device.....	15	2

The Frictionless Band Saw Guide



LIST OF PARTS

- | | |
|--------------------------|----------------------|
| 1. Disk with Spindle. | 7. Bevel Jaws. |
| 2. Socket or Bushing. | 8. Clamp Screw. |
| 3. Hand Adjusting Screw. | 9. Main Casting. |
| 4. Jaw Screws. | 10. Sliding Casting. |
| 5. Thumb Screws. | 11. Bevel Washer. |
| 6. Jaw (Plain). | 12. Spring. |
| | 13. Ball. |



Code	Description and Size	
Derma	No. 140	Band Saw Guide for Saws up to 1 1/4".
Descant	No. 141	Band Saw Guide for Saws up to 1 1/2".
Despair	No. 142	Band Saw Guide for Saws up to 2 1/2".

In our frictionless saw guides the back of saw runs against the face of a tempered tool steel disk, ground true and smooth, preventing the heating and crystallization of the blade and the consequent tendency to cracking or breaking of saws from this cause.

The disk spindle has a long, accurately fitted bearing socket, is self-oiling, requiring attention say once a month. The oiling is accomplished by means of the machine screw plug in front end of the disk spindle.

The end of the disk spindle bears against a hardened steel ball and the pressure on back of saw is regulated by a spiral spring. This construction affords a frictionless thrust which regulates the varying pressures ordinarily exerted upon the guides and at the same time keeps the saw true to cut and does away with the tendency of saw to buckle on the back.

The smooth ground face of the disk is well adapted to keep the back edge of the saw perfectly true, without burr or upsetting.

If the band saw construction requires a very short guide, the spiral spring may be omitted, the ball alone affording the same frictionless thrust. The omission of the spring from the smaller guides in no way impairs the efficiency because of the light pressure exerted by narrow saws.

The side guides or jaws are of tool steel, hardened and polished, and practically frictionless, interchangeable, that is, either R. H. or L. H., and all guides are equipped with knurled screw adjustment for opening the jaws.

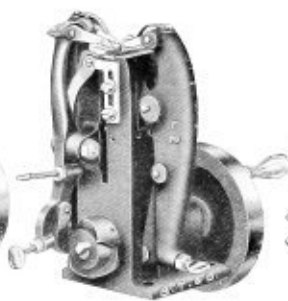
Band Saw Fitting Tools

Continued

Automatic Band Saw Setter



No. 450—Power



No. 452—Hand



No. 451—Hand

Adaptation

These Band Saw Setters are well built. All movements are balance wheel feeds and sets two teeth, one to the right and automatic and rapid. The force of the blow is regulated instantly, using thumb screws. The feed and setting mechanism are strong and powerful, the pawl and hammers being made of finest steel properly hardened.

Design

These machines have been designed for plants using a number of saws daily, and where rapid work is demanded from a durable tool. They will set 200 teeth per minute, but we recommend a speed of 100 teeth or less if no more is required to meet the needs. Each revolution of pulley or balance wheel feeds and sets two teeth, one to the right and one to the left.

Blow

The machine gives its blow in such a manner that the tooth remains where set. The feed and setting mechanism are strong, being made with pawls and hammers of fine steel and hardened.

Guarantee

There are thousands of these machines in use daily, and we could supply a bushel of testimonials if it were necessary. We guarantee them to be just as represented and perfectly satisfactory when properly operated or no sale.

The Set

The set is true, obviates strain on saw, smooth sawing is result. Force of the hammer blows may be instantly regulated. The setters are adapted to teeth spaced from $\frac{1}{8}$ to $\frac{3}{8}$ points. The No. 452 machine is furnished (on special order) for teeth up to $1\frac{1}{4}$ " spacing.

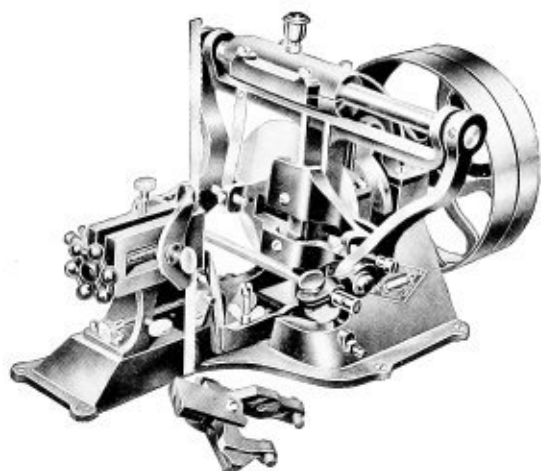
CODE, WEIGHT, ETC.

Code	No.	Capacity	Pulley	R. P. M.	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dessert	450	$\frac{1}{8}$ " to 3"	6" x $1\frac{1}{4}$ "	50 to 100	65	75	2
Destiny	451	$\frac{1}{8}$ " to 1" (Hand)			27	35	1
Deta	452	$\frac{1}{8}$ " to 3" (Hand)			50	80	1

Band Saw Fitting Tools

Continued

No. 453 Combined Band Saw Filer and Setter



Belt Driven Machine

This is up-to-date because it is two machines in one. Occupies only one square yard of floor space.

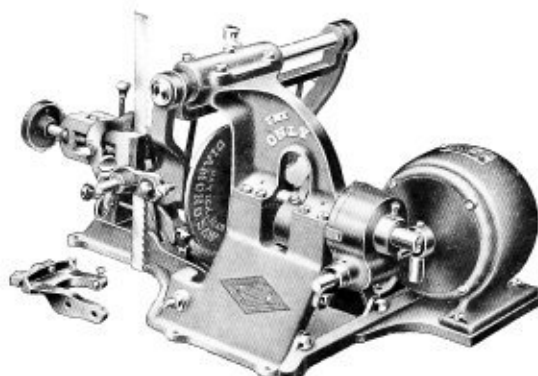
Saw hangs from a peg overhead.

Feed accurate and positive.

Requires no attention after saw is adjusted. Uses slim taper, ordinary taper or special machine files.

Does not file deeper in the brazes than elsewhere.

Gives a keen cut equal to hand filing.



Motor Driven Machine

With each motor driven machine is furnished a length of cord and a porcelain plug ready to attach to any lamp socket; therefore the motor driven machine can be placed in any convenient location in the factory.

The motors are of standard make, and are of sufficient horse power to operate the machine under all conditions.

Code	No.	Capacity	T. & L.	Speed R. P. M.	Weight Belt Type	Weight Motor Type	Cubic Feet
Deten	No. 453-A	$\frac{1}{16}$ " to $1\frac{1}{2}$ "	9" x $1\frac{1}{4}$ "	80	55 lbs.	75 lbs.	2
Detent	No. 453-B	$\frac{1}{16}$ " to $2\frac{1}{2}$ "	9" x $1\frac{1}{4}$ "	80	55 lbs.	80 lbs.	2

Directions for Operating

Place machine with reflection of light on teeth of saw. Have the bench conform to shape of base in front of vise. Belt to run the pulleys toward you.

Place peg at convenient height and forward of machine to let the saw hang natural, against vise of machine.

Band Saw Fitting Tools

Continued

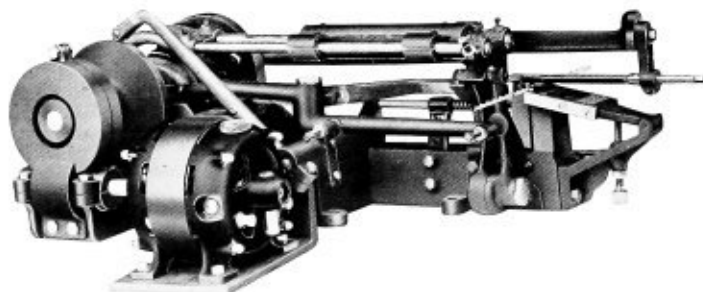


No. 454 IMPROVED AUTOMATIC BAND SAW FILER

This machine is practical, efficient and durable. It is made like a machine tool. It will file the saws sharp, keeping the teeth in perfect alignment, thus equalizing the strain.

Is quickly adjusted to any size saw or tooth spacing within its rated capacity. A special feature found in this machine is the pawl pushing the tooth just filed. This evens the spacing and joints the saw—possible only with our No. 454 Filer.

This filer is completely automatic in all its movements; the saw is fed tooth by tooth to the file, which is pushed across the saw with the exact movement of hand filing, improving the latter because of having every stroke identical in pressure and depth of cut. The saw is automatically clamped at each stroke of the file and released as the saw is fed forward by the feed pawl.



No. 454 BAND SAW FILER—Motor Driven

CODE, WEIGHT, ETC.

Code	No.	Saw Capacity	Spacing for Teeth	Weight	Cubic Measurement
Deterge	454-A	$\frac{1}{8}$ " to 1"	$\frac{1}{2}$ " or less	105	3
Detinue	454-B	$\frac{1}{8}$ " to 2"	$\frac{1}{2}$ " or less	105	3
Deton	454-C	$\frac{1}{8}$ " x 3"	$\frac{1}{2}$ " or less	105	3
Detop	One set of motor bracket, gears and gear guards for motor driving any of above filers.				

Band Saw Fitting Tools

Continued

No. 456 Band Saw Filing Vise

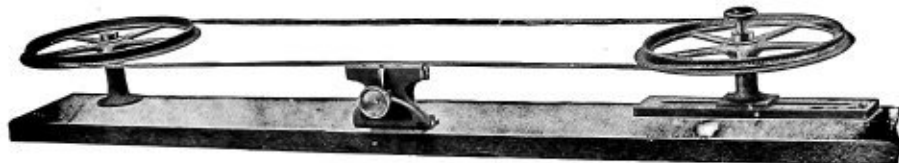
The No. 456 is a 20" vise with hardened steel jaws designed for saws $\frac{1}{8}$ " to $2\frac{1}{2}$ " wide.

Clamps instantly, is heavy and efficient. Weight, 55 pounds net. 70 pounds crated.

Code, Detrop.



No. 456 BAND SAW FILING VISE



No. 458 BAND SAW FITTING-UP WHEELS

Designed for use with Band Filer or Setter. Quickly adjustable for different lengths.

The No. 458 Band Saw Fitting-up Wheels are 18 inches in diameter, and may be used with the No. 87 Vise or not. Will carry saws of any width up to 3 inches. They are fine to use in supporting a band saw blade when filing or setting it.

Code		Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Detto	No. 458 Fitting-up Wheels only.....	60	100	2



No. 460 BRAZING TONGS

Code	Description
Deutzi	No. 460 Tongs for 1" Saws.
Deutzia	No. 460-A Tongs for 2" Saws.
Devest	No. 460-B Tongs for 3" Saws.



No. 459 BRAZING CLAMP AND IRONS
For Saws up to 3" wide
Code, Deuce. Weight, 31 pounds.

Band Saw Fitting Tools

Continued

Brazing Compound for Band Saw Brazing

Brazing Compound is used for cleaning laps and solder preparatory to brazing band saws. Its adoption by saw makers and operators was instantaneous. Its use is general. No one can afford to be without it and none who have once used it will be without it.

Code	Description
Devesy	One Large Bottle Brazing Compound, 4 ounce size.
Devesy	One Small Bottle Brazing Compound, ½ ounce size.

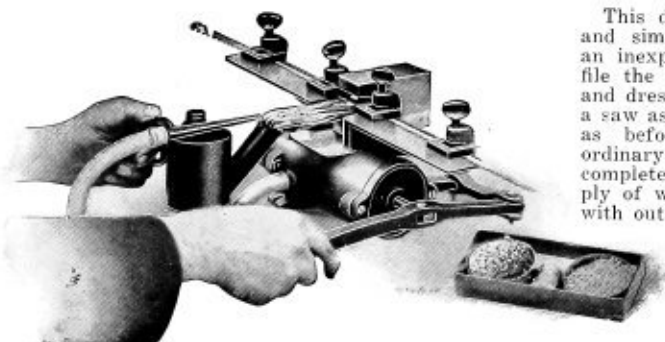
Silver Solder for Band Saw Brazing

We have for many years specialized in the sale of strictly first quality silver solder. It is the "best," not the "just-as-good" kind. The price per ounce is rather less important than the making of perfect brazes that hold, and since an ounce of solder will serve for from 6 to 15 brazes, according to the width of the saws in use, the saving of a cent a braze by buying a cheap brittle alloy is not an economy when it involves the risk of losing the braze and all the labor put on it.

Widths regularly carried in stock: ½, ¾, ¾, ¾ and 1¼ inch. Special widths rolled to order.

Code	Description
Devet	Silver Solder, one ounce in brass box.
Devex	Spelter Solder, one pound.

No. 461 Band Saw Brazer



This device is inexpensive and simple to operate, and an inexperienced person can file the laps, braze the saw and dress the joint and have a saw as straight and strong as before the break. An ordinary file is necessary to complete the outfit. A supply of wire and spelter sent with outfit.

The No. 461 Brazer has a capacity for saws up to 1½" wide, but for saws from 1" to 3" in width we recommend our No. 459 Brazing Clamp, equipped with brazing irons. This tool, with the use of silver solder, will make a permanent braze easily.

CODE, WEIGHT, PRICE, ETC.

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Devil	No. 461 Band Saw Brazer.....	14	14	1

Band Saw Fitting Tools

Band Saw Files

Code, Dexter

These are made from high grade steel, are sharply and uniformly cut and have the special shape that is desirable for sharpening band saws.

Lengths 4½", 5", 6", 7", 8".

Leather and Rubber Bands for Band Saw Wheels

We furnish these to fit any band saw wheel, using nothing but the highest grade of leather and rubber obtainable. In ordering give diameter and width of wheel.

Narrow Band Saw Blades

In ordering narrow Band Saws state plainly whether plain or bevel back, give length, width, gauge and number of points to the inch, bearing in mind the difference between points and teeth. When measuring points count the points at each end of the inch as per illustration. Five points are 4 teeth, 6 points 5 teeth, etc.



When points and gauge are not specified we always send standard sizes, that invariably give satisfaction, but our customers may specify just what they want; also state whether to be brazed and fitted.

Brazed, Set and Filed Ready for Use—Always in Stock

Code	Length	Widths									
Dibber	15½'	1½"	1½"	1½"	3½"	1½"	3½"	3½"	7½"	1"	1¼"
Dicing	19'	1½"	1½"	1½"	3½"	1½"	3½"	3½"	7½"	1"	1¼"
Dicky	20'	1½"	1½"	1½"	3½"	1½"	3½"	3½"	7½"	1"	1¼"

Other lengths and widths may be furnished with slight delay in shipment.

We also supply them any length toothed and tempered, but not joined, set or sharpened.

Band Knives

We are in position to furnish Band Knives of various width and lengths for any machine. State length, width, gauge required and the kind of work contemplated.

Bevel Back Band Saw Blades

Especially adapted for fine scroll sawing, such as carvings, wood ornaments and furniture work in general. For smooth work and short curves they are unequalled. Being ground thin on the back they require but very little set, simply enough to form a perfect corner on the tooth.



No. 29 Patent Scroll Saw

8,000 in daily use

General Information The Scroll Saw that does not work perfectly is a source of constant annoyance to the operator and of expense to its owner. The experience of years teaches us that in the machine illustrated we are offering the scroll saw that gives satisfaction. It is made with or without the tilting table, arranged for belt or motor drive.

Frame This is a rigid plate casting with broad floor support.

Table This is 38" x 40", usually made of narrow strips of thoroughly seasoned maple, cleated with iron. A metal plate at the center prevents excessive wear. When made to tilt it is mounted on a machined and graduated rocker.

Straining Device This is the essence of the machine and deserves special attention. The working parts are mounted on a metal tube and its support in such a manner that they adjust vertically for different lengths of blades. A spring counter balances the weight of the parts, thus facilitating adjustment. An adjustable stop holds down the work and carries steel bearings for supporting blades at sides and back. The tension is obtained from coiled springs and may be regulated as desired. The levers and connections are so arranged that the strain on the blade is constant at all points of the stroke. The lever bearings are hardened, self-oiling and very durable. An air pump furnishes a strong blast and has no working joints.

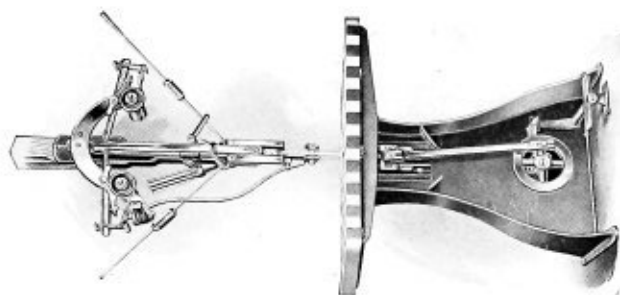
Drive A friction pulley is used for driving the machine. It is simple in construction and adjustable for wear. The foot lever operates the clutch, and when thrown out, applies a brake to the crank wheel. An oil chamber in the shaft thoroughly lubricates the pulley. Bronze and steel gearing are often furnished for driving the machine.

Lower Crosshead The lower crosshead runs in planed guides set square with the table. Should heating occur the expansion loosens it slightly and overcomes the difficulty.

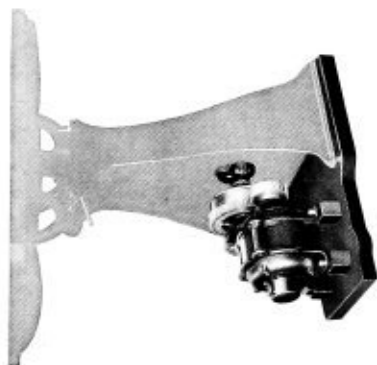
Saw Clamps The saw clamps are practically self-acting. A slot in the lower end of the blade is engaged by a hardened steel jaw. A pin in the upper end is held by a hook in the upper crosshead, which is pulled down by the lever when putting a blade in place.

Code	No.	Style	Speed of Crank Shaft	Friction Pulley	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Differ	29-A	Tilting Table	825	8 $\frac{1}{4}$ x 3"	500	725	36
Diffuse	29-B	Rigid Table	825	8 $\frac{1}{4}$ x 3"	450	675	36

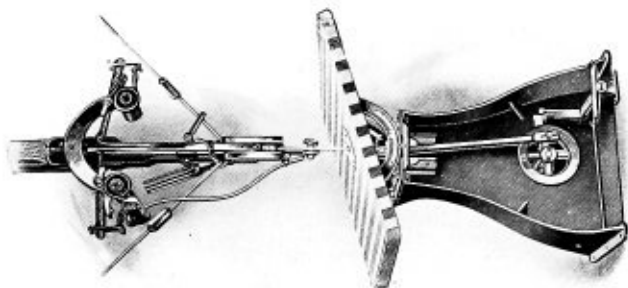
With each machine is furnished one dozen assorted blades, also wrench for adjusting the strain springs.



No. 29-B SCROLL SAW
With stationary table



MOTOR DRIVE RECOMMENDED
Gears Fully Guarded When So Ordered



No. 29-A SCROLL SAW
With tilting table

No. 61

**"Oliver" Single Cylinder Four-Roll Cabinet
Double Belted Surfacers**

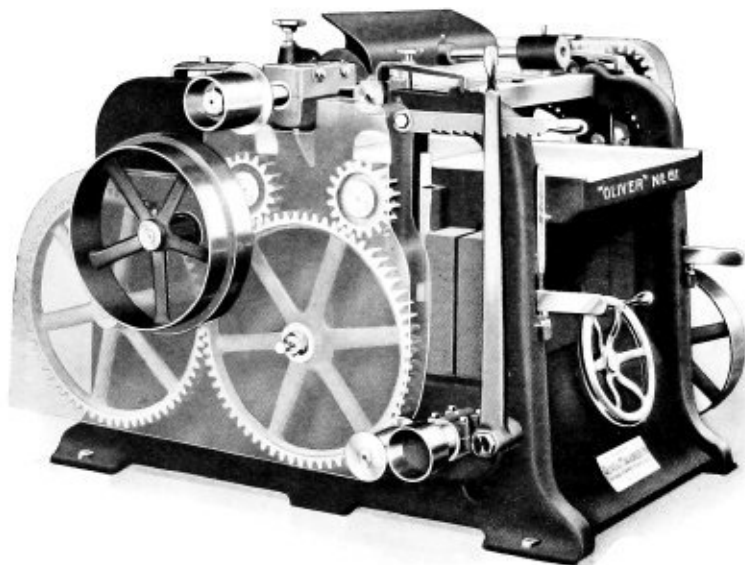
24 and 30-inch Wide, 8-inch Thick

- Adaptation** This machine is a faithful exponent of the popular demand for a surfacer having correct design, compactness, solidity, feeding power and general efficiency and it has a prominent place among surfacers. It is not only a smoothing planer, but is also for rough planing where the quantity of the product enters into the calculation as well as the quality.
- General Construction** We are constructing these planers along metal tool lines, convinced that in this we are serving our friends properly and satisfactorily. Our success in the past leads us to pursue the same general policy with this surfacer. Only the best of material is used and all parts are individually submitted to thorough tests before using.
- Framing** Is of cored sides and heavy ribbed girts, machine jointed and bolted. Ample material in it eliminates the vibration usually communicated through the high speed of the cylinder and the feed mechanism. This material is distributed to properly care for strains.
- Cylinder** This is a crucible steel forging of uniform texture, circular in form, carries two thin air hardening, high speed, steel knives, is belted from both ends and revolves in two long bearings that absorb the strain and eliminate rough planing. The steadiness under speed and active service is desirable. The chip breaking lips are shaped to repel the shavings and chips. The journals are long, of large diameter and machine ground. On pages 96 to 99 of this catalog will be found a full description of this splendid cylinder.
- Cylinder Pulleys** These are solid steel, two in number, and perfectly in balance. Their faces are grooved spirally, preventing air pockets under the belts and augmenting the belt power through its close contact with the pulleys.
- Cylinder Bearings** Are long, with large oil chambers. They are readily adjusted to hold the cylinder firmly in place for smooth planing. Readjustment of caps made instantly.
- Back Pressure Bar** This bar follows the cylinder and is held by adjustable screws for regulating the hold-down pressure on the lumber as it leaves the cut. The throat between the front and rear pressure bars is only 2½" for service in planing smoothly and without end clipping on very short stock.

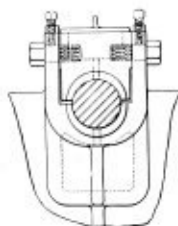
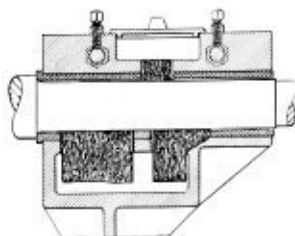
No. 61

"Oliver" Single Cylinder Surfacers

Continued



**"OLIVER" No. 61 FOUR ROLL, SINGLE CYLINDER, DOUBLE BELTED
CABINET SURFACER**
View from left hand side



**Etching showing Cylinder Bearing on "Oliver" No. 61 Four Roll,
Double Belted, Single Cylinder Surfacers**

No. 61

"Oliver" Single Cylinder Surfacer

Continued

Chip Breaking Pressure Bar

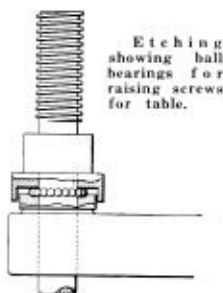
The bar before the cut holds the lumber firmly to the bed as it is planed, and prevents the chips from tearing its surface. It is attached to the main frame in such position that it raises concentrically with the cylinder, thus preventing the bar raising into the knives. A steel spring shoe is secured to the lower part of the bar, which not only holds the stock firmly on the bed but yields to any ordinary inequalities in rough stock. An adjustable weight regulates the pressure.

The Feed

A planer with a weak feed is worthless as a money-saving proposition so we have evolved a feed that is strong and positive and one that can be crowded to the satisfaction of the most exacting operator. Four speeds are regularly provided with each machine. The feed is under instant and positive control of the operator. The feeding power is transmitted through belts from the cutting cylinder.

Bed

It is of suitable dimensions and gibbed properly, is raised in a wide central slide that is deep to give the bed the proper rigidity. A guide is located at each side to prevent material from leading away from the bed and striking the frame or gearing. The bed is supported on heavy square thread screws with ball bearings, reducing friction and permitting the raising of the bed without exertion. The bevel gears used in elevating the bed are machine cut and are protected from dirt by a wide shelf that covers the inner space below the table and keeps the shavings from within the frame and makes it very easy to clean around the machine. Directly underneath the cylinder is a center plate adjustable to wear, removable from the bed when worn. It may be redressed and refitted or discarded for a new one as the occasion demands.



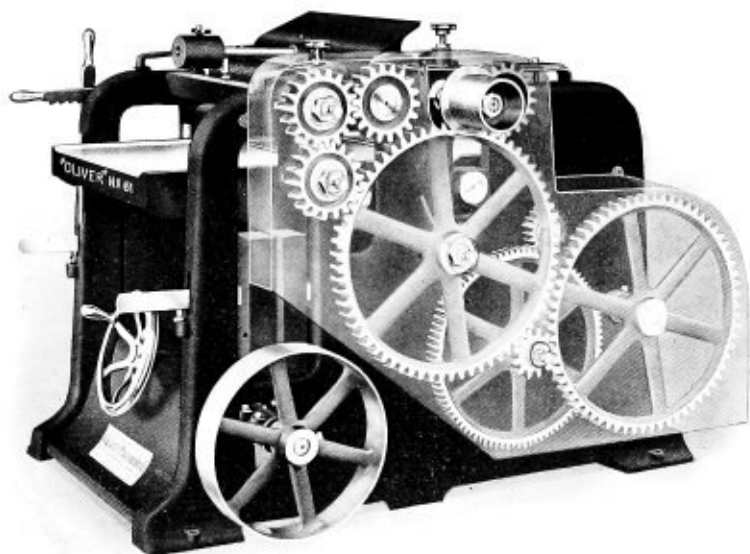
Etching
showing ball
bearings for
raising screws
for table.

Feed Rolls

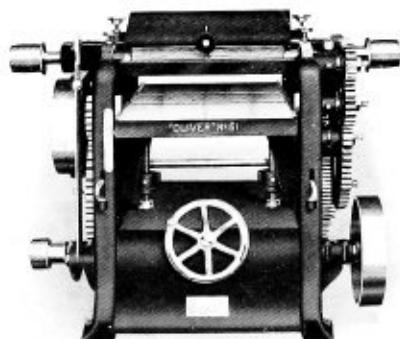
These are four, one pair back of the cylinder to feed the material free of the knives and assist in carrying it through the machine. They are large in diameter, made of hammered steel and are supported in self-oiling roll boxes. The upper feed-in roll is corrugated for gripping stock firmly. All the rolls are driven by a train of heavy gearing, three pitch, the teeth machine cut, insuring a smooth and positive feed. The feed-in rolls are weighted and the delivery rolls have spring tension.

The upper delivery roll has a cover over it and is provided with a scraper which keeps the rolls free from shavings.

No. 61 "Oliver" Single Cylinder Surfacer



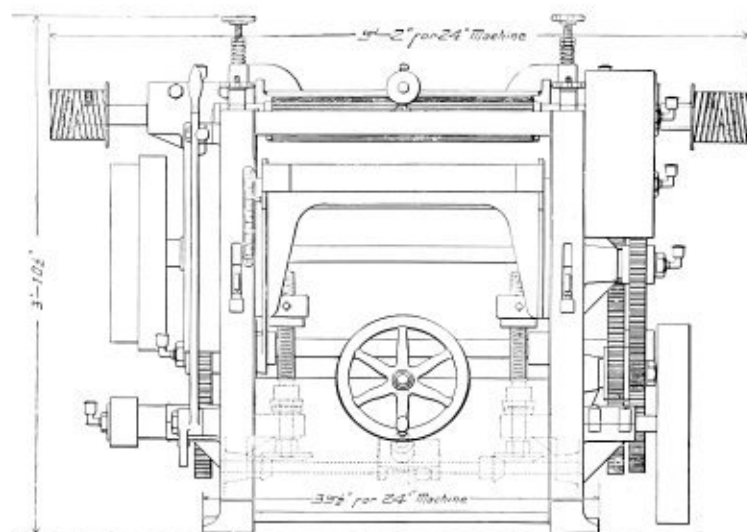
"OLIVER" No. 61 FOUR ROLL, SINGLE CYLINDER, DOUBLE BELTED, CABINET SURFACER—View from right hand side



Front End View
Gear Guards Removed

No. 61
"Oliver" Single Cylinder Surfacers

Continued



"OLIVER" No. 61 FOUR ROLL, DOUBLE BELTED, SINGLE CABINET SURFACER
Etching of end view, showing table raising device, pneumatic pulleys, etc.

**Gears and
Studs**

The gearing that transmits the power to the rolls forms a substantial part of the machine and is responsible in a great measure for its success. Such gears as revolve on steel studs are provided with oiling devices that are right.

**Method of
Oiling**

Grease cups mounted on each stud furnish oil through channels in the studs to the inner surface of the hubs, producing effective lubrication. The studs are large and the bearings for shafts that pass through the machine are fitted with dust-proof spring oilers. The master driving pinion is hammered crucible steel and machine cut.

Countershaft

This may be secured to the floor on which the machine rests or supported in hangers either on the ceiling or below the floor. Hangers are of the ring-oiling type.

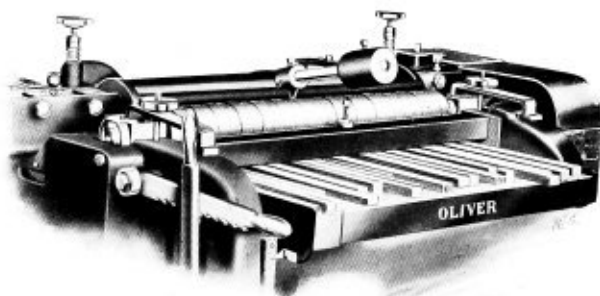
No. 61
"Oliver" Single Cylinder Surfacer

Continued

Motor Drive This may be provided as shown on following pages. If desired the tight and loose pulleys may be left off the regular counter-shaft and the motor connected to it by means of a flange coupling.

Capacity The machine is made in two widths, viz: to plane 24" or 30" wide, and the bed will lower to receive and plane material from $\frac{1}{16}$ " to 8" thick. Standard feeds furnished with the machine are 16, 21, 27 and 33 feet per minute.

Sectional Feed Roll May be provided when so desired. It consists of sections $1\frac{1}{2}$ " wide and 4" diameter. While giving a horizontal drive as positive as a solid roll, they yield vertically independently of each other to the extent of $\frac{1}{16}$ ". Each section is composed of an outer ring enclosing four sections or seats placed radially to the center of the roll shaft and each carrying a helical spring.



Half-tone of Sectional Feed Roll

Method of Compression This drive is against the sections, which insures a positive drive equal to a solid roll. By the use of this roll the capacity of the machine in narrow lumber is largely increased.

Sectional Chip Breaker This consists of $1\frac{1}{8}$ " sections pivoted in connection with section weights, on two horizontal bars attached to two plates. They yield concentric to the cylinder independently of each other.

No. 61

"Oliver" Single Cylinder Surfacers

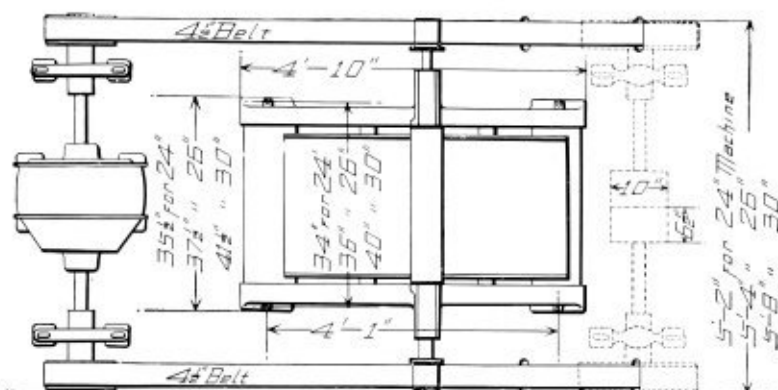
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GENERAL DIMENSIONS

Frame	24" machine is 58" long, 35½" broad, 37½" high. 30" machine is 58" long, 41½" broad, 37½" high.	
Cylinder	Cutting diameter 4½". Journals 9¾" long, 2" diameter. Pulleys 5" diameter, 5" face. Speed, 3800 revolutions per minute.	
Feed Rolls	4" diameter, shafts 4½" long, 2" diameter. Feeds regularly furnished 16', 21', 27', 33' per minute. Roll Gears 6" diameter, 3" pitch. Main driving gears 22" diameter, 3" pitch.	
Bed	24" machine is 48" long and 28" wide. 30" machine is 48" long and 34" wide. Vertical Adjustment in slide is 8". Depth of Slide, 12½". Depth of Table, 14¼". Raising Screws 1½" diameter, 4 threads to the inch. Hand Wheel for raising bed is 12" diameter.	
Feed Pulleys	Cylinder Pulley 2½" diameter, 2¾" face. First Pulley of First Feed Shaft 20" diameter, 3" face. Second Pulley of First Feed Shaft 16" diameter, 3" face. First Feed Shaft Cone Pulley 3" and 4½" diameter, 2½" face. Tightener Pulley 2¾" diameter, 5" face. Second Feed Shaft Cone Pulley 16" and 17¾" diam., 2½" face.	
Countershaft	2" diameter, 5' 2" long and 5" 8" long for 24" and 30" machine respectively, 2 hangers 14" drop—bearings 6" long, 1¾" diameter. Pulleys for driving cylinder 20" diameter, 5" face. Tight and Loose Pulleys 10" diameter, 6½" face. Speed, 950 revolutions per minute.	
Floor Space	With Countershaft	Without Countershaft
	24" machine 8' 4" x 5' 2"	5' 2" x 5' 2"
	30" machine 8' 4" x 5' 8"	5' 2" x 5' 8"
Horse Power	7½ to 10.	

No. 61
"Oliver" Single Cylinder Surfacers

Continued



No. 61 "OLIVER" FOUR ROLL, DOUBLE BELTED, SINGLE CYLINDER CABINET SURFACER

Etching showing method of motor drive with motor taking the place of the usual countershaft

CODE, WEIGHT, ETC.

No. 61 Four Roll, Single Cylinder, Cabinet Surfacers with
Solid Feed-in Roll

Code	Size Planes	Domestic Weight	Boxed Weight	Measurement in Cubic Ft.
Digest	No. 61-A 24" x 8".....	3900	4200	100
Digger	No. 61-B 30" x 8".....	4200	4500	115

No. 61 Four Roll, Single Cylinder, Cabinet Surfacers with
Sectional Feed-in Roll

Digit	No. 61-D 24" x 8".....	3900	4200	100
Digger	No. 61-E 30" x 8".....	4200	4500	115

Internal Belting

Based on Countershaft located 6' from Cylinder

Two Belts, each 15' 3" long, 4 1/2" wide for cylinder.

One Belt, 8' 2" long, 2 1/4" wide for 2 slow feeds.

One Belt, 7' 6 1/2" long, 2 1/4" wide for 2 fast feeds.

One Belt, 8' 2" long, 2 1/4" wide for feed on left hand side.

We can furnish this belting at ruling prices. It should be the best grade of oak tanned short lap leather belting, uniform in thickness and straight.

No. 99

"Oliver" Double Belted Single Cylinder Surfacers

Planes 20 and 24-inch Wide and 6-inch Thick

Introduction The splendid success of this surfacer is due to its semi-circular cylinder and its powerful feed, and those who desire a machine of moderate cost and not too light, will find this adapted to their needs.

No machine we manufacture gives more universal satisfaction. All the parts are mechanically arranged and get-at-able. It is beautifully made. All gearing is safely guarded and has machine-cut teeth. Every precaution has been taken, resulting in a very sensible machine.

Frame This is of metal with plate slides, and girts strongly ribbed, joints planed true and strongly bolted. A wide flange at the base eliminates vibration and gives good floor support.

Bed It is made in one piece and fitted to the frame in four bearings arranged with dovetail gibs for taking up wear. It is supported by two screws of large diameter on ball bearings that are dust proof. The raising screws easily operated by bevel gearing and crank at the operator's hand.

Cylinder This is the "Oliver" Semi-Circular Type, made of forged crucible steel, carries two general planing machine knives and adjustable steel chip breakers. It produces very fine results, being particularly free from vibration. While of small diameter, it has more steel in it than the old-fashioned cylinder, is better balanced and does not spring under strain. A steel driving pulley of the pneumatic type is placed at each end to double belt it.

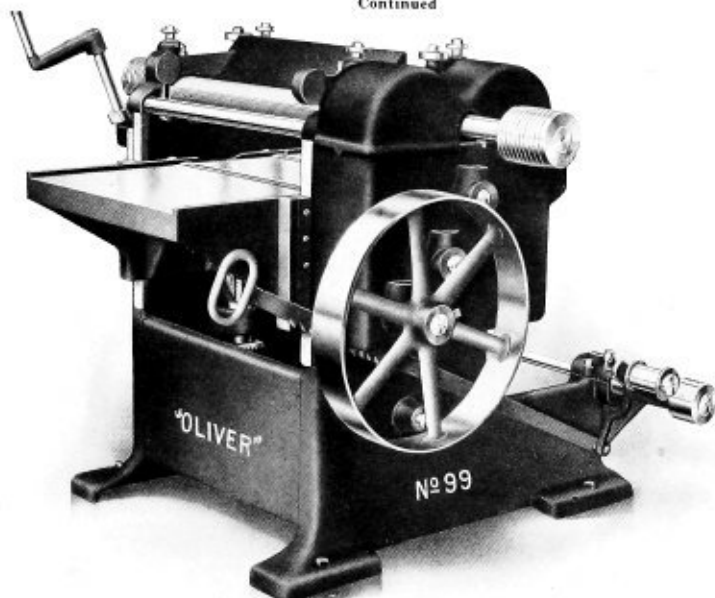
Cylinder Journals and Bearings The journals are of large diameter, ground true and revolve in long bearings that are cast to the frame. These bearings have oil chambers that serve to lubricate the journals through wicking.

Pressure Bars The bar at the feeding end is heavily weighted and automatically yields to the inequalities of the cut. It is adjustable for varying the pressure on the lumber. The delivery bar holds the stock firmly to the bed. These bars are only 1½" apart at the cutting line, thus overcoming the tendency to end clipping on very short stock.

No. 99

"Oliver" Double Belted Single Cylinder Surfacers

Continued



No. 99 "OLIVER" DOUBLE BELTED SINGLE CYLINDER SURFACER

View of right hand side, gears covered

- Feed Rolls** They are made of forged steel, accurately turned, and fitted into roll boxes that are adjustable for alignment. The upper feed-in roll is fluted regularly, but may be supplied with smooth surface if desired. The upper rolls are held down by strong volute springs. The lower rolls are adjustable with the bed and have independent vertical adjustment. The upper rolls are driven by gearing.
- Feed Gears** These are large and strong, with teeth machine cut. They are mounted on steel shafts that run in self-oiling bearings. Power is given from the cylinder through a belt tightener controlled by a lever. This feed is very positive. The gears are protected by a metal cover.
- Countershaft** This may be mounted back of the machine or overhead. The hangers are fitted with long self-oiling bearings. The pulleys are turned true and balanced. The loose pulley is fitted with a self-oiling bronze bushing.
- Equipment** We supply one pair of cylinder knives, and the necessary countershaft pulleys and wrenches.

No. 99

"Oliver" Double Belted Single Cylinder Surfacers

Continued

GENERAL DIMENSIONS

Frame	20" machine is 39½" long, 31½" wide, 35½" high. 24" machine is 39½" long, 35½" wide, 35½" high.
Cylinder	Cutting diameter 3½"; Journals 1¾" diam., 6" and 7" long. Pulleys 4" diam., 4½" face. Speed 4500 revolutions per minute.
Feed Rolls	3½" diam., with roll bearings 3¾" and 5" long, 1⅝" diam. Distance apart of rolls 10". Rolls rise ½". Roll Gears 7" diam., 4" pitch.
Bed	Vertical adjustment is 6". Depth of slide 16½". Depth of table 10". Raising Screws are 1" diameter, 4 threads to inch.
Feed Pulleys	On cylinder 2½" diam., 2½" face. First feed shaft 18" diam., 2½" face. First feed shaft 3½" diam., 2½" face. Tightener Pulley 2" diam., 3" face. Second feed shaft 19" diam., 2½" face.
Feed	24 feet per minute.
Countershaft	1¾" diam., 55" and 59" long. Bearing 1½" diam., 6" long. Driving pulleys for Cylinder, 20" diam., 4½" face. Tight and Loose Pulleys, 10" diam., 5" face. Speed 900 revolutions per minute.
Floor Space	20" machine without Countershaft 50" x 48". 24" machine without Countershaft 56" x 48".
Horse Power	5.

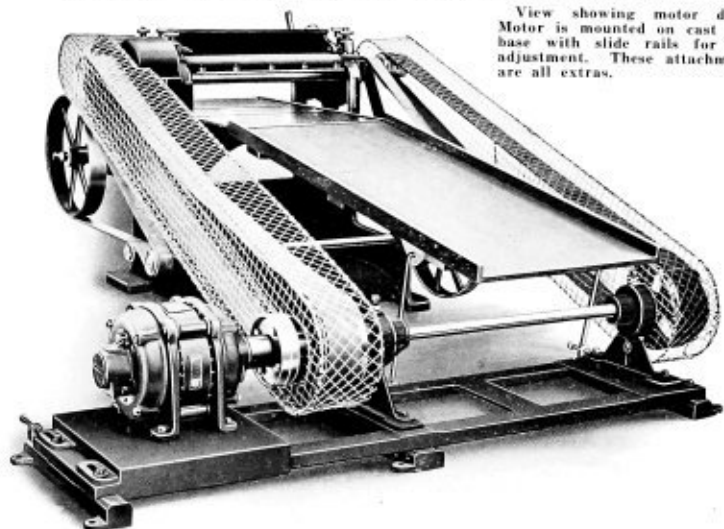
CODE, WEIGHT, ETC.

Code	No.	Size Planes	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dike	99-A	20" x 6"	2100	2350	50
Dilate	99-B	24" x 6"	2380	2680	60

EXTRAS

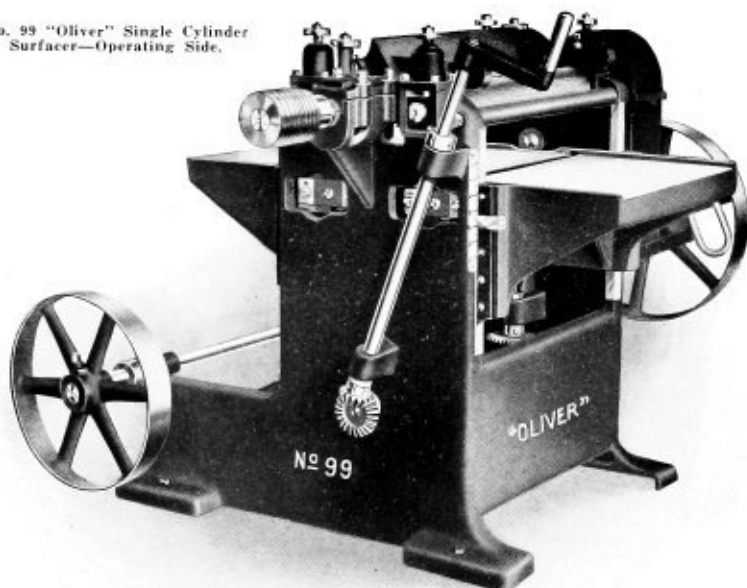
Dilaze	Two Endless Single Leather Belts for driving feed mechanism and two endless single leather belts for driving the cylinder. Wire mesh guards, motor drive, cast iron base with slide rails and auxiliary table as illustrated.
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No. 99 "Oliver" Single Cylinder Surfacers



View showing motor drive. Motor is mounted on cast iron base with slide rails for belt adjustment. These attachments are all extras.

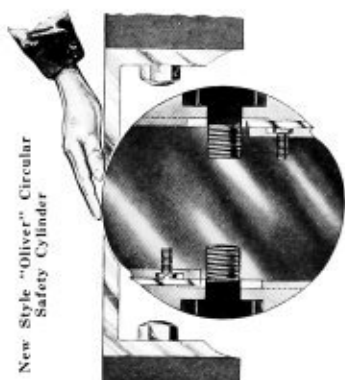
No. 99 "Oliver" Single Cylinder Surfacers—Operating Side.



No. 12

"Oliver" Hand Planer and Jointer

- Introduction** This machine has been designed to meet the demands of a class of purchasers who recognize the fact that the best is cheapest. To produce it we have spared neither skilled labor nor material. They are used to plane smoothly, or true-up long or short pieces of lumber or timber, taking them out of wind, making glue joints, planing draft on pattern lumber, etc. Where high grade work is the requirement they are most profitable.
- Bed** This is very heavy, mounted on two cabinet columns, which places it on a very firm foundation, dissipating all vibration and allowing greatest foot room possible for the workman.
- Tables** Tables are rigid, proportionately made, and are provided with all the conveniences for promptly adjusting them to perform their functions. They are 2" wider than the knives and are grooved in the side for rabbeting. The operating section is 2' longer than the front or stationary section. They rest on slides that are dovetailed into the bed and adjustable to and from the cut instantly.
- Table Throats** These tables are faced at the throat next the cutting cylinder with steel plates, which may be replaced at any time should the edges become badly nicked or worn from the use of special projecting knives or other causes.
- Sliding Frames** These carry the work tables and move in dovetailed ways planed in the bed. They are easily withdrawn for convenience in sharpening or removing knives. To them are bolted the shoes for the adjustment of the work tables, the rockers upon which the table rests, and also the screws and hand wheels which raise and lower for depth of cut.
- Shoes** These are tongued and grooved to the sliding frame and securely bolted. They also have large flat bearing surfaces and are gibbed by separate gibs running in slots which hold the work table securely to the sliding frame. These surfaces are all milled and accurately scraped and keep the correct plane, or level, of the table at all times.
- Cylinder Yoke** This carries the cylinder and is made in one solid piece and bolted to the bed. This is a very desirable feature.
- Cylinder** We furnish with this machine Carston's Patent Circular Safety Cylinder, which has all the advantages of the square cylinder and it saves hands. It is made of forged crucible steel and as regularly furnished carries two knives. It makes less noise than the old square cylinder, maintains a better balance, has device to prevent knives from flying out and uses all steel knives made from air hardening high speed steel.



New Style "Oliver" Circular Safety Cylinder

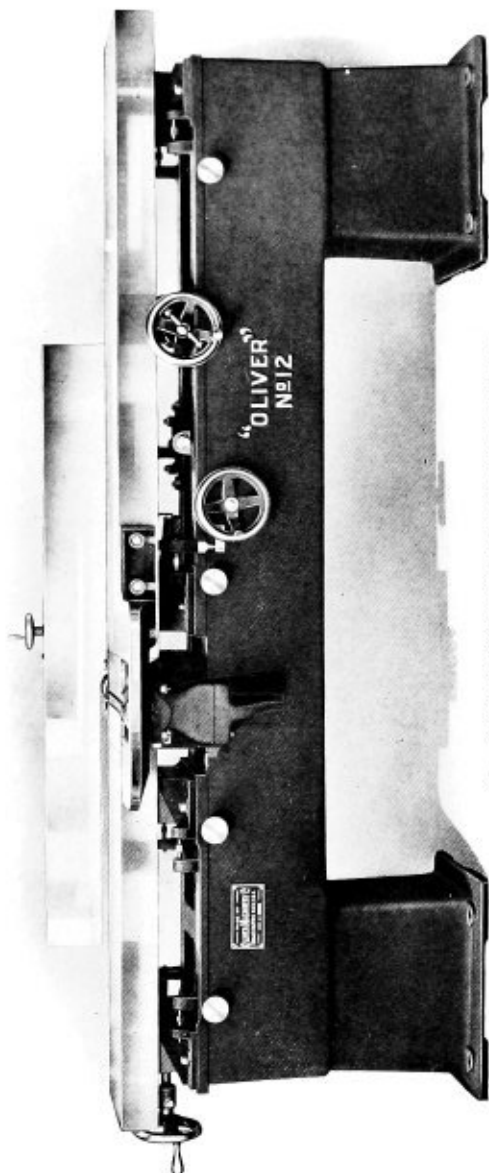


Type of Circular Safety Cylinder used in the "Oliver" Hand Planer

Complete description on pages 96 to 99



Old Style—Dangerous.



No. 12 "OLIVER" HAND PLANER AND JOINTER
Front View

No. 12

"Oliver" Hand Planer and Jointer

Continued

Cylinder Journals

These are ground, three in number, of suitable length and diameter, giving generous wearing surface, and they receive oil from a reservoir beneath each yoke bearing. The cylinder has an oscillation of about $\frac{1}{8}$ ", which can be entirely removed when desirous of using special cutters, by simply setting the driving pulley against the end of bearing.

Fence

This is held in position on the slide which is bolted to the table. It may be moved backward or forward the full width of the table. It may also be set at any angle from square to 45 degrees by means of a worm and wheel. When the fence is not used it rests on the table extension bracket out of the way of the operator, leaving the table clear.

Table Tilting Device

This is one of the distinctive features. By means of this the pattern maker can obtain the draft upon every straight piece of wood that passes through his hand. This one point alone adds exceptional value to the machine for this particular work. It operates the rockers upon which the rear table rests and by means of a hand-wheel and screw the table may be adjusted to give the required taper, or draft, to the work. In order to obtain draft over full width of table it is necessary to gradually lower the rear table upon the shoes and plane the material several times until the full length of the knives is in use. Upon stock less than one-half of the width of the table this is not necessary. Very sharp or acute angles of any degree desired may be obtained by simple repetition of the above operation.

Countershaft

This is proper length, carrying tight and loose pulleys and driving pulley. The loose pulley is bushed with a loose bronze sleeve, which doubles the wearing surface, as it may either revolve around the outer diameter of the sleeve, or both pulley and sleeve may revolve around the shaft. Suitable shifter fingers and drip cups are attached.

Motor Drive

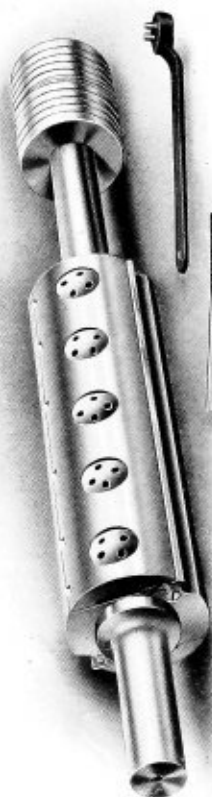
When desired we eliminate the countershaft and furnish an electric motor to drive the machine. This motor may be placed on the floor or be mounted on a bracket attached to one of the cabinet columns.

Equipment

We furnish one circular safety cylinder fitted with a pair of air hardening steel knives, special cylinder wrench and the regular wrenches.

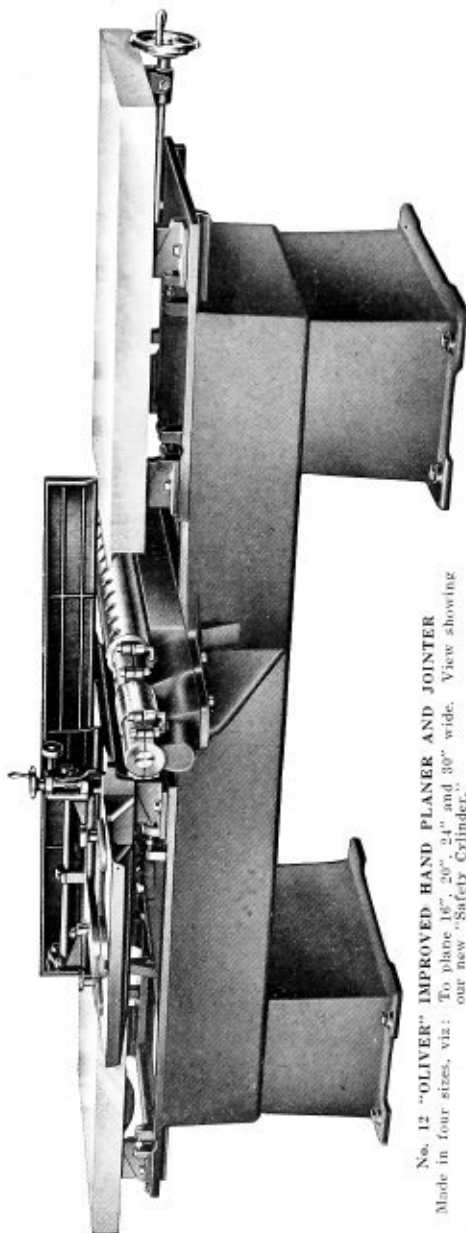
Capacity

We make this machine in four widths, viz: to plane 16", 20", 24" and 30" wide and the tables may be adjusted to take a cut $\frac{3}{4}$ " deep when desired.



Type of Circular Safety
Cylinder used in the
"Oliver" Hand Planer

Complete description on
pages 96 to 99



No. 12 "OLIVER" IMPROVED HAND PLANNER AND JOINTER

Made in four sizes, viz: To plane 16", 20", 24" and 30" wide. View showing
our new "Safety Cylinder."

No. 12 "Oliver" Hand Planer and Jointer

Continued

GENERAL DIMENSIONS

Base	Floor Space—100", 33" wide on 30" machine. Height to the table, 33".
Table	Operating section 5' 4" long. Front or supporting section, 3' 4" long. Width according to knives used. Draw away from cylinder, 18". Vertical adjustment, 1". Tilting device swings table 5 to 7 degrees.
Cylinder	Main journal, 1 3/4" in diameter, 8" long. Outside journal, 1 3/4" in diameter, 6" long. Cutting diameter, 4 3/4", square 3 1/2". Pulley, 4" diameter, 5 1/2" face. Speed, 4500 revolutions per minute.
Fence	Length, 5', width 5"; bevels to 45 degrees. Permits full width of table to be used.
Countershaft	Length, 3 1/2'; diameter, 1 1/2". Hangers, 14" drop; bearings, 6" long. Tight and loose pulleys, 10" diameter, 6" face. Driving pulley, 18" diameter, 5 1/2" face. Speed, 1000 revolutions per minute.
Horse Power	Maximum, five.

CODE, WEIGHT, ETC.

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Divest	No. 12-A to plane 16" wide.....	3000	3400	140
Divide	No. 12-B to plane 20" wide.....	3290	3690	160
Divine	No. 12-C to plane 24" wide.....	3600	4000	180
Diving	No. 12-D to plane 30" wide.....	3900	4300	200

EXTRAS

Divip	Aluminum Jointer Guard for 16" and 20" Jointers.
Divipa	Aluminum Jointer Guard for 24" and 30" Jointers.
Divirt	One Endless Leather Belt for Cylinder to drive from motor or countershaft on floor back of machine.

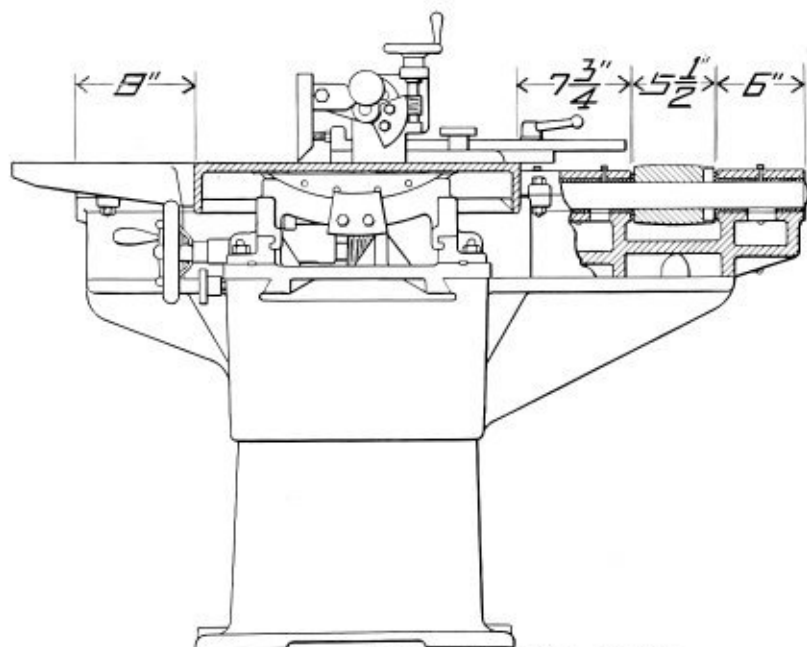
Special Notice

A fully illustrated and complete description of our Patent Circular Safety Cylinder may be found on pages following.

No. 12
"Oliver" Hand Planer and Jointer
 Continued



Rear View with operating table removed to show finished rockers and hand wheel worm and gear tilting device



No. 12 "OLIVER" HAND PLANER AND JOINTER— End View
 Showing System of Three Bearings for the Cylinder

"Oliver" New No. 166 Hand Planer and Jointer

Introduction This is the latest model "Oliver" Ball Bearing Jointer. With this machine we meet the demand made by those who are not inclined to invest in the heavy type of hand planer, yet insist upon correct design, superior workmanship and high grade material in its makeup. In its development we have adhered strictly to "Machine Tool Construction" as the only true basis for a good product. For planing smoothly, straight or tapering, taking out of wind, cornering, chamfering, making glue joints, etc., it will be found very profitable.

Bed This is heavy and properly ribbed. The bridge design absolutely eliminates any vibration that might be caused by the high speed cylinder. The operator is given ample foot room.

Tables They are well ribbed, properly machined, draw filed and scraped true, and provided with conveniences for adjustment. Each table is fitted with a steel lip next to the cutting cylinder, which can be removed and replaced at any time. This valuable feature avoids nicked edges to the tables.

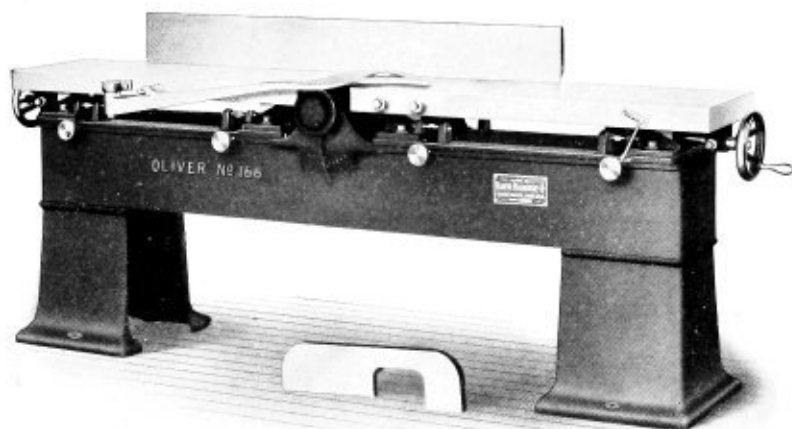
Sliding Frames These carry the tables and move to and from the cylinder in dovetailed ways planed in the bed. They can be readily drawn away from the cylinder when sharpening, setting or removing knives. The shoes are tongued and grooved to the sliding frame, and securely bolted. They have wide bearing surfaces and control the correct plane of the tables at all times.

Cylinder This is made of forged crucible steel, its journals of correct diameter and machine ground. It is of the famous circular safety type, by the use of which it is impossible to mutilate the fingers and hands, as is so frequently done on the square cylinder in common use. See pages 96 to 99 for a full description of this cylinder.

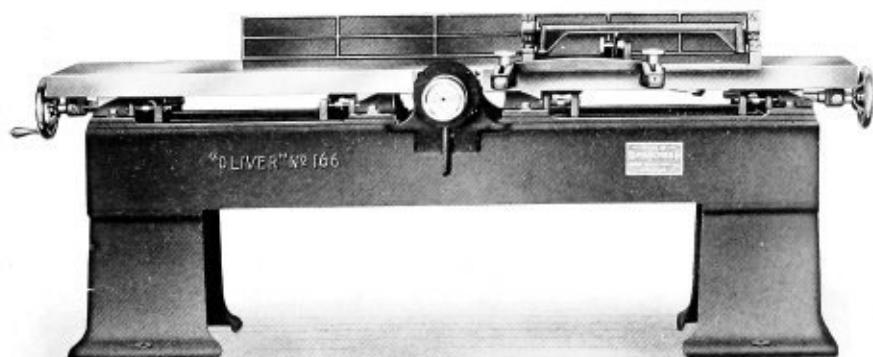
Cylinder Bearings The bearings are of the self-aligning, frictionless, ball bearing type, require very little attention and are bound to give satisfaction.

Fence This is rigidly held in position and may be moved across the table its full width. It is made to bevel to any angle down to 45 degrees. When the fence is not used it rests on the extension brackets, out of the way. Note especially that the fence on this type of jointer is mounted on the rear table, where many operators prefer to have it.

No. 166
"Oliver" New Hand Planer and Jointer
Ball Bearings



Front View showing application of "Oliver" Jointer Guard



Rear View showing location of Fence on rear table

No. 166

"Oliver" New Hand Planer and Jointer

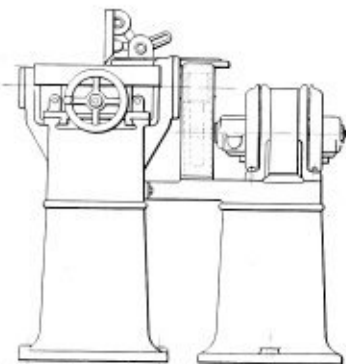
Continued

Rabbeting Attachment This device is supplied with each machine. It is made so as to be removed at any desired time. It presents a wide supporting surface for stock being rabbeted and is preferred to the old style rabbeting groove in the receiving table.

Countershaft This is made of steel, and runs in self-oiling bearings. It carries the driving pulley and a pair of tight and loose pulleys. The loose pulley is fitted with a loose bronze sleeve, which doubles its wearing surface, as it may revolve around the outer diameter of the sleeve, or both pulley and sleeve may revolve around the shaft. Suitable shifter fingers and drip cups are provided.

Motor Drive This may be substituted when desired. Specifications, involving the electric drive, are furnished when requested.

Capacity This machine is made in five widths, viz.: 9", 12", 16", 20" and 24" and the tables will lower to work a cut $\frac{3}{4}$ " in depth. With each machine we furnish one pair of high speed air hardening steel knives, special cylinder wrench and regular wrenches.



This etching shows gear drive—no belt, safe and easy to install



"Oliver" Patented Circular Safety Cylinders, the kind with the high speed, thin, steel knives.

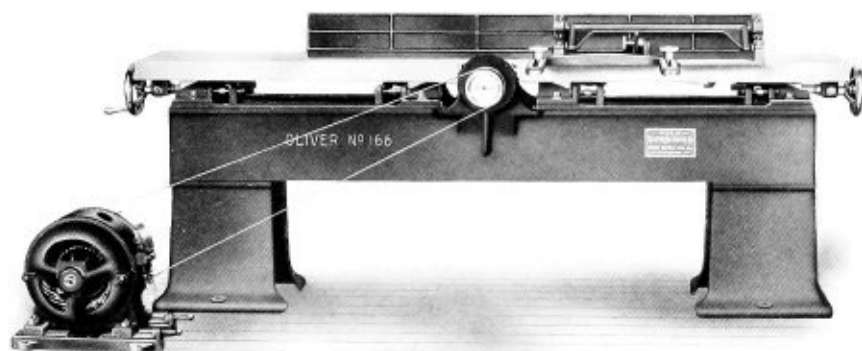
Regularly furnished with all "Oliver" Jointers

One of the most effective mechanical safeguards that can be installed on a jointer is the Circular Safety Cylinder. This form of head fills up the gap between the tables to such an extent, and the knives project so little from the head,

that if any operator's hand should come in contact with the knives, they cannot be mangled as they would be with a square head.

"Oliver" New No. 166 Hand Planer and Jointer

Continued



Rear view showing Belted Motor Drive. Motor may be placed at either end

GENERAL DIMENSIONS

Bed 78" long, 34" high, 9" deep, width according to size of machine.

Tables Each section 42" long, and in width 2" more than machine will plane. Draw away from the cylinder 18" either end. Vertical adjustment, $\frac{3}{4}$ ". Throat between tables, 1 $\frac{3}{8}$ " wide.

Cylinder "Oliver" Circular Safety Cylinder type fitted with self-aligning frictionless ball bearings. Cutting diameter 5"; pulley 4 $\frac{1}{2}$ " diameter, 4" face for 9" size, 5" face for 12" and 16" sizes, 5 $\frac{1}{2}$ " face for 20" and 24" sizes; speed 4500 revolutions per minute.

Rabbeting Arm 25" long and 9" wide.

Fence Length 4', width 6", bevels 45 degrees. Permits full width of table to be used.

Countershaft Length 3 $\frac{1}{2}$ ', diameter 1 $\frac{1}{2}$ ", hangers 14" drop, bearings 6" long, tight and loose pulleys 10" diameter, 6" face, driving pulley 18" diameter, 5 $\frac{1}{2}$ " face, speed 1125 revolutions per minute.

Horse Power 3 to 5, according to width and character of work.

CODE, WEIGHT, ETC.

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Disno	No. 166-A Size 9".....	1575	1675	62
Divan	No. 166-B Size 12".....	1700	1800	70
Dbet	No. 166-C Size 16".....	2000	2100	82
Docel	No. 166-D Size 20".....	2300	2400	110
Docet	No. 166-E Size 24".....	2500	2600	120

No. 14

"Oliver" Hand Planer and Jointer

Babbitted Bearings

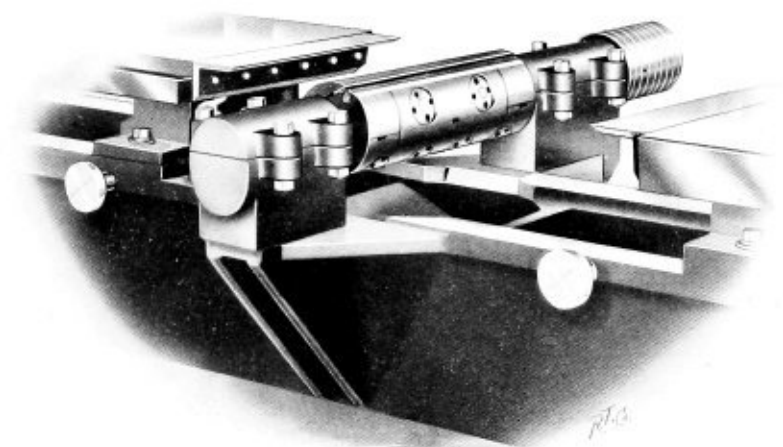
- General** The general description of the No. 166 Hand Planer and Jointer in the preceding four pages applies to this No. 14 type, except that the No. 14 is fitted with babbitted bearings.
- Cylinder** This is made of forged crucible steel, its journals of correct diameter and machine ground. It is of the famous circular safety type, by the use of which accidents are avoided. See pages 96 to 99 for full description.
- Cylinder Journals** These are two in number on the 12" and 16" machines, and three in number on the 20" and 24" machines. They receive oil from reservoirs beneath each bearing. The oscillation of the cylinder can be removed when desired. The bearings are of good length, lined with "genuine" babbitt, and made self-lubricating.
- Capacity** This machine is made in five widths, viz.: 12", 16", 20" and 24", and the tables will lower to work a cut $\frac{3}{4}$ " in depth. With each machine we furnish one pair of high speed air hardening steel knives, special cylinder wrench and regular wrenches.

GENERAL DIMENSIONS

- Bed** 78" long, 34" high, 9" deep; width, according to size of machine.
- Tables** Each section 42" long, and in width 2" more than machine will plane. Draw away from the cylinder 18" either end. Vertical adjustment, $\frac{3}{4}$ ". Throat between tables, 1 $\frac{3}{8}$ " wide.
- Cylinder** Journals, 1 $\frac{3}{4}$ " diameter, main bearing, 7" long on 12" and 16" sizes and 8" long on the 20" and 24" sizes; front bearings, 6" long (the 20" and 24" machines have a third or outboard bearing 5" long); cutting diameter, 4 $\frac{3}{4}$ "; pulley, 4" diameter, 5 $\frac{1}{2}$ " face, speed 4500 revolutions per minute.
- Rabbeting Arm** 25" long and 9" wide.
- Fence** Length, 4'; width, 6", bevels 45 degrees. Permits full width of table to be used.
- Countershaft** Length 3 $\frac{1}{2}$ ', diameter 1 $\frac{1}{2}$ ", hangers 14" drop, bearings 6" long, tight and loose pulleys 10" diameter, 6" face, driving pulley 18" diameter, 5 $\frac{1}{2}$ " face, speed 1000 revolutions per minute.
- Horse Power** 3 to 5, according to width and character of work.

No. 14
"Oliver" Hand Planer and Jointer

Continued



"OLIVER" No. 14 HAND PLANER AND JOINTER
 Showing tables drawn back and Circular Safety Cylinder installed

It is made in four widths, viz.: 12", 16", 20" and 24" wide.

CODE, WEIGHT, ETC.

Code	Machine		Domestic Weight	Export Weight	Measurement in Cubic Ft.
Divort	No. 14-A	Size 12".....	1700	1800	70
Doby	No. 14-B	Size 16".....	2000	2100	84
Docile	No. 14-C	Size 20".....	2300	2400	122
Dock	No. 14-D	Size 24".....	2500	2600	140

"SAFETY FIRST"

Every Circular Safety Cylinder in the United States market today is a copy of this one. We purchased the original German patent No. 877,407. Its safety features were so apparent in changing an extremely dangerous machine into one of perfect safety that many states now compel their installation. Liability Insurance Companies insist upon it. Give us credit for not only recognizing its value and paying a large sum in cash for it, but more than that, give us credit for saving at least six fingers for each cylinder of the many thousands installed by us. Remember, when you purchase an "Oliver" you not only get the original but the best one as well.

No. 144
"Oliver" Hand Planer and Jointer



No. 144-A "OLIVER" HAND PLANER AND JOINTER
Showing Latest Style Aluminum Guard

- Introduction** This machine is a quality producer in any workshop where hand planing is done either by the workman at his bench or by the other methods in vogue. While it has but a 6" head, it has the other features found on our heavy hand planers, performs every function, and can be relied upon for perfect planing. It is capable of doing a large percentage of the planing done by cabinet workers and others who ordinarily use the hand plane, and doing it better.
- Frame** This is in compact and rigid form, made of metal and may be bolted to a bench or mounted on a column (see special view).
- Tables** These are mounted on inclines and raised or lowered by means of hand wheel and screw. Both are dovetailed into the frame and may be locked firmly in any position.
- Cylinder** This is the celebrated "Oliver" Circular Safety type made of forged steel, carries two high speed air hardening knives and adjustable steel chip breakers. Insures safety to the operator and produces a higher grade of work. The pulley is the pneumatic type for increasing belt power.
- Cylinder Bearings** These are correct length, babbitted and scraped to proper fit. Wear can be taken up. They are self-oiling by wicks from oil reservoirs underneath.
- Fence** This is good length, very rigid and moves anywhere across the tables. It is easily held at any angle to 45 degrees.
- Countershaft** This is fitted with a steel ground shaft, two self-oiling hangers and the necessary pulleys. The loose pulley is bushed with bronze and is self-oiling.

No. 144
"Oliver" Hand Planer and Jointer

Continued



No. 144-B "OLIVER" BENCH HAND JOINTER ON CAST IRON COLUMN
With Rabbeting Arm Attachment

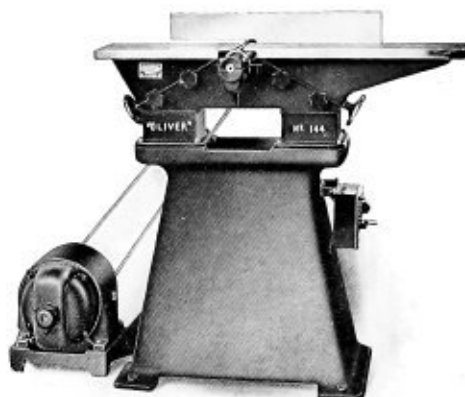
No. 144 "Oliver" Hand Planer and Jointer

Continued

Motor Drive When desired the countershaft may be omitted and a motor used for driving electrically. We furnish the motor or not as may be preferred.

Special Column Sometimes it is desirable to use the machine away from a bench. To meet this need we supply a metal column on which to bolt it. If to be electrically driven we mount the motor on a bracket bolted to the column.

Equipment We furnish one pair of knives on the cylinder, and the requisite wrenches.



No. 144 "OLIVER" HAND PLANER AND JOINTER
On column and arranged with Electric Motor Drive

GENERAL DIMENSIONS

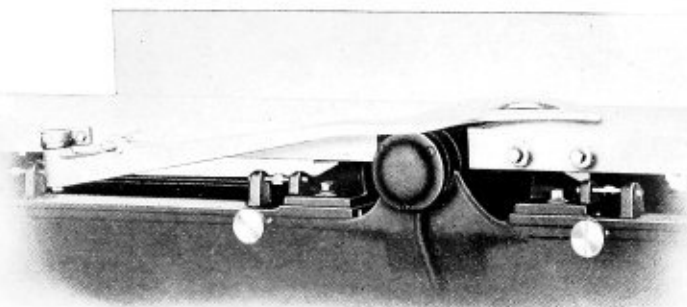
Tables	Front table is 24" long. Rear table is 15½" long, width 6½". Height for bench 10¼". Tables lower for maximum cut of ½". Throat 1" wide when cutting ⅛" deep.
Cylinder	Length 6", cutting diameter 3⅞". Journals 1" diameter. Bearings 4" long. Pulley 2¼" x 2¾" face. Speed 5000 revolutions per minute.
Fence	Length 24", width 3½", tilts to 45 degrees.
Countershaft	Bearings 5" long, 1⅞" diameter. Driving Pulleys 10" diameter, 3" face. T & L Pulleys, 8" diameter, 3" face. Speed 1125 revolutions per minute.
Floor Space	Without countershaft 18" x 41".
Horse Power	½ to 1.

CODE, WEIGHT, ETC.

Code	Type	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dodder	No. 144-A For Bench	425	465	11
Dodge	No. 144-B On Column, belt drive.....	590	760	26
Dodo	No. 144-C On Column with Bracket, no countershaft.....	595	720	22

No. 101 "Oliver" Full Automatic Jointer Guards

Made of Aluminum, for use on any Jointer



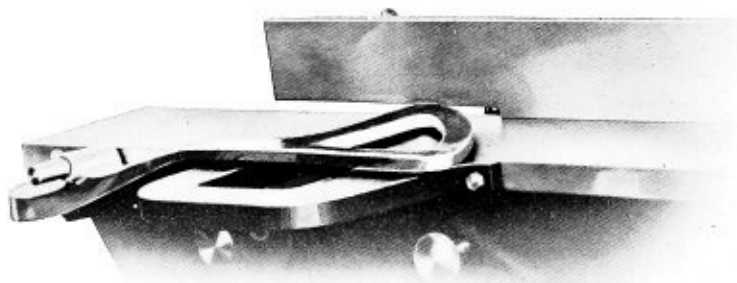
"OLIVER" FULL AUTOMATIC JOINTER GUARD
View of Guard mounted on a 16-inch Jointer

Adaptation

This guard meets all of the requirements of a "Safety First" Jointer Guard. It can be attached to any jointer now in use; but once attached, it can not be easily thrown out of use by operator. It is full automatic—always covers all that part of knives not actually cutting. It is never in the way—does not curtail output. It is made of aluminum—light, yet durable.

Construction

The guard is very simple. The main aluminum part swings on a large trunion which is held securely in the bracket bolted to the jointer table. A helical spring automatically keeps it against the fence or the work. An adjustable rubber tipped bumper prevents the guard from striking the fence too harshly on its return stroke.



View of Guard mounted on a 6-inch Jointer

Code
Dofg
Dofk
Dofm
Dofu

No. 101-A Guard suitable for 6" Jointers, similar to No. 144.
No. 101-B Guard suitable for 8" or 9" Jointers.
No. 101-C Guard suitable for 12" or 16" Jointers.
No. 101-D Guard suitable for 20" or 24" Jointers.

"Oliver" Circular Safety Cylinder

For Hand Planers and Jointers

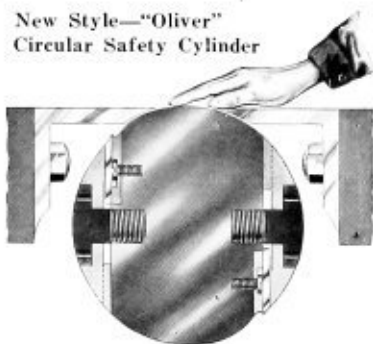
Patented

- Introduction** While this cylinder was invented primarily to prevent accidents that are serious, it has splendid qualifications other than the safety feature that will be interesting to the prospective buyer. It makes less noise, causes less vibration, takes less power, and it does very smooth planing.
- Material** It is made of high grade crucible steel, forged to shape. The knives are made of special steel and of superior temper. The bolts that hold the knives are special steel, heat treated.
- Construction** The Cylinder block is flat on two faces, on which the knives are secured with the bearing right at the cutting edges by means of plate caps and several bolts as shown.
- Safety Features** The Circular Safety Cylinder presents a regular surface, fits the gap caused by the separation of the tables and prevents the fingers getting below the table top between the cutters and the table edges. Thus they cannot be cut off nor very severely damaged. The illustrations clearly show the difference between the terribly dangerous and the safety cylinder.
- Chip Breakers** These are underneath the knives and are adjustable tool steel back plates, which are easily kept sharp and which secure very superior results on the lumber.
- Planing Knives** They are made thin and narrow from a special air hardening high speed steel and a radical saving in the cost of knives is effected. They being much lighter, are cheaper, more easily sharpened, and being firmly held close to the cutting edge, they cut more smoothly and with less vibration than the old unsupported knives.
- Capabilities** In the use of this Cylinder the following are possible: Planing exceedingly short pieces, plane against the end of stock—take very heavy cuts, corner, chamfer and any irregular work desired. Molding knives may be used and when running the "Oliver" Jointers, knives with long projections can be attached and elaborate mouldings cut. This Cylinder will do any cutting that can be done with other cylinders, and a great deal in addition. We also make Circular Cylinders for Surface Planers not of our manufacture.

**Old Style—Dangerous
Should be Replaced**



**New Style—"Oliver"
Circular Safety Cylinder**



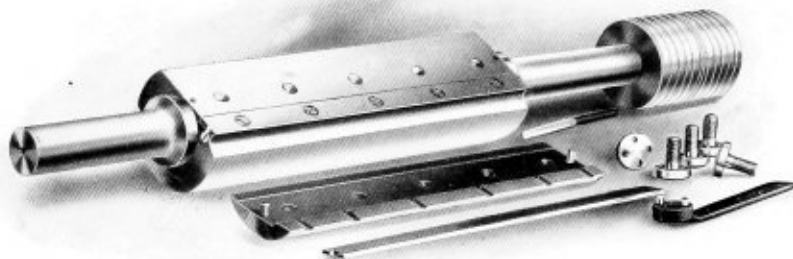
Accident with Square Cutterhead

Don't
Forget
"Oliver"
First
Introduced
Safety
Cylinders
in
U. S. A.



Accident with "Oliver" Cylinder

More Economical than Employer's Liability Insurance



Half-tone showing the Cylinder dismantled.
Can be furnished with divided caps for using moulding knives.
The "Oliver" is the Original Safety Cylinder. Don't Select Substitutes!
Complete description on request.

"Oliver" Circular Safety Cylinder

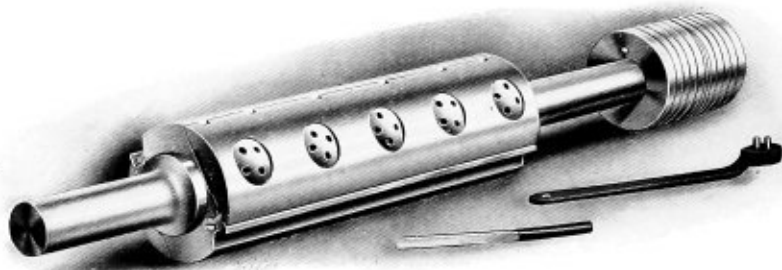
Continued



FOUR SIDED CUTTER HEADS

How to Order Cylinders

When desirous of installing one of these cylinders for a hand planer in use, it is necessary for us to have a drawing showing the actual dimensions of the old style cylinder, and give us the name of the maker of the machine.



(Patented January 21, 1908)
Half-tone showing a complete Cylinder with Wrench and Knife Setting Tool
May be supplied with two or four knives

Cylinders for Wood Workers

We make these cylinders to 20" in length to use on wood worker mandrels, with a true hole bored to suit its diameter. They are just as safe and effective on these machines as they are on Hand Jointers.

Extra Knives

As the knives are very inexpensive, compared with the old heavy knives, we suggest it as good policy to always have an extra set of knives on hand. One set may be made sharp while the other is in use.

Our Guarantee

Every Cylinder is guaranteed to be free from flaws, made correctly and perfectly satisfactory when properly operated. We have 6500 of these cylinders in daily use. We also make Circular Cylinders for Surface Planers that are not of our manufacture.

Employers' Liability

is now so serious you cannot afford to work longer without this new Patent Safety Cylinder. Apart from being "safe" it does very superior work and saves money!

HIGH SPEED SELF HARDENING STEEL KNIVES FOR SAFETY CYLINDERS

How long do the knives on your present jointer cylinder wear without being ground? Knives used on "Oliver" Safety Cylinders are made of special steel and of superior temper; they may be removed, ground and honed, and replaced in fifteen minutes; then they may be used continuously for two days without sharpening again. They are firmly held close to the cutting edge, thus cutting more smoothly and with less vibration. Being thin and narrow, there is a radical saving in the cost of additional knives—as compared with the regular Jointer Cutters.

WOOD WORKER AND JOINTER CUTTER HEADS

This shows a short head for use on the side spindles of Matchers, Molders, etc., on Wood Workers and Variety Molders. Its value is in the saving of expense making knives and keeping them in order. Also in the superior work



SHAPER AND WOODWORKER CUTTER HEADS

Set these knives as you would a Jack or Butt Plane
We make Four-Sided Heads, too

they will do because they are gripped firmly just back of the cut. We furnish these heads all diameters and all lengths; give them a trial; they use the same type knife as above.

We make "Oliver" Cylinders to fit any ordinary make of Hand Jointer, we needing only the length of knife, cutting diameter (distance from point to point of knives) and size of pulley to furnish prices.

CYLINDERS FOR CARRYING MOLDING CUTTERS

When it is desired to do molding on the Jointer where the Circular head is used, remove the caps and use the ordinary molding cutters in the usual manner.

Cylinders for Universal Wood Workers and Surface Planers of OTHER MAKES a specialty. It will pay you to get more detailed information.

"Oliver" No. 48 Knife Balance



Note: We can furnish any kind of Knife Balance desired—for thin high speed knives, thick planer knives, shaper knives, etc. State your requirements.

CONSTRUCTION

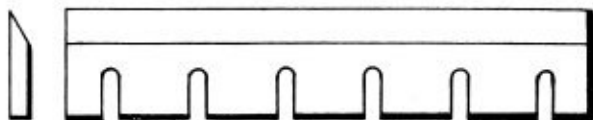
These machines are as sensitive as a druggist's scales, are simple, all parts are accurately balanced, all the bearings are hardened steel, and the other parts are made of steel, malleable or cast iron, as the case demands.

Code	Description	Weight
Dotam	No. 48 Knife Balance for Thin Knives.....	50

CYLINDER BOLTS

These are carried in stock in $\frac{1}{2}$ ", $\frac{3}{8}$ ", $\frac{1}{4}$ " and $\frac{3}{16}$ " sizes and suited for either Circular or Square Cylinders, and may be had with or without nuts and washers. In ordering, send a drawing with all dimensions, or an old bolt as a sample.

"OLIVER" PLANER KNIVES FOR SURFACE PLANERS



We supply these for either Circular or Square Cylinders as required. For the Circular Cylinders we furnish the special air hardening steel knives referred to above. For the Square Cylinders we carry a large variety of laid knives of excellent quality. All knives are guaranteed.

We should have a paper pattern of such knives as are wanted—giving length, thickness, shape of bevel and positions, number and dimensions of slots if there are any at all.

High Speed Thin Planer Knives



Thin high speed steel machine knives range in thickness from $\frac{1}{8}$ to $\frac{1}{4}$ inch and in width from $1\frac{1}{4}$ to 2 inches as commonly employed

We invite orders for thin knives on the basis of **quality**.

The "Oliver" Knives are ground and highly finished all over, absolutely balanced and not "Black, Raw Stock."

HOW "OLIVER" KNIVES GET THEIR QUALITY

Knives, like razors, owe their reputation to the steel they are made from, and much good knife steel is spoiled in making knives. Nothing new about that, but the idea we want to convey to you is this: That the steel mill that makes "Oliver" Knife Steel does not leave it to the knife manufacturer to spoil. They make the temper that you or we cannot alter, and under the watchful eye of an expert a grade of self hardening high speed steel has been developed that is absolutely uniform in temper and of such durability of edge as to be surprising.

SUBSTITUTES FOR "OLIVER" QUALITY

Don't think that substitutes for the Knife Steel or "Oliver" Cylinders that are just as good work as well as ours.

COME TO STAY

"Oliver" Thin, High Speed, Self Hardening Knives have been in use for about five years and have "Come to Stay."

No. 22

"Oliver" Extra Heavy Universal Lathe

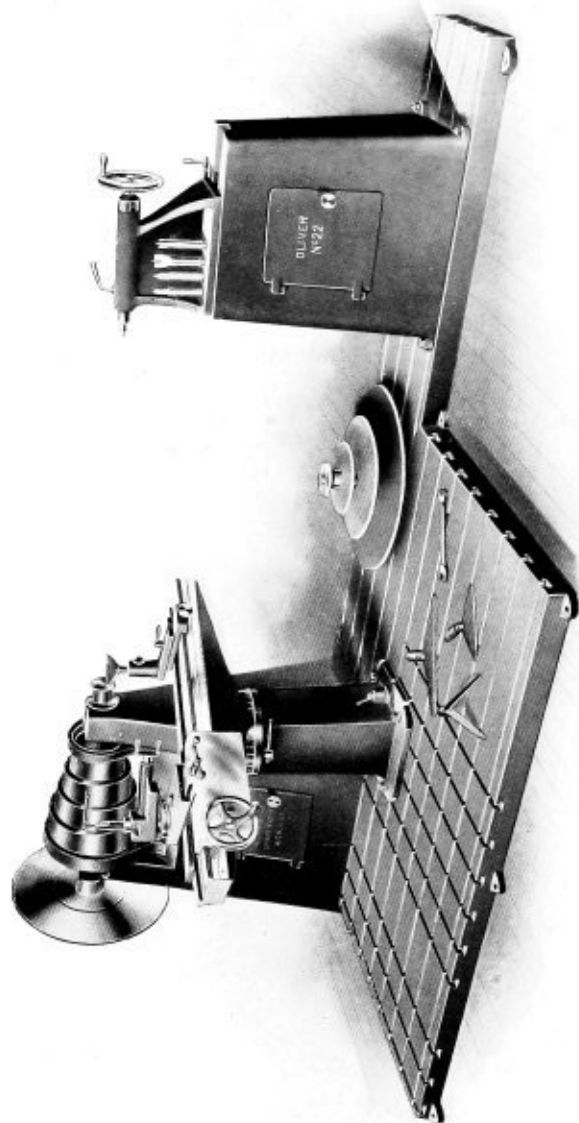
96 inch Swing over Bed Plate
104 inch Swing over Floor
Larger Swings at Rear End in a Pit

Introduction The demand for a heavy universal pattern turning lathe has been responsible for the introduction of this lathe. Its great range, correct construction, strength and unqualified utility makes it of particular value to those whose patterns are of a widely diversified character or are unusually large and heavy. The makers of wheel patterns for generators, engine wheels, large pulleys, etc., have in this lathe a tool that has heretofore been represented only by the "home-made" lathe that is generally too light and always restricted.

Advantages The machine has all the advantages of the face lathe, with added facilities through the Back Gear Drive, and the enlarged scope of the tool column and carriage. It has a wide range on heavy turning, and effects a great saving in time on turning in general. In the general construction of the machine we are careful to observe our policy of following the methods of the builders of high class metal working tools, and incorporating in it such material and workmanship and such devices that stand for maximum economy and minimum cost of maintenance.

Sole Plate This is made from heavy castings and supports the various columns. In its surface "T" slots are planed lengthwise and crosswise for the proper alignment of the tail stock and movable carriage column. The section that receives the carriage column is extended across the front of the head column to permit the use of the tool carriage on face work that overhangs the column. With this sole plate embedded in the floor, the space occupied by the lathe columns is no greater, and most of the time not so great as it is with the larger types of ordinary lathes. When turning short work, the amount of space is limited to that necessary for the actual work to be performed.

Head Stock It is mounted on a heavy column bolted to the sole plate. A crucible steel hollow spindle, machine ground, is supported in large self-oiling bearings lined with genuine babbitt and adjustable to wear. The cone is machined all over. End thrust in spindle adjusted by means of thrust collars threaded to the spindle. A loose bronze thrust collar bears against each end of the rear journal boxes and plays between the solid collar and spindle on one end and the thrust collars upon the other.



No. 22 "OLIVER" EXTRA HEAVY UNIVERSAL LATHE
View from operating side

No. 22

"Oliver" Extra Heavy Universal Lathe

Continued

Back Gear Drive This augments the driving power and reduces the speed of the head stock spindle to a minimum, facilitating the turning of patterns of very large diameter, using a pit at the left hand of the head stock. It is constructed similar to back gearing on the regular Engine Lathe for turning iron, the ratio being four to one.

Head Stock Cone This cone has four steps, mounted on bronze sleeves, that are self-oiling and revolve on the spindle. At each end of the cone are located the driving gears, the one at the rear end keyed to the spindle. When the lathe is driven at the high speeds, this gear is connected to the cone by means of a substantial spring plunger, and the back or connecting gears are displaced. The gear at the opposite end is keyed permanently to the cone and through it the power is applied to the back gear driving mechanism.

Gear Support The back gears are supported on a large hollow shaft, through which the eccentric shaft extends, and to which is attached the lever device for throwing the mechanism in or out of gear.

Movable Carriage and Tool Post This is a device that is a very important factor in the performance of an infinite variety of work. It may be located quickly and correctly in any desired position on the sole plate. The alignment of the pillar is accomplished by loose keys which fit the various slots in the sole plate, and may be adjusted to operate upon the largest diameters; or set directly underneath the center of the spindles to act as a bed for hand turning on small work; or set close to both head and tail stock, parallel with them, in such a position as to admit of the centers coming together and still have a bed for convenient use upon extremely short work that requires two centers.

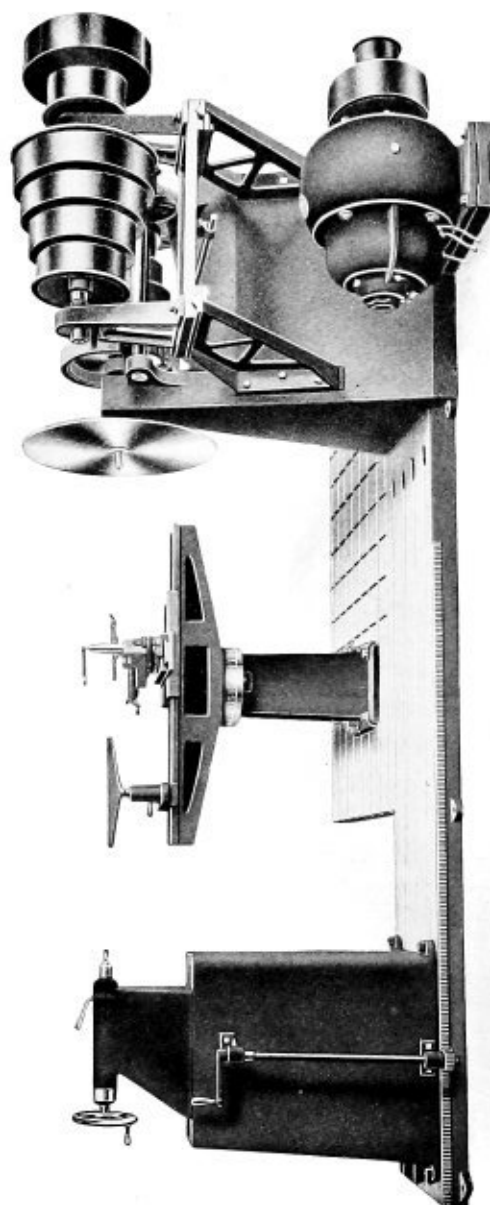
Hand Feeding Carriage This is actuated by means of cut gear and rack. Cross slide has an exceptionally long traverse, as also has the compound rest which is mounted upon it. This rest is accurately graduated and swivels to any angle. This swivel, in connection with the one shown between the carriage slide and the top of column, makes it possible to secure all of the angles necessary in various bevel work. In the turning of large drums the end of the carriage slide may be inserted within the work being turned.

SOLE PLATE

Length, 12½'. Height, 4". Width, 30" at head stock, 23" at opposite end. T slots, 6½" between centers. Extension for carrying carriage and tool post, 7' 11".

INCREASED CAPACITY

Extra length of sole plate and additional capacity to swing larger diameters at additional cost.



No. 22 "OLIVER" EXTRA HEAVY UNIVERSAL LATHE
Rear view showing motor drive and back gear

No. 22

"Oliver" Extra Heavy Universal Lathe

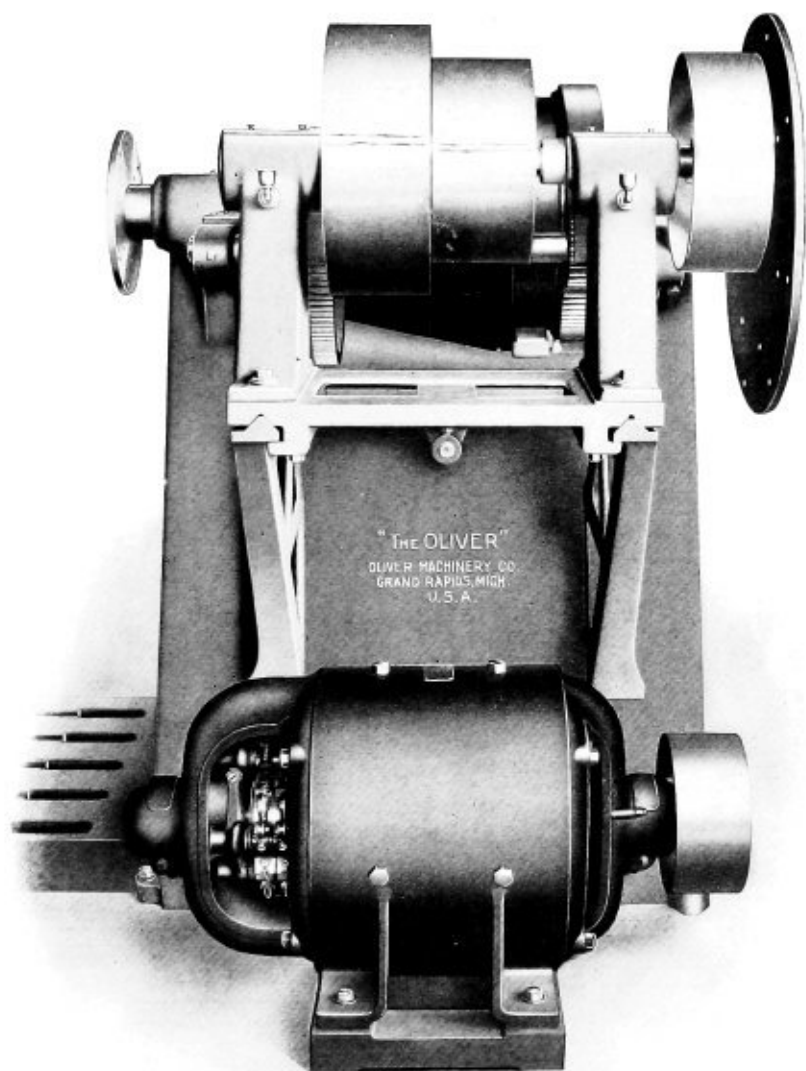
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Tail Stock This is mounted on a heavy column which may be adjusted to and from the head stock by means of a rack and pinion at its base. The top of this column, however, admits of a certain lateral motion of the tail stock. Sometimes it is necessary, in centering work, to move the tail stock instead of the center, and this adjustment is equal to a longer traverse of the tail spindle. Tail stock is of open side design with the usual set-over device.

Countershaft This consists of a heavy steel shaft of suitable length, supported in ceiling hangers having self-oiling and babbitted bearings. We supply two pairs of tight and loose pulleys to give eight speeds to the head stock cone. The loose pulleys are bushed with bronze and self-oiling. The cone pulley has four steps, is machined inside and outside, and adjusted to a running balance.

Motor Drives Motor drives are furnished when called for and to suit the requirements of the purchaser. The most popular method of driving by motor we have endeavored to properly indicate by a half-tone on pages 105 and 107. This method has the effect of having the lathe self-contained and dispenses with the overhead belts that sometimes prove obnoxious.

Equipment As regularly sold is as per the list given below. Modifications of the equipment are supplied when desired:
One driving center, each 1 1/4" and 2" diameter, one cup center, 3/4".
Two conical centers 3/4" diameter.
Four face plates for spindle 12", 24", 30" and 38" diameter.
One rest holder, made to fit the tool carriage.
Three rests, 6", 12" and 18" long.
One right angle rest, 6" long.
One floor stand with off-set rest.
One countershaft, hangers and pulleys.



"OLIVER" No. 22 EXTRA HEAVY 104-INCH UNIVERSAL WOOD TURNING LATHE
Rear view of Head Stock with special Back Gear and Variable Speed Motor Drive

A Few Concerns that Use This Lathe

Marion Steam Shovel Co.
Otis Elevator Co.
American Locomotive Co.

Penna. Steel Casting Co.
American Brake Shoe Co.
Canadian Locomotive Co.

American Steel & Wire Co.
Emerson Steam Pump Co.
Morgan & Wright Rubber Co.

No. 22

“Oliver” Extra Heavy Universal Wood Lathe

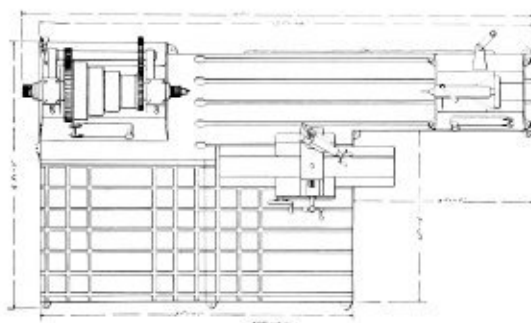
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GENERAL DIMENSIONS

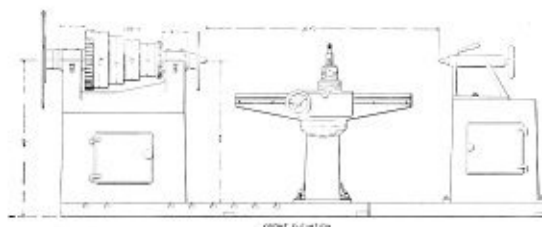
Head Stock	Length, $38\frac{1}{2}$ "; width, $15\frac{1}{2}$ ". Height to spindle center, 48". Spindle bearings, 8" long, front, $3\frac{3}{8}$ " diameter; rear, $3\frac{1}{2}$ " diam. Spindle $47\frac{1}{2}$ " long; $3\frac{1}{2}$ " diameter; 1" hole through it. Spindle bored to receive No. 4 Morse Taper. Cone on spindle—four steps—10", $12\frac{1}{2}$ ", 15" and $17\frac{1}{2}$ " diameter, $4\frac{3}{4}$ " face. Width of belt, $4\frac{1}{2}$ ".
Tail Stock	Length, $17\frac{1}{2}$ "; width, $12\frac{1}{2}$ ". Spindle 16" long, 3" diameter. Traverse of spindle, 8".
Carriage	Length of bed, 54"; height from base, $33\frac{1}{4}$ ". Traverse of cross feed, 12". Traverse of cross feed on compound rest, 7". Travel of carriage on bed, 44".
Sole Plate	Length, $12\frac{1}{2}$ ". Height, 4". Width, 30" at head stock, 23" at opposite end. T slots, $6\frac{1}{2}$ " between centers. Extension for carrying carriage and tool post, 7' 11".
Countershaft	Length, $63\frac{1}{2}$ "; diameter, $1\frac{3}{4}$ ". Speeds, 185 and 750 revolutions per minute. Bearing, 6" long; $1\frac{1}{2}$ " diameter; hangers 14" drop. Tight and loose pulleys, 10" x 6" and 18" x 5". Cone pulley, four steps, $12\frac{1}{2}$ ", 15", $17\frac{1}{2}$ " and 20" diameter, $4\frac{3}{4}$ " face. Small T & L pulleys give 560 to 1480 R. P. M. Large T & L pulleys give spindle 130 to 365 revolutions per minute. Back gearing gives spindle 30 to 90 revolutions per minute.
Horse Power	Maximum 5.
Capacity	Will swing 96" over the base and 104" at the rear of the head stock. Will turn 6' 6" between centers on a standard length of machine. Can furnish it any desired length.

No. 22 "Oliver" Extra Heavy Universal Lathe

Continued



No. 22 "OLIVER" EXTRA HEAVY UNIVERSAL LATHE
Etching showing Sole Plate, Back Gearing, Tool Carriage, etc.



CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dough	No. 22-A Machine with extension sole plate and tail stock.....	9800	10600	210
Douma	No. 22-B Machine without extension sole plate and tail stock.....	8000	8800	160

EXTRAS

Douse	Special motor drive mechanism consisting of a special counter-shaft mounted on a bracket attached to the head stock column, and a motor bracket at the base of the column.
Dove	Extra lengths of sole plates in two feet sections.

No. 21
"Oliver" Combination Pattern Lathe
90" Swing. Any length of bed

Introduction This lathe is one that is unique, not only in design, but in construction, since in its manufacture we have adopted the lines pursued by the makers of modern metal working tools, thus insuring a greater degree of satisfaction to the operators in its manipulation and a higher quality of product. Heretofore patternmakers have been at a loss to find a machine that combined the functions of ordinary turning with those of turning large diameter, long cylindrical patterns, gearing, etc. Realizing these necessities we have developed and perfected a machine, subject to various modifications, which has proven to be admirably adapted to meet these exacting demands.

Sole Plate We build this any length. Upon it are mounted the various columns supporting the head and tail stock and the movable carriage. The casting is very heavy and in its surface "T" slots are planed, both lengthwise and crosswise, for the proper alignment of the tail stock and movable carriage column.

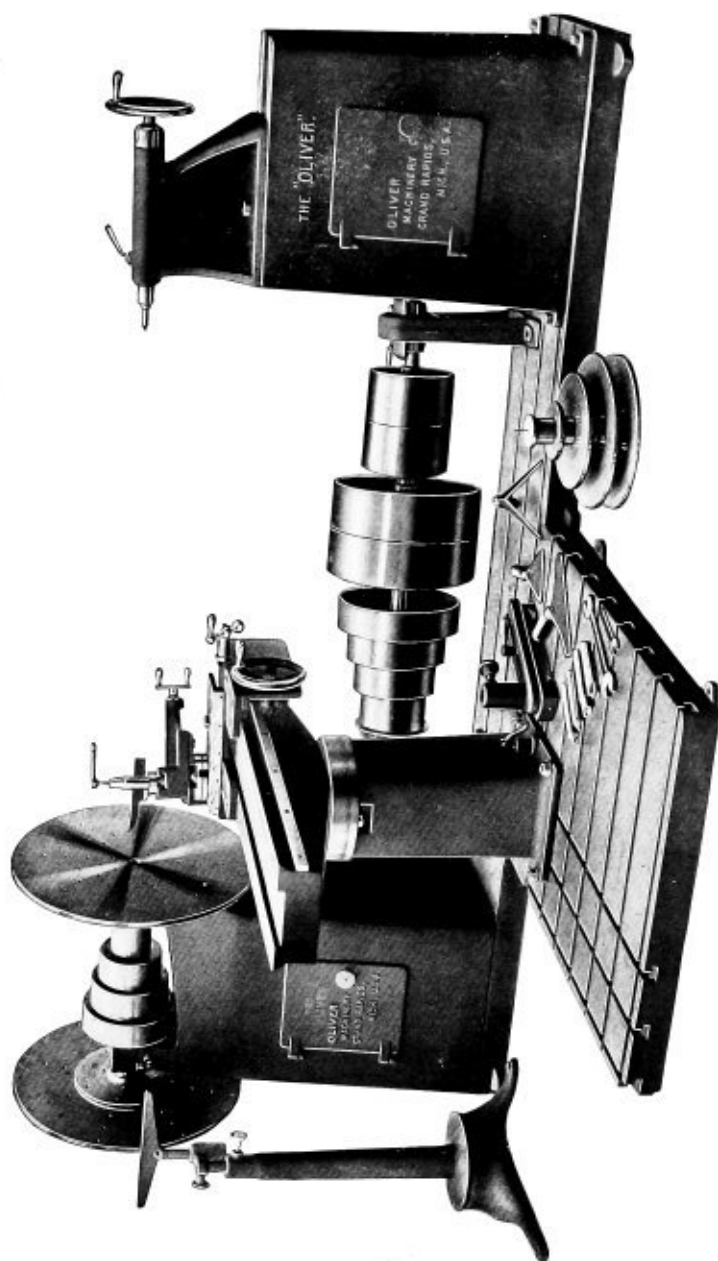
Floor Space The objection to most large Lathes, particularly in the ordinary pattern shop, is that they take up a great deal of valuable space. The "OLIVER," with its movable parts bunched close to the head stock, and its sole plate embedded in the floor, is a point well worth considering.

Head Stock This is mounted upon a very heavy column. Carries a stiff, strong, hollow spindle, machine ground and supported in self-oiling bearings.

Bearings are of genuine babbitt metal and are adjustable to wear.

Cast iron cone is machined both inside and out and adjusted to a running balance.

End Thrust This is adjusted at the rear by means of thrust collars threaded to the spindle. A loose bronze thrust collar bears against each end of the rear journal boxes and plays between the solid collar and the spindle on one end, and thrust collars upon the other.



No. 21 "OLIVER" COMBINATION PATTERN LATHE. View showing Tail Stock and Extension Sole Plate. Extended Sole Plate for increased capacity either for lengths or to facilitate the use of tool post around pit on outside face plate at additional cost.

No. 21 "Oliver" Combination Pattern Lathe

Continued

Movable Carriage and Tool Post

This idea is certainly new and admits performing an infinite variety of work. The alignment of the pillar is accomplished by loose keys which fit the various slots in the plate, and it may be adjusted to operate upon the largest diameters; or set directly underneath the center of the spindles to act as a bed for hand turning on small work; or set close to head and tail stock, parallel with them, in such a position as to admit of the centers coming together and still have a bed for convenient use upon extremely short work that requires two centers.

Carriage

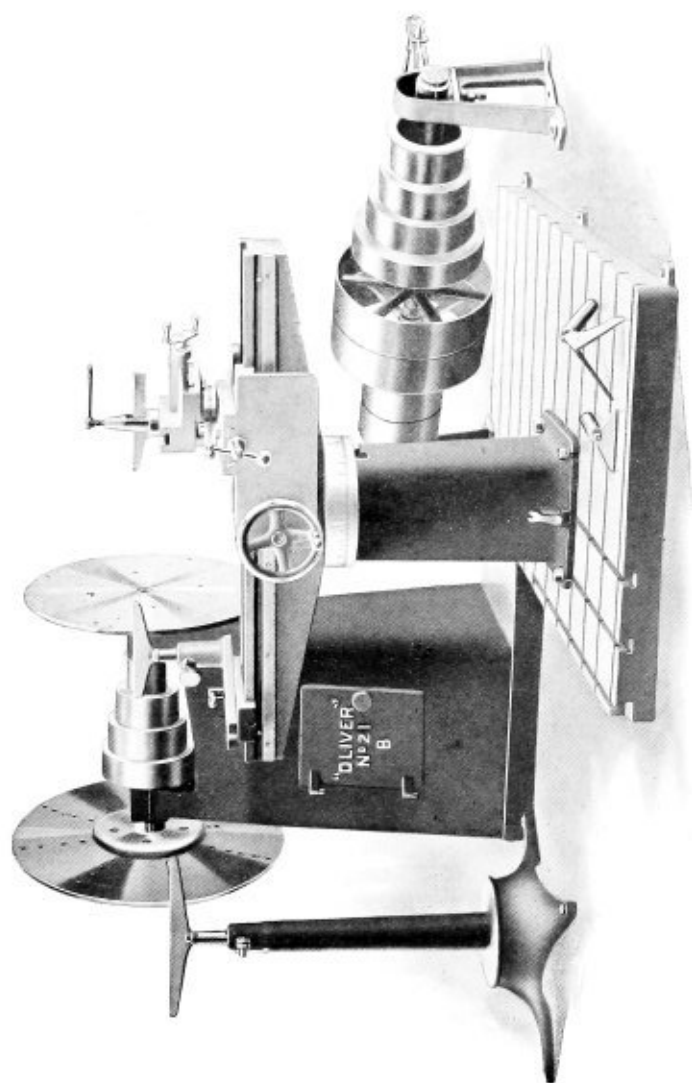
This has hand feed by means of steel cut gear and rack. Cross slide has an exceptionally long traverse, as also has the swivel rest. Compound rest is accurately graduated and swivels to any angle. This swivel, in connection with the one shown between the carriage slide and the top of column, makes it possible to secure all of the angles necessary in various bevel work. In the turning of large drums the end of the carriage slide may be inserted within the work being turned.

Tail Stock

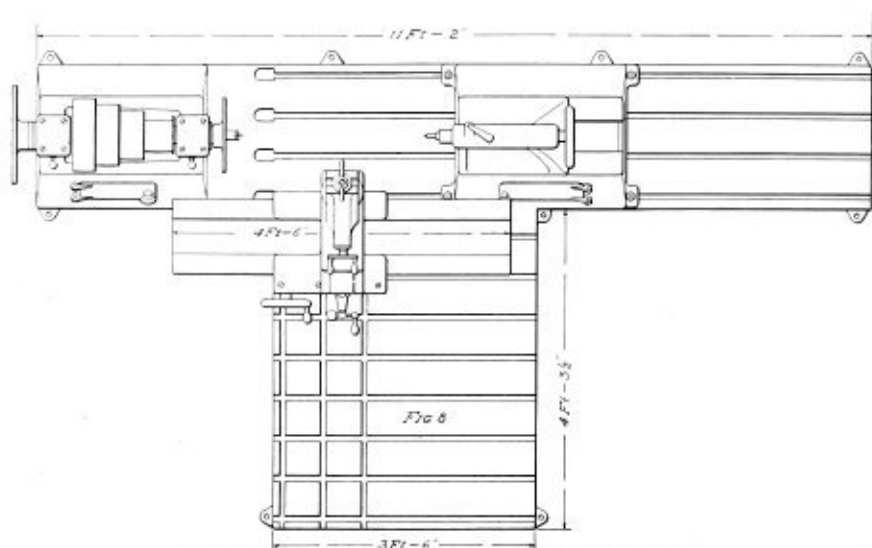
This is mounted on a column which may be adjusted to and from the head stock by means of a rack and pinion at its base, controlled by hand wheel. The top of this column, however, admits of a certain lateral motion of the tail stock. Sometimes it is necessary, in centering work, to move the tail stock instead of the center, and this adjustment is equal to a longer traverse of the tail spindle. Usual set over device is supplied.

Equipment

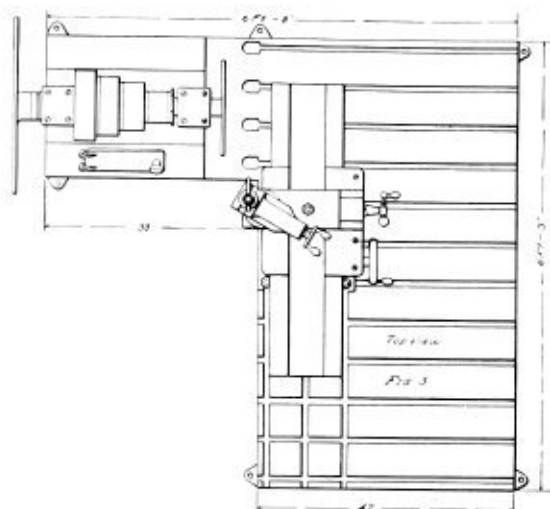
One spur center each $1\frac{1}{4}$ " and 2" diameter, one cup center $1\frac{1}{8}$ ".
Two conical centers $1\frac{1}{4}$ " diameter.
Four face plates for spindle, 12", 24", 30" and 38" diameter.
One rest holder arranged to attach to tool carriage.
Three rests 6", 12" and 18" long.
One right angle rest, 6" long.
One floor stand with off-set rest.
One 2 speed countershaft, hangers and pulleys.



No. 21 "OLIVER" COMBINATION PATTERN LATHE. View eliminating Tail Stock and Extension Sole Plate.



No. 21-A "OLIVER" COMBINATION PATTERN LATHE
90 inch. Floor Plan



No. 21-B "OLIVER" COMBINATION PATTERN LATHE
Etching showing floor plan of machine when tail stock and extension sole plate is omitted

No. 21

"Oliver" Combination Pattern Lathe

Continued

GENERAL DIMENSIONS

Head Stock	Length, 28½"; width, 12½". Height to spindle center, 46". Spindle bearings—Front, 6" x 2¾"; rear, 6" x 2⅞". Spindle, 34" long; 2¾" diameter. Hole through spindle, ⅞". Receives No. 4 Morse Taper. Cone on spindle—four steps—7", 9½", 12" and 14½" and 3½" face. Width of belt, 3¼".
Tail Stock Carriage	Length, 17½"; width, 12½". Spindle, 16" long, 2" diameter. Traverse of spindle, 8". Length of bed, 54"; height from base, 33¼". Traverse of cross feed, 12". Traverse of cross feed on compound rest, 7". Travel of carriage bed, 44".
Sole Plate	Length, 75". Height, 4". Width, 75" at head stock, 42" at opposite end. T slots 6½" between centers.
Extension Plate for Tail Stock Countershaft	Length, 54"; width, 23". Height, 4". T slots 6½" between centers. Length, 5'. Diameter, 1¾". Speeds, 100 and 500 revolutions per minute. Bearings, 6" long, 1½" diameter. Hangers, 14" drop. Tight and Loose Pulleys, 10" x 6" and 18" x 5". Cone pulley—four steps—12½", 15", 17½" and 20" and 3½" face. Small T & L pulleys give spindle 430, 625, 925 and 1440 revolutions per minute. Large T & L pulleys give spindle 100, 125, 185 and 288 revolutions per minute.
Horse Power Capacity	Maximum, 5. Will swing 90" over the base and 94" at the rear of the head stock. It will turn in length on a standard machine 6' 6". It is made to order any length advancing by sections of two feet.

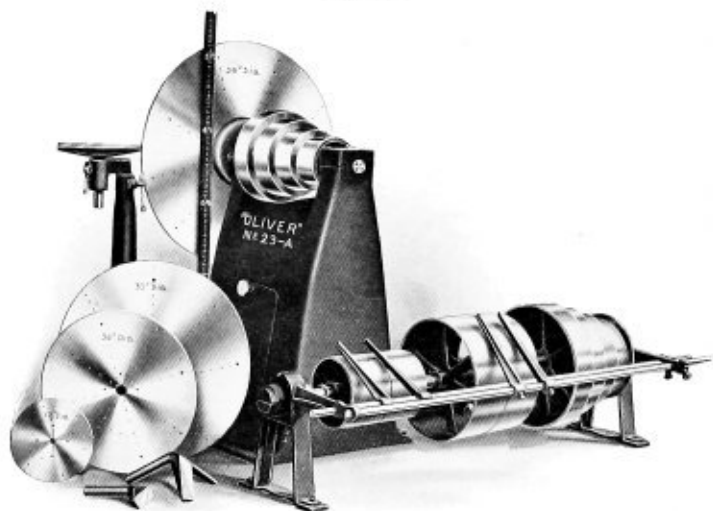
CODE, WEIGHT, ETC.

Code	Machine	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dowdy	No. 21-A 90" Machine with tail stock and extension sole plate.....	6000	6600	175
Dower	No. 21-B 90" Machine without tail stock and extension sole plate.....	4400	4850	125

MOTOR DRIVE

We furnish special motor drive mechanism, consisting of a countershaft mounted on a bracket attached to the head stock column, and a bracket at the base of the column to receive motor. See pages 105, 107, 117 and 118.

No. 23
"Oliver" Pattern Maker's Face Lathe
88-inch



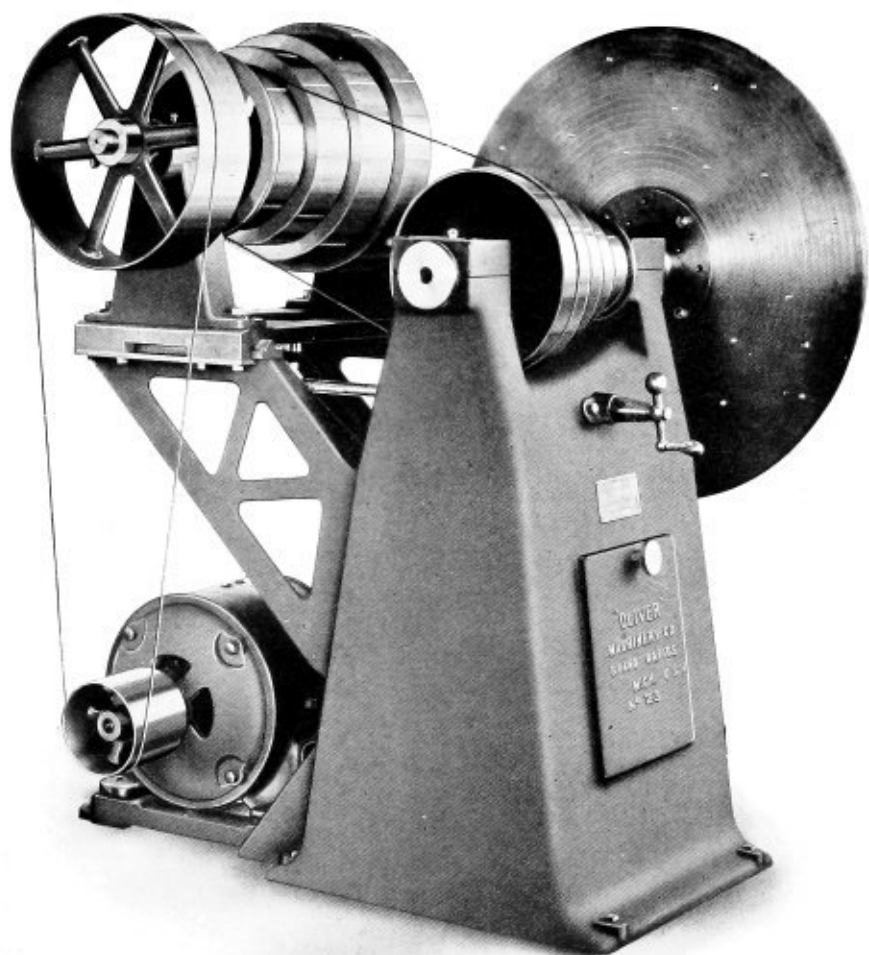
Capacity may be increased by placing machine on edge of pit in floor

Introduction In some pattern shops the need for a plain yet substantial Face Lathe is apparent to the pattern maker, and a machine constructed for that work only is preferred to one having a sole plate, movable carriage and tool post. The machine shown fills the need satisfactorily.

Head Stock This is supported on a column having a broad base and it will swing material up to 88" in diameter. The spindle is large in diameter, machine ground and is hollow. Bearings are long and self-oiling. They are adjustable to wear.

Cone Pulley This has four steps, and the range of speeds to the spindle covers from 86 to 1440 revolutions per minute. It is carefully machined all over and adjusted to a running balance. The end thrust in the spindle is adjusted at the rear by thrust collars threaded to spindle and bearing against each end of the journal boxes.

Countershaft This consists of a steel ground shaft, a pair of strong ceiling hangers carrying babbitted self-oiling bearings. It carries two pairs of tight and loose pulleys to give eight speeds to the head stock cone. The loose pulleys are bushed with bronze and self-oiling. The cone pulley is of metal, machined all over, and adjusted to a running balance.

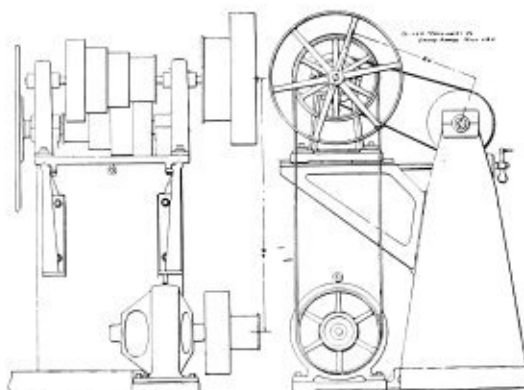


No. 23 "OLIVER" PATTERN MAKER'S FACE LATHE
Motor Driven

Motor Drive for Combination Lathes

Nos. 21, 22 and 23

Self Contained in Machine



The above etching displays the method of driving Lathes by means of motor attached to the machine. The location of the motor and of the countershaft is such that all overhead belts are dispensed with, and the machine with all its driving mechanism is one unit.

The countershaft is made in suitable proportions, operates in heavy hanger bearings that are self-oiling; a metal cone of four steps, machined all over, and properly balanced, carries the head stock belt. This countershaft is mounted on a slide in the bracket attached to the head stock column, and is moved to and from the head stock by means of a hand screw at the operator's position. This is for the dual purpose of loosening the belt for shifting to different speeds on the cone, and for giving proper tensions on the belt to transmit its maximum power. A two-step cone pulley receives the motor belt.

The Bracket and slide are heavy and rigidly secured to the head stock column in such position as to enable the operator to get the full swing of the head spindle over the sole plate. At the outside or overhang end of the head spindle, one may turn to 30" in diameter when using this particular drive.

The Motor Bracket is made of the correct proportions to suit such motor as may be selected. It is securely bolted to the sole plate. Motors for use with this device must be provided with a two-step cone pulley to carry the belt to the countershaft and give eight speeds to the head spindle.

No. 23

"Oliver" Pattern Maker's Face Lathe

Continued

Motor Drives There are a variety of motor drives that are applicable to this machine and are shown on previous pages. We recommend the method on pages 117 and 118 as the most desirable.

Equipment We furnish one face plate each 12", 24", 30" and 38" diameter; one floor stand fitted with off-set rest holder, one right angle rest 6", one each straight rest 6" and 12" long and one countershaft with two sets of tight and loose pulleys and hangers.

GENERAL DIMENSIONS

Head Stock Length, 28½"; width, 12½".
Height to center of the spindle, 46".
Spindle Bearings—front, 6" x 2¾"—rear, 6" x 2¾".
Spindle, 34" long, 2¾" diameter.
Hole through spindle, ⅞" diameter and receives No. 4 Morse Taper.
Cone on Spindle has four steps, 7", 9½", 12" and 14½" diameter and 3½" face.
Spindle Speeds are 86, 125, 185, 288, 430, 625, 925 and 1440 revolutions per minute.
Width of belt used, 3¼".

Countershaft Length, 5'; diameter, 1¾".
Bearings, 6" long, 1½" diameter.
Hangers, 14" drop.
Cone Pulley—four steps—12½", 15", 17" and 19" diameters, 3½" face.
Two pairs T & L Pulleys, 10" x 6" and 18" x 5".
Speeds, 100 and 500 revolutions per minute.

Floor Space 28" x 33".

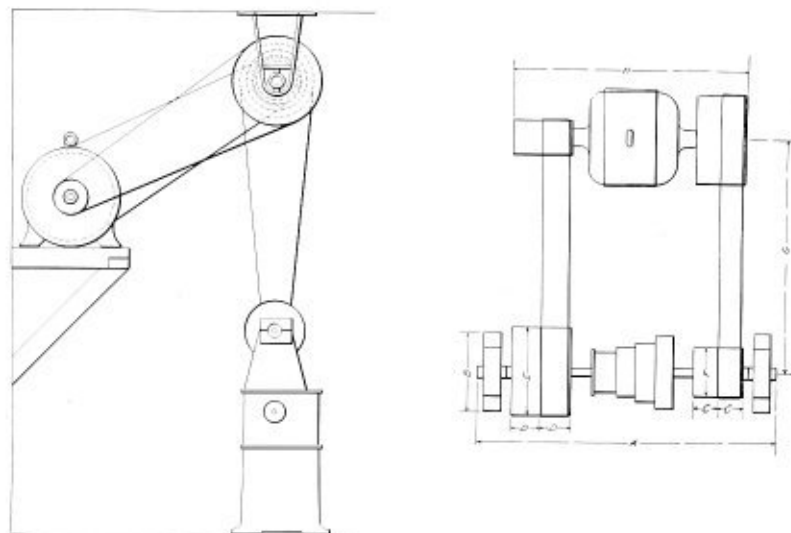
Horse Power 3 to 5.

CODE, WEIGHT, ETC.

Code		Drive	Swing	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dozy	No. 23-A	Belt	88"	3100	3800	70
Dulzy	No. 23-C	Motor	88"	3100	3800	70

Special Motor Drive for "Oliver" Lathes

One of the Methods Now in Use



This etching displays a Lathe driven by a motor attached to a wall-bracket, and belting direct to the countershaft of the Lathe. The motor in this instance is fitted with an armature shaft extended to receive a driving pulley on each end, thus enabling the head spindle to revolve at eight different speeds. There are other methods of electric driving to suit conditions, and etchings and full data can be furnished when desired.

TABLE OF DIMENSIONS

Lathe No.	Swing	A	B	C	D	E	F	G	H	R. P. M. of E	R. P. M. of F
18	32"	5'4"	16"	5"	5"	18"	10"	4'0"	4'1"	130	600
18	36"	5'4"	16"	6"	5"	18"	10"	4'0"	4'1"	130	600
18	42"	5'4"	16"	6"	5"	18"	10"	4'0"	4'1"	130	600
21	90"	5'4"	16"	6"	5"	18"	10"	4'0"	4'1"	100	500
22	96"	5'4"	16"	6"	5"	18"	10"	4'0"	4'1"	185	750
23	88"	5'4"	16"	6"	5"	18"	10"	4'0"	4'1"	100	500
24	16"	2'8"	16"	3"	3"	16"	8"	4'0"	4'1"	160	750
24	20"	3'0"	16"	3½"	3½"	16"	10"	4'0"	4'1"	135	750
24	24"	3'5"	16"	4½"	4½"	16"	10"	4'0"	4'1"	135	750
24	30"	5'0"	16"	6"	6"	16"	10"	4'0"	4'1"	130	750
26	30"	5'0"	16"	6"	6"	18"	10"	4'0"	4'1"	100	500

No. 52
"Oliver" Motor Head Face Lathe



No. 52-A FACE LATHE

For use on Alternating Current, any phase,
 60 Cycle, 110 or 220 Volt



No. 52-D FACE LATHE

For use on Direct Current 110 or 220 Volts

Introduction This machine is self-contained; the motor head, the controller or switch and the rests are mounted on the floor column, making the machine especially desirable as a portable face lathe. All electrical parts are totally enclosed—dust proof.

Motor Head Either motor head as illustrated will be furnished in accordance with the available electric current. The A. C. motor head will run at 800 to 3500 R. P. M.—speed controlled by the hand wheels which govern a self-contained controller. The D. C. motor head will operate at 600 to 3000 R. P. M.—speed controlled by the controller mounted on the floor column.

Capacity Lathe swings 24" over bracket, 20" over rest socket and will turn work up to 12" wide by 20" diameter or 6" wide by 24" diameter. Great care should be taken not to run these lathes at a higher speed than the work at hand will warrant.

Equipment One 16" tool rest with offset rest holder, one right angle rest, one 6" and one 12" face plate, one 2 1/4" screw chuck.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Drad	No. 52-A Face Lathe for any phase 60 cycle and 110 or 220 volt.....	675	725	27
Drada	No. 52-D Face Lathe for 110 or 220 volt D. C.....	675	725	27



"OLIVER" No. 26 LARGE PATTERN MAKER'S GAP LATHE

To turn 30-inch diameter over the bed and 60-inch in the gap, any length desired

Mr. J. W. Oliver, himself, taking pride in a final inspection

No. 26

"Oliver" Large Pattern Maker's Gap Lathe

Turns 60-inch in the Gap

Introduction The introduction of the Oliver Gap Lathe to the users in general of heavy lathes, is the result of a demand for a machine of great capacity, that will occupy a minimum amount of floor room when engaging it on work of medium dimensions.

Bed This is constructed in two sections: The upper section is fitted to the lower in a dovetailed slide and is moved, as ordered, either by hand wheel rack and pinion or by power to and from the head stock to close and open the gap by means of gearing that engages rack on its lower side. The gearing and rack have cut teeth and are made of steel. This upper section carries the tail stock the power-feeding carriage for use in long cylindrical work and a special hand-feeding carriage, located at the inside end of the bed, for use in facing patterns and other work, either outside or inside as desired. The base section of the bed supports the head stock and its column. The bed is wide and flat, the carriage ways being located on the side. This renders it easily cleaned, and tools may be laid on it without the danger of sliding off. The casting is heavy and properly ribbed for strength. The end of the movable bed is fitted with an adjustable leg for support when the bed is set out to full capacity.

Head Stock It is mounted on a rigid column secured to the lower section of the bed. It is fitted with a large crucible steel spindle made hollow to facilitate securing large face plate work, is accurately machine ground and true in its journals. The bearings are lined with genuine babbitt metal, are self-oiling and adjustable to wear. The head stock may be swiveled 5 degrees to the right or left on its column.

The end thrust is adjusted for wear at the rear by means of thrust collars threaded to the spindle. A loose bronze collar bears against each end of the rear journal box and plays between the solid collar on the spindle on one end and the thrust collars on the other.

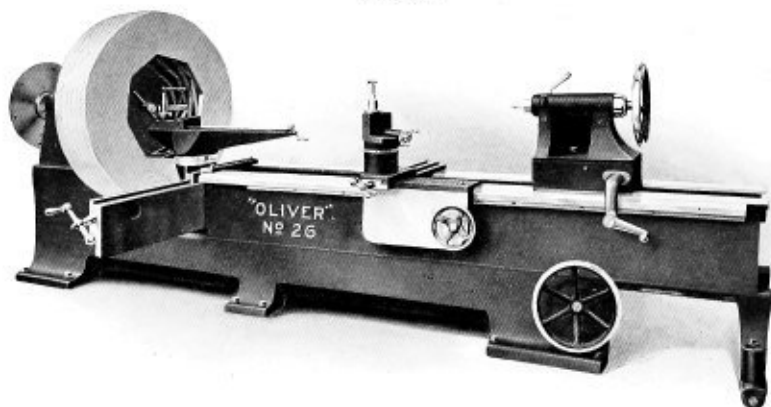
Cone Pulley This is of metal, is composed of four steps, is machined inside and outside, and accurately balanced.

Tail Stock This is of open side design, permitting the cutting tools and tool post to be brought close to the center without interference. The spindle is large and carries Morse Taper, which admits of using standard sockets, drills and reamers. A cast locking lever securely holds the spindle in any desired position. The usual raising block and set-over device is furnished for service in taper work.

No. 26

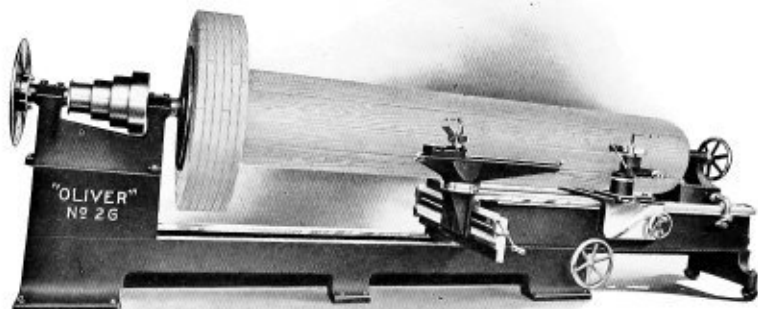
"Oliver" Large Pattern Maker's Gap Lathe

Continued



View showing work on face plate, 48 inches diameter, 12 inches thick

The long compound swivel slide properly graduated and indexed makes it extremely easy for the workman to follow his blue prints. A very large advantage lies in the fact that everything works smoothly, its general convenience lends itself to quick action, all the conveniences for hand turning are also provided.



"OLIVER" No. 26 HEAVY PATTERN MAKER'S GAP LATHE

To turn 30 inch over the bed and 60 inch diameter in the gap

Size of work illustrated above, column 12' long, 26" diameter; large base, 48" diameter, 12" thick. Maximum length of machine extended, 19' 6". Maximum length of machine with gap closed, 12' 7".

No. 26

"Oliver" Large Pattern Maker's Gap Lathe

Continued

Main Carriage This is supported on the adjustable section of the bed. It is furnished either hand feeding or power feeding type as may be ordered. The power feeding carriage is actuated by means of a cut gear and rack and may also be moved by hand when desired. The cross slide has a very long traverse and supports the compound swivel rest that possesses its individual traverse of the required length. This rest is accurately graduated, and swivels to any angle.

Supplemental Carriage This is located on the inside end of the adjustable bed and is used in connection with the gap when desiring to face the inside and outside of wheel rims, etc., and it possesses all the functions of a hand-feeding carriage. This tool post is made double for giving it longer range. The slide is so arranged that a hand-crank operating it forward or back can be used from either end. The cross slide is dovetailed directly to the end of the bed, and has a movement laterally that is sufficient for the full capacity of work the gap will receive. When this carriage and its cross slide is not in use it may be swung back of the frame entirely out of the way.

Countershaft It is mounted in heavy self-oiling hangers and carries two pairs of tight and loose pulleys, giving it two speeds, thus giving eight speeds to the head spindle. The cone driving pulley is made of metal, with four steps, is machined all over, and adjusted to a running balance. Belt-shifter rod and fingers are supplied with it.

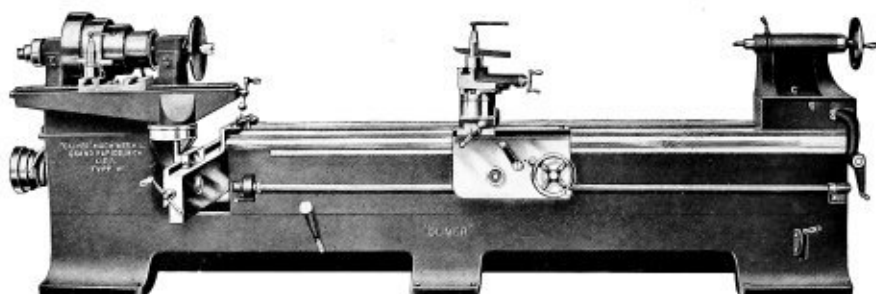
Motor Drive Motor drive can be supplied when so desired, there being several methods of applying the power. The same methods that apply in driving our Nos. 21, 22 and 23 types of Lathes, as described and shown by etching in preceding pages of the catalogue, are applicable to this Gap Lathe.

Equipment One spur center, each $1\frac{1}{4}$ " and 2" diameter.
One cup center, 1" diameter.
Two conical centers.
Four face plates for front end of spindle, 12", 24", 30" and 38" diameter.
Above face plates for rear end of spindle also.
One rest holder fitted to the tool carriage.
One single shank rest, each 6", 12" and 18" long.
One double shank rest, 48" long.
One right angle rest, 6" long.
Two rest holders, bored $1\frac{1}{2}$ " diameter.
One floor stand with off-set rest.
One Countershaft, Hangers and Pulleys.

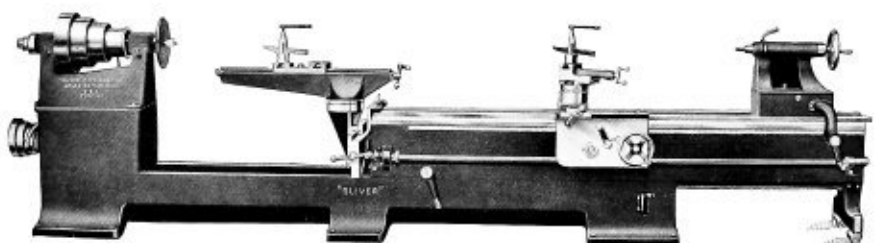
Capacity Will turn a maximum length of 15' between centers, 30" in diameter and under when gap is open, and 8' 6" when closed. Will turn a maximum length of 92" in the gap, 60" diameter and under with tool post taken off and gap open.
Will swing 26" over the carriage and 27" over the rest.

No. 26
"Oliver" Large Pattern Maker's Gap Lathe

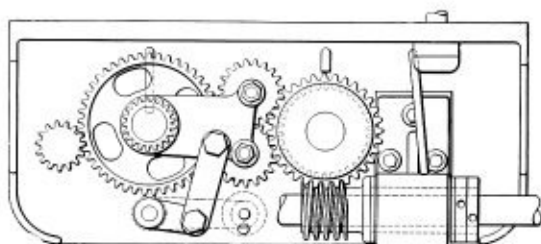
Continued



No. 26 "OLIVER" LARGE PATTERN MAKER'S GAP LATHE
 View showing power driven carriage and bed closed



No. 26 "OLIVER" LARGE PATTERN MAKER'S GAP LATHE
 View showing power driven carriage and bed open



No. 26 "OLIVER" LARGE PATTERN MAKER'S GAP LATHE
 Etching showing power feed carriage gearing

No. 26

"Oliver" Large Pattern Maker's Gap Lathe

Continued

GENERAL DIMENSIONS

Head Stock	Length, 28½". Spindle bearings, front, 5½" x 2¾"; rear, 5¾" x 2⅞". Spindle, 34" long; hole through spindle, ⅞". Spindle bored to receive a No. 4 Morse Taper. Speeds of spindle, 86, 125, 185, 288, 430, 625, 925 and 1440 revolutions per minute. Cone on spindle—four steps—6½", 9⅞", 12" and 14½" diameter. Width of belt, 3½".
Tail Stock	Length, 18". Spindle, 16" long, 3" diameter. Traverse of spindle, 8". Spindle bearing, 14" long.
Bed	Length with gap closed, 12½'; with gap open, 19½'. Width, 18¾"; depth, 15". Height to top of the extension bed, 30". Maximum width of gap, 86".
Main Carriage	Traverse of cross feed, 14". Traverse of cross feed on compound rest, 7". Travel of carriage, 91". Power Feed Travel, ½", 1/14", and ⅙" to each revolution of the spindle. Bearing on ways, 22". Tool post slot, 1¾" x ¾".
Auxiliary Carriage	Traverse of cross feed, 35". Traverse of cross feed on compound rest, 31". Tool post slot, 1¾" x ¾".
Countershaft	Length, 5'; diameter, 2". Speeds, 100 and 500 revolutions per minute. Bearings, 6"; 1¾" diameter. Hangers, 14" drop. Tight and loose pulleys, 10" x 6" and 18" x 6". Small T & L pulleys give spindle 430 to 1440 revolutions per minute. Large T & L pulleys give spindle 86 to 288 revolutions per minute. Cone—four steps—12½", 15", 17½" and 19½" diameter; 3½" face.
Horse Power	Maximum, 5.

CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Draft	26-A Hand Feed, belt drive.....	5800	6150	230
Draga	26-C Hand Feed, motor drive.....	6050	6450	230

No. 66 "Oliver" Gap Lathe

28 and 48-inch Swing

Introduction All the little refinements of construction which make an "Oliver" worth having are here. Twenty-five years of experience as builders of a very large line of wood lathes ought to have taught us the "know how," and we recommend it as a general utility tool, more than ordinarily adapted to use in the shops of either industrial or educational institutions.

Main Bed This is a one-piece, cored casting exceptionally well ribbed and very heavy, and easily absorbs all ordinary vibration caused by rotating work that is out of balance.

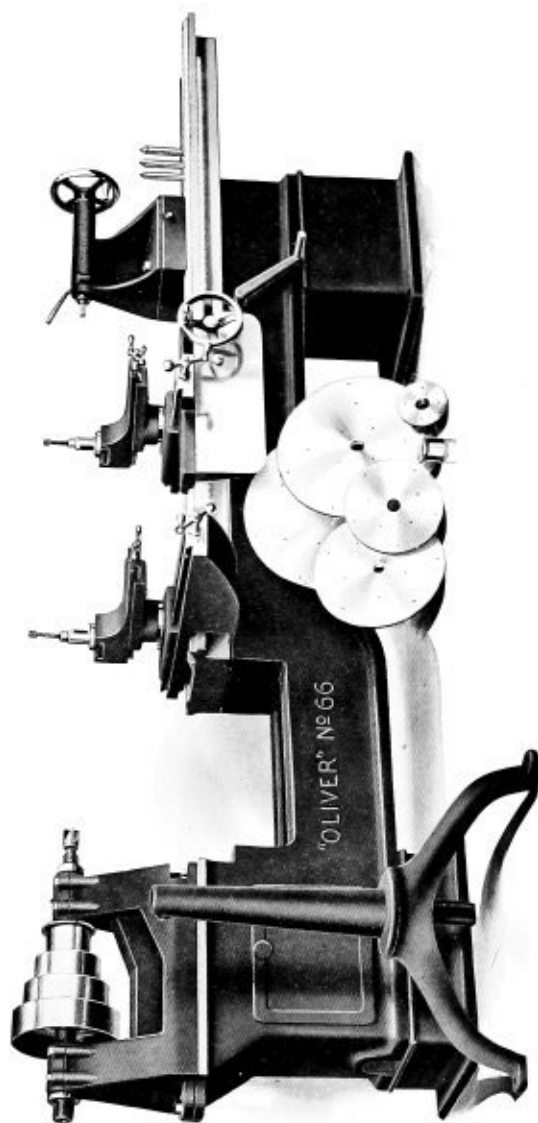
Sliding Bed This casting is movable upon the main bed by crank, rack and pinion, as illustrated. When closed over the gap, the carriage operates up to the head stock in the usual way. When gap is open, the sliding bed increases capacity between centers 2 feet.

Main Carriage Is hand feeding with cross feed and compound swivel rest and tool post, as illustrated. The apron has a bearing of 24" upon the bed and travels the entire length of sliding bed. The top of the sliding bed near the head stock, and the guide of the cross slide, are graduated by sixteenths and the ends of the carriage, as well as the ends of the cross slide, are provided with index pointers that may be adjusted to the work and helps to determine a definite diameter or length and will eliminate much of the "cut and try" method of fitting.

Auxiliary Cross Slide This attachment is secured to the inside end of sliding table and is of sufficient size to operate upon the full capacity of 48" diameter that may be swung in the gap. It is easily removed when desired, and carries the compound swivel rest shown in connection with the main carriage. We do not furnish two, as shown in illustration. The hand tool rest socket may be substituted for the compound swivel, as per illustration.

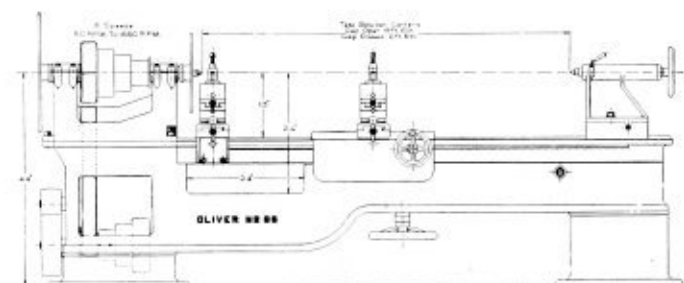
Compound Swivel Rest Is graduated in degrees at the base and carries the regulation tool post. It is easily detached and a socket substituted for carrying the hand tool rests, as illustrated.

Head Stock Open type and may be belted, as shown by etchings, or driven by a two-speed countershaft from overhead, or from the ceiling of the floor below. A number of motor drives may be arranged to suit conditions. Head stock swivels 5 degrees.

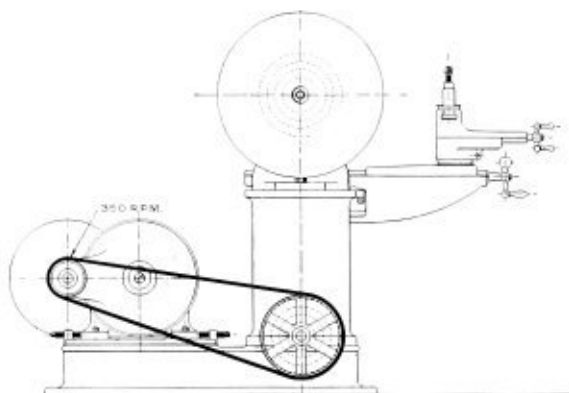


"OLIVER" No. 66 IMPROVED GAP LATHE, 28 and 48 inch Swing

No. 66 "Oliver" Gap Lathe



No. 66 IMPROVED GAP LATHE, 28 and 48 inch Swing
View showing gap closed



End view showing back geared motor drive. The diameter of large face plate, 24 inches. Side view of auxiliary cross slide upon which is mounted the compound swivel rest and tool post

Spindle

Is $2\frac{1}{4}$ " diameter, 32" long, runs in 5" bearings. Eight spindle speeds from 86 to 1850 R. P. M. Spindle is hollow, with $\frac{3}{4}$ " hole and fitted for No. 4 Morse taper; is machine ground and is carried in large bearings of genuine babbitt; substantial thrust collars are provided for end thrust. The out board end of spindle carries a heavy steel collar to which may be attached with four bolts the large, steel face plate which comes with the regular equipment, a great improvement over the usual method of threading the nose of the spindle.

No. 66 "Oliver" Gap Lathe

- Tail Stock** Open side design and "set over" adjustment. The tail spindle is of large cross section and carries a No. 4 Morse Taper. Is 1 3/8" diameter, 13 3/4" long.
- Capacity** Will turn 6' 4" between centers with gap closed, or 8' 4" between centers with gap open. Will turn 28" over the ways and 20" over the carriage. Will turn 24" long and 48" diameter in the gap. Will turn 7' 6" over the floor at the outer end of spindle.
- Increased Capacity** We build to order this machine with extra length of bed and to swing large diameters at additional cost. Further information upon request.
- Equipment** One each spur center 1 1/4" and 2" diameter, one cup center, 3/4"; two conical centers; one each face plates, 12", 24", 30" and 38" diameter; one each tool rests, 6", 12", 18" and 48" long; two rest holders, one right angle rest 6" long, one portable floor stand with off-set rest holder, countershaft, hangers and pulleys.

SPECIAL DATA

- Head Stock Spindle** Made hollow and reamed for No. 4 Morse taper, has four step cone pulley. Speed, 68 to 1825 R. P. M.
- Tail Stock Spindle** 13 3/4" long and 1 3/8" diameter, has set-over base.
- Main Carriage** Cross feed traverse is 14", cross feed on compound rest is 8".
- Auxiliary Carriage** Cross feed traverse full distance for 48" diameter circle, and is detachable.
- Countershaft** Has two sets of T & L pulleys, 10" x 4 1/2" and 16" x 4 1/2". Speeds 130 and 700 R. P. M. to give speed of 86 to 1850 R. P. M. to Head Stock Spindle.
- Horse Power** Five.

CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Drake	No. 66-A Gap Lathe, belt drive.....	4800	5800	200

MOTOR DRIVE

A variety of motor drives are applicable; data furnished on request.

No. 18

"Oliver" Heavy Wood Lathe

32-inch, 36-inch and 42-inch

Introduction We have introduced new and important features in these lathes. The general design and construction is similar to the best iron working lathes. They are convenient in adjustments, quick in operation and capable of wide range of work. They are made in three standard sizes, viz.: to swing 32", 36" and 42" over the bed.

Head Stock This is well proportioned, carrying a stiff, strong, hollow spindle supported in self-oiling bearings. Spindle is hollow to facilitate securing face plate work, is machine ground, and absolutely true. Bearings are lined with "Genuine" babbitt metal and adjustable to wear. Head will swivel five degrees each way from the center line without interfering with the power feed. The cone is metal, machined all over.

End Thrust This is adjusted at the rear by means of thrust collars threaded to the spindle.

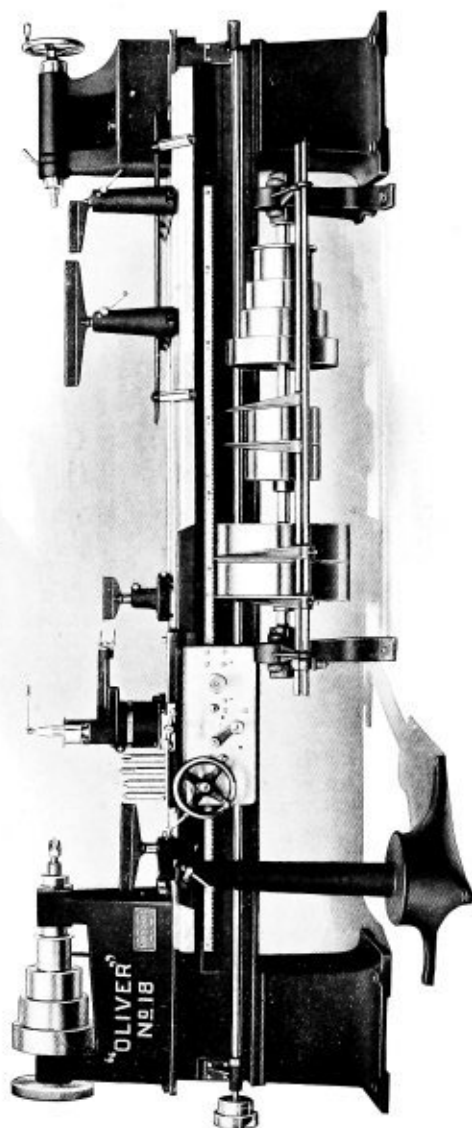
Bed This is cast iron, strongly ribbed, and has a smooth flat top with ways for the carriage located upon the side. A great convenience to the operator when hand turning, as the absence of obstructions upon its broad top surface renders it easily cleaned and upon which he can lay his sharp tools.

Tail Stock It is of the open side design, which allows the cutting tools and tool post to be brought close to centers without interference. Spindle is large and carries a No. 4 Morse Taper, same as spindle in head stock, thus allowing standard sockets, drills and reamers to be used in either spindle.

Carriage Carriage has both hand and power feed. The apron has a wide support on the front of the bed, is very substantial and the whole device is operated by hand freely in either direction by means of the hand wheel and screw, or by power, through a belted cone pulley and lead screw and gears all controlled by small hand screw on face of apron.

Cross Slide Swivel The carriage is fitted with a cross slide having a long traverse and this slide carries a graduated swivel or compound rest, also having a long traverse; by this device any desired angle may be correctly obtained.

Hand Rest Socket A socket carrying a rest for hand turning is provided and may be substituted instead of the compound swivel and tool post when desired.



No. 18 "OLIVER" HEAVY WOOD LATHE WITH AUTOMATIC FEEDING CARRIAGE
32 inch, 36 inch and 42 inch Swing
A high class precision Lathe for Quality Pattern Shops

No. 18
"Oliver" Heavy Wood Lathe

Continued

GENERAL DIMENSIONS

Swing Head Stock

	32"	36"	42"
Length and width of frame.....	30"x14"	30"x14"	30"x14"
Length and diameter of spindle.....	35"x2 $\frac{7}{8}$ "	35"x2 $\frac{7}{8}$ "	35"x2 $\frac{7}{8}$ "
Length of bearings.....	5 $\frac{1}{2}$ "x6"	5 $\frac{1}{2}$ "x6"	5 $\frac{1}{2}$ "x6"
Diameter of front spindle bearings.....	2 $\frac{3}{4}$ "	2 $\frac{3}{4}$ "	2 $\frac{3}{4}$ "
Diameter of rear spindle bearings.....	2 $\frac{7}{8}$ "	2 $\frac{7}{8}$ "	2 $\frac{7}{8}$ "
Size by No. Morse Taper.....	4	4	4
	5	5	7"
	8	8	9 $\frac{1}{2}$ "
Diameters of cone steps.....	10	10	12"
	12	12	14 $\frac{1}{2}$ "
Width of cone steps.....	4"	4"	4"
Width of belt used.....	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "
	86	86	86
	130	130	125
	195	195	185
Spindle Speeds at rated C. S. Speed.....	390	390	280
	400	400	430
	600	600	625
	900	900	925
	1800	1800	1840

Tail Stock

Length and width of frame.....	18"x12 $\frac{1}{2}$ "	18"x12 $\frac{1}{2}$ "	18"x12 $\frac{1}{2}$ "
Length and diameter of spindle.....	16"x3"	16"x3"	16"x3"
Length of spindle bearing.....	15"	15"	15"
Traverse of spindle.....	8"	8"	8"
Size by No. Morse Taper.....	4	4	4
Adjusting screw threads to inch.....	4	4	4

Bed

Standard length and width.....	12'8"x20 $\frac{1}{2}$ "	12'8"x20 $\frac{1}{2}$ "	12'8"x20 $\frac{1}{2}$ "
Depth.....	12"	12"	12"
Height from Floor.....	30"	30"	30"

Carriage

Traverse of Cross Feed.....	14"	14"	14"
Traverse of Compound Feed.....	7"	7"	7"
Travel of Carriage on Bed.....	8'6"	8'6"	8'6"
Power feed ranges per revolution of spindle.....	$\frac{3}{32}$ " & 1/10	$\frac{3}{32}$ " & 1/10	$\frac{3}{32}$ " & 1/10
Length of Way Bearing.....	22"	22"	22"

Countershaft

Length and diameter.....	5"x2"	5"x2"	5'6"x2"
Length and diameter of bearings.....	6"x1 $\frac{3}{4}$ "	6"x1 $\frac{3}{4}$ "	6"x1 $\frac{3}{4}$ "
Drop of hangers.....	14"	14"	14"
	8"	8"	12 $\frac{1}{2}$ "
	10"	10"	15"
Steps of cone—diameter.....	12"	12"	17 $\frac{1}{2}$ "
	14 $\frac{7}{8}$ "	14 $\frac{7}{8}$ "	19 $\frac{3}{4}$ "
Steps of cone—width.....	4"	4"	4"
Width of belt used.....	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "
Speed of T & L Pulleys, revolutions per minute.....	130 and 600	130 and 600	100 and 500
	18"x6"	18"x6"	18"x6"
Diameter and face of T & L Pulleys.....	10"x6"	10"x6"	10"x6"
Horse Power.....	4	4	4

No. 18

"Oliver" Heavy Wood Lathe

Continued

Countershaft This is steel and machine ground. The hangers have ring-oiling boxes and shifting device. Two pairs of tight and loose pulleys are furnished to give 8 speeds to the head spindle, and the loose pulleys are of our new and special design, bushed with bronze, self-oiling and "always work." The cone is machined all over and adjusted to a running balance.

Equipment One driving center (or spur center), 1 1/4" diameter.
One driving center, 2" diameter.
One cup center, 3/4" diameter.
Two conical centers.
One rosette plate or chuck (screw spud), 3 1/2" diameter.
Two face plates for front end of spindle, 12" and 24" diameter.
Two face plates for rear end of spindle, 30" and 38" diameter.
Two Rest Holders, bored 1 1/2" diameter.
One special Hand Rest Socket for use in tool carriage.
Four rests, 6", 12", 18" and 48", 1 1/2" shank.
One right angle rest 6" long, 1 1/2" shank.
One floor stand with extension or offset rest.

Capacity Swing over the bed, 32", 36", 42".
Swing over the carriage, 28", 32", 38".
Swing at outer end of the Head Spindle, 92", 92", 98".
Length will turn between centers, 8' 6", 8' 6", 8' 6".

CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Dram	No. 18-A Swing 32"	4500	4900	165
Drank	No. 18-B Swing 36"	4800	5250	172
Drape	No. 18-C Swing 42"	4900	5360	180

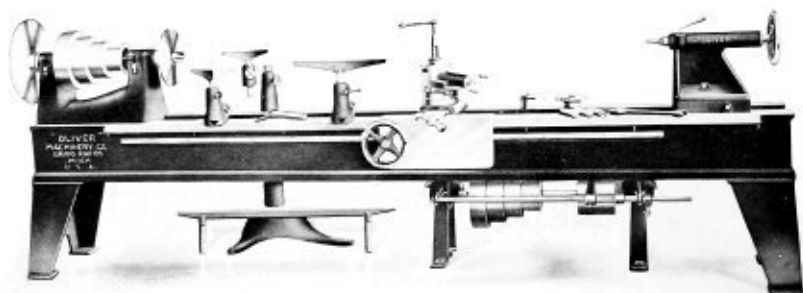
SPECIAL DATA

These machines may be made with certain modifications, viz.:
Hand Feeding Carriage instead of Power Feeding.
Machine with plain bed—no carriage.
Machine with beds shorter or longer than standard lengths.
Machine with two head and two tail stocks.
Machines with electric drives.

We make the most varied line of Wood Lathes in the world—from 12" to 100" swing.

Motor Drive There are a variety of motor drives that are applicable to this machine. Special data concerning them is found on various other pages of this catalog and specific recommendations will be made to suit your needs. Write us.

No. 24
"Oliver" Double End Wood Lathe



No. 24 "OLIVER" PATTERN MAKER'S WOOD LATHE
16, 20, 24 and 30 inch Swing with Hand Feeding Carriage and Compound Swivel Rest

Modern shop practice in wood turning demands a higher type of lathe than formerly. Alive to this situation we have met the demand in the No. 24 Lathe described herein.

Head Stock It is made from a cored casting of the proper strength and rigidity, and well proportioned. It may be swiveled for taper turning, about 5 degrees each way from the center.

Head Spindle We make it of fine crucible steel, large in diameter and threaded at both ends to receive face plates. It is made with hole through it to assist in securing work to face plates. It is accurately ground and is absolutely true in the journals.

Spindle Bearings and Cone These are lined with genuine babbitt, are adjustable to wear, and are fitted with oil chambers for self-lubrication. The spindle cone is made of cast iron, has four steps, machined all over and adjusted to a running balance.

End Thrust It is taken care of by means of thrust collars threaded to the spindle. A loose bronze collar bears against each end of the rear journal box and plays between the solid collar on the spindle on one end and the thrust collars on the other.

Tail Stock It is constructed in the open side design. Cutting tools may be brought close to centers. It has set-over device for turning taper work, and an eccentric lever for locking it in any desired position. The tail spindle is of correct diameter bored to Morse tapers. It is held in position by means of a strong clamp. The tail center may be removed by simply backing the screw.

No. 24
"Oliver" Double End Wood Lathe

Continued



Arranged with 8 and 10 foot long metal beds. Power feeding carriage and compound swivel rest
Made in four sizes, to swing over the bed 18, 20, 24 and 30 inch diameter

The Bed

It is of iron of proportionate dimensions to suit the size of the lathe. It can be supplied in any length, six feet or more, calculating by advances of two feet. It has a broad top, made flat so the operator's tools will not work off. When furnished to receive a tool carriage the ways for same are cast to the side.

**Power
Feeding
Carriage**

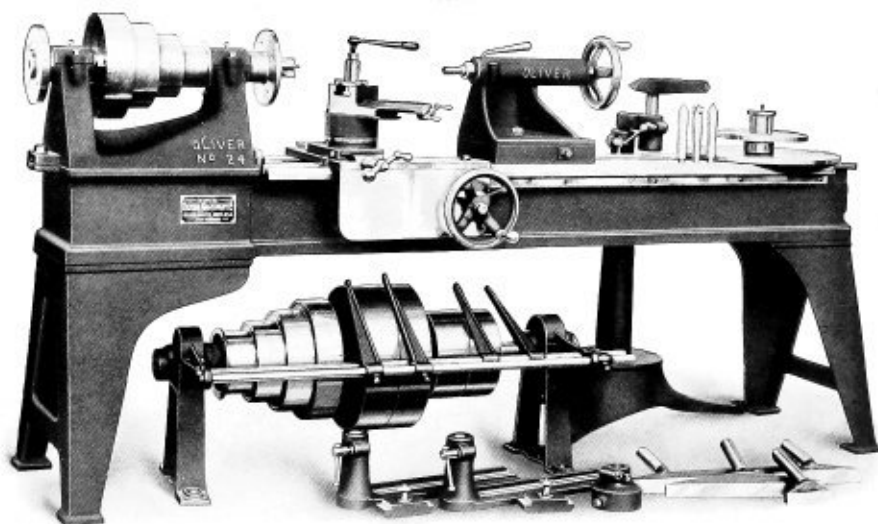
The call for this machine fitted with a carriage that is fed automatically as well as by hand has resulted in the design of carriage shown in the accompanying half-tone. All sizes of lathes are recommended and regularly provided with it. However, when hand-feeding carriage only is especially desired, same is furnished at a slight difference in price. The carriage receives its power through a belt from a two-step cone on the lathe spindle to a cone on the feed shaft, giving two speeds to the feed shaft. When using the lathe at the overhanging end for face turning on large diameters the cone pulley may be instantly removed.

**Compound
Swivel Rest**

We locate a graduated swivel device on the cross slide of the tool carriage, which permits the use of the tool on angular lines. By means of the graduations the tool may be set with great exactness. It has a long traverse and any conceivable angle may be correctly obtained.

No. 24
"Oliver" Double End Wood Lathe

Continued



"OLIVER" No. 24, 16, 20, 24 and 30 INCH SWING
View showing Bed fitted with Hand Feeding Carriage

**Hand
Feeding
Carriage**

It may be furnished with either size of machine. Is correctly proportioned and constructed with a compound swivel rest. The apron has a wide support on the front side of bed. A hand wheel engages steel cut rack and pinion and operates freely in either direction.

**Special Hand
Rest Socket**

This device provides an effective hand tool rest mounted on the cross slide of the carriage. It consists of a rest socket machined to fit the slide and held firmly.

Countershaft

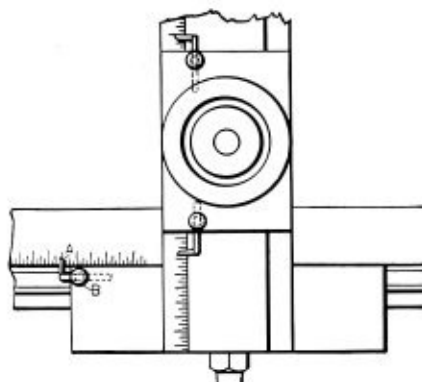
This is furnished with two pairs of tight and loose pulleys and a four-step cone. This gives eight speeds to the head spindle. The loose pulleys are bushed with bronze with oil chamber for supplying lubrication. The hangers are supplied with ring oiling bearings; the shaft is of steel.

**Motor
Drives**

There are several methods by which these machines may be arranged for driving them from a motor. If, for any reason, an underdrive is desired, a widened headstock and enlarged end of bed may be provided, which allows the driving belt to go down through the bed for either countershaft or motor drive. A variable speed direct current or multi-speed alternating current motor is recommended.

No. 24 "Oliver" Double End Wood Lathe

Continued



Carriage Graduations

These are placed on the machine to enable an operator to turn a definite length or depth without having to "fit and try" as formerly. They are located on the top of the bed at the front and on the ways for the carriage cross slide. "A" is a finger adjustably set in the carriage slide and clamped by means of a screw "B."

GENERAL DIMENSIONS

Head Stock

Swing in Inches	16-inch	20-inch	24-inch	30-inch
Length	16"	19½"	24¾"	28"
Width	8"	10"	11½"	12"
Diameter of Spindle	1 ⅝"	2 ¼"	2 ¼"	2 ¾"
Length of Spindle	21 ⅞"	25 ⅞"	31 ⅞"	34"
Length of Spindle Bearings	3 ⅝" 3 ⅞"	4" 4 ½"	5 ½" 6"	5 ½" 6"
Diameter of Front Spindle Bearings	1 ⅝"	2 ¼"	2 ¼"	2 ¾"
Diameter of Rear Spindle Bearings	1 ⅞"	2 ⅜"	2 ⅜"	2 ⅞"
Size of Morse Taper by No.	4	4	4	4
Steps of Cone—diameter	3 ½"	4 ½"	5"	5"
	5 ⅝"	6 ¾"	7 ⅝"	8"
	7 ⅞"	9"	9 ⅝"	10"
Steps of Cone—width	9"	11 ¼"	12"	12"
	2 ¼"	2 ⅞"	3 ½"	4"
Width of Belt used	1 ¾"	2 ½"	3"	3 ½"
Spindle Speeds at rated Countershaft Speed in revolutions per minute	2640	2200	1960	1800
	1480	1200	1110	900
	940	735	690	600
	622	450	390	400
	563	400	350	390
	315	220	200	195
	200	130	124	130
	133	80	70	86

No. 24

"Oliver" Double End Wood Lathe

Continued

GENERAL DIMENSIONS—Continued

Tail Stock

Swing in Inches	16-inch	20-inch	24-inch	30-inch
Length	10"	12½"	12½"	17"
Width	8"	10"	11½"	12"
Diameter of Spindle	1½"	1⅞"	1⅞"	2"
Length of Spindle	9¾"	12½"	13¾"	16"
Traverse of Spindle	4½"	6"	7"	8"
Length of Spindle Bearings	10¼"	13"	14"	15"
Size of Morse Taper by No.	4	4	4	4
Adjusting Screw—No. Threads to Inch ..	8	6	6	6

Bed

Standard Length in Feet	8'	8'	10'	10'
Width Inside of the Carriage Way	9½"	11½"	14¾"	14¾"
Depth	7"	9"	11"	11"
Height from Floor	34"	32"	30"	30"

Carriage

Traverse of Cross Feed	8"	11"	13"	13"
Traverse of Compound Feed	5"	6"	7"	7"
Travel of Carriage on the Standard				
Length of Bed	5' 3"	7'	6' 6"	6'
Length of Way Bearing	15"	17"	20"	20"
Length of Slot in Tool Post	1⅞"	1⅞"	2½"	2½"
Width of Slot in Tool Post	1½"	1½"	¾"	¾"

Countershaft

Length	32¾"	36¾"	41¾"	60"
Diameter	1½"	1¾"	1¾"	2"
Drop of Hangers	14"	14"	14"	14"
Length of Hanger Bearings	6"	6"	6"	6"
Diameter of Hanger Bearings	1¾"	1¾"	1¾"	1¾"
Steps of Cone—diameter	7"	7"	6¼"	8"
	9"	9"	9"	10"
	10⅝"	11"	11"	12"
Steps of Cone—width	12½"	13"	13"	15"
	2¼"	2⅞"	3½"	4"
T & L Pulleys	8" & 16"	10" & 16"	10" & 16"	10" & 16"
Diameter				
Face	3"	3½"	4½"	6"
Width of Driving Belt	2"	2½"	3"	3½"
Speed of Small T & L Pulleys—revolutions per minute	750	750	750	600
Speed of Large T & L Pulleys—revolutions per minute	160	135	135	130
Horse Power—Maximum	3	4	4	4½

No. 24 "Oliver" Double End Wood Lathe

Continued

Capacity

Swing in Inches	16-inch	20-inch	24-inch	30-inch
Swing over Bed.....	16"	20"	24"	30"
Swing over Carriage.....	13"	17"	20"	26"
Swing at outer end of Head Spindle..	84"	84"	84"	84"
Length will Turn Between Centers on Standard Length of Bed.....	5' 1"	5' 1"	6' 1"	6' 1"

Equipment

Two Single Shank Rests, Length.....	6" & 18"	6" & 18"	6" & 18"	12" & 18"
One Double Shank Rest, Length.....	30"	30"	48"	48"
Two Rest Holders, Quantity.....	two	two	two	two
Two Head (Spurs) Centers, Sizes.....	$\frac{3}{4}$ " & $1\frac{1}{4}$ "	$1\frac{1}{4}$ " & 2"	$1\frac{1}{4}$ " & 2"	$1\frac{1}{4}$ " & 2"
One Tail (Cup) Center, Sizes.....	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$\frac{3}{4}$ "
Two Conical Centers.....	pair	pair	pair	pair
Two Front Face Plates, Diameters....	8" & 14"	8" & 14"	8" & 14"	8" & 16"
One Rear Face Plate, Diameters.....	20"	20"	24"	24"
One Screw (Rosette) Chuck, Diameters	$3\frac{1}{2}$ "	$3\frac{1}{2}$ "	$3\frac{1}{2}$ "	$3\frac{1}{2}$ "
One Right Angle Rest, Size.....	6"	6"	6"	6"
One Floor Stand with off-set rest holder.....	one	one	one	one

CODE, WEIGHT, ETC.

No. 24 Lathes with Power Feeding Carriage and Compound Swivel Rest

Code			Length of Bed	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Droop	No. 24-A	Size 16"	8'	1750	1950	104
Dropsy	No. 24-B	Size 20"	8'	2300	2500	133
Drowse	No. 24-C	Size 24"	10'	2900	3200	136
Drudge	No. 24-D	Size 30"	10'	3300	3600	144

Length of Bed and Carriage Rack for 16", 20", 24" and 30" Lathes may be longer or shorter than standard in 2' lengths at extra cost.

Hand Feeding Carriage and Compound Swivel Rest

Above machines will be furnished with Hand Feeding Carriage instead of Power Feeding when so ordered at a suitable reduction in price.

No. 20

"Oliver" Motor Drive Pattern Maker's Wood Lathe

Arranged for Using Alternating Current Motor

Introduction To successfully meet the demand for a self-contained lathe that can be driven by an A. C. motor, we have furnished the machine as shown and described herewith. We recommend it as capable of proving absolutely satisfactory.

Motor We recommend alternating current, two speed, 600, 1200 R. P. M. motor, giving 8 speeds to spindle. Motor is supported under the lathe bed and fitted with a four-step cone pulley accurately balanced. A vertical adjustment serves to keep the belt tight. A self-oiling bearing carries the outer end of the armature shaft with cone pulley.

Head Stock This is similar to the one on the No. 24 Lathe with the exception of the widened base to permit passing the driving belt through to the cone on the motor shaft. Head spindle is fine steel, machine ground, and cone is metal fitted to a running balance.

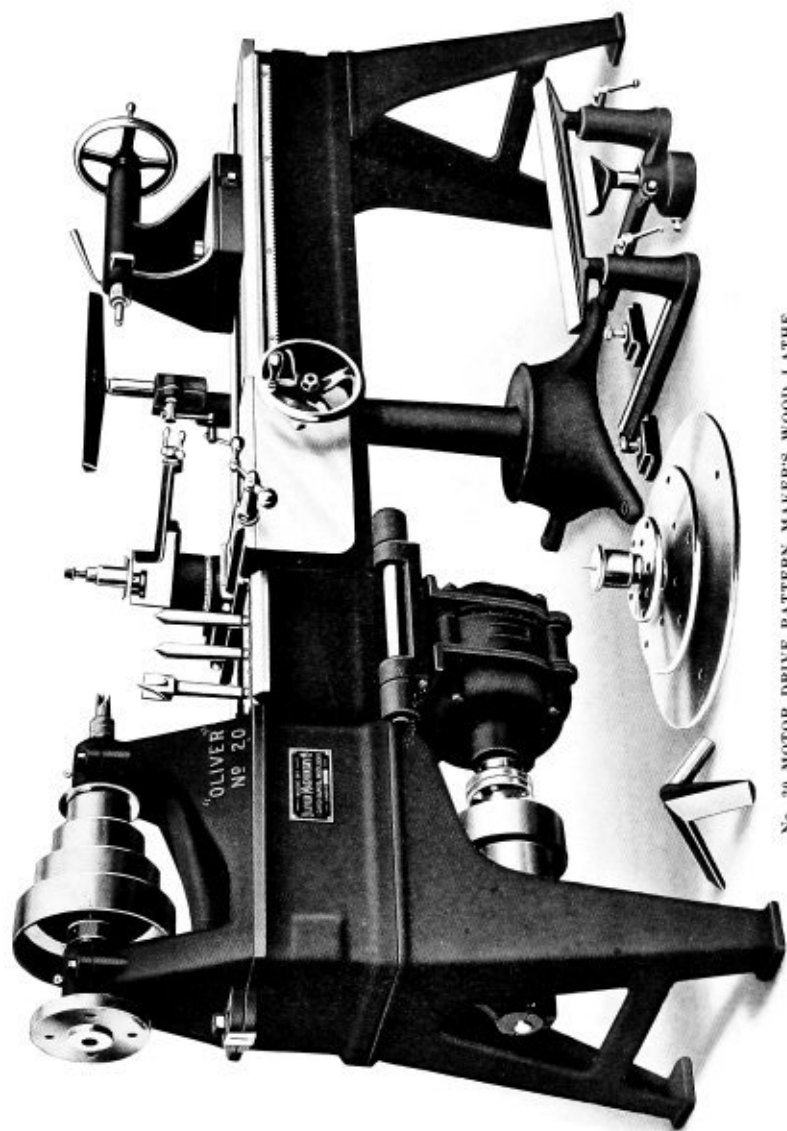
Tail Stock It is open side design with large steel spindle bored to Morse taper. It is supported rigidly in all its positions.

Bed This is similar to the metal beds supplied with the No. 24 Lathe—except that the end that receives the head stock is widened to permit the belt to pass through.

Power Feeding Carriage The carriage is regularly fitted with a compound swivel rest having ample lateral movement, wide bearing on the ways. It receives its power through a belt from a two-step cone on the lathe spindle to a cone on a feed shaft placed the length of the bed, giving two speeds to the feed shaft.

Equipment Power or hand feeding carriage and compound swivel rest; two spur center, one cup center, one pair conical centers, three face plates, each 8", 14" and 20" diameter; one screw chuck, 3½"; two single shank rests, 6" and 18" long; one double shank rest, 30" long; two rest holders with clamps, one rest holder fitted to tool post on carriage, one right angle rest 6" long, one portable floor stand with off-set rest holder. For exact equipment with each size, see table of equipment on page 141.

Code	No.	Size	Swing Over Bed	Car- riage	Swing at Outer End Head Spindle	Turns Between Centers	Standard Length Bed	Dom. Weight	For. Weight	Cu. Ft.
Duke	20-A	16"	16"	13"	84"	5'	8'	1700	1950	108
Dumb	20-B	20"	20"	17"	84"	4' 6"	8'	2200	2550	138
Dumpy	20-C	24"	24"	20"	84"	6'	10'	2565	2900	142
Dunker	20-D	30"	30"	26"	84"	5' 6"	10'	3050	3500	158



No. 20 MOTOR DRIVE PATTERN MAKER'S WOOD LATHE

No. 25**"Oliver" Motor Head Pattern Lathe**

Made in Four Sizes, 16-inch and 20-inch Swing for Heavy Work
24-inch and 30-inch Swing for Light Work

Introduction We have found it desirable in many shops to use a large pattern lathe with electrically driven head stock consisting of a motor mounted on the lathe bed and forming the head stock, having all the functions of the ordinary belt-driven machines but without their undesirable features.

Eliminations By the use of this motor head stock we have eliminated a number of features that are peculiar only to the belt-driven machines, and we are enabled to offer you a tool wherein the factor of danger has been reduced to a minimum. Briefly, there are no belts used, no light obscured, no overhead countershaft, no oiling to do while on a ladder, no chance for a belt to become tangled and pull down a countershaft on a luckless operator, machine easier to keep clean—only two oil bearings to look after, greater variations in speed.

Motor Head Stock This consists of a high class variable speed motor of the required power, made to fit our standard No. 24 Wood Lathes fully described in this booklet. Motor is double end, fully enclosed, armature shaft made hollow for face plate work and with suitable take-up for end thrust. Front end of shaft bored for Morse Taper.

Controller Ordinarily we furnish a C-H drum type controller of the required capacity though we can supply other types when called for. This admits of making a large number of changes in the spindle speeds that will meet all ordinary needs.

Tail Stock This is the same as that used on the No. 24 Lathe, a rigid and well made device with strong spindle bored to Morse Taper. See page 136 for construction and page 140 for general dimensions.

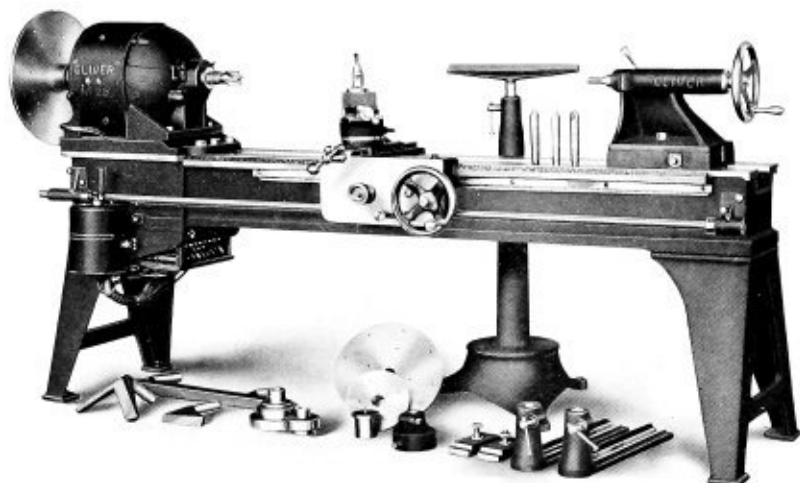
Bed It is made of iron, correct in design and construction and can be furnished in any length from six feet and upward, advancing by two-foot sections.

Tool This may be the hand feeding carriage described on page 138. The power feed carriage, also described on page 137, has been adopted as the one to be used in connection with the motor head stock but we could arrange for the hand feeding carriage on special order.

Capacity This is the same as corresponding sizes of the No. 24 Lathe. See previous pages for this.

No. 25 "Oliver" Motor Head Pattern Lathe

Continued



View showing arrangement when rear end turning is done



View showing arrangement when carriage has power feed

Equipment

We supply the same extensive equipment with these lathes that goes with the No. 24 Lathes as listed on page 141.

Motor Head

Two H. P., fully enclosed, variable speed 400 to 2000 R. P. M.

CODE, WEIGHT, ETC.

Code	No.	Machine	Size	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Duff	25-A	Motor Head Lathe	16"	1600	1850	136
Dug	25-B	Motor Head Lathe	20"	2100	2400	136
Dugie	25-C	Motor Head Lathe	24"	2500	2900	138
Dugige	25-D	Motor Head Lathe	30"	3000	3400	140

No. 19

"Oliver" Improved Speed Lathe 12-inch

- Introduction** The demand for a Speed Lathe that is well designed, correctly built, substantial, powerful and easily operated, has been met by the No. 19 machine here illustrated. We make no claims for "cheapness" in the ordinary acceptance of the word.
- Head Stock** This is made in the cored form, and has a clean cut design. The base is fitted to the bed and securely bolted by bar clamps.
- Head Spindle** It is of crucible steel, machine ground, made hollow and the front end threaded to receive face plates, hollow chucks, screw chucks, etc. Center hole fitted for No. 2 Morse taper.
- Bearings** These are supplied with split bronze bushings grooved inside for oil passage, and fitted with brass ring oiling device. A constant film of oil covers the journals with no danger of scattering it. Wear of spindle is compensated for by adjustable caps.
- Spindle Cone** This is of metal finished to a running balance, has four steps and is fastened to the spindle with two large set screws. The cone pulley may be held rigid, while face plates are screwed on or off.
- End Thrust** This is cared for by the ends of the cone pulley pressing against the bronze bushings. Adjustment is made by expanding the cone. The smallest step being threaded into the balance of the cone.
- Tail Stock** This is open side design, permits cutting tools to reach the centers and provides a pocket for holding small tools. A hand lever with a shaped concave end piece clamps the spindle and a hand lever clamps the tail stock at any position on the bed.
- Tail Spindle** We make this correct diameter and bore it for No. 2 Morse taper. The end of the hand wheel rod, which is fastened by screwing a sleeve into the tail stock casting, is square threaded into the tail spindle and operates easily. The tail center may be removed by backing up the screw.
- Bed** This is of metal, well ribbed and free from vibration. The broad top of the bed is flat and will receive operator's tools without danger of their working off and becoming lost. Two metal brackets on the back to receive a tool board are provided. It is made to stand on the floor or be placed on a bench as desired.



No. 19 "OLIVER" IMPROVED SPEED LATHE—12-inch
Front View



No. 19 "OLIVER" IMPROVED SPEED LATHE—12-inch
Rear View

No. 19

"Oliver" Improved Speed Lathe 12-inch

Continued

Hand Tool Rest

This is provided with a turned shank and the front edge and top machined true and case hardened to prevent being nicked by hard corner chisels. A guide ridge is milled in the face, aiding the operator in correct turning. The rest socket or holder is split and by a strong lever clamp provides a uniform pressure on the rest shank. The rest is extra heavy for hard service.

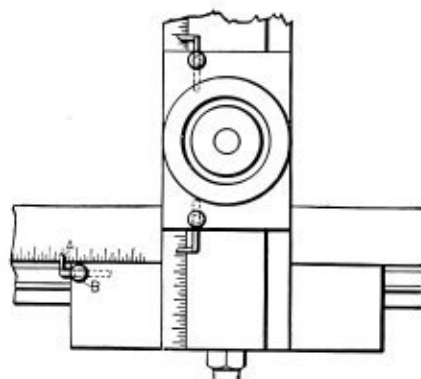
Carriage

A hand-feeding carriage may be furnished. It is correctly proportioned and constructed with a cross feed and a compound swivel rest. When lathes are ordered with carriage, the tail stock is provided with a set over device to be used in taper turning.

Compound Swivel Rest

This consists of a cross feeding device supported by two circular plates which are graduated accurately to permit the use of tools on angular lines. When the tool is set to the desired angle it is locked by two hexagonal nuts. Hand turning in connection with the carriage is easily performed by replacing the regular tool holder with a specially designed hand tool rest which may be fastened on the carriage almost instantly. See illustration on No. 54-K Lathe.

Graduations for Carriage



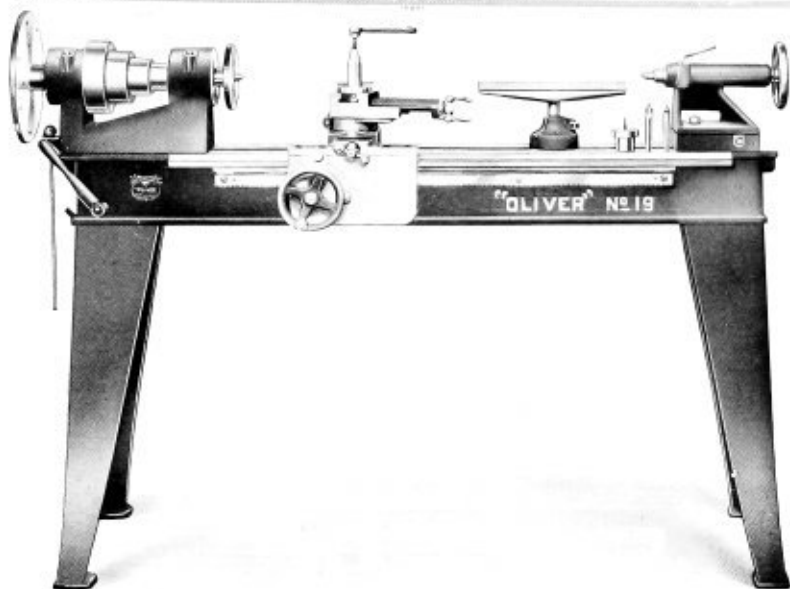
The top of the bed and the cross slide guide are accurately graduated by sixteenths, and the end of the carriage, as well as the ends of the cross slide, are provided with pointers that may be adjusted by loosening the thumb screws and pulling them out. This enables the operator to turn work to a definite length or depth without having to "fit and try."

Countershaft

The four-step cone pulley, and the tight and loose pulleys, are supported by the shaft in ring oiling hangers. The loose pulley has a well lubricated bronze sleeve running loose both on the shaft and inside of the pulley, providing double wearing surface and lessening friction.

Equipment

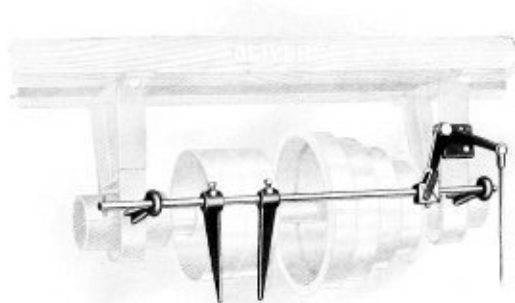
We furnish on all No. 19 Speed Lathes the following tools: One spur center, one cup center, one conical center, one 6" face plate, one 6" and one 12" tool rest, one rest holder, one rosette chuck, one center rod, belt shifting device. When lathes are ordered with carriage we furnish a special hand tool rest for use on it in place of the regular hand rest.



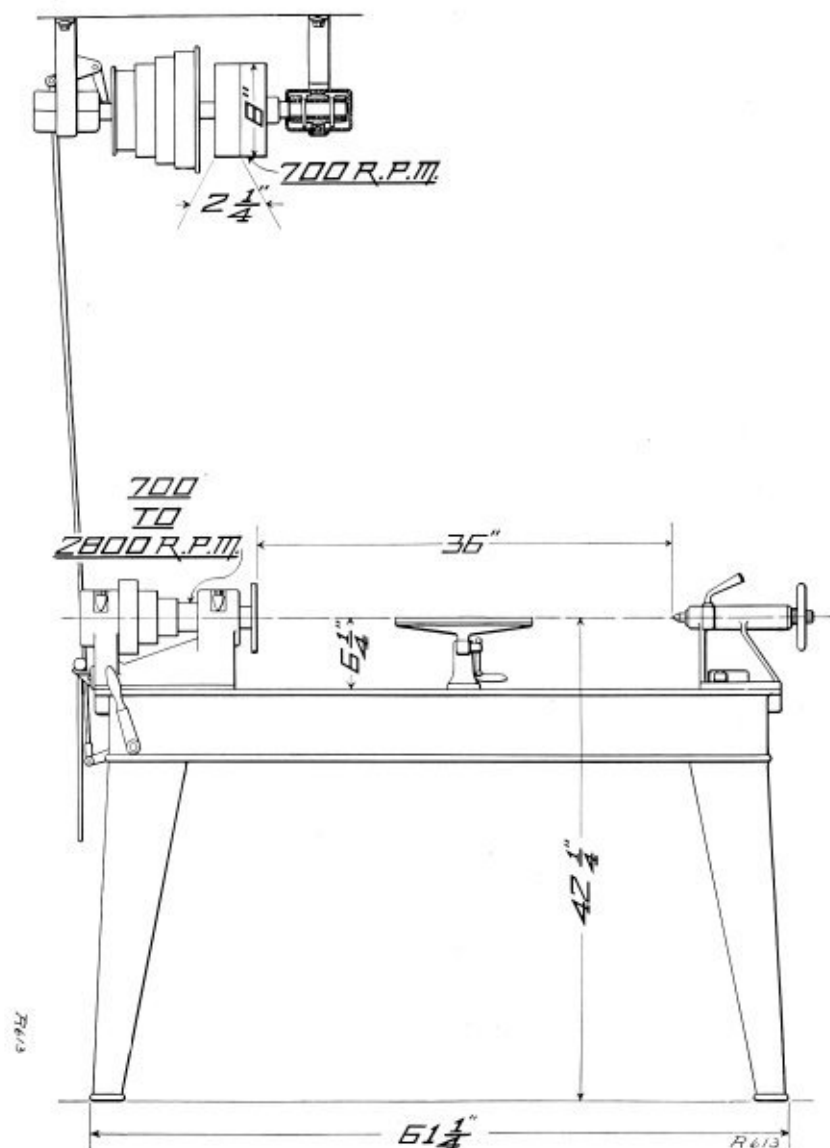
No. 19 "OLIVER" IMPROVED SPEED LATHE—12-inch
View showing hand feeding carriage and double end spindle

Capacity

Swings over the bed 12".
Swings over the hand tool rest 9".
Swings over the carriage 9½".
Turns 24" between centers on a 48" bed.
Turns 36" between centers on a 60" bed.
Two standard lengths of bed, either plain or with power feeding carriage. Extra lengths at additional cost.



COUNTERSHAFT, SHOWING NEW BELT SHIFTING DEVICE



No. 19 "OLIVER" IMPROVED SPEED LATHE—12-inch
Etching showing countershaft and connections

No. 19 "Oliver" Improved Speed Lathe 12-inch

Continued

GENERAL DIMENSIONS

Head Stock	Length, 12 $\frac{1}{4}$ ". Width, 6". Spindle, 15 $\frac{1}{16}$ " long, 1 $\frac{3}{8}$ " diameter. Hole through spindle, $\frac{5}{8}$ " diameter. Speed of spindle, 700, 1195, 1920, 2800 revolutions per minute. Cone on spindle—four steps—2 $\frac{1}{2}$ ", 3 $\frac{3}{8}$ ", 4 $\frac{11}{16}$ ", 6 $\frac{1}{16}$ ", diameter, 1 $\frac{3}{4}$ " face; width of belt, 1 $\frac{1}{2}$ ". Distance from floor to center of spindle, 42". Front bearing, 3" long, 1 $\frac{1}{2}$ " diameter. Rear bearing, 3" long, 1 $\frac{3}{8}$ " diameter.
Tail Stock	Length, 7". Width, 6". Spindle, 8" long, 1 $\frac{1}{4}$ " diameter; spindle bearing, 8" long. Traverse of spindle, 4". Amount of set over, 1".
Carriage	Traverse of cross feed, 6 $\frac{1}{2}$ "; traverse of compound rest, 3 $\frac{1}{2}$ ". Travel of carriage on the bed, 36 $\frac{3}{4}$ ". Length of bearing on the bed, 10". Tool post slot, 2" long, $\frac{11}{16}$ " wide.
Bed	Length, 48" and 60"—regular. Width, 6 $\frac{5}{8}$ ". Depth, 6 $\frac{1}{4}$ ". Height, floor to top of bed, 36".
Countershaft	Length, 27 $\frac{1}{4}$ ", 1 $\frac{1}{4}$ " diameter. Hangers, 8" drop. Bearings, 5" long, 1 $\frac{1}{8}$ " diameter. Cone—four steps—6 $\frac{1}{16}$ ", 8", 9 $\frac{1}{4}$ ", 10" diameter, 1 $\frac{3}{4}$ " face. Speed, 700 revolutions per minute. Tight and loose pulleys, 8" x 2 $\frac{1}{4}$ "; 2" belt required.
Floor Space	Extreme measure—24" wide, 53" long for a 4' bed.
Horse Power	Maximum, $\frac{1}{2}$.

CODE, WEIGHT, ETC.

Code	No.	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Ectype	19-A	Machine with plain bed 48" long, to turn 24" between centers.....	410	510	36
Eden	19-B	Machine with plain bed 60" long, to turn 36" between centers.....	450	560	37
Educe	19-F	Machine with bed 60" long to turn 36" between centers and with a hand feeding carriage and compound swivel rest.....	545	645	41

No. 54

"Oliver" Improved Under Drive Speed Lathes 12-inch Swing, Any Length

Each Lathe Shipped Set Up Complete as a Unit

Three Different Types

Introduction This lathe supplies the need for a self-contained proposition and at the same time operates by power transmitted through belts. It is so constructed that it may be installed singly or in series, as preferred. Each lathe is set up complete as a unit—all mechanisms self contained.

Types The No. 54-A and B Lathes use tight and loose pulley method for the countershaft. The No. 54-C and D Lathes have cone clutch and brake for each machine but shift the belt by hand. The No. 54-K and L Lathes carry the matter of safety to the limit. By a clever mechanism, the belt between the cones is shifted by levers. The starting of the machine by the leather-lined clutch and stopping by a brake upon the same lever all lends itself to the protection of the operator. A glance at illustrations will emphasize efficiency of the guards.

Under Drive Each lathe has its own independent countershaft and when run in series are joined together by flexible couplings, as many in line as desirable. The cone, belting, clutch and shafting are enclosed for safety, as illustrated. These lathes may be driven from a pulley at one end of a series, in a number of ways, dependent upon the power to be used and how applied, or direct connected to motor.

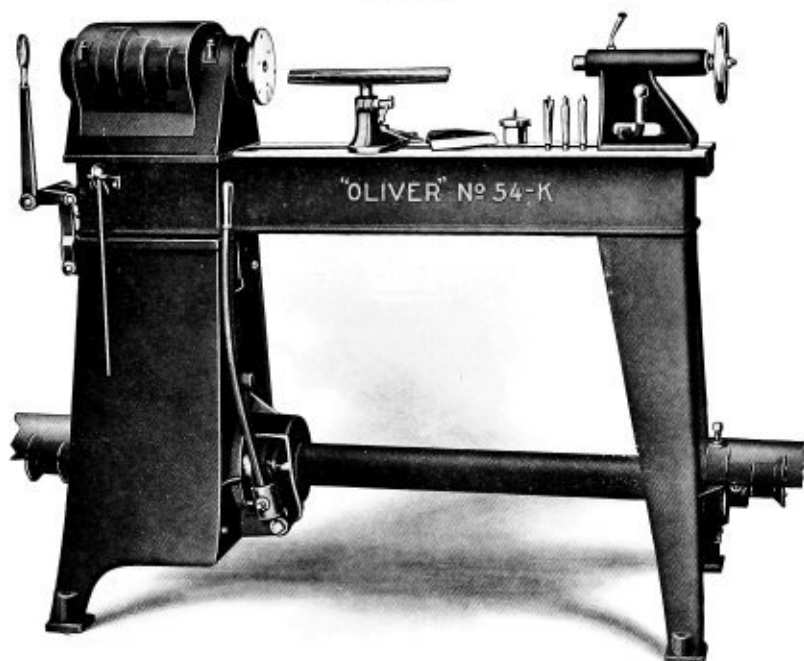
Head Stock This is made in the cored form, and has a clean-cut design. The base is fitted to the bed and securely bolted by bar clamps. The frame of the head stock is made wider and the end of the bed to which it is bolted is broadened to suit, for the purpose of permitting the driving belt to go through to the countershaft.

Head Spindle It is of crucible steel, machine ground, made hollow and the front end threaded to receive face plates, hollow chucks, screw chucks, etc. Center hole fitted for No. 2 Morse taper.

Bearings These are supplied with split bronze bushings grooved inside for oil passage, and fitted with brass ring oiling device. A constant film of oil covers the journals with no danger of scattering it. Wear of spindle is compensated for by adjustable caps.

No. 54 "Oliver" Improved Under Drive Speed Lathe 12-inch

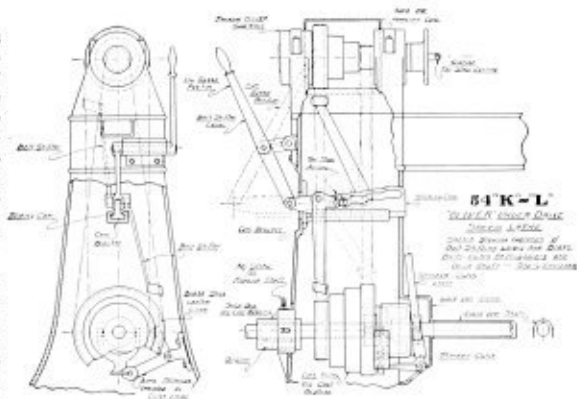
Continued



"OLIVER" No. 54-K and L UNDER DRIVE SPEED LATHE
Showing Lathe with single lever belt shifter ready for use

The diagram shows the method of shifting the belt by means of a single lever convenient to operator. The handle for the belt shifting device can be located so that it will not interfere with rear end face plate turning.

Tool steel jigs and fixtures used in making these shifters insure absolute interchangeability of parts. Our hundreds of jigs and fixtures for standardizing our line have cost us thousands of dollars, but it means accurate fitting of parts—precision tools—manufactured in a manufacturing way.



No. 54

"Oliver" Improved Under Drive Speed Lathe 12-inch

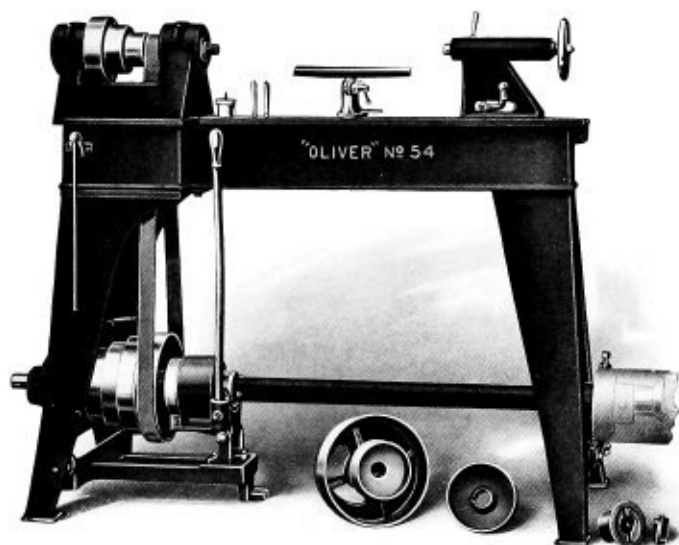
Continued

- Spindle Cone** This is of metal finished to a running balance, has four steps and is fastened to the spindle with two large set screws. The cone pulley may be held rigid, while face plates are screwed on or off.
- End Thrust** This is cared for by the ends of the cone pulley pressing against the bronze bushings. Adjustment is made by expanding the cone. The smallest step being threaded into the balance of the cone.
- Tail Stock** This is open side design, permits cutting tools to reach the centers and provides a pocket for holding small tools. A hand lever with a shaped concave end piece clamps the spindle and a hand lever clamps the tail stock at any position on the bed.
- Tail Spindle** We make this correct diameter and bore it for No. 2 Morse taper. The end of the hand wheel rod which is fastened by screwing a sleeve into the tail stock casting, is square threaded into the tail spindle and operates easily. The tail center may be removed by backing up the screw.
- Bed** This is of metal, well ribbed and free from vibration. The broad top of the bed is flat and will receive operator's tools without danger of their working off and becoming lost. Two metal brackets on the back to receive a tool board are provided. It is made to stand on the floor or be placed on a bench as desired.
- Hand Tool Rest** This is provided with a turned shank and the front edge and top machined true and case hardened to prevent being nicked by hard corner chisels. A guide ridge is milled in the face, aiding the operator in correct turning. The rest socket or holder is split and by a strong lever clamp provides a uniform pressure on the rest shank. The rest is extra heavy for hard service.
- Carriage** A hand-feeding carriage may be furnished. It is correctly proportioned and constructed with a cross feed and a compound swivel rest. When lathes are ordered with carriage, the tail stock is provided with a set over device to be used in taper turning.
- Compound Swivel Tool Rest** The compound rest carries the slotted tool post and has a traverse of $3\frac{1}{2}$ ". Its socket base is graduated and swivels on the cross slide. This mechanism enables the operator to remove the compound rest and substitute a socket which receives the hand tool rest so that hand turning may be done without having to remove the carriage.

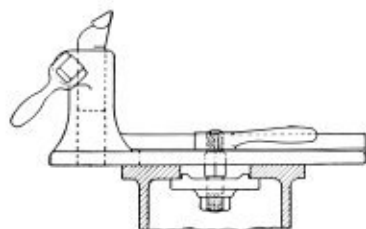
No. 54

"Oliver" Improved Under Drive Speed Lathe 12-inch

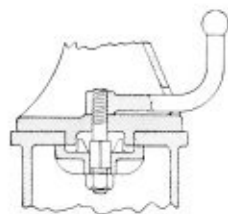
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"OLIVER" No. 54-C and D UNDER BELT DRIVE SPEED LATHE
Showing Friction Clutch, Cone and Flexible Coupling



Showing new hand rest socket, with lever lock
for the bed



Showing method of locking tail stock to
the bed

No. 54

"Oliver" Improved Under Drive Speed Lathe 12-inch

Continued

Guards Suitable guards are provided that cover the countershaft from the clutch to end of box on rear leg. Also a similar covering over the flexible couplings and shafting between the lathes when run in series.

Countershaft We have this mounted in self-oiling split bearings that are secured to the legs or standards. It carries a metal four-step cone and clutch. Flexible couplings between each lathe are furnished if they are to be driven in series by belt or direct connected to motor at one end.

GENERAL DIMENSIONS

Head Stock Spindle, 15" long, 1 3/8" diameter.
Hole through spindle, 5/8" diameter.
Spindle bored for No. 2 Morse taper.
Speed of Spindle, 700, 1195, 1920, 2800 revolutions per minute.
Width of belt, 1 1/2".
Distance from floor to center of spindle, 42".

Tail Stock Spindle, 8" long, 1 1/4" diameter.
Spindle bearing, 8" long.
Traverse of Spindle, 4".
Amount of set-over, 1" (furnished only with carriage).

Bed Length, 48" and 60"—regular.
Width, 6 5/8".
Depth, 6 1/4".
Height floor to top of bed, 36".

Carriage Traverse of Cross Feed, 6 1/2".
Travel of carriage on bed, 36 3/4".
Travel of Compound rest 3 1/2".
Length of bearing on the bed, 10".
Tool Post Slot, 2" long, 3 1/2" wide.

Countershaft Diameter, 1 1/2"—is fully guarded.
Hangers, 8" drop.
Speed, 700 revolutions per minute.
Tight and loose pulleys with No. 54-A and B, 8" x 2 1/4".

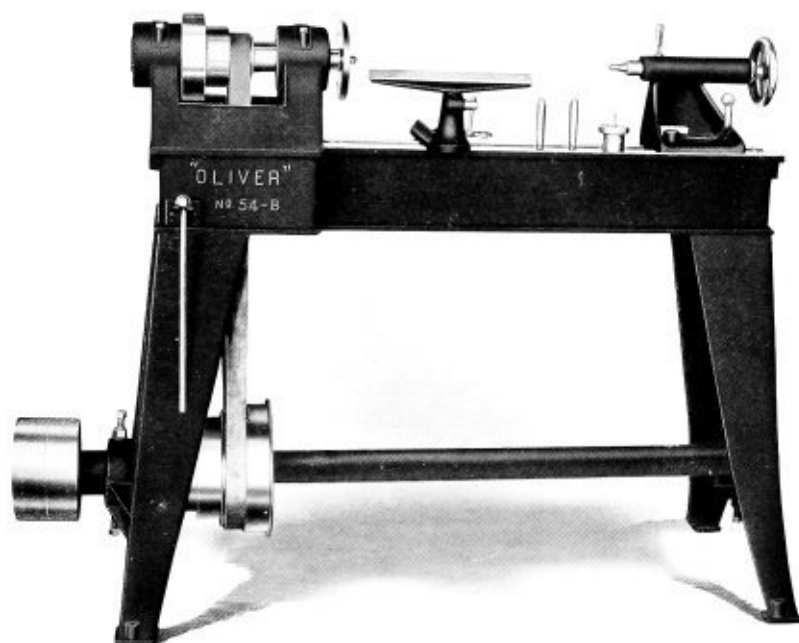
Floor Space 53" long, 24" wide for a 4' bed machine.

Horse Power Per lathe when run in a group, 1/2.

No. 54

"Oliver" Improved Under Drive Speed Lathe 12-inch

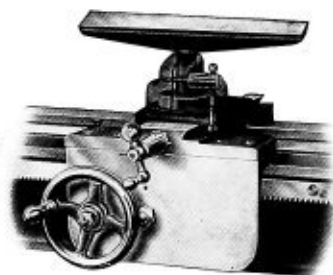
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"OLIVER" No. 54-A and B UNDER BELT DRIVE SPEED LATHE

Showing self-contained countershaft

Tight and Loose Pulley may be located anywhere on the shaft



Showing new hand tool rest (with machined edge) mounted on the carriage

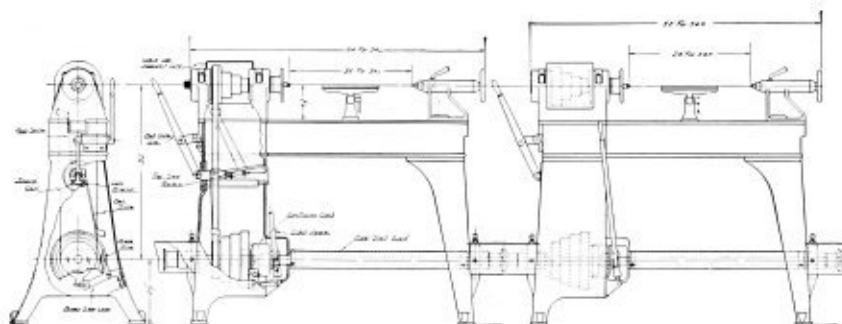


Compound Swivel Cross Slide and Tool Post easily removed from the carriage to allow use of hand Tool Rest Holder

No. 54

"Oliver" Improved Under Drive Speed Lathe 12-inch

Continued



Etching showing group Drive arrangement

Equipment

We furnish on each speed lathe the following tools: One spur center $\frac{3}{4}$ ", one cup center $\frac{1}{2}$ ", one conical center, one 6" face plate, one 6" and one 12" tool rest, one rest holder, one rosette chuck, one center rod. When lathes are ordered with carriage we furnish a special hand tool rest for use on it in place of the regular hand rest.

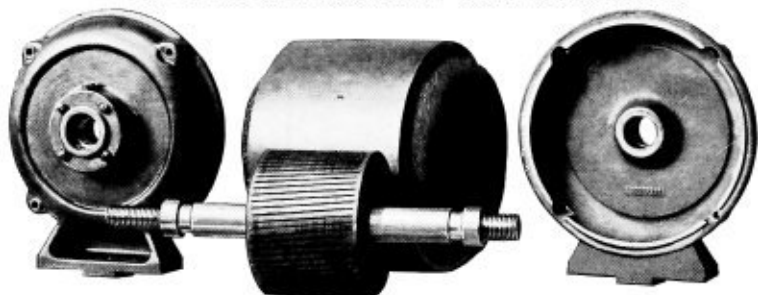
CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Egret	No. 54-A Lathe with plain tight and loose pulley self contained countershaft, bed 48" long to turn 24" between centers	450	550	36
Eikon	No. 54-B Above lathe with 60" bed to turn 24" long	480	580	37
Eland	No. 54-C Lathe with clutch and brake and flexible coupling on the self-contained counter-shaft; bed 48" long to turn 24" between centers	575	675	36
Elder	No. 54-D Above Lathe with 60" bed to turn 24" long	620	720	37
Ejret	No. 54-K Lathe with clutch, brake, flexible coupling and automatic belt shifter; bed 48" long to turn 24" between centers	700	875	36
Ejkon	No. 54-L Above Lathe with 60" bed to turn 24" long	725	925	37
Ejma	Hand Feeding Carriage and Compound Swivel Rest for any of above Lathes	50	50	0

No. 51 "Oliver" Four Speed Motor Head Speed Lathe

For Alternating Current, 3 Phase, 60 Cycle, 220 Volt

Swings 12" diameter and either 24" or 36" between centers



Four Speed A. C. Motor Parts—Nothing to Get Out of Order

Adaptation

Three phase, sixty cycle, two hundred twenty volt alternating current is becoming the standard electric current in many localities; hence, we offer this wood turning speed lathe.

Motor

This is a special four-speed, ball-bearing, totally enclosed motor with hollow shaft threaded at both ends for face plates. The outer end carries a hand wheel which can easily be replaced by a rear end face plate. The front end is arranged for Morse Taper No. 2 centers. Motor speeds are approximately 570, 1140, 1725 and 3450 revolutions per minute at full load.

Motor Construction

The motor frame is a cylindrical iron casting with openings at the bottom for bringing out the leads. The primary core is built up of steel laminations, riveted together and securely fastened in the frame.

The stator windings consist of two distinct sets of coils, from each set of which two speeds are obtainable. The individual coils are carefully insulated from the core and from each other. The ball bearings take end thrust in either direction.

Controller

The controller is mounted in the leg of the lathe and is operated by a handle which projects through an opening in the leg. A complete cycle of operation is obtained by 140 degrees revolution of the control shaft.

Dynamic braking effect for slow-down is obtained by throwing on the next lower speed. The motor should be brought to the lowest speed before being finally stopped by the hand wheel.



A. C. Controller



A. C. Controller Contact Side

Other Parts

All other parts of this lathe are exactly as described on the following two pages. Write for detailed information.

No. 51 "Oliver" Variable Speed Motor Head Speed Lathe

For Alternating Current—Any Phase, Any Cycle

Introduction This lathe represents the very latest development in electric motors and is the only successful Variable Speed Alternating Current Motor now manufactured. Heretofore speed variations were obtained through the use of a belt in connection with cone pulleys. This new type motor is compact, self-contained and does away entirely with pulleys, belts, main shafts, counter-shafts, etc., insures greater safety, economy of operation and above all a great range of speeds varying from 800 to 3500 R. P. M. This variable speed alternating current motor is built exclusively for and sold only through the Oliver Machinery Co.

Motor Head Stock The motor itself forms the headstock of this lathe and is entirely enclosed, as is also the control apparatus. It is equipped with high grade, self-aligning ball bearings of sufficient capacity to carry a 4 H. P. radial load and a 1 H. P. thrust load, much larger bearing capacity than required by the ordinary $\frac{1}{2}$ H. P. motor.

Motor Details Motor is of the single phase, series-compensated type. Will operate on any single or polyphase circuit of proper voltage and also operate satisfactorily on any frequency from 25 to 60 cycles. Upper cover on compensator end is removable for internal inspection. The wiring from main line to motor comprises two wires only, making its connection simple through the avoidance of a multiplicity of wires incidental to the use of regulators or rheostats. Lubrication is very simple and confined to the occasional filling of grease cups.

Spindle Is made of steel tubing selected for strength and durability. It is $1\frac{1}{4}$ " diameter and has a $\frac{1}{2}$ " hole its entire length to facilitate removal of centers. Inside end is threaded for face plates and bored to receive No. 2 Morse Taper Shanks. Outside end carries a hand wheel for holding the spindle for removing face plates, for turning spindle by hand when making adjustments, or for quickly stopping motor. When rear end turning is desired, the hand wheel may be replaced by a face plate.

Controller The stator frame is constructed of laminated steel reinforced with iron spacing blocks inserted to absorb the thrust, which insures absolute rigidity of the headstock. Speeds from 800 to 3500 R. P. M. or any intermediate speed may be obtained by simply turning one or the other of the conveniently placed hand wheels. There are no field rheostats, regulators or relays, the entire controlling mechanism being contained in the motor.

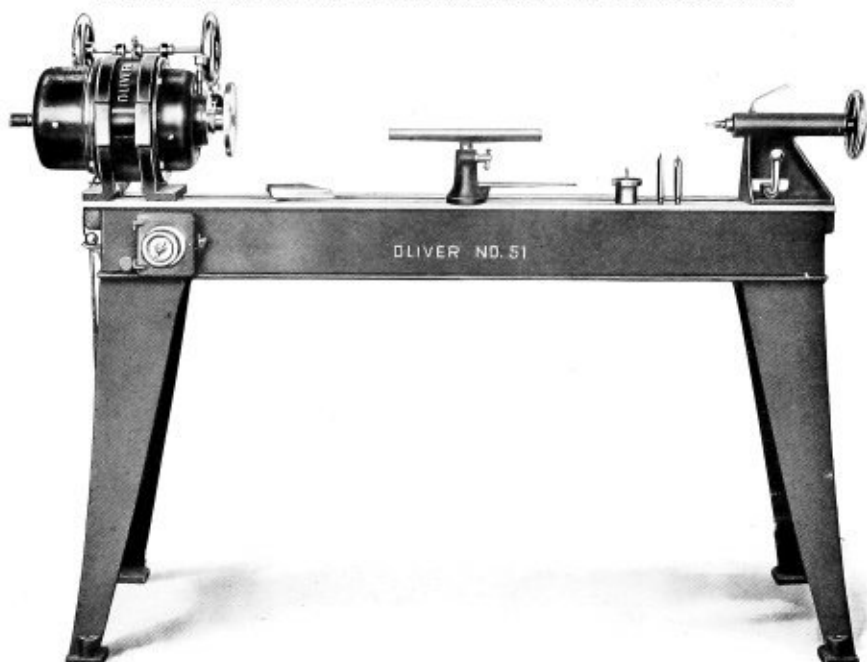
Switch This is a heavy nickel encased snap switch with cast iron fuse box, safe and convenient.

No. 51 "Oliver" Variable Speed Motor Head Speed Lathe

For Alternating Current—Any Phase, Any Cycle

Continued

Swings 12-inch diameter over bed and either 24-inch or 36-inch between centers



No. 51 "OLIVER" MOTOR HEAD SPEED LATHE—12-inch
Showing machine with plain bed

Other Parts

All other parts of this Lathe are exactly as described in connection with No. 19 Speed Lathe, pages 146 to 151 of this catalog.

Equipment

Consists of one spur center $\frac{3}{4}$ ", one cup center $\frac{1}{2}$ ", one conical center, one screw chuck $2\frac{1}{4}$ ", one face plate 6", one each 6" and 12" hand tool rest, one complete rest holder and one fully enclosed controller.

Capacity

Will swing 12" diameter over the bed or $9\frac{1}{2}$ " over the carriage and will turn 24" long between centers on 48" bed or 36" long on 60" bed.

Code	No.	Description	Crated Weight	Boxed Weight	Measurement in Cubic Ft.
Emost	51-A	Lathe with plain bed 48" long..	600	700	44
Emoto	51-B	Lathe with plain bed 60" long..	625	725	55
Emows	51-E	Lathe with bed 60" long fitted with hand-feeding carriage and compound swivel tool rest	715	815	55

No. 53
"Oliver" Motor Head Speed Lathe
For Direct Current

Swings 12-inch diameter over bed and either 24-inch or 36-inch between centers

Its Record The No. 53 Speed Lathe has made a fine record in engineering and educational institutions, satisfying the users because it eliminates main shafts, countershafts and belting, secures more light, purer atmosphere, less trouble and greater safety to the operator, reduces cost of maintenance, beautifies the work room and renders the location of the lathes a matter of choice.

Motor Head Stock We mount it directly on the lathe bed. It consists of an "Oliver" fully enclosed, variable speed, direct current, $\frac{1}{2}$ horse power motor of improved bi-polar type, having commutating interpoles. The speed varies from 600 to 3000 R. P. M.

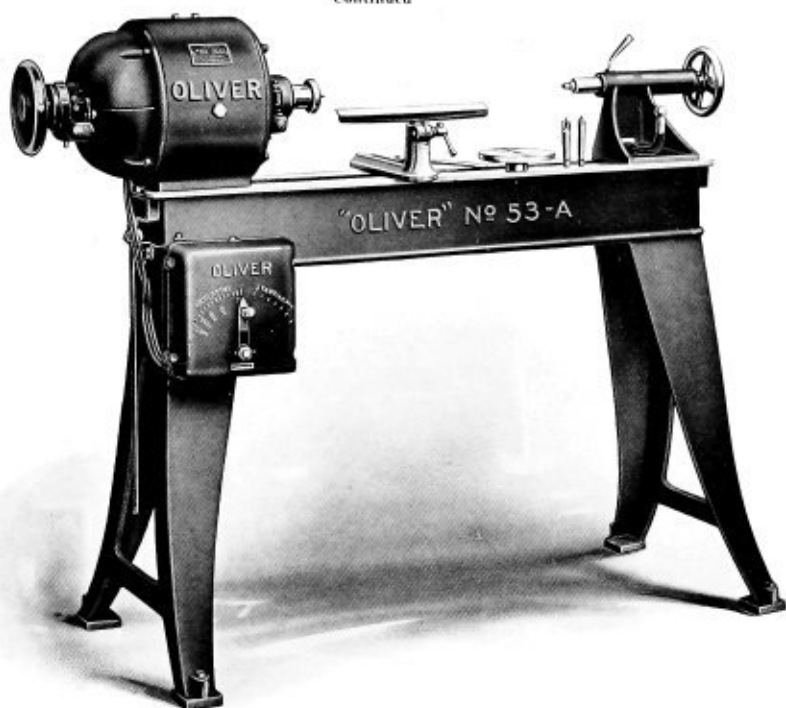
Motor Details The frame is made of soft cast steel and fully encloses all current carrying parts. Upper cover on the commutator end removable for inspecting brushes. Polepieces are drop forgings of very high magnetic permeability. Field coils are form wound and thoroughly insulated. Bearings are ring oiling and adjustable for wear. Commutator bars are made of hard drawn copper, insulated from the commutator center and from each other by selected mica. Commutator uses two brushes per stub, eliminating brush trouble and sparking. Armature is mounted on a special shaft constituting the head stock spindle. The core is built up of laminate of soft steel sheet heavily insulated before the coils are wound into place.

Spindle Is made of steel tubing selected for strength and durability. It is $1\frac{1}{4}$ " diameter and has a $\frac{1}{2}$ " hole its entire length to facilitate removal of centers. Inside end is threaded for face plates and bored to receive No. 2 Morse Taper Shanks. Outside end carries a hand wheel for holding the spindle for removing face plates, for turning spindle by hand when making adjustments, or for quickly stopping motor. When rear end turning is desired, the hand wheel may be replaced by a face plate. End thrust is taken up by means of a collar and simple lock washer.

Controller We provide this with "no-voltage" release. It has a range of 20 speeds from 600 to 3000 revolutions per minute. All electrical connections and contact points are fully enclosed by a cast iron cover, exposing only the lever and cut-off switch. Face of this cover has an index showing location for different speeds.

No. 53 "Oliver" Motor Head Speed Lathe

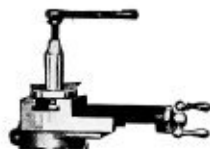
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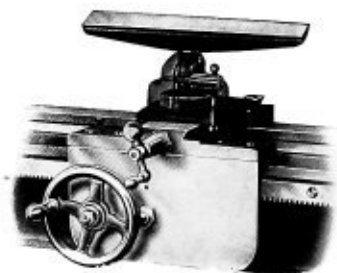
No. 53. "OLIVER" MOTOR HEAD SPEED LATHE

Showing machine with plain bed

Will operate on 20 different speeds between 600 and 3000 R. P. M.



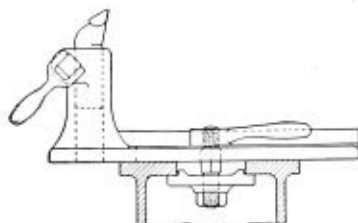
Compound Swivel Cross Slide and Tool Post easily removed from carriage when hand tool rest socket is substituted



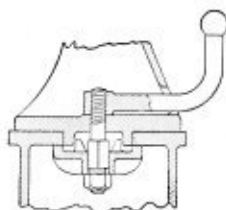
Showing new hand tool rest mounted on the carriage

No. 53
"Oliver" Motor Head Speed Lathe

Continued



Showing new hand rest socket with lever lock for the bed



Showing method of locking tail stock to the bed

The Bed

This is a cored casting $6\frac{1}{4}$ " deep, $6\frac{5}{8}$ " wide, and regularly either 48" or 60" long. The top is planed flat so the operator's tools may rest on it securely. The inside edges are machined and act as ways for the alignment of the head and tail stock. When furnished with a tool carriage the ways for same are cast to the side of the bed. Two iron brackets are fastened on the back to support a tool rack.

Legs

Lathe is furnished with long floor legs, making top of bed 36" from floor.

Tail Stock

This is of the open side design. It is secured to the bed by a positive lever clamp. Spindle is machine ground steel $1\frac{1}{4}$ " diameter, 8" long, bored for No. 2 Morse Taper and is held in position by a lever clamp. Tail center is removed by backing of screw. On lathes with carriage, the tail stock is furnished with a set-over device for taper work. Spindle has traverse of 4".

Tool Carriage

Hand-feed tool carriage with cross feed and compound swivel rest may be furnished with this lathe. The apron has a bearing of 10" on the bed and a travel of 37" on a bed 60" long. It is freely operated in either direction by means of a cut steel rack and pinion actuated by a hand wheel.

Compound Swivel Tool Rest

The compound rest carries the slotted tool post and has a traverse of $3\frac{1}{2}$ ". Its socket base is graduated and swivels on the cross slide. This mechanism enables the operator to remove the compound rest and substitute a socket which receives the hand tool rest so that hand turning may be done without having to remove the carriage.

Carriage Graduations

On lathes having tool carriage, the top of the bed and the guide of the cross slide are graduated by sixteenths and the end of the carriage, as well as the ends of the cross slide, are provided with little pointers that may be adjusted to any work. This enables the operator to turn work to a definite length or depth without having to "fit and try," as formerly.

No. 53 "Oliver" Motor Head Speed Lathe

Continued



Equipment Consists of one spur center $\frac{3}{4}$ ", one cup center $\frac{1}{2}$ ", one conical center, one screw chuck $2\frac{1}{4}$ ", one face plate 6", one 6" and one 12" hand rest, one complete rest holder, one center drift, oil cups and one fully enclosed controller.

Capacity Will swing 12" diameter over the bed or $9\frac{1}{2}$ " over the carriage and will turn 24" long between centers on 48" bed or 36" long on 60" bed.

GENERAL DIMENSIONS

Head Stock Lengths, $18\frac{7}{8}$ "; width, $11\frac{5}{8}$ "; spindle, $22\frac{3}{8}$ " long, $1\frac{1}{4}$ " diameter. Hole through spindle, $\frac{1}{2}$ "—use No. 2 Morse Taper. Speeds, 600 to 3000 revolutions per minute.

Tail Stock Length, 7"; width, 6"; spindle, 8" long, $1\frac{1}{4}$ " diameter. Adjustable screw, 8 threads to inch; bearing, 8" long. Traverse of spindle, 4". Amount of set over when ordered, 1".

Carriage Traverse of Cross Feed, $6\frac{1}{2}$ "; traverse of carriage on the bed, $36\frac{3}{4}$ "; traverse of compound rest, $3\frac{1}{2}$ "; length of bed bearing, 10"; tool post slot, $2" \times \frac{11}{16}"$.

Bed Standard lengths, 48" and 60"; width, $6\frac{5}{8}$ "; depth, $6\frac{1}{4}$ "; height floor to top of bed, 36".

Horse Power $\frac{1}{2}$. Continuous duty.

Floor Space 60" x 24" for 48" bed and 72" x 24" for 60" bed

CODE, WEIGHT, ETC.

Code	No.	Description	Domestic Weight	Export Weight	Measurement in Cubic Ft.
Emir	53-A	48" plain bed to turn 24" long, mounted on floor legs.....	600	700	44
Emmet	53-B	60" plain bed to turn 36" long, mounted on floor legs.....	625	725	55
Emula	53-E	60" bed to turn 36" long, fitted with hand feed carriage and mounted on floor legs.....	715	815	50

NOTE—These lathes may be furnished with short bench legs when so ordered.

No. 56

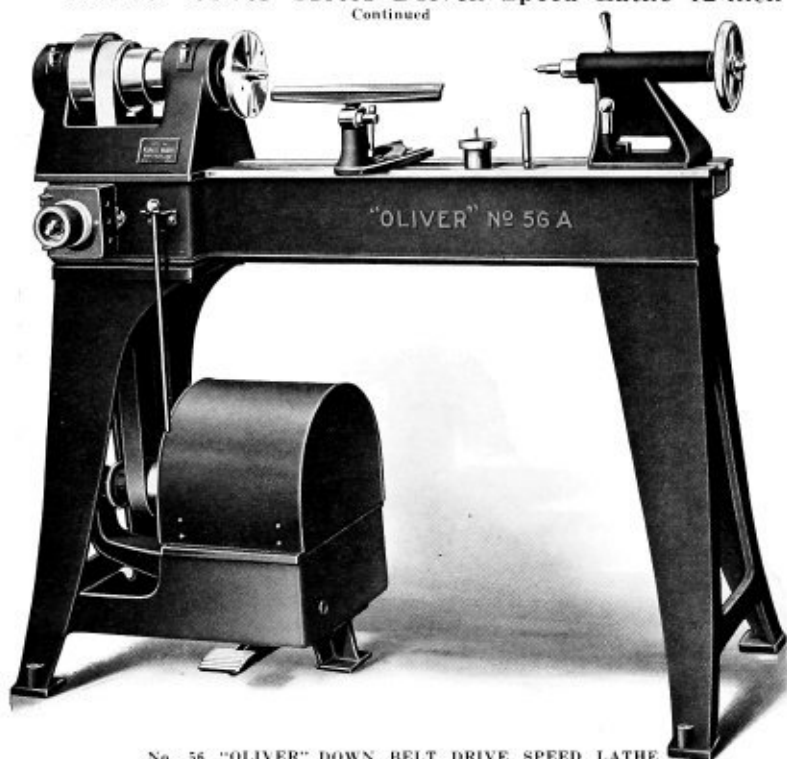
"Oliver" Motor Driven Speed Lathe 12-inch

For Direct or Alternating Current Electric Power

- Its Record** The No. 56 Speed Lathe has proven to be a great favorite, its present perfection resulting from a long series of carefully planned tests and experiments.
- Motors** Unlike the No. 53, with its variable speed motor head stock which requires direct current motor to operate, this No. 56 can be operated by any kind of current or any type of constant speed motor. Being a self-contained machine, it may be located to suit the light, or shifted with little or no expense to accommodate more equipment that may be installed later.
- Variations of Speed** Variations of speed are obtained by means of a four-step cone of suitable size attached to the armature shaft of the motor, which is located under the housing, beneath the bed, out of the way. The housing not only covers the motor, but guards the belt effectively.
- Head Stock** Head stock is a work of art. Long experience and careful painstaking attention to details enables us to say a number of things about it we would like you to remember.
- Spindle** 1st. It has Parsons white bronze ring oiling bearings that are adjustable to wear. Spindle is hollow; never heats, no matter how hard the end thrust, and needs oil about once a month.
- 2nd. The cone cannot give trouble or get loose on spindle, the smallest step is securely attached to the spindle and the adjustment for end thrust is made between that and the next larger step in a most practical, simple manner.
- 3rd. Oil does not leak or fly out, owing to elaborate arrangement made to prevent it.
- 4th. Every piece, every part, not only of the headstock, but of the whole lathe, is interchangeable with any other similar lathe. This feature is of inestimable value and relieves the one in charge of great responsibility when new parts are required.

No. 56 "Oliver" Motor Driven Speed Lathe 12-inch

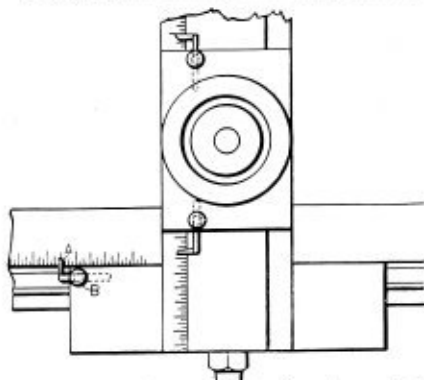
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No. 56 "OLIVER" DOWN BELT DRIVE SPEED LATHE

Showing machine with plain bed

Swings 12-inch diameter over bed, 24-inch or 36-inch long between centers, as ordered



Showing graduations on the tool carriage and bed as aids in exact turning



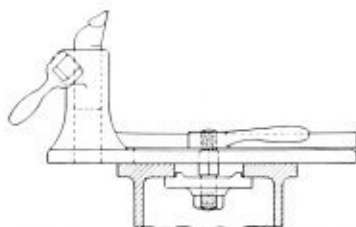
Three pole Snap Switch and Fuse Box

Furnished with single and three phase motors 110 and 220 Volts only, all others take knife switch and cover.

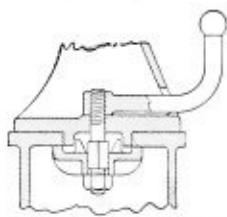
No. 56

"Oliver" Motor Driven Speed Lathe 12-inch

Continued



Showing new hand rest socket with lever lock for the bed



Showing method of locking tail stock to the bed

The Bed

This is a cored casting $6\frac{1}{4}$ " deep, $6\frac{5}{8}$ " wide, and regularly either 48" or 60" long. The top is planed flat so the operator's tools may rest on it securely. The inside edges are machined and act as ways for the alignment of the head and tail stock. When furnished with a tool carriage, the ways for same are cast to the side of the bed. Two iron brackets are fastened on the back to support a tool rack. Bed is 36" from floor to top.

Tail Stock

This is of the open side design. It is secured to the bed by a positive lever clamp. Spindle is steel, $1\frac{1}{4}$ " diameter, 8" long, bored for No. 2 Morse Taper and is held in position by a lever clamp. Tail center is removed by backing of screw. On lathes with carriage, the tail stock is furnished with a set-over device for taper work. Spindle has traverse of 4".

Tool Carriage

Hand-feeding tool carriage with cross feed and compound swivel rest may be furnished with this lathe. The apron has a bearing of 10" on the bed and a travel of 37" on a bed 60" long. It is freely operated in either direction by means of a cut steel rack and pinion actuated by a hand wheel.

Compound Swivel Tool Rest

The compound rest carries the slotted tool post and has a traverse of $3\frac{1}{2}$ ". Its socket base is graduated and swivels on the cross slide. This mechanism enables the operator to remove the compound rest and substitute a socket which receives the hand tool rest so that hand turning may be done without having to remove the carriage.

Hand Rest and Socket

The Rest is provided with a machined case hardened edge, which the turning tools easily follow. Good turning is promoted by this; also by a suitable parallel shape which fits the operator's hand. (A good point, don't overlook it.)

Motor Bracket

Motor Bracket is supported upon three point bearings, eliminating vibration most effectively, besides adding greatly to the general solidity of the entire machine.

Belt

Belt is of best quality, $1\frac{1}{2}$ " wide, endless, and attached to each speed lathe at the factory. A suitable device is provided for taking up slack or stretch in the belt as it occurs from time to time.

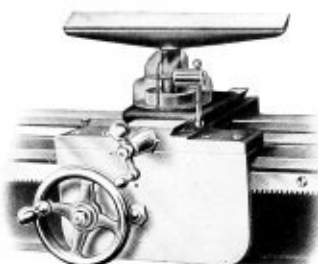
No. 56

"Oliver" Motor Driven Speed Lathe 12-inch

Continued



Compound Swivel Cross Slide and Tool Post,
easily removed from carriage when
hand tool rest socket is
substituted



Showing new hand tool rest (with machined
edge) mounted on the carriage

Face Plates

Face plates and rosette chucks of our lathes are interchangeable with any other; the first is provided with six screw holes, three equi-distant for large diameter and three for smaller. The rosette chuck is also provided with three holes in addition to its central screw and may be used on this account as an additional face plate.

Equipment

Consists of one spur center $\frac{3}{4}$ ", one cup center $\frac{1}{2}$ " one conical center, one screw chuck $2\frac{1}{4}$ ", one face plate 6", one each hand rest 6" and 12", one complete rest holder and one fully enclosed knife or snap switch with non-arcing fuses. When lathes are ordered with carriage, we furnish a special hand tool rest for use on it in place of the regular hand rest.

Capacity

Will swing 12" diameter over the bed or $9\frac{1}{2}$ " over the carriage and will turn 24" long between centers on 48" bed or 36" long on 60" bed.

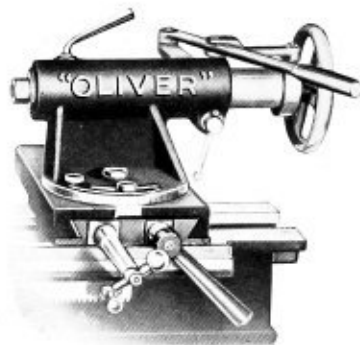
Code	No.	Description	Crated Weight	Boxed Weight	Measurement in Cubic Ft.
Eamir	56-A	Lathe with plain bed 48" long mounted on long floor legs.....	600	700	44
Ebmmt	56-B	Lathes with plain bed 60" long mounted on long floor legs....	625	725	55
Eemula	56-C	Lathe with bed 60" long, fitted with hand-feeding carriage and compound swivel tool rest, on long floor legs.....	715	815	55

"OLIVER" LATHE ATTACHMENTS

No. 50

"Oliver" Special Tail Stock

This is a Lever and Screw Feed Swivel Set-Over Tail Stock. Is built in three sizes to be used with any "Oliver" Speed Lathe and Pattern Lathes up to 20" diameter swing over bed. The swivel device swings the Tail Stock about a central pin for 30 degrees each way and is clamped in position by two hexagonal nuts. The off-set is controlled by lever and screw in a finished dove-tail way. A strong lever with eccentric clamp secures the Tail Stock to bed. The Spindle may be actuated either instantly by the lever feed or steadily by the hand wheel and screw feed.



No. 50 "OLIVER" SPECIAL TAIL STOCK

CODE, WEIGHTS, ETC.

Code	No.	Swing of Lathe	Traverse of Spindle	Amount of Set-Over	Domestic Weight	Foreign Weight
Endue	50-A	12"	4"	5"	30	40
Enema	50-B	16"	4½"	7"	40	50
Enforce	50-C	20"	6"	9"	50	60

No. 49

"Oliver" Quick Action Lever Tail Stock

This kind of Tail Stock can be furnished for any "Oliver" Speed Lathe or Pattern Lathe up to 20" swing over the bed. The quick feed lever part may be securely clamped at any position, making lathe available for regular turning.



No. 49 "OLIVER" SPECIAL TAIL STOCK

CODE, WEIGHT, ETC.

Code	No.	Swing of Lathe	Traverse of Spindle	Domestic Weight	Foreign Weight
Enka	49-A	12"	4"	15	25
Enki	49-B	16"	4½"	25	35
Enko	49-C	20"	6"	35	45

"OLIVER" LATHE ATTACHMENTS—Continued

No. 134 "Oliver" Improved Tool Holder



"OLIVER" PATENT TOOL HOLDER
Showing its parts



"OLIVER" PATENT TOOL HOLDER
In position in Tool Post of a Lathe

Advantages The introduction of carriage and automatic feeding devices on wood turning lathes opened the field for a universal tool holder that would enable the workman to set his cutting tools at any angle, the same as in hand turning with the common hand tool rest. Moreover, the tool rest wanted was one to hold the old style chisels and gouges as well as special tools desired.

Guarantee of satisfaction goes with each Tool Holder. Try one and you will be convinced of its good qualities.

Code	No.	Size	Domestic	Foreign
Ennoble	134-A	3 filling rings for 12" to 14" lathes....	6 lbs.	8
Enrage	134-B	3 filling rings for 16" to 30" lathes....	7 lbs.	9

No. 44 "Oliver" Turning Tools

No.	Size	Code, Enrobe Description
44-A	1½"	Round Nose
44-B	1⅝"	Straight Edge
44-C	1½"	Spear Point
44-D	1"	Skew Edge
44-E	1"	Gouge
44-F	1⅝"	Double Edge Skew
44-G	2½"	Roughing and Smooth- ing



These turning tools are especially prepared for use in the "Oliver" Tool Holder. This set is a very good one to start with, covering as it does practically everything that can be used in turning with the feeding carriage of a lathe. The blades are made from solid steel of highest grade suitable for wood turning, and the handles are from sound hard wood properly ferruled. We guarantee them to be all right.

"OLIVER" LATHE ATTACHMENTS—Continued

No. 262 All Steel Turning Chisels

Full length 12-inch

Code, Erse

We furnish these ground sharp and handled in the following sizes:

$\frac{1}{8}$ " $\frac{1}{4}$ " $\frac{3}{8}$ " $\frac{1}{2}$ " $\frac{5}{8}$ " $\frac{3}{4}$ " $\frac{7}{8}$ " 1" $1\frac{1}{4}$ " $1\frac{1}{2}$ " $1\frac{3}{4}$ " 2"

We also furnish in sets as follows:

Escape No. 262-A Set of 9 chisels to 2"—ground sharp and handled.
Escort No. 262-B Set of 12 chisels to 2"—ground sharp and handled.

No. 263 All Steel Turning Gouges

Full length 12-inch

Code, Esparto

We furnish these ground sharp and handled in the following sizes:

$\frac{1}{8}$ " $\frac{1}{4}$ " $\frac{3}{8}$ " $\frac{1}{2}$ " $\frac{5}{8}$ " $\frac{3}{4}$ " $\frac{7}{8}$ " 1" $1\frac{1}{4}$ " $1\frac{1}{2}$ " $1\frac{3}{4}$ " 2"

We also furnish in sets as follows:

Esprit No. 263-A Set of 9 gouges to 2"—ground sharp and handled.
Essay No. 263-B Set of 12 gouges to 2"—ground sharp and handled.

No. 264 Turner's Hustler Chisels

Code, Esteem

We furnish these ground sharp and handled in the following sizes:

$\frac{1}{8}$ " $\frac{1}{16}$ " $\frac{1}{4}$ " $\frac{3}{8}$ " $\frac{1}{2}$ " $\frac{5}{8}$ " $\frac{3}{4}$ " $\frac{7}{8}$ " 1"

No. 265 Turner's Parting Tools

Code, Etch

We furnish these ground sharp and handled in the following sizes:

$\frac{1}{8}$ " $\frac{3}{16}$ " $\frac{1}{4}$ " $\frac{3}{8}$ " $\frac{1}{2}$ " $\frac{5}{8}$ " $\frac{3}{4}$ " $\frac{7}{8}$ " 1"

No. 266 Wood Turner's Sizing Tools

Code, Ether



This is made in only one size (opens to 4"). It is made of English Cast Steel and correctly tempered. We furnish one $\frac{1}{2}$ " spear-point cutting tool unless directed otherwise.

"OLIVER" LATHE ATTACHMENTS—Continued

Group A "Oliver" Wood Turning Tools

Code, Enroc

This group is very highly recommended as an individual wood turning set for each lathe used in educational institutions such as Universities, Colleges, Technical Schools and Manual Training Departments. The consensus of opinion of over two hundred instructors is back of this set. You will never regret adopting "Oliver" Group A as your standard individual set. All turning tools handled, ground sharp ready for use.

Each set consists of eleven pieces as follows:



Three Turning Gouges, one each $\frac{3}{8}$, $\frac{1}{2}$ and $1\frac{1}{2}$ inch.
Three Skew Chisels, one each $\frac{1}{4}$, $\frac{1}{2}$ and 1 inch.
Two Round Nose Chisels, one each $\frac{1}{4}$ and $\frac{1}{2}$ inch.
One Parting Tool $\frac{1}{2}$ inch, $\frac{1}{4}$ inch across cutting edge.
Two Calipers, 6 inch plain, one each inside and outside.

Group B "Oliver" Wood Turning Tools

Code, Enrof

This group of turning tools is intended for schools who do not wish as complete a set as shown above.

All of these tools are made of the highest grade material under modern methods of tempering and finishing.

Each set consists of eight pieces as follows:



Two Turning Gouges, one each $\frac{1}{2}$ and 1 inch.
Two Skew Chisels, one each $\frac{1}{2}$ and 1 inch.
One Round Nose Chisel, $\frac{3}{8}$ inch.
One Parting Tool $\frac{1}{2}$ inch, $\frac{1}{8}$ inch across cutting edge.
Two Calipers, 6 inch plain, one each inside and outside.

"OLIVER" LATHE ATTACHMENTS—Continued

No. 206 "Oliver" Adjustable Back Rest

Notice—When ordering this Adjustable Back Rest be sure and state the "swing" of lathe on which it is to be used.

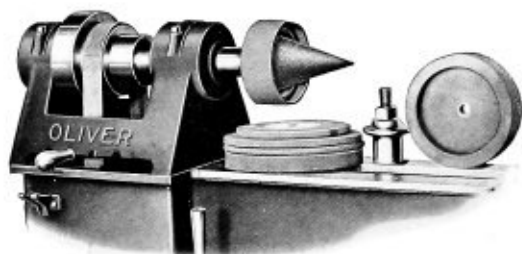


Adaptation This is for steadying long work while it is being turned in lathes, and it is a tool of proven merit.

Construction It is made of iron and steel, with bearings accurately fitted. An ordinary rest holder and lever clamp is used for adjusting to work. Rolls are smooth and do not mar the work.

Code	No.	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Entail	206-A	For stock 6" diameter and under, shank 1".....	16	16	2
Enteric	206-B	For stock 6" diameter and under, shank 1 1/4".....	16	16	2
Entice	206-C	For stock 14" diameter and under, shank 1 1/2".....	25	25	2 1/2

No. 239-A Grinding and Buffing Attachment



This handy attachment acts as an extension of the spindle, is provided with collars between which may be held the leather stropping device. The emery cone illustrated, also a variety of emery wheels, a rag wheel for buffing and polishing, all add to the convenience and can be furnished at extra cost.

Code	No.	Description
Errant	239-A	For use on Speed Lathes.
Erreo	239-B	For use on large Pattern Lathes.

"OLIVER" LATHE ATTACHMENTS—Continued

No. 250 "Oliver" Large Face Plates



These are made in any diameter from strong, sound and durable material, machined all over and properly balanced. There are a number of holes countersunk in the face for receiving screws with which to secure to the plate the work to be turned. Made to fit any make of lathe. When ordering be sure to state diameter and length of hole, pitch of threads and make of lathe.

Code, Entreat

No.....	250-A	250-B	250-C	250-D	250-E	250-F
Diam.....	10"	12"	14"	16"	18"	20"
No.....	250-G	250-H	250-I			
Diam.....	24"	30"	36"			

No. 208 "Oliver" Small Face Plates

These are constructed in a similar way to the large plate above illustrated, and can be furnished for any make of lathe. State size and length of hole and pitch of threads.

Code, Entry

No.....	208-A	208-C	208-F	208-H
Diameter.....	3"	4"	6"	8"



No. 207

"Oliver" Small Screw Chuck and Wrench

Furnished to suite any Lathe



Code, Entomb

Screw Chuck shown by the above half-tone provides a very strong hold on the work. The chuck is screwed very tightly into the end of the work by means of the chuck wrench, the end pegs of which fit the holes made for it on the chuck. Then the work, chuck and all, is screwed into any face plate hole, which is already on the spindle. The special advantage is that the work may be turned clear to the end of the piece.

"OLIVER" LATHE ATTACHMENTS—Continued

No. 251 "Oliver" Spur Centers



Code, Epad

Made from fine tempered steel with shanks accurately ground to fit the spindle for any make of lathe. We use special high carbon nickel alloy steel which is both hard and tough.

No.....	251-A	251-B	251-C	251-D	251-E	251-F
Size.....	$\frac{3}{4}$ "	1"	1 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "	2"

No. 252 "Oliver" Cup Centers

Tempered Steel
and accurately
ground.



Code, Epad

For Wood Lathes

No.....	252-A	252-B	252-C	252-D	252-E
Size.....	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1"	1 $\frac{1}{2}$ "	2"

No. 253 "Oliver" Conical Centers

Tempered Steel
and correctly
ground.



Code, Epad

For Wood or Metal
Lathes

No.....	253-A	253-B	253-C	253-D
No. of Morse Taper.....	1	2	3	4

NOTE—We make centers to fit any make of lathe. When ordering be sure to state what taper and give size.

No. 254 "Oliver" Screw Chucks

Code, Epoch



The advantage of having a tool of this kind is apparent to those who have small pieces to turn into various shapes from stock that cannot be held between centers.

No.....	254-A	254-B	254-C	254-D	254-E
Size.....	2 $\frac{1}{4}$ "	2 $\frac{1}{2}$ "	3"	3 $\frac{1}{2}$ "	4"

"OLIVER" LATHE ATTACHMENTS—Continued

No. 255 "Oliver" Right Angle Rest 6-inch

Code, Epede

This tool has been found of such material advantage that we are supplying it with all our Lathes. We accurately turn the shank to fit the regular rest holders. The arms of the rest are 6" long and true.



No. 256 "Oliver" Floor Stand

Code, Erase

This is one of the features of the "Oliver" Lathes, having a broad base that it may be firmly placed. It carries an offset rest holder for service in doing interior turning. It holds the ordinary rests and has the clamping devices for securing them firmly. We make them in three sizes.

No. 256-A for 12" Lathes

No. 256-B for 16" Lathes

No. 256-C for 20" to 30" Lathes



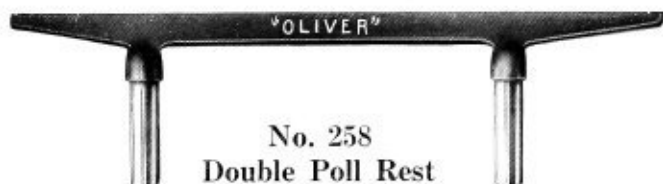
No. 257 "Oliver" Single Poll Rest

Code, Erebub

These are made with any size of shank. They are machined straight on the face or edge that supports the turning tool. Shanks are turned to exact sizes. When ordering be sure to give size of shank.



No.....	257-A	257-B	257-C	257-D	257-E
Length	4"	6"	8"	10"	12"
No.....	257-F	257-G	257-H	257-I	
Length	14"	16"	18"	20"	



**No. 258
Double Poll Rest**

Code, Ergo

No.....	258-A	258-B	258-C	258-D	258-E	258-F
Length	20"	24"	30"	36"	40"	48"

Will make them to fit any rest holder.

No. 41

"Oliver" Double Disk Sander 37-inch

Introduction The economic value of sand paper is becoming more apparent every day and its application to the pattern makers' art is one of its most useful qualifications. The only difference between grinding iron and wood on a disk sander is that you can grind wood many times faster. Five minutes of sanding on a piece of wood will frequently accomplish more than an hour would any other way. It smooths up end grain and puts draft on it. It sands out saw marks. In repairing patterns the broken piece that is usually thrown away because it is full of brads or nails, may be sanded nails and all saved.

A large disk is more desirable than a small one because the sand paper farthest from the center does the most work.

General Construction This very desirable sander is constructed from a new design and has embodied in the design and superior workmanship that which renders it subject to the most searching inspection. If one has important and variable sanding to do he should not ignore this very efficient source of economy.

Base We build this in the cored form with a wide flange for rigid support on the floor. It carries all the working parts and its solidity eliminates vibration. On the front is a door through which may be introduced a motor for electric drive.

Spindle This is of fine crucible steel, ground true and fitted at each end to receive the metal disks. Its driving pulley is grooved spirally on its face to permit increase of belt power.

Bearings They are lined with "genuine" babbitt scraped to correct fit, have large oil chambers and wick oilers. End motion to spindle is eliminated by means of forged collar on the spindle between disk and bearings and adjustable keyed and set screwed pulley against babbitt thrust bearing.

Disks These are of steel 37½" diameter machined to receive the sand paper and are screwed to the spindle by four large counter-sunk screws. The paper is cemented to face of disk.

Dust Hoods A sheet steel dust exhaust hood for each disk is located just below the table top with a connecting spout to each hood. Prevents dust from being scattered about the room.

Disk Guards Sheet steel guards to protect operator against danger from that part of disks above the table are furnished regularly with each machine.

No. 41
"Oliver" Double Disk Sander 37-inch

Continued



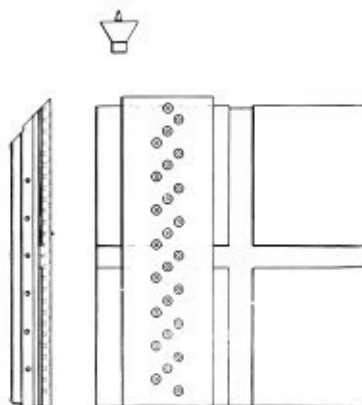
No. 41-B "OLIVER" DOUBLE DISK SANDER—37-inch
Note the disk Guards and Dust Hoods Regularly Furnished



A few specimens of work that can be done on "Oliver" Disk Sanders

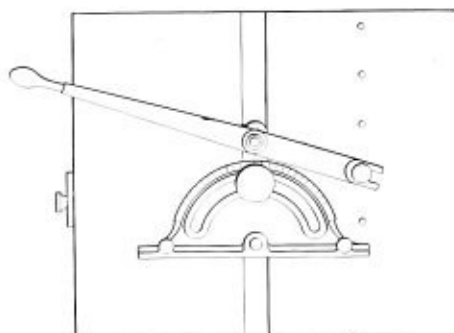
No. 41
"Oliver" Double Disk Sander 37-inch

Continued



No. 41 "OLIVER" DOUBLE DISK SANDER

Etching of device for sanding circular work on the edges



No. 41 "OLIVER" DOUBLE DISK SANDER

Etching of Table showing device for sanding to uniform widths and lengths

Circular Sanding Attachment

Consists of metal plate with tongue to fit slot in table which permits using the entire surface of disk in circular sanding. The plate has a series of staggered holes so that any diameter within the capacity of the machine may be sanded either square or to any angle the table will tilt. The steel pivot center can readily be changed from one hole to another and for diameters between the limits of these holes and for fine adjustment, a micrometer screw is provided for bringing the table to and from the sanding disk.

Tables

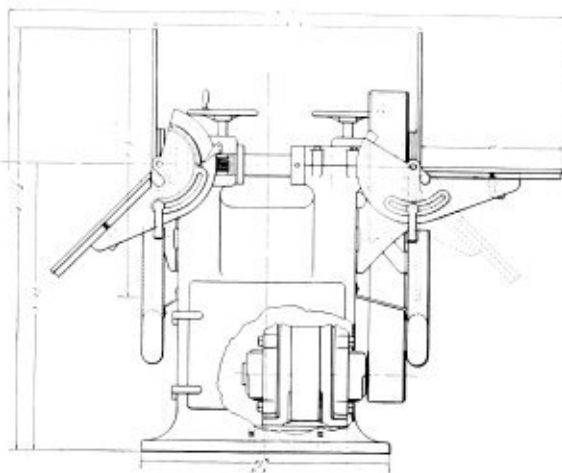
They are 46" long and 20" wide, have a lateral adjustment of 2" by means of hand wheel and screw and an angular adjustment of 45 degrees. The table brackets are mounted on rocker arm controlled by means of hand wheel, worm and segment of worm gear.

Duplicating Fence

For sanding several duplicate pieces to the same width we furnish on one table a fence sliding in a groove. It is moved to and from disk by a lever which strikes an adjustable stop at the side. The fence is graduated to 30 degrees each way and may be swiveled to sand angular work. This mechanism may be removed as desired, leaving table clear for large work.

No. 41
"Oliver" Double Disk Sander 37-inch

Continued



No. 41-B "OLIVER" DOUBLE DISK SANDER—37-inch
Etching shows motor drive

**Motor
Drives**

There are a variety of these that are applicable to this machine, the full details of which we will supply on request. The best plan is the one where the motor is located inside the base and belts from a pulley thereon to the spindle pulley. The motor support is adjustable for taking up the stretch of the driving belt.

Countershaft

This is equipped with ring-oiling bearings and the necessary driving pulleys. The loose pulley is fitted with a bronze sleeve with oiling devices.

Equipment

Consists of the two disks, six abrading sheets of No. 1½ garnet sandpaper, two dust hoods, two disk guards and two oil cups. Countershaft hangers and pulleys.

No. 41
"Oliver" Double Disk Sander 37-inch

Continued

GENERAL DIMENSIONS

Base	65" long, 39" wide, 40½" high to spindle center.
Disks	37½" diameter.
Spindle	34" long, 3" diameter with journals 7½" and 8¾" long. Pulley 10" x 7½"—speed 500 revolutions per minute.
Tables	46" long, 20" wide, vertical adjustment 6½", lateral adjustment 5", tilts to 45 degrees.
Countershaft	40½" long, 1½" diameter. Hangers 14" drop—bearings 6" long. T & L pulleys 10" x 6". Driving pulley 10" x 7½". Speed 500 revolutions per minute.
Floor Space	42" x 82".
Horse Power	Maximum 6.

CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement In Cubic Ft.
Ethics	No. 41-A Size 37"	3100	3500	118
Ethit	No. 41-B Size 37"	3100	3500	118

EXTRAS

Sando	Sando-Cement, one gallon can.
Ethner	Steel Guards to guard both disks above the tables.
Ethnic	Abrading Disks or sheets cut to shape from No. 1½ Garnet Sandpaper.
Etanob	Metal Disks, 37" diameter, useable on either side.

"Oliver" Sando-Cement

A scientific adhesive for fastening Garnet Paper or Emery Cloth sheets to Metal Disks and Rolls of Disk and Spindle Sanders or Grinders

Quickly fastens abrading sheets to Metal Disks or Rolls.



Odorless, Vermin-Proof, Non-Corrosive, Fireproof, Quick-acting, Non-poisonous.

One Gallon Can of
"Oliver" Sando-Cement

Advantages For years all users of Disk and Spindle Sanders or Grinders have been in need of an effective method for quickly fastening the abrading sheets to the disks or rolls with the assurance that when the sheets are worn they can be easily removed and new sheets installed with the least possible loss of time. After many experiments we can now offer with pride this scientifically prepared adhesive—Sando-Cement.

Ready for Use "Oliver" Sando-Cement just as received in this can, is ready for use. No mixing or preparing is required. If it gets thick because cold, warm it; if dried out, thin with hot water (use very little water and stir well).

Directions Apply "Oliver" Sando-Cement evenly with a flat brush to the entire contact area of the metal disks or rolls, as well as the back of sand paper or emery cloth sheets which are to be applied; place the abrading sheet on a flat place with the cement side up, and cover this with the cemented side of the metal disk; allow to stand until the Sando-Cement has set. This will require but a few minutes—twenty minutes at the outside—then the disks are ready for use. For rolls or drums apply the abrading sheets quickly and wind a string around and around to counteract the natural resistance or spring of the paper. To remove the abrading sheets, apply hot water.

Care The brush should be washed or placed in a can of water. The unused cement should be returned to the can and this should be kept air tight.

Code
Sando

Description
One Gallon Can of "Oliver" Sando-Cement securely packed.

No. 34**"Oliver" Vertical Spindle and Disk Sander**

Ball Bearings and Single Belt Drive
24-inch and 30-inch Disk

Introduction In this machine are incorporated all of the best features found on any disk and spindle sander. The driving is all done through a single spindle. The disk shaft is connected to the drum by means of a standard friction transmission. The machine is ball bearing throughout with double row thrust bearings for each spindle, full enclosed and protected.

Economy By the use of highest quality ball bearings and the simple transmission, the machine requires practically no more power applied to the belt than is used at the point of sanding.

Main Frame Is heavy, made of one casting in the cored form with large flanged base measuring 28" x 28" at the floor.

Disk Table Is machined true with grooves to receive centering plates, duplicating attachment and angle gauge. The disk table is counterbalanced by weights operating inside the column. There is a positive clamping device for holding table in position on column. Disk table tilts 10 degrees up and 45 degrees down. The disk table moves back 4" from the disk. Table is adjustable both above and below the center of the disk. The tilting mechanism forms the bracket on which the table rests. The heavy cast iron machined rockers are so arranged that the pivoted center is exactly in the plane of the disk.

Spindle Table Is 26" x 30", height from floor 42". Table tilts 45 degrees forward and 5 degrees backward. Provided with removable metal throat pieces closely fitting the 2", 3" or 4" drums respectively.

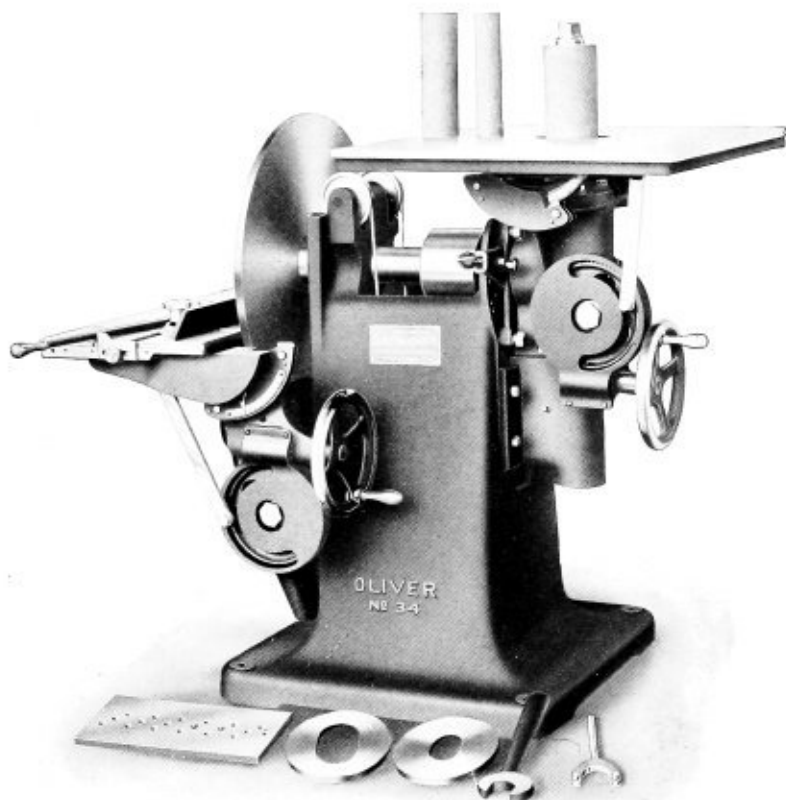
Disk This is 24" or 30" in diameter, made of steel $\frac{1}{2}$ " thick, machined in such a way that the paper easily adheres to it and tested for running balance. The center of the disk is 32" from the floor. Hood is so arranged as to connect conveniently with an exhaust pipe.

Can operate disk without running spindle. The latter can be instantly thrown into or out of operation by simply moving one lever, which is conveniently placed.

Drum The oscillating mechanism is operated from spindle through worm and gear in oil, making fifty strokes per minute. The oscillating travel of drum is $1\frac{1}{4}$ ". Standard length of drum 9".

No. 34
"Oliver" Vertical Spindle and Disk Sander

Continued



No. 34 "OLIVER" VERTICAL SPINDLE AND DISK SANDER

Made in two sizes—24-inch and 30-inch diameter disks

Front view showing method of tilting tables



No. 34

"Oliver" Vertical Spindle and Disk Sander

Continued

Drives

The motor may be placed a short distance from column as shown in cuts or a countershaft may be located in the same position.

A very compact drive may be secured by driving directly up from countershaft below floor.

Equipment

Consists of 2", 3" and 4" drums, each with steel circles to fit the table; one centering plate with two plugs for circle work which will sand circles to 30" in diameter; one attachment for duplicating pieces; one graduation gauge for setting the desired angle; one spanner wrench and one wrench for drum.

GENERAL DIMENSIONS

	Size of Disks	
	24" Disk Machine	30" Disk Machine
Spindle pulley (disk).....	6" x 4½"	6" x 4½"
Table (drum)	26" x 30"	26" x 30"
Table (disk)	33½" x 15"	39½" x 15"
Disk	24"	30"
Table (disk) tilts up	15°	15°
Table (disk) tilts down	45°	45°
Table (disk) moves back from disk	4"	4"
Table (disk) raises above center....	6"	6"
Table (disk) lowers below center....	5½"	6½"
Drums.....	2", 3" and 4" dia. x 9" long Same	
Oscillating movement of drum.....	1½"	1½"

Floor Space Machine measures 40" x 58" over all.

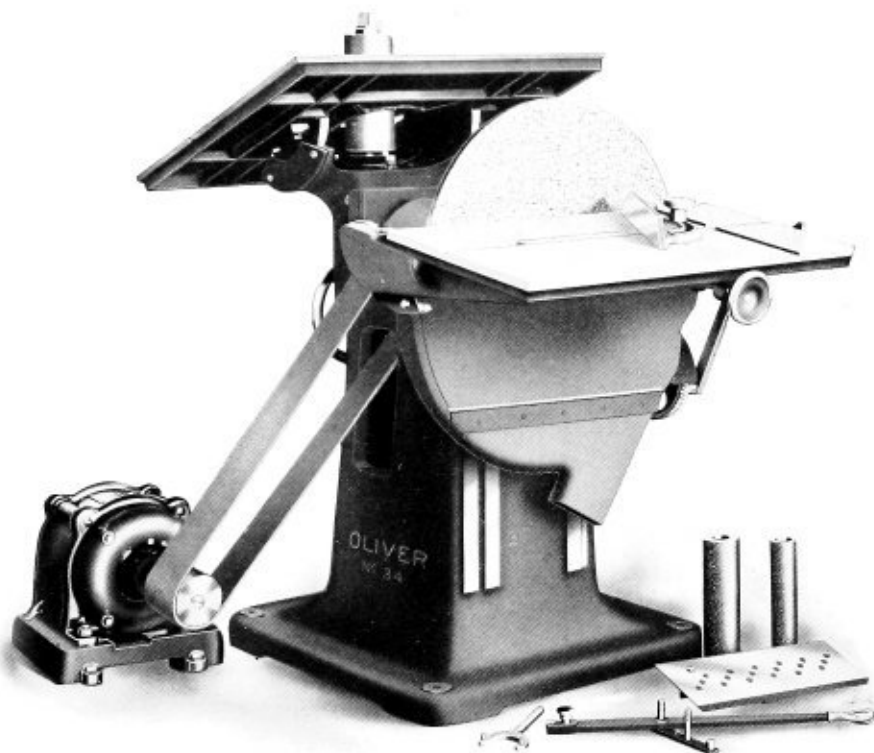
Countershaft Has 10" x 5" T & L pulleys and 12" x 5" driving pulley. Speed 600 R. P. M.

Horse Power 2 to 4.

No. 34 "Oliver" Vertical Spindle and Disk Sander

Ball Bearings and Single Belt Drive

Continued

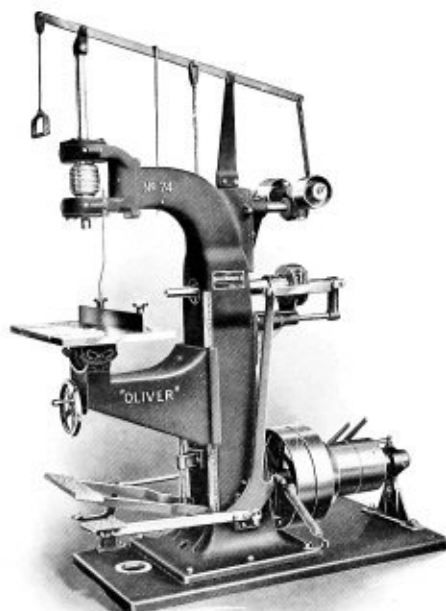


No. 34 "OLIVER" VERTICAL SPINDLE AND DISK SANDER
Rear view showing motor drive

Code	No.	Machine Description	Domestic Weight	Foreign Weight	Meas. in Cu.Ft.
Etap	34-A	Machine with countershaft, 24" disk	2040	2250	65
Etape	34-B	Machine without countershaft, 24" disk.....	1840	2050	60
Etap	34-D	Machine with countershaft, 30" disk	2050	2270	65
Etap	34-E	Machine without countershaft, 30" disk.....	1850	2075	60

**No. 74****"Oliver" Universal Vertical and Horizontal Borer**

Ball Bearings—Two Spindle

**No. 74-A "OLIVER" UNIVERSAL VERTICAL AND HORIZONTAL BORER**

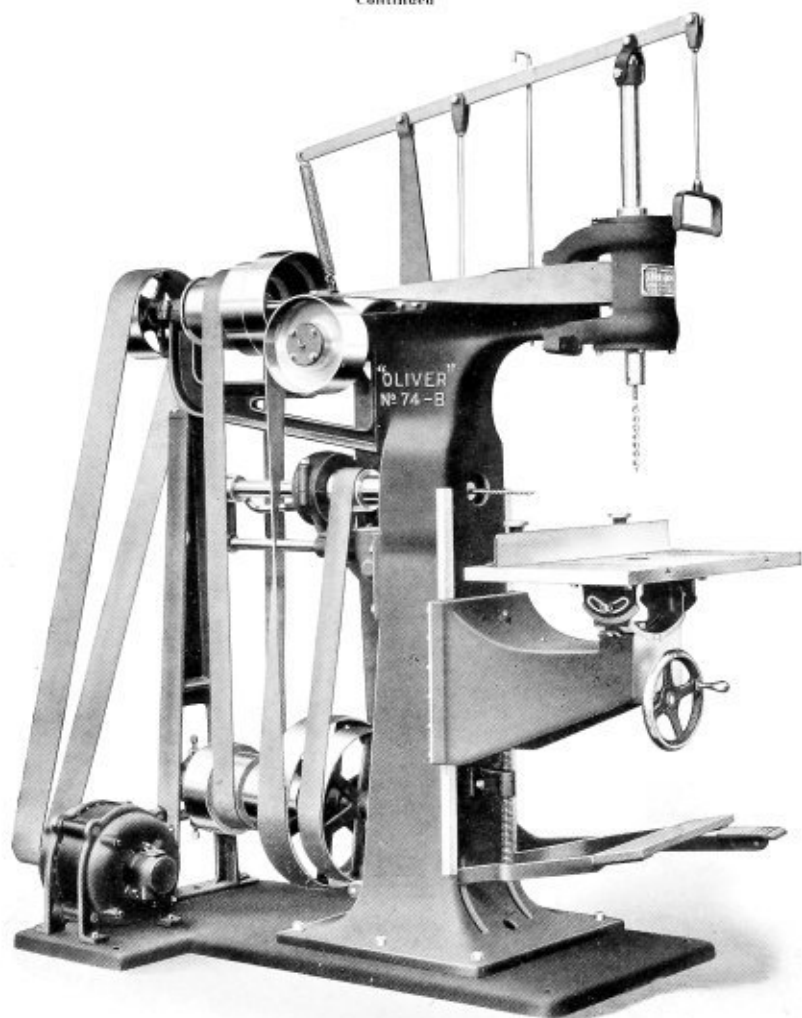
Introduction We have designed this with the idea of supplying to the trade a heavier and more desirable machine for boring purposes than is usually offered. Those who find ordinary boring machines too light and weak for their purpose are particularly requested to study this Borer.

Adaptation This is an extraordinary borer—it will not only respond with satisfaction to all kinds of boring machine work, but will also drill holes in iron or to do the work of a router, shaper, buzz planer or sandpaper machine. A little safety cylinder, similar to that used in our No. 144 jointer, applied to this machine opens up an endless variety of work that this machine will easily take care of. A variety of sanding spindle helps to smooth up many otherwise almost inaccessible places.

The machine is built right, works right and we can recommend it as an "Oliver Tool."

No. 74 "Oliver" Universal Vertical and Horizontal Borer

Continued



No. 74-B "OLIVER" MOTOR DRIVEN UNIVERSAL VERTICAL AND HORIZONTAL BORER

Capacity

Vertical spindle will bore 12" deep to center of 36". Horizontal spindle will bore 7" deep. Both spindles will readily bore holes 3" diameter and under.

No. 74 "Oliver" Universal Vertical and Horizontal Borer

Continued

Column This is a large, heavy, hollow casting bolted to a sole plate 28" x 60"; height over all, 7' 9".

Vertical Spindle This is 1½" diameter carried in a sleeve formed by the driving pulley with its extended ends. These ends are the rotating journals which fit into very large and substantial ball bearings. Spindle is bored to receive ½" bit shanks and when so ordered the nose is threaded to take a three-jawed chuck.

A vertical travel of 12" is obtained by either hand lever or foot treadle, as illustrated. Speed 3000 R. P. M. Pulley 5" x 4½".

Horizontal Spindle This has ball bearings and is sustained in a bracket on the column and projects through it at a proper height from the base to get the full benefit of the table movements necessary for the work being bored, and is moved forward by a foot treadle and made to assume its normal position through a coil spring release. It has a forward movement of 7". But one speed is supplied with this spindle, as it is usually engaged in boring the small diameters of holes. Speed 3000 R. P. M. Pulley 4½" x 4".

Table Is 18" x 30", with a vertical adjustment of 17" obtained by hand wheel and screw. Table tilts to an angle of 40 degrees to or from the column, and 30 degrees to right or left. Rockers are graduated to show degree of pitch attained, and table has T slots to receive fence bolts.

Countershaft Self contained; tight and loose pulleys 10" x 5"; driving pulleys 16" x 18" diameter, 4" wide; speed 830 R. P. M. A number of variations in the method of both belt and motor drive may be applied at additional cost. Send for detailed individual circular of this machine.

Idler Pulleys These located at rear of column are independently adjustable to track the right angle belt properly. They are bronze, bushed and oiled through the studs by grease from cups provided.

Horse Power 3 to 5 H. P. is required, as work demands.

Equipment Five bits 6" twist, one each ¼", ⅜", ½", ⅝" and ¾".

Floor Space 70" x 38" for No. 74-A; 73" x 38" for No. 74-B.

CODE, WEIGHT, ETC.

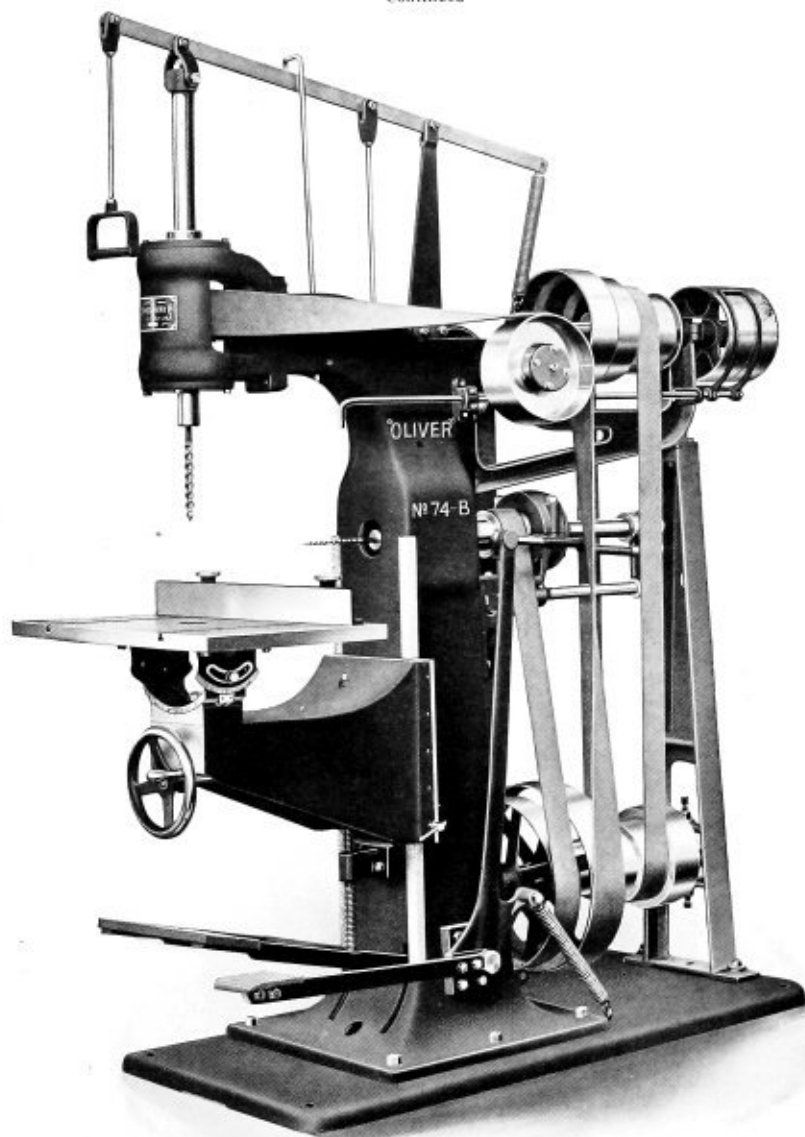
Code	No.	Machine Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Exile	74-A	Belt driven, as illustrated.....	2000	2300	101
Exilg	74-B	With special countershaft having four-step cone pulley to give 4 speeds to spindles, 968 to 3000 R. P. M.....	2300	2600	101

EXTRAS

Exotic Set of internal belts for spindles.

Expel Little Giant Chuck for bits 0" to ½" fitted to the spindle.

No. 74 "Oliver" Universal Vertical and Horizontal Borer
Continued



No. 74-B "OLIVER" UNIVERSAL VERTICAL AND HORIZONTAL BORER

No. 73

"Oliver" Universal Vertical Borer

Ball Bearings—Single Spindle

Introduction We have designed this with the idea of supplying to the trade a heavier and more desirable machine for boring purposes than is usually offered. Those who find ordinary boring machines too light and weak for this purpose can get results from this one that no doubt will be satisfactory.

We have not tried to make a cheap boring machine that will compete in price with some other makes but we did try to build a machine that would **bore holes** when you want them, whether they are $\frac{1}{4}$ " or 3" in diameter. The tool that is weak because it is too light in weight, too small in its working parts and cheap because of the poor quality and small amount of inferior workmanship on it is not this one.

Column This is a large, heavy, hollow casting bolted to a sole plate 28" x 60"; height over all, 7' 9".

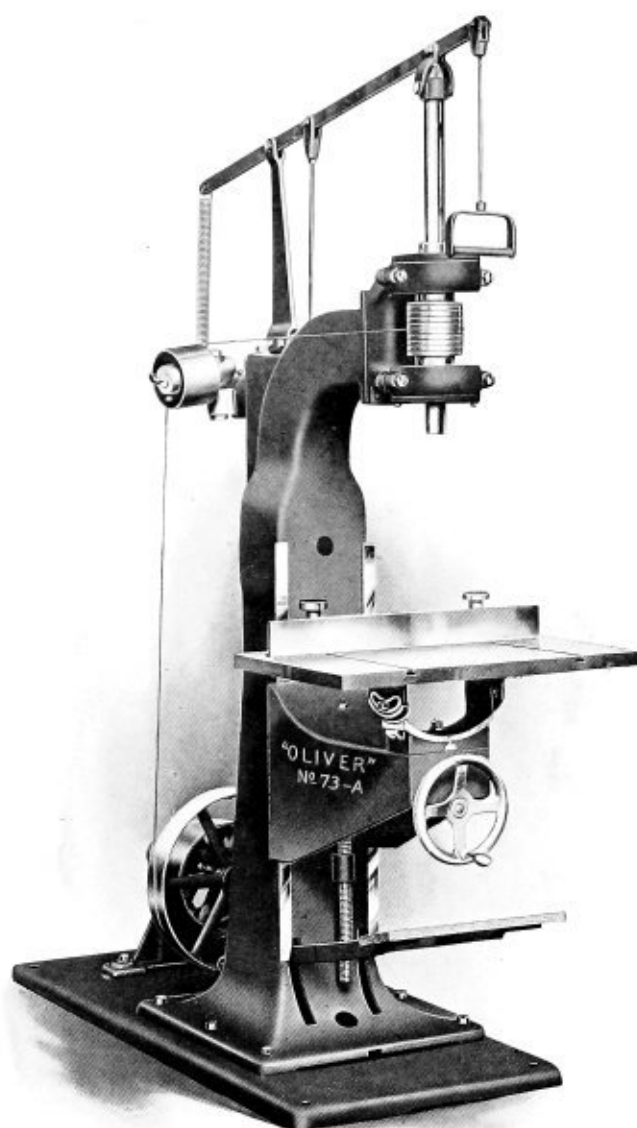
Boring Spindle This is a high-class piece of workmanship and is carried in a sleeve formed by the driving pulley with its extended ends. These ends are the rotating journals which fit into very large and substantial ball bearings. Spindle is bored to receive $\frac{1}{2}$ " bit shanks.

A vertical travel of 12" is obtained by either hand lever or foot treadle, as illustrated.

Table Is 18" x 30", with a vertical adjustment of 17" obtained by hand wheel and screw. Table tilts to an angle of 40 degrees to or from the column, and 30 degrees to right or left. Rockers are graduated to show degree of pitch attained, and table has T slots to receive fence bolts.

Capacity Machine has capacity to bore to the center of 36" and to a depth of 12". Capable of boring readily 3" diameter and under.

Idler Pulleys These located at rear of column are adjustable to track the right angle belt properly. They are bronzed, bushed and oiled through the studs by grease from cups provided.



No. 73-A "OLIVER" UNIVERSAL VERTICAL SINGLE SPINDLE BORER

No. 73-A has one speed—2800 R. P. M. The countershaft is located upon the sole plate, as illustrated, and may be driven from line shaft in ordinary way.

No. 73

"Oliver" Universal Vertical Borer

Continued

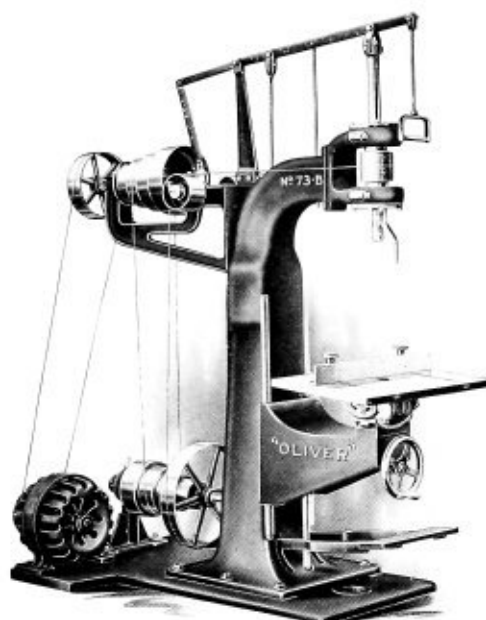
- Countershaft** This is carried in a self-contained manner in the base of the machine, is mounted in ring oiling and self-aligning bearings.
- Belt Shifter** This is foot pedal type mounted on the base with the controller at the operator's foot and is very convenient.
- Motor Drive** There are a variety of motor drives applicable to the No. 73-A machine, viz.: the variable speed, direct current motor as illustrated, in connection with the No. 75 Wood Milling Machine on following pages. A two-speed, alternating current motor could be used if direct current was not available. The No. 73-B Borer may be motor driven, as shown on the opposite page.
- Little Pattern Makers** These are sets of cutters that may be used in the spindle for routing, fillet and core box work in small dimensions. They are amply shown and described on page 215. A full set of these with a No. 73 Boring Machine is the equivalent of one pattern maker.

GENERAL DIMENSIONS

- Column Spindle** 48" long, 26" wide, 7' 9" high.
1 $\frac{3}{8}$ " diameter, vertical travel 12".
Bearings, ball bearing.
End of spindle bored for $\frac{1}{2}$ " shank.
Pulley is 4 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ ", speeds 1800 and 3000 R. P. M.
Use a belt 3 $\frac{1}{2}$ " wide.
- Table** 30" long, 18" wide; vertical movement 17".
Tilts 40 degrees to the front or rear.
Tilts 30 degrees to the right or left.
- Fence** 28" long, 3" high, works in T slot way.
- Idler Pulleys** 6" x 4" bronze bushed.
- Countershaft** 1 $\frac{5}{8}$ " diameter, bearings 6" long.
Driving Cone Pulley has two steps, 11" and 18" diameter, 3 $\frac{3}{4}$ " face.
Tight and Loose Pulleys, 8" x 4 $\frac{1}{2}$ "—700 revolutions per minute.
- Floor Space** 71" x 30".
- Horse Power** Maximum, 3.

No. 73
"Oliver" Universal Vertical Borer

Continued



No. 73-B "OLIVER" UNIVERSAL VERTICAL BORER

No. 73-B has four speeds 1000 to 4000 R. P. M., and is regularly furnished as shown above, except, of course, motor and belting are extra when desired.

Equipment We furnish one boring bit 6" twist, each $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ " diameter and necessary wrench with the machine. If a universal chuck is desired with the machine, we can supply it at an extra cost. This will also require nose of spindle to be threaded to take chuck. An extra charge will be made for this thread.

Code	No.	T. & L.	Speed	H. P.	Domestic Weight	Foreign Weight
Expend	73-A	8" x 4"	830 R. P. M.	2 to 3	1550	2550
Expense	73-B	8" x 4"	600 R. P. M.	2 to 3	1750	2750

EXTRAS

Exploit Endless Leather Belt for Spindle.
Explore Little Giant Chuck for bits 0" to $\frac{1}{2}$ " fitted either by shank or threaded to outside of spindle.

No. 102

"Oliver" Universal Wood Milling Machine

Read Carefully the Following Ten Pages

The most desirable machine for working in wood that has been brought to the attention of the public. Its range of usefulness is unlimited.

It is to the patternmaker and his department what the Universal Milling Machine is to the tool room.

For general pattern work it has no equal.

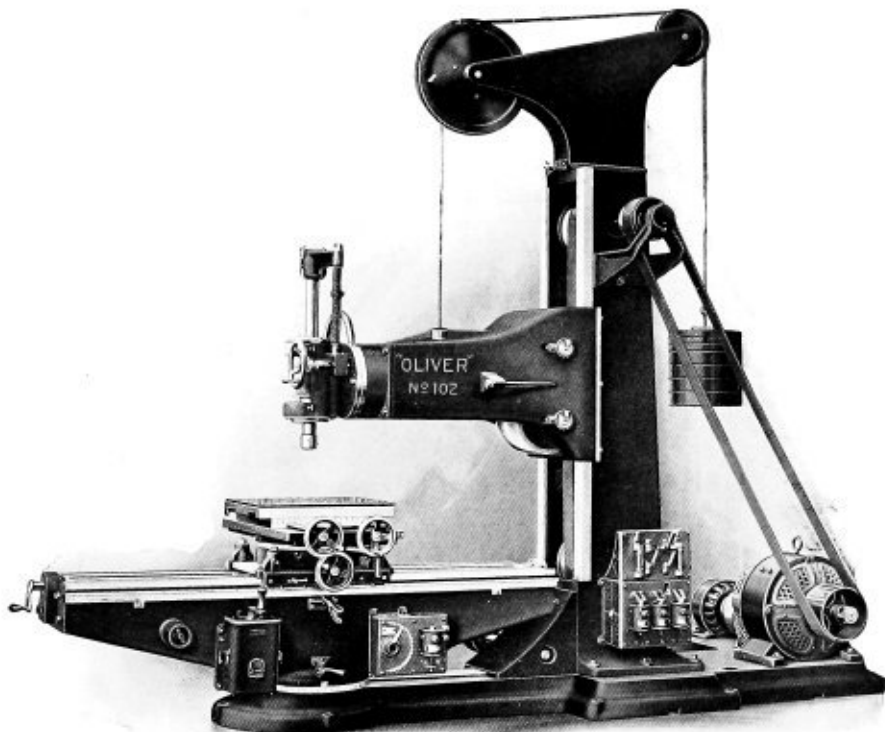
GENERAL DESCRIPTION

Column	Is 92" high and 18" wide across the face.
Base	Is 92" long and 42" wide.
Main Arm	Has vertical adjustment of 42" controlled by hand and power feed.
Head	Is made to swivel 90 degrees to the right and 45 degrees to the left and is graduated to cover this range.
Spindle	Is 2½" in diameter in the sleeve and 3" in diameter where cutter holders are attached. Has a 6" vertical movement controlled by hand wheel. Distance from spindle to face of column 48" and from table to spindle when raised to extreme height 30".
Off-Set Head	Can be readily attached to main head and is fitted to receive large core box cutters.
Main Swivel Bed	Is 84" long and 19" wide. Permits movement of main table 64½" and swivels through complete circle on ball bearing graduated base. Feed screw is controlled by hand or power and is fitted with an automatic stop. Front edge of bed is graduated in inches and ½" fractions.
Table	Is mounted on ball bearing swivel carriage graduated in degrees. The slides give a horizontal movement of 9¾" to the left of center, and 12" to the right for upper, and 10" to right and left of center for lower section by means of hand wheel, worm and rack. Upper table is 20" x 24".
Power Feed	Main carriage slide has a power feed screw with right and left shifting clutch, giving feed speeds of 26", 34" and 45" per minute.
Extension Beds	Each is 88¾" long. Is fitted with power feed shaft and screw. With both extensions attached to one end of main swivel it gives a carriage travel of 18' 4½" from spindle, and with one extension on each end of main swivel carriage travel will be 10' 11¾". For large radius work, long core boxes, frog and crossing pattern work, these extension beds are absolutely necessary.
Bearings	The main spindle, idler pulleys in main arm, upper and lower drive shafts in column all have high grade ball bearings. Off-set head also has the ball type bearings.

General description continued on page 205.

No. 102
"Oliver" Universal Wood Milling Machine

Continued



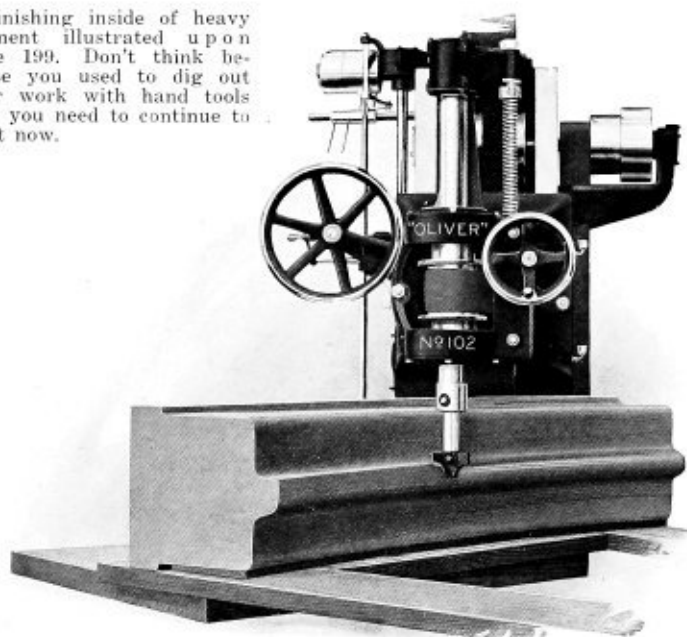
Either Motor Driven as Above or Belt Driven

Specially adapted to the requirements of Industrial Engineering Plants, Railroad Shops, Shipyards, Arsenals and all manufacturers using wood and metal patterns.

No. 102 "Oliver" Universal Wood Milling Machine

Continued

Finishing inside of heavy segment illustrated upon page 199. Don't think because you used to dig out your work with hand tools that you need to continue to do it now.



Standard Core Box Bushings

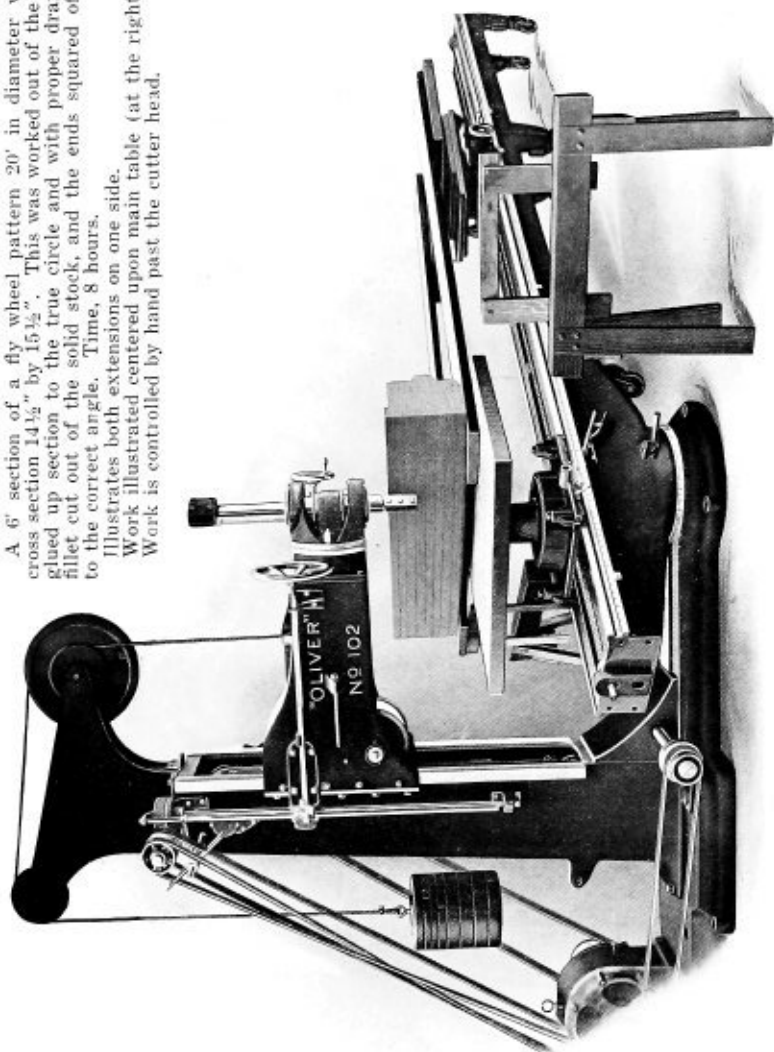
The small cut shows 12 bushings made on No. 102 machine. Size, 12-inch radius, tapering slightly. All are 21 inches long.

Entire set completed, as shown, in eleven hours. Figure the saving.

A 6" section of a fly wheel pattern 20" in diameter with a cross section $14\frac{1}{2}"$ by $15\frac{1}{2}"$. This was worked out of the rough glued up section to the true circle and with proper draft and fillet cut out of the solid stock, and the ends squared off true to the correct angle. Time, 8 hours.

Illustrates both extensions on one side.

Work illustrated centered upon main table (at the right). Work is controlled by hand past the cutter head.

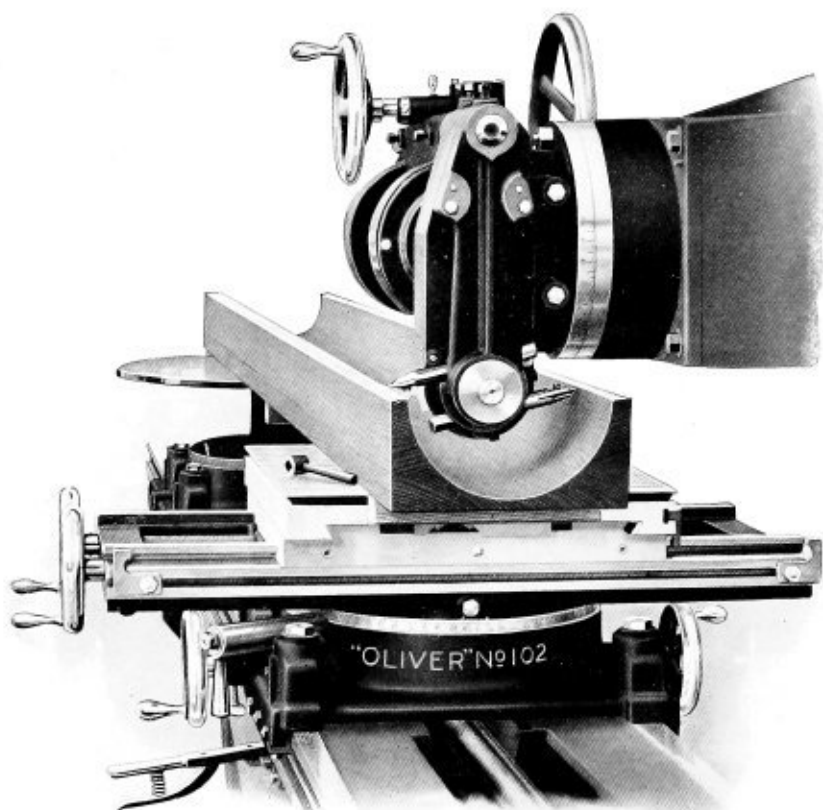


SIDE VIEW "OLIVER" No. 102 WOOD MILLING MACHINE—FINISHING SEGMENT HEAVY FLY WHEEL.

Lower belt controls feed in bed. The small straight and cross belts control the raising and lowering of the main arm. The auxiliary table shown under main spindle is not controlled by power but placed when convenience requires its use.

No. 102
"Oliver" Universal Wood Milling Machine

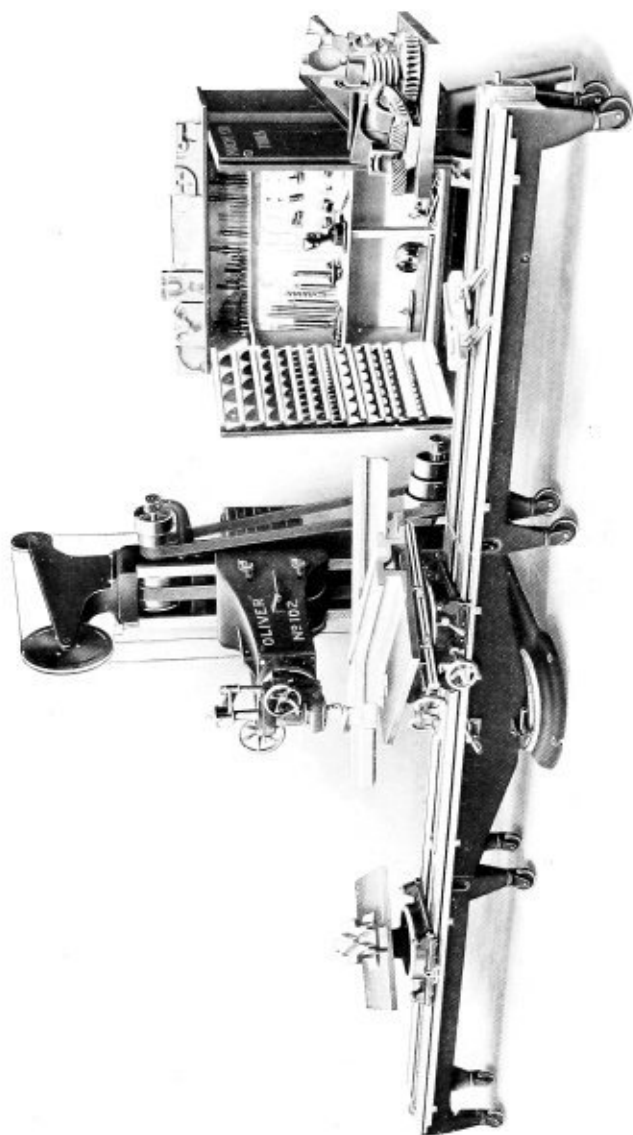
Continued



"OLIVER" No. 102 WOOD MILLING MACHINE
Showing off-set head making core box 10 feet long by 10 inches diameter (5 inch radius)

COMPLETED IN THIRTY MINUTES

This off-set head carries the center down that half diameters may clear the overhanging arm as illustrated. Works up to 37" diameter, any length. Just three things make this tool a wonder—a good head on the operator, a good equipment of tools and lots of work that needs doing.
More information upon request.



FRONT VIEW "OLIVER" No. 102 WOOD MILLING MACHINE

23 feet long over all. Power feed for Main Table over entire length. Radial capacity increased by placing one extension bed on end of the other bed, as shown on page 199.

No. 102
"Oliver" Universal Wood Milling Machine

Continued



SPIRAL SPUR AND WORM GEAR PATTERNS

Special Shapes for Crushing

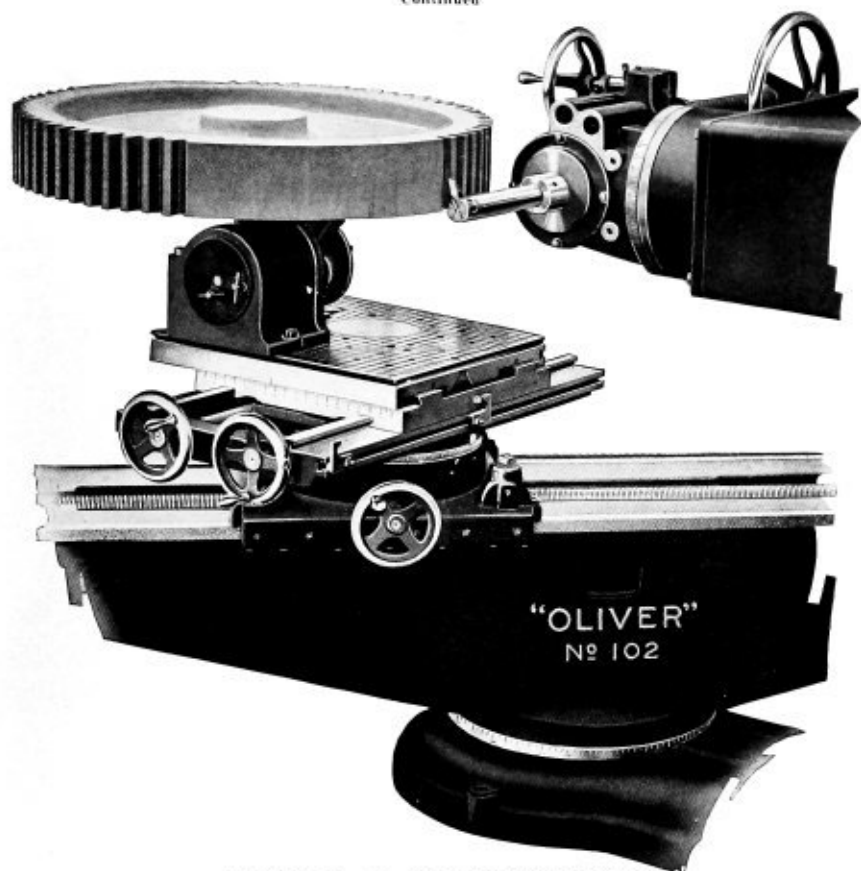
Examples of work that can be produced on an "Oliver" new No. 102 Wood Milling Machine

The work shown in above cut represents patterns which were entirely completed on the machine and as accurately as it could be done on any milling machine.

This is the only machine on the market that will do the above illustrated work and do it efficiently. We are ready at all times to prove this statement. The limitations of this machine have not yet been discovered.

No. 102 "Oliver" Universal Wood Milling Machine

Continued



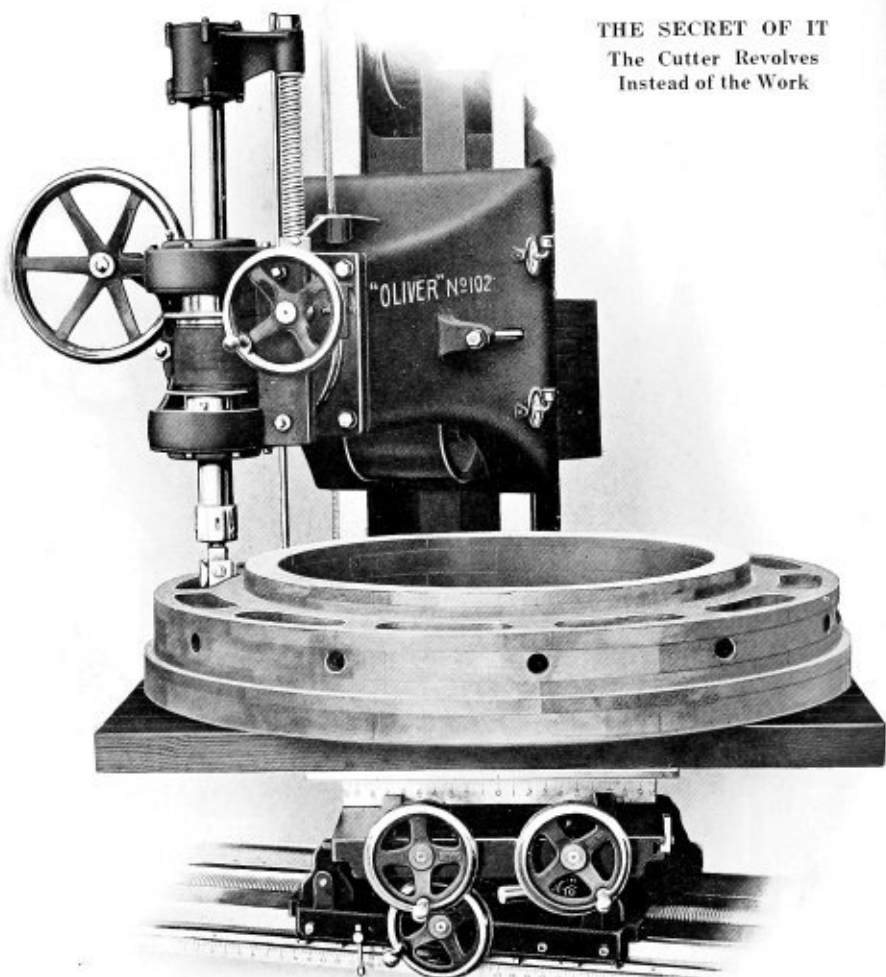
"OLIVER" No. 102 WOOD MILLING MACHINE

This view shows machine finishing gear pattern. Size, 35" pitch diameter by 5¼" face. Total number of teeth, 70. Blanks for teeth were all shaped to conform to circle of body of pattern, also beveled on edges where they are joined together and the entire pattern worked out of rough, glued-up stock. By slightly tilting the dividing head on which pattern was mounted, the proper draft was cut at same time teeth were finished.

Pattern Completed in Eight Hours

Would you, or could you, conduct your machine shop tool room without a Universal Milling Machine with a suitable dividing head with spiral attachment and all other up-to-date features?

Think about it. If you have the same quality of talent in your pattern shop this Wood Milling Machine can be used just as effectively and upon a much wider range of work; besides, the cutters do not cost nearly so much.



THE SECRET OF IT
The Cutter Revolves
Instead of the Work

"OLIVER" No. 102 WOOD MILLING MACHINE

This piece of work is 48" diameter. Every convenience is there to produce quick results. The cutter on the spindle at 4500 R. P. M., the work and cross slides all swivel upon a ball race. If this job was on a lathe in the usual way everything would be the reverse; in that case the work would revolve at high speed. In this case the cutter head revolves and the work is moved past it. Besides, you can let in the pockets with suitable draft and fillets. Which is the safest way? You can do more in five minutes this way than five hours the other way.



No. 102

"Oliver" Universal Wood Milling Machine

Continued

GENERAL DESCRIPTION CONTINUED FROM PAGE 196

- Horse Power** Main spindle, $7\frac{1}{2}$ H. P. Vertical and horizontal feed screws, 2 H. P.
- Countershaft** Is mounted on sub-base extension at rear of column fitted with two driven pulleys $14" \times 6"$, with reversing friction clutches. One driving cone pulley 10, 12, 14 inch by $4"$ face to drive main spindle. One driving pulley for vertical feed screw, $18" \times 8"$. One driving cone pulley for horizontal feed screw, $8"$, $9"$ and $10"$ diameter by $1\frac{3}{4}"$ face. Speed of countershaft to be 900 R. P. M.
- Capacity** This machine is practically without limitation for capacity as well as variety of operations.
- Metal Patterns** Both brass and soft metal patterns can be worked out on this machine, the only universal pattern making machine that has ever been produced on which both wood and soft metals can be worked accurately.

CODE, WEIGHT, EQUIPMENT, ETC.

- Explug** **No. 102 Universal Wood Milling Machine**, ball bearing through-out; consisting of main column, arm for cutter spindle head, spindle head, geared off-set head, adjustable swivel table with two extensions; main table slide, internal belting, cutter holders, bushings, clamps, wrenches, etc., as per Nos. 600 to 628 inclusive; arranged for belt drive, including ball bearing countershaft or arranged for motor drive but not including motors. Weight, 14,000 pounds.

Note—For detailed information covering cutters, etc., see special booklet on this machine and tool list which will be gladly furnished on request.

- Explug** **Direct Current Motor Drive**, which we recommend, consists of one $7\frac{1}{2}$ H. P., 220 volt, direct current motor to have a speed ratio of 2:1 or 850:1700 R. P. M. and reversible; to have semi-enclosing covers and mounted on extension sole plate or motor base and fitted with proper size driving pulley. Motor controlling device will consist of one operator's switch with reverse movement and dynamic brake. One speed controlling device. One remote controller with three contact points and main line switch. All controlling devices to be mounted on machine convenient to operator. One 2 H. P., 220 volt, 1200 R. P. M. constant speed motor to have special shaft extension, pulleys and out-board bearing; all to be mounted on extension motor base. The starting device for this motor to be mounted on machine convenient to operator. Weight, 1000 pounds extra.

- Explug** **Alternating Current Motor Drive**, which we recommend, consists of one 6 H. P., 3 phase, 60 cycle, 110, 220 or 440 volt motor with multi-speed winding. Speeds, 600, 900, 1200 and 1800 R. P. M., with shaft arranged for and fitted with two-step cone pulley for driving main spindle. One motor controller to give four changes of speed to the above motor. One 2 H. P., 3 phase, 60 cycle, 110, 220 or 440 volt, 1200 R. P. M. motor with plain knife switch for driving feed screws. All the above to be mounted on machine ready to receive wiring connections but these are not included in price. Weight, 1000 pounds extra.

EXTRAS

- Explug** **Special Cutters, Tools, etc.**, full information on application.



No. 75

"Oliver" Wood Milling Machine

Adaptation

For the general pattern shop where good work is appreciated. It does the most difficult work very simply and very easily. This machine is to the pattern shop what the milling machine is to the tool room. The same dividing head may be used not only for cutting gear teeth, but also for dividing off and machining duplicate work on similar segments or sections of the same piece. It is a machine that improves with acquaintance, although the operator quickly grasps the idea and general working of the machine, it is a matter of time for him to realize to the fullest extent the operations it can perform, since it is only as extraordinary shapes are brought to him that he gradually sees that the flexibility of the machine renders its range of operations practically unlimited. **Hours** you spent then now mean **minutes** on this machine on any of the following operations:

Kind of Work

Core Boxes, regular and irregular, any section.
Square Bends, S Bends, Tees, Socket Ends, Valve Boxes, etc.
Regular and Irregular Patterns to match the above.
Cross Grooving, Trenching, Halving, Jointing, Cross Cutting.
Recessing, Routing out heavy bodies, Rounding Curves.
Shaping U D and C Shaped Sections.
Truing up Sectional Built-up Pieces direct from the saw.
Boring and Slotting large size holes at any angle.
Facing, Cutting Port Holes.
Shaping straight or curved Arms of Wheels, and bases of same.
Recessing and trenching of every description and variety.
Gear Cutting.
Boring up to 6 inches or larger by rotating the work table.
Cutting Fillets, straight or curved.
Cutting Dowels crosswise of the grain.
Straight Corner Locking Half Lapping Jointing, Ploughing.
Slot Mortising and Recessing any length and up to 6" wide.
Shaping Square to any design, size or length.
Tenoning, double or single, and scribing at one operation.
Dovetailing right and left hand sets at one setting.

Tools Needed

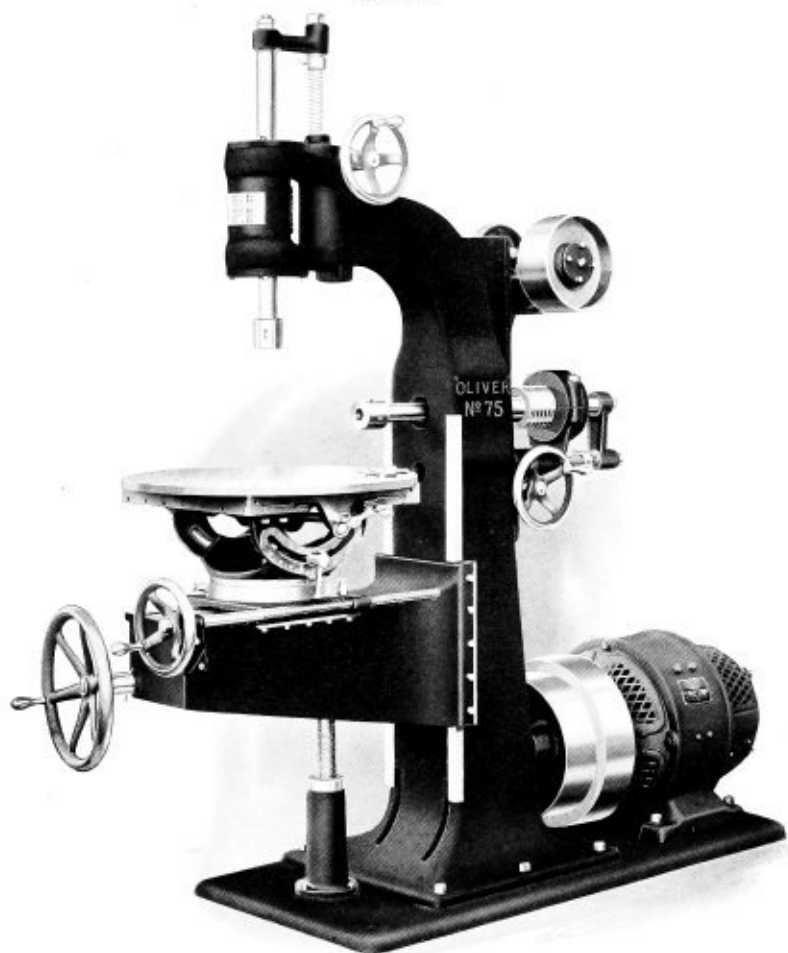
Most of the above operations may be accomplished with the tools provided with the machine and others can be quickly made to suit special work.

Bearings

Both vertical and horizontal spindles run on ball bearings of large diameter, allowing a maximum speed of 5000 R. P. M., if desirable, on certain work. Regular speeds of each spindle on No. 75-A and B are 1250, 2000, 3000 and 4300 R. P. M. Idler pulleys are 10" diameter and 4" face, and are provided with ball bearings, thus eliminating all lubrication troubles of high speed loose pulleys. The countershaft bearings are of genuine babbitt, as the slower speeds render ball bearings needless, and the loose driving pulley is bushed with die cast white bronze bushing.

No. 75
"Oliver" Wood Milling Machine

Continued



"OLIVER" No. 75-C WOOD MILLING MACHINE
Front view showing Variable Speed Motor Drive

No. 75

"Oliver" Wood Milling Machine

Continued

Table

Is 20" x 20" divided accurately into 1" squares by etched lines and tapped at convenient locations for attaching the general purpose clamps. A 3" removable centering disk permits boring below the line of table without injury to boring tools. For circular work where the work revolves, two centering plugs $\frac{1}{2}$ " and 1" diameter respectively are furnished. Table swivels on ball bearings, full 360 degrees and at 90 degree points a positive lock operates to rapidly and positively locate these important table positions correctly. Table tilts 45 degrees in either direction and cross-feed of table is secured by screw and ball crank lever, which may be operated from either side of table. A positive centering device locates center directly over the ball bearing swivel center for circular work. Cross-feed travel 12".

An auxiliary swiveling table is also furnished for turning cones, taper work, etc., and is used in connection with regular table.

Spindles

Made from highest grade high carbon stock and accurately ground. Diameter $1\frac{1}{8}$ " in sleeve and 3" head for receiving cutters with No. 4 Morse taper. Both vertical and horizontal spindles are hollow to allow the draw in rods to safely hold the fly cutter holders in place. Vertical travel of spindle is 10" while the horizontal spindle has $11\frac{1}{2}$ " travel. Both spindles are controlled by hand-wheel and spiral gear acting on double square thread screw of large diameter. Micrometer adjustment to both hand-wheels permits very accurate control of cutting tool. Each spindle control screw is provided with knurled brass positive stop lock nut to insure cutting to given depth. Spindle slides easily in accurately bored pulley sleeve, the construction of which is such that no belt strain whatever is transmitted to the spindle. Distance of center of vertical spindle to face of column is 18" and when in highest position is 24" above the table. Center line of horizontal spindle is 14" above table at lowest position.

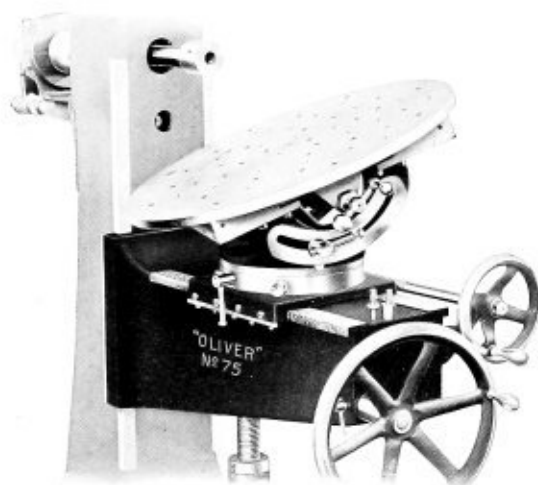
Knee

Construction is box type closed on top to prevent chips interfering with raising mechanism, open below, strongly gibbed to column. Horizontal planed ways permit table to travel to and from column a distance of 17", a large square thread screw and hand-wheel giving rapid traverse. Additional support to the knee is rendered by a centrally located telescoping screw. An extra large hand-wheel operating this screw lowers or raises the knee with ease its 21" of vertical travel. A zero line on the horizontal ways gives quick location of the table exactly in line with vertical spindle.

No. 75

"Oliver" Wood Milling Machine

Continued



AUXILIARY SWIVELING TABLE

Column

Cored type with ample flange support bolted to base. Vertical ways $10\frac{3}{4}$ " wide across face, extending far enough to give perfect bearing to knee in either highest or lowest position. Height over all, 7' 0".

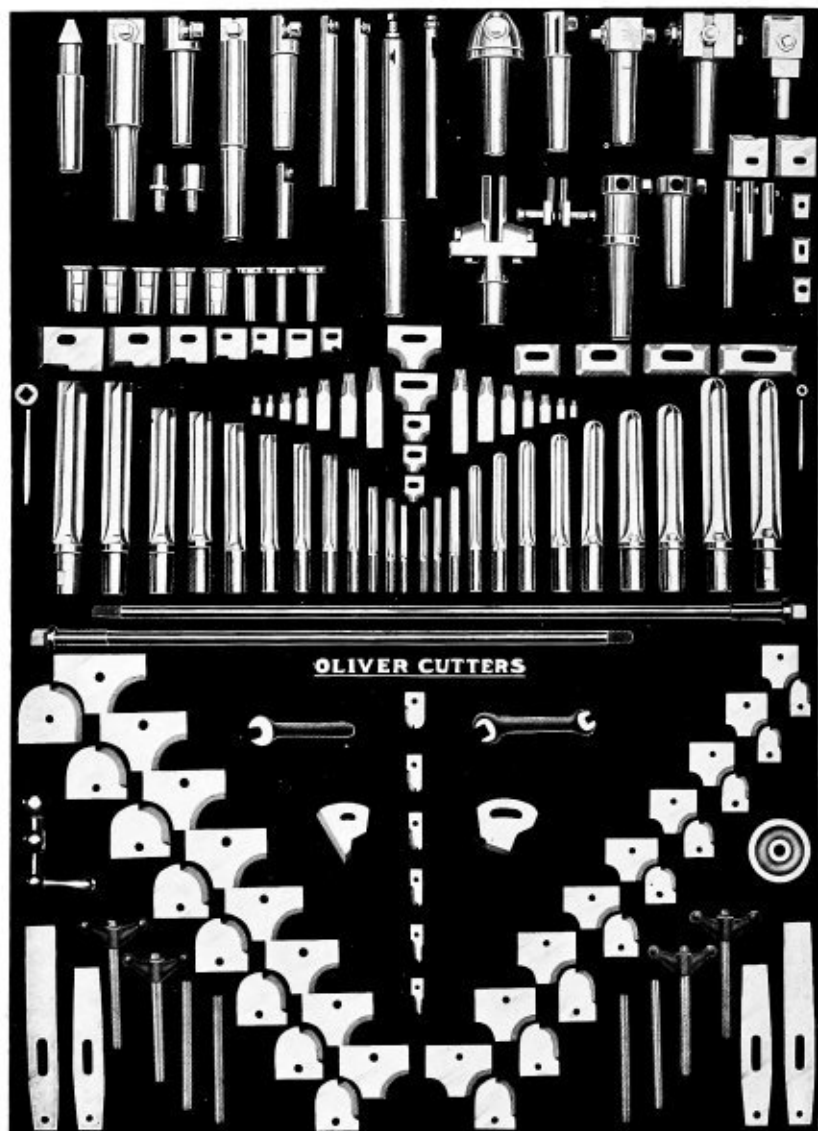
Base

Or sole plate 28" x 60" planed to receive column and telescoping screw bracket. On No. 75-B this plate is extended to receive motor.

Capacity

The capacity of this machine is limited only by the size of cutters that can safely be used, and the ability of the operator to get the full usefulness out of the machine. Core box cutters up to 3" diameter are regular part of the equipment, although larger core boxes may be cut. A core box 30" in length may be cut at a single setting of the stock.

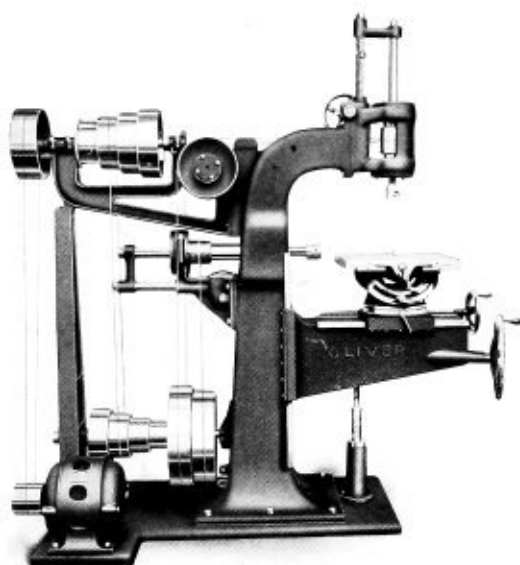
Using vertical spindle, circular work up to 19" diameter may be turned by means of the revolving table. By centering work on table center plugs, work up to 28" diameter may be turned. By revolving table, work up to 48" diameter may be turned. By centering work on superimposed table, the limits of such circular work are indefinitely greater. By means of a special dividing head, spur and bevel gears may be accurately cut, spur gears up to 24" diameter by 4" face.



The above illustration shows a partial list only of the regular equipment furnished with machine. We make all kinds of cutters to suit ordinary work and special cutters for special work. The usefulness of machine is greatly increased by a liberal assortment. So quickly may work be done that the time an operator actually spends in cutting wood is generally less than the time consumed in changing cutters. Further information upon request.

No. 75
"Oliver" Wood Milling Machine

Continued



"OLIVER" No. 75-B WOOD MILLING MACHINE

Drives

This Universal Wood Milling Machine is made to drive direct from line shaft with T & L pulleys, or with base extended to receive constant speed motor either D. C. or A. C. A third method and a very desirable one when proper current is available is by means of D. C. variable speed motor as shown on page 207, allowing speed changes from slowest to fastest speeds. The machine thus arranged is known as No. 75-C Universal Wood Milling Machine.

Countershaft

Has 10" x 5" T & L pulleys, and four-step cone driving pulleys. It is an integral part of the machine and is supported solidly from sole plate. Speed, 500 R. P. M.

Horse Power

From 3 to 5, with the larger power recommended where large work requiring the larger cutters is contemplated.

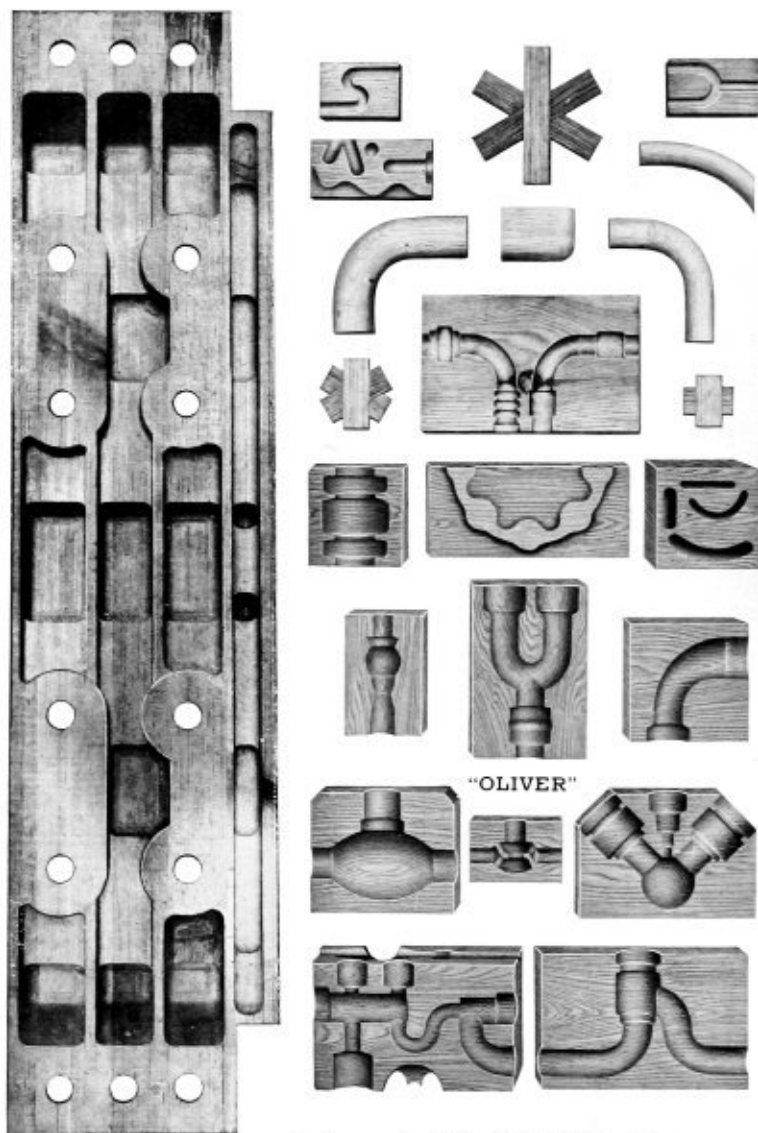


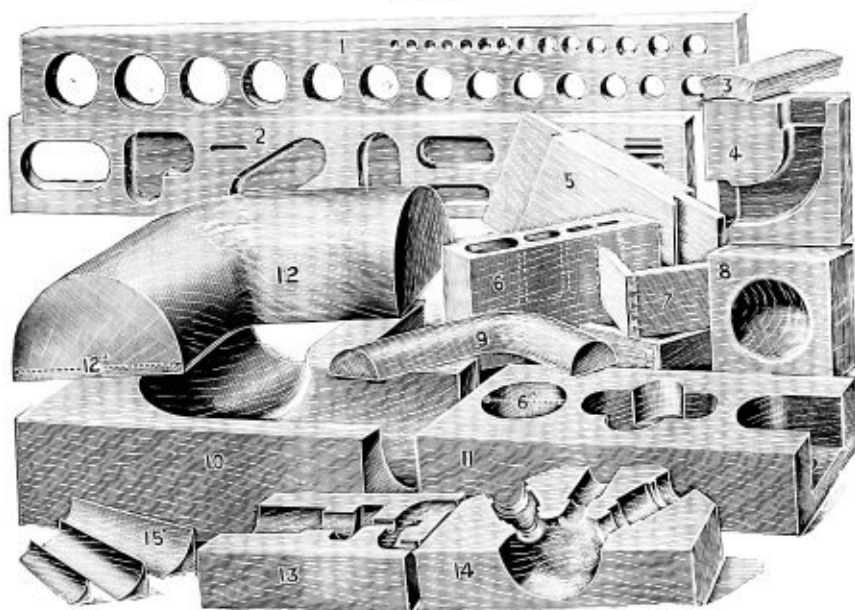
Illustration representing work done on the "Oliver" Wood Milling Machine

This pattern has a uniform thickness of $\frac{3}{8}$ " throughout, and was completed as shown above, with fillet cut out of solid stock, at a cost of four dollars—against sixteen dollars by the old method of doing work by hand.

No. 75

"Oliver" Wood Milling Machine

Continued



Specimens of what can be done on a Wood Milling Machine

Note the time required to do the work shown in above cut.

No. of Piece.....	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Time in Mins..	4	3	6	10	4	3	8	5	6	30	15	30	25	20

CODE, WEIGHT, EQUIPMENT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Expob	75-A Complete with regular set of cutters, cutter holders and special tools and wrenches as listed on the complete circular of this machine, with tight and loose pulley and four speed countershaft, built integral with machine.....	2500	2900	115
Expof	75-B Same as above except sole plate will be extended to receive constant speed motor, and countershaft provided with tight pulley only but without motor.....	2500	2900	115
Expok	75-C Same as No. 75-A except countershaft is omitted and sole plate is arranged to receive variable speed motor but without motor.....	2200	2600	90

Drill Chucks for Borers and Lathes



No. 267 TWO JAW CHUCK
"THE HARTFORD"



No. 268 TWO JAW CHUCK
"LITTLE GIANT"

Code	No.	Capacity	Diameter	Length	Weight
Faba	267-A	0" to $\frac{3}{8}$ "	1 $\frac{3}{4}$ "	2 $\frac{1}{2}$ "	1 $\frac{1}{4}$ lbs.
Fabab	267-B	0" to $\frac{1}{2}$ "	2 $\frac{1}{8}$ "	2 $\frac{3}{4}$ "	2 $\frac{1}{4}$ lbs.
Fabaf	267-C	0" to $\frac{3}{4}$ "	2 $\frac{3}{8}$ "	3 $\frac{1}{4}$ "	4 $\frac{1}{2}$ lbs.
Fabag	267-D	$\frac{1}{4}$ " to 1"	3 $\frac{3}{8}$ "	4 $\frac{1}{4}$ "	8 lbs.
Fabib	268-A	0" to $\frac{1}{4}$ "	1 $\frac{3}{4}$ "	2 $\frac{1}{2}$ "	1 $\frac{1}{4}$ lbs.
Fabif	268-B	0" to $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	2 $\frac{3}{4}$ "	2 $\frac{1}{2}$ lbs.
Fabig	268-C	0" to $\frac{3}{4}$ "	3"	3 $\frac{1}{2}$ "	4 $\frac{3}{4}$ lbs.
Fabik	268-D	0" to 1"	3 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	8 lbs.



No. 269 THREE JAW "JACOBS" CHUCK

Code	No.	Capacity	Diameter	Length	Weight
Fabom	269-A	0" to $\frac{1}{4}$ "	1 $\frac{3}{4}$ "	2 $\frac{1}{2}$ "	1 $\frac{1}{4}$ lbs.
Fabop	269-B	0" to $\frac{3}{8}$ "	2 $\frac{1}{8}$ "	2 $\frac{3}{4}$ "	2 $\frac{1}{4}$ lbs.
Fabor	269-C	0" to $\frac{1}{2}$ "	2 $\frac{1}{4}$ "	2 $\frac{3}{4}$ "	2 $\frac{1}{2}$ lbs.
Fabot	269-D	0" to $\frac{3}{4}$ "	2 $\frac{1}{2}$ "	3"	4 lbs.
Fabov	269-E	$\frac{3}{8}$ " to 1"	3 $\frac{1}{2}$ "	4 $\frac{1}{4}$ "	7 lbs.

Note — When ordering any of these Chucks be sure to state what kind of shank is desired, straight or tapered, and give dimensions of shank desired.

“Oliver” Little Pattern Makers

Richmond Patent

These are useful cutters for the purpose of working out small core boxes, making fillets and routing. They may be best used on Boring or Profiling machines, though they can be used in lathes or similar machines.

The philosophy of these cutters is that the broad, circular band of the cutter, just above the knife edge, forms a rub-collar and any irregular shape or pattern bandsawed as required (say $\frac{1}{2}$ " to 2" thick) and tacked temporarily to top of work, allows the work to be pushed or pulled by hand under the cutter with the collar pressed against the pattern; if cutter is sunk into the work beyond the pattern the path just cut acts as a guide for cutter. A very simple, quick and effective way of working out core boxes, slots, etc.



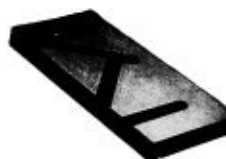
No. 211

No. 210

No. 212



No. 1. The fillet and recess done by $\frac{1}{2}$ " fillet cutter.



No. 4. Section of stair stringer grooved by $\frac{5}{8}$ " routing cutter.



No. 6. Showing round and flat bottom mortises made with core and routing cutters respectively.



No. 5. Sample of work done with fillet cutter and 1" core box cutter. The large recess is $3\frac{1}{2}$ " in diameter.

Order by number—give exact diameter and length of shank. State name of machine in which will be used. These cutters are money savers, try them.

No. 210 Fillet Cutters—Code, Fabub

Nos.	210A	210B	210C	210D	210E	210F	210G	210H	210J	210K	210L
Rad.	$\frac{1}{8}$ "	$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	2"

No. 211 Core Box Cutters—Code, Fabub

Nos.	211A	211B	211C	211D	211E	211F	211G	211H	211J	211K	211L	211M	211N	211P
Dia.	$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	2"	$2\frac{1}{4}$ "	$2\frac{1}{2}$ "	$2\frac{3}{4}$ "	3"

No. 212 Routing Cutters—Code, Fabub

Nos.	212A	212B	212C	212D	212E	212F	212G	212H	212J	212K
Size	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	2"

No. 91

"Oliver" Vertical Hollow Chisel Mortiser

Chisels and Bits Quickly Changed

Compound Tilting Table Regular

Introduction

This mortising machine performs its work by means of the hollow chisel, a form of tool now almost universally applied for all kinds of mortising operations. This chisel has a high speed bit revolving within it which serves both to bore a round hole and to remove the chips thus bored, as well as those cut out by the corners of the chisel. All chisels are accurately sized and thus mortise accurately, while operating smoothly, cleanly and without noise or vibration. They cut rapidly, due to the high bit speed possible with a supporting chisel, and are readily adapted to any shape of mortise, of any length or practical depth.

Column

The vertical type of mortiser is most popular and in this machine we offer a substantial, hollow vertical column with an extended base which offers support for either a self-contained countershaft or motor. This column carries the ways in which the spindle plunger operates and also those on which the table adjusts, correct alignment of the tools with the table being insured.

Plunger

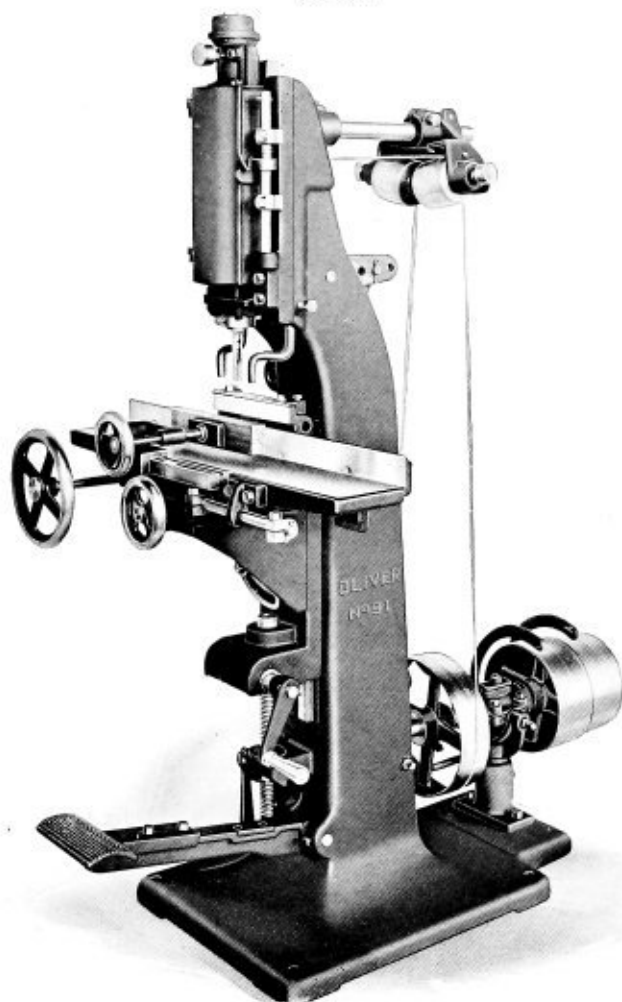
The vertically reciprocating plunger carries the bit spindle with its drum driving pulley and also the chuck which holds the chisel. Its movement is controlled by foot lever, the length of stroke being adjustable according to the work. The return movement is accelerated by spring pressure. The foot lever is also adjustable in length and the belt pulley guarded.

Table

The most satisfactory form of table for any hollow chisel machine is the compound type with a clamp and rack and pinion feed. While many pieces can be mortised without clamping there are others where clamping is necessary for straightening the stock or doing accurate work. Machines are sometimes cheapened by having plain tables, but such are deficient for general work.

No. 91 "Oliver" Vertical Hollow Chisel Mortiser

Continued



No. 91 "OLIVER" VERTICAL HOLLOW CHISEL MORTISER

General view showing belt drive arrangement. Machine also furnished with motor bracket for direct motor drive

No. 91

"Oliver" Vertical Hollow Chisel Mortiser

Continued

Adjustments The table has a swivel adjustment for angle mortising, cross adjustment for varying thickness of stock and a lengthwise movement regulated by stops for long mortising. Its rear fence can be varied in height so that pieces may be held by a lip fitted on its upper edge. Tables are made to receive stop rods which are an extra feature but useful when making many duplicate pieces. The vertical adjustment is by protected spiral gears and a screw directly beneath the line of the chisel thrust.

Tools The machine is operated with what we call short or extra short types of hollow chisels and bits, which are universally standard in their dimensions and most economical in practical use. Chisel blades are of 4" lengths, except that in the $\frac{1}{4}$, $\frac{5}{8}$ and $\frac{3}{8}$ inch sizes extra short or 2 $\frac{3}{4}$ inch blades are often used.



SQUARE HOLLOW CHISEL AND BIT TO SUIT
Furnished either with 4-inch or 2 $\frac{3}{4}$ -inch blade, any size

Capacity This foot feed machine is usually operated with tools from $\frac{1}{4}$ " to $\frac{5}{8}$ " square, altho $\frac{3}{4}$ " square chisels can be fed in woods not excessively hard. Material 12" high can be worked and the table will center pieces 6" wide under the chisel.

Boring When ordinary boring is desired, we furnish a Bit Guide to put on chisel holder and an extension for the bit spindle to allow use of ordinary boring bits with $\frac{1}{2}$ " straight shank.

Countershaft The countershaft is supported on the base of the machine in adjustable bearings. It is regularly fitted to run 1100 to 1150 R. P. M. It has 12" x 3" drive pulley and 10" x 4" tight and step-down loose pulleys. An attached belt shifter with hand lever control is supplied.

Motor These machines are very generally driven by a motor supported on brackets resting on the base of the frame. Motors of 2 H. P. are usual and are very readily attached. Any motor speed is possible but if not 1100 to 1200 R. P. M. we advise 1700 to 1800 R. P. M. We furnish one hollow chisel $\frac{3}{8}$ " x $\frac{3}{8}$ " square with a hollow chisel bit to fit, and also such bushings and wrenches as are necessary with the machine.

Power 2 Horse Power.

No. 91

"Oliver" Vertical Hollow Chisel Mortiser

Continued



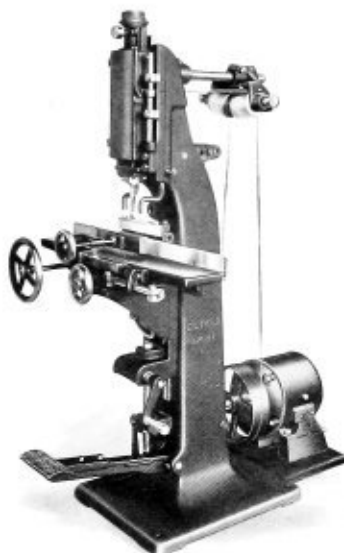
Furniture Work



Chair Work



**Sash and
Door Work**



**No. 91-C MOTOR DRIVEN "OLIVER"
VERTICAL HOLLOW CHISEL
MORTISER**

**General
Dimensions**

Table is 6" x 36", is 43½" above floor at highest position and 31½" at lowest position. Spindle pulley 4" diameter, 8" face. Pneumatic belt 2½" or 3" single, about 14' long.

Equipment

We furnish one hollow chisel ¾" x ¾" square with a hollow chisel bit to fit, and also such bushings and wrenches as are necessary with the machine.

CODE, WEIGHT, ETC.

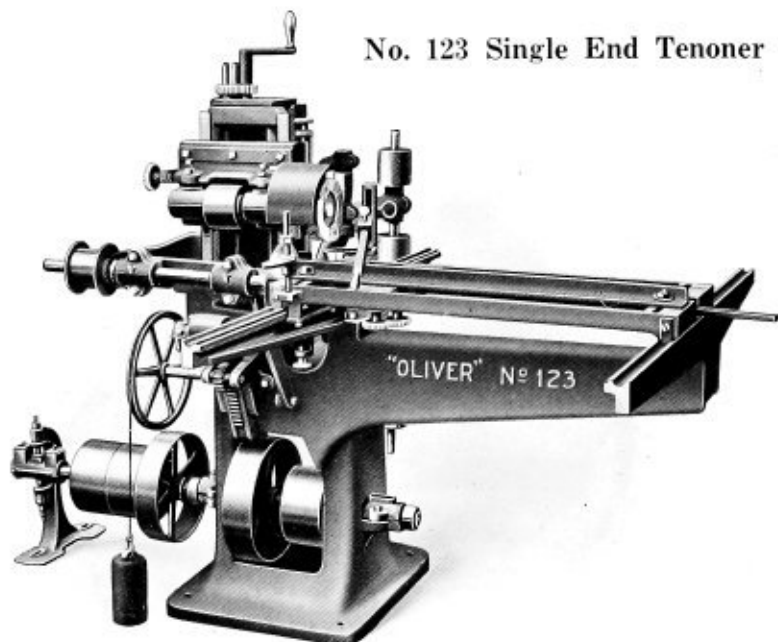
Code	Machine description	Domestic Weight	Export Weight	Measurement in Cubic Ft.
Fade	No. 91-A Belt drive with countershaft	1200	1400	50
Fadit	No. 91-C Motor drive, not including motor.....	1200	1400	50

EXTRAS

Fadiv
Fadix
Fadiz

Six Foot Rod and Six Stops.
Best Oak Tanned Endless Leather Belt.
Bit Guide and Spindle Extension for use when boring only.

No. 123 Single End Tenoner

**Description**

This No. 123 Single End Tenoner has an abundance of weight evenly distributed, making it thoroughly durable and insuring the necessary solidity for perfect as well as rapid work.

The peculiar design of our main frame permits the operator applying the very desirable body, as well as hand motion to the table or carriage without meeting any obstruction whatever.

The encased anti-friction roller movement given table or carriage is so sensitive as to create motion by single finger pressure. The pressure of 500 pounds load on table or carriage is imperceptible. Operators do and will continue to prefer this machine, as they can use it all day long without fatigue.

Frame

is cast in hollow or cored-out form with wide base and extended arm all in one piece.

Table

is also in one piece—now made slightly different than in cut—the under side of the ends being greatly widened in parallel line with ways, all accurately planed out to receive and encase the anti-friction rolls (dust proof) likewise to fit snug over side edges of the long planed rails. Table rests solidly and has gibs for wear. Its top side is planed and ruled and is fitted with an adjustable fence that may be set to make angle tenons, with planed adjustable gauge rod and spring stops, with clamp or hold-down bar and lock, likewise has wipers to remove chips, shaving and dust from the rails.

**Mandrel
Pulleys**

are between, and not outside of the bearings; the belt strain is therefore evenly divided, insuring cool-running and even-wearing journals, the relative alignment of which is also thus preserved. This machine will make tenons 4 inches long, from shoulder out, on a single cut, or 6 inches long on a double cut.

No. 123 Single End Tenoner

Continued

Cut-Off Saw Attachment being ahead of the tenoner heads, reduces the resistance to operator, because saws with entire periphery a cutting edge, easily cuts away the waste that was formerly tenoned first; it saves the tenon knives, and above all leaves the end of tenon free from ragged edges, and ready to enter the mortise without the need of further attention. This cut-off saw attachment is driven direct from the main countershaft, independently of the cutterhead mandrels.

Tenon Heads The mandrels carrying tenon heads are extra large, revolve in long self-oiling connected bearings, may be adjusted separately or together, are mounted in yokes—with gibs for wear—on dovetailed ways right to the main frame. Top mandrel has lateral or overcut movement to permit making the tenons longer or shorter on one side than on the other. The position of the mandrels is such as to make the cutters self-clearing and to make nice clean tenons with tight, snug-fitting shoulders. A self-compensating binder takes up the slack in the belt as position of mandrels is changed.

The Cope Cutter-Heads with their connected bearings, etc., are mounted on main head stocks and rise and fall with the same; they are fitted to milled off surfaces and have independent horizontal and vertical adjustments. Cope countershaft is attached to the main frame when this attachment is supplied.

Cut-Off Saw is adjustable quickly for long and short tenons.

Mandrel This machine is built by experts, of best materials procurable, under a system of special tools, templets, etc., and thus the maximum degree of accuracy is attained at the minimum of cost.

Floor Space Without cope and cut-off attachments, 5' 8" by 4' 6".
With cope and cut-off attachments, 6' 8" by 5' 4".

Countershaft Tight and loose pulleys are 8" diameter, 4" face and should make 875 revolutions per minute.

Code	No.	Machine Description	H. P.	Weight in Lbs.		Cu. Ft.
				Crated	Boxed	
Faga	123-A	without cope and cut-off attachments	2	1300	1600	70
Fagab	123-B	like 123-A, also cut-off attachment....	3	1350	1360	72
Fage	123-C	like 123-A, except without cut-off attachment but with top cope.....	3	1375	1675	73
Faged	123-D	like 123-A, except without cut-off or top cope attachment but with under cope	3	1375	1675	73
Fagi	123-E	like 123-A, except without cut-off attachment but with top and under cope attachments	3	1400	1700	74
Fagik	123-F	like 123-A, except with cut-off attachment and top cope.....	3	1400	1700	75
Fago	123-G	like 123-A, except with cut-off attachment and under cope.....	3	1400	1700	75
Fagof	123-H	with cut-off and both top and under cope attachments	4	1450	1750	76

No. 483

"Oliver" High Speed Double Spindle Shaper

Faster work with less Trouble

Introduction The Wood Shaper or Variety Molder is one of the essential machines to a wood working plant. The style of work varies from rabbeting, grooving and fluting to shaping of every description. The illustrations represent our new High Speed Shaper, the machine that runs at extreme high speed without vibration.

Spindles are large and tapering and made of High Carbon Crucible Machinery Steel ground perfectly true on dead centers.

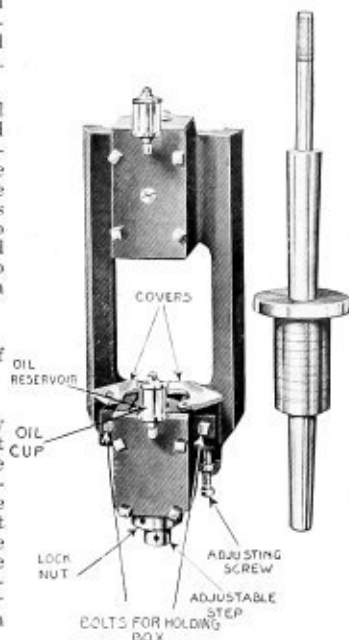
Bearings are made of Bronze, conical in shape and are surrounded by oil chambers which lubricate the spindles the entire length of the bearings. The bottom of the spindle rides on a copper adjustable step which is constantly washed with oil. A large drip cup catches the waste oil from the upper bearings.

Pulleys are carefully balanced and of the pneumatic type.

Yokes are raised and lowered by means of the handwheels at the side of the machine, there being sufficient vertical adjustment to raise the spindle above the table or lower it beneath the tables. These yokes are very rigid and the screws for raising or lowering are directly in the rear of the spindle, affording them a direct support.

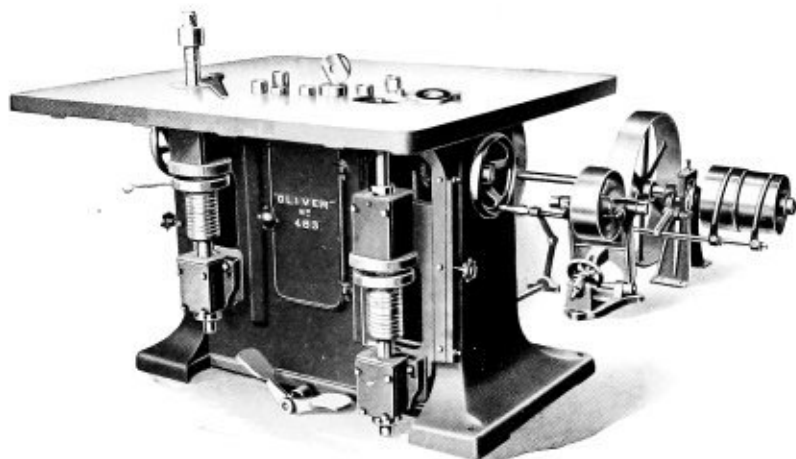
Table is large, very rigid, planed, and then accurately ground by a special process. It is bored out and fitted with three sets of rings to be used in connection with the knife collars.

Countershaft furnished with each machine, consists of double adjustable hangers with ring oiling boxes, drive pulleys, tight and loose pulleys (the loose pulley regularly furnished is bronze bushed, self-oiling and has a flange, but the Nelson patented loose pulley can be furnished on order at a slight additional cost), shaft collar and shifter. Two independent idlers or tighteners are also furnished with the machine. These idlers are well constructed, are adjustable and the bearings are bronze bushed and self-oiling, allowing separate adjustment for each belt.



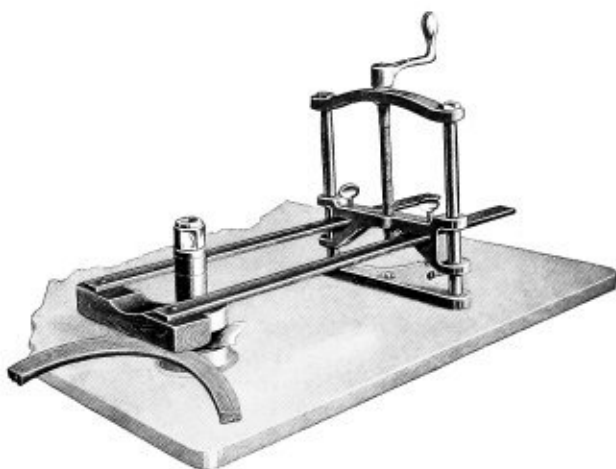
No. 483 "Oliver" High Speed Double Spindle Shaper

Continued



No. 483 "OLIVER" HIGH SPEED WOOD SHAPER—Belt Driven

When motor driven, a motor with extended shaft can take the place of the countershaft.



No. 491 QUICK ADJUSTING SHAPER GUARD

This is a very effective guard and one is furnished with every machine. Additional guards furnished when ordered as extra.

No. 483 "Oliver" High Speed Double Spindle Shaper

Continued

- Motor Drive** can be easily obtained by using an extended shaft motor in place of the countershaft.
- Equipment** Each machine is regularly furnished with two sets of knife collars, sufficient filling collars, oil cups, pins, wrenches, one guard or hold-down, and countershaft complete.
- Testing** The spindles are regularly furnished to run out. Each machine is given a thorough running test before shipping.

GENERAL DIMENSIONS

- Table** Size, 50" x 44".
Hole in table, 8" diameter.
Hole in rings, 2" diameter.
- Spindles** Distance between centers, 24"
Diameter at collars, 1 1/8".
Diameter at top bearing, 2 1/4"
Diameter at bottom bearing, 1 1/2".
Length at collars, 8 1/2".
Length of top bearing, 7 1/2".
Length of bottom bearing, 4 1/2".
Large collars, diameter 3".
Small collars, diameter 1 3/4".
Spindle Pulleys, 3 1/2" diameter; belt 4" wide.
Speed, 5700 to 6500 R. P. M.
- Countershaft** Speed, 1000 to 1150 R. P. M.
Weight, 400 lbs.
Tight and loose pulleys, 10" diameter, 5" face.
Driving Pulley, 20" diameter, 4" belt.

- Floor Space** Machine only, 50" x 44"; countershaft, 24" x 60".
- Horse Power** 7 1/2.



BEVELED SHAPER STEEL

CODE, WEIGHT, ETC.

Code			Weight in Lbs. Crated	Boxed	Measure in Cubic Ft.
Fala	No. 483	Machine with bronze bearings	2000	2500	65
Falab	No. 483-A	Machine with Babbitt bearings	1400	2000	54

EXTRAS

- Fale** No. 491 Quick Adjusting Shaper
Guard 15 15
- Falef** Beveled Shaper Steel, high speed knife steel in 24" bars.
State width desired.
- Falo** One set of four straight knives 1 1/2" wide, 3" long.

"Oliver" Wood Trimmers

Pages 225 to 241—READ EVERY WORD

General description	225 to 233
Trimmer Knives and Care	231
Lever Drive Wood Trimmers	234 to 236
Capstan Drive Wood Trimmers	237 to 241

We are giving the same careful attention to the pattern shop needs in Wood Trimmers that has characterized our efforts in other tools, and today we take pride in the almost universal recognition of our Trimmers as the most excellent in design, most perfect in construction, most convenient in adjustment, and most durable and efficient.

The old style machines have given place to the new and improved tools, and the up-to-date ideas embodied in their construction indicate the progressive thought and experience that we have given them. The name "Oliver" cast into the frame of a Wood Trimmer means more than the name of the maker. It stands for correct methods in every detail of our large and expanding business of selling trimmers and it means "Quality."

Unscrupulous imitators of our machines have endeavored to foist upon the users of this class of machinery their poorly constructed and cheap products, and occasionally they have succeeded, but we are turning out more "Oliver" New Style Trimmers today than ever.

Those interested in these wonderful devices are directed to the succeeding details set forth on these pages for a full knowledge of their exceptional merit.

Our factory has the most complete equipment in the United States for the scientific construction of wood-working machinery and we feel sure the sentiment will be heartily endorsed by those who have purchased "Oliver Tools" when we claim that all our machinery is constructed on a quality basis.

To supply our friends and save them all we possibly can in the purchase of Wood Trimmers and give them quicker delivery than we otherwise could, we have established a factory in Manchester, England.

The Trimmer Department at our Grand Rapids factory is equipped with new and special machines that enable us to supply them at lower prices than formerly and at the same time furnish a finer line of Trimmers.

Trimmers are adjusted to cut square, vertically and horizontally, and warranted to read absolutely true to their graduations. The correct position of each graduation for the triangle, miter, hexagon, octagon and square upon both the obtuse and acute angles is determined by actually fitting three pieces of wood together for the triangle, four for the miter, six for the hexagon, eight for the octagon, etc. When the joints on these come absolutely perfect the hole is reamed in the bed into which the spring plunger fits and thus the angle is located positively and accurately.

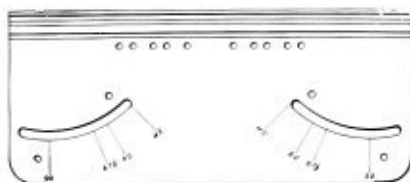
"Oliver" Wood Trimmers

Continued

Diagrams with range of angles shown by definite graduations on the face of the bed.



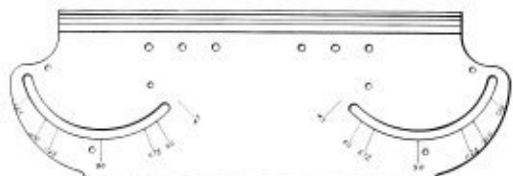
No. 6 WOOD TRIMMER. 45 to 135 degrees



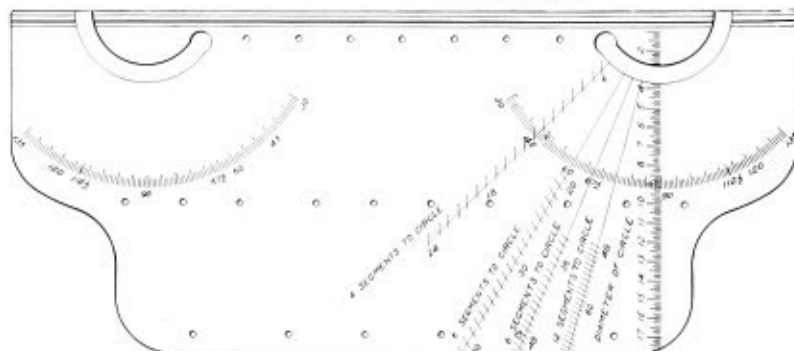
No. 1 WOOD TRIMMER. 45 to 90 degrees



Nos. 2 and 7 WOOD TRIMMERS. 30 to 135 degrees



No. 9 WOOD TRIMMER. 45 to 145 degrees



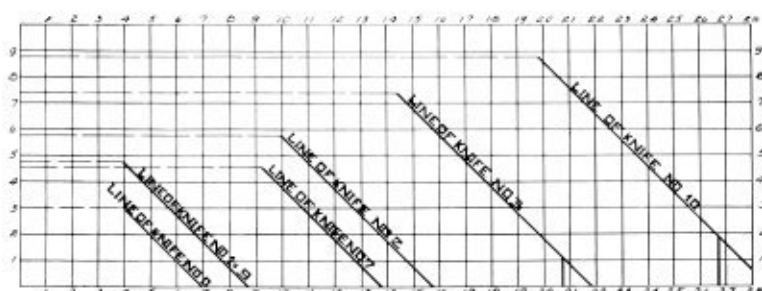
Nos. 3 and 10 WOOD TRIMMERS. 30 to 135 degrees

"Oliver" Wood Trimmers

Continued

To make a proper selection bear in mind that a small machine for the exclusive use of each man together with enough of the larger sizes to care for the heavy work is the ideal and most satisfactory way. For all around general work both large and small, the Nos. 1 or 9 for small work and No. 3 for larger work makes the most useful combination. If you only want one, buy a large one; it will work upon both little and large work with equal convenience.

Size Diagram



Diagram

This will prove of service to intending purchasers. Each square represents one square inch, and the exact trimming capacity of each machine is represented by the black and dotted lines of knives. Thus No. 3 trims $20\frac{3}{4}$ " long and $7\frac{1}{2}$ " deep. Below we give the capacities of the several machines in both the English and metric systems:

No.	Length of Stroke		Depth of Cut		Superficial Trimming Area		No.
	Inches	M. M.	Inches	M. M.	Square Inches	Square Centimetres	
0	6	152.40	3	76.20	13	83.8711	0
1	$7\frac{3}{4}$	196.85	$4\frac{1}{4}$	107.95	24	154.8390	1
2	15	381.00	$5\frac{3}{4}$	146.05	70	451.6138	2
3	$20\frac{3}{4}$	527.05	$7\frac{1}{2}$	190.50	135	870.9695	3
9	$8\frac{1}{2}$	215.90	$4\frac{3}{4}$	120.65	25	161.2906	9
10	$26\frac{1}{2}$	673.10	9	228.60	198	1277.4427	10

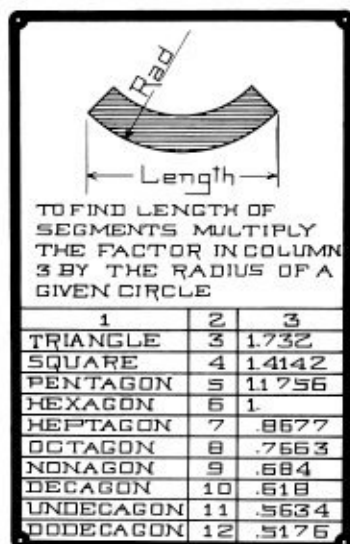
Styles

We have these machines arranged for the workman's bench, or we mount them on columns or stands as preferred. The stands are provided with drawers in which may be kept the wrenches, oil stones, tri-square, etc.

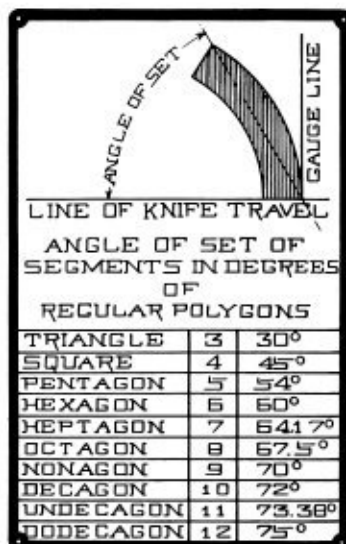
The Nos. 0 and 1 machines cut acute angles only, but all the other sizes cut both acute and obtuse angles.

Our No. 10 Large Trimmer is a new style machine with the interesting feature of vertically adjusting table.

“Oliver” Wood Trimmers—Interesting Special Features Continued

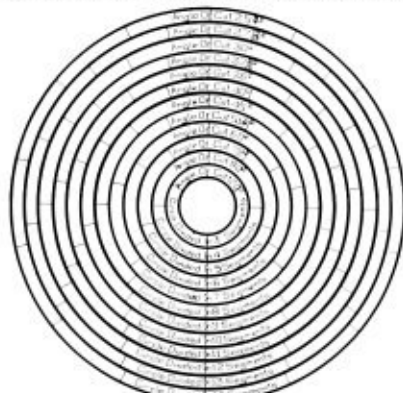


Length of Segments



Angle of Set of Segments

Operators of Wood Trimmers sometimes require quick knowledge of the needed length of segments in inches and the angle of set of segments in degrees. Above tables have been prepared by our engineers to indicate at a glance the correct length of segments for circles of any diameter as well as the position of segments on the Trimming Table.



Angle of Cut of Segments

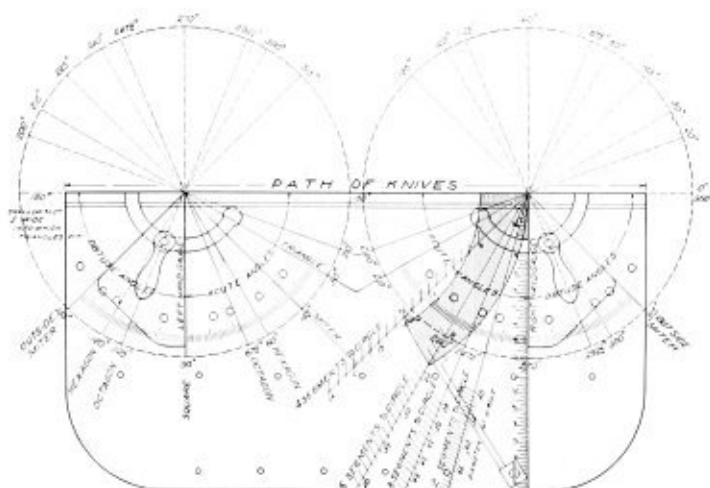
Both diagrams have been worked out up to 12 segments to the circle and we find that this covers all ordinary requirements.

This design has been carefully and correctly prepared to furnish instant information to an operator as to the angle of cut in trimming a given number of segments to a circle. It covers the degrees of angles from three to fourteen segments in a circle.

We aim to supply one of these diagrams drawn to a larger scale with each Trimmer sold. It will be worth preservation located on or near the machine and frequent reference to it will undoubtedly avoid an occasional error.

“Oliver” Wood Trimmers—Interesting Special Features

Continued



The Theory

The above illustrates how our full Universal Trimmers, Nos. 2, 3, 9 and 10 are graduated, and the theory upon which they are designed. It will be observed that the gauges cover degrees from 30 to 135 degrees on each side of the bed.

The reason for two gauges is that the one on the right hand is intended to cover one-half the degrees in a circle, and the one on the left hand the other half.

Segment Graduations

The additional graduations shown are for use in connection with circular pattern work. Four, six, eight or twelve segments to circles of from 6" to 72" in diameter can be instantly and accurately jointed by using the auxiliary stop-gauges.

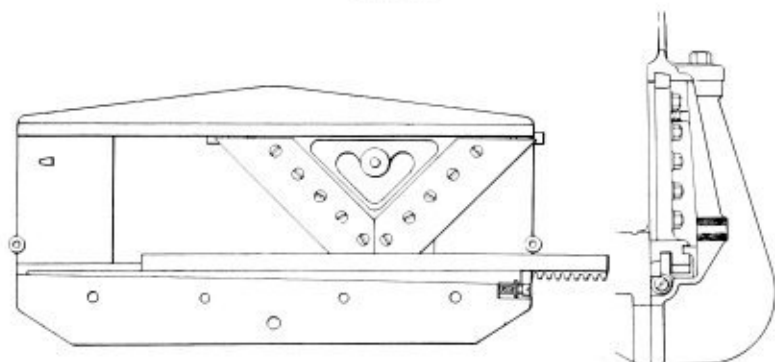
The shading represents one of six segments to a 24" circle properly adjusted. Trim one end first, then turn end for end, and finish to graduation mark.

Adjustments

These trimmers are adjusted to cut square, vertically and horizontally, and warranted to read absolutely true to their graduations. The correct position of each graduation for the triangle, miter, hexagon, octagon and square upon both the obtuse and acute angles is determined by actually fitting three pieces of wood together for the triangle, four for the miter, six for the hexagon, eight for the octagon, etc. When the joints on these come absolutely perfect the hole is reamed in the bed into which the spring plunger fits and thus the angle is located positively and accurately.

"Oliver" Wood Trimmers—Interesting Special Features

Continued



Adjustable Bearings

The method of taking up the wear to the bearings of our Nos. 2 and 3 Trimmers is illustrated above, and its importance cannot be over-estimated. When bearings become worn the tendency in any trimmer is for the knife to crowd away from the bed. By our adjustment, however, the long tapered gib raises the knife carriage and the double bevel keeps it thrust firmly against the face of the bed. This is a great improvement. It doubles the life of the machine and insures greater accuracy.

"Oliver" Wood Trimmers are always adjusted to cut perfectly square, vertically as well as horizontally, and warranted to be within one two-thousandth of an inch of exact truth.

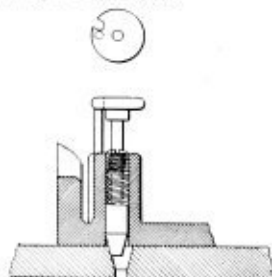
Capstan Wheel

The capstan hand wheel operating mechanism is an improved method of controlling the knife movement in our Trimmers. It is made with either four or six handles to suit the machines to which they are fitted. The handle is ready to use wherever the knife may be and a down stroke is always obtainable.

Convenience and power are its chief characteristics.

Automatic Gauge Location

The gauges on these Full Universal Trimmers are automatically located at the principal angles, i. e., 30, 45, 60, 67½, 90, 112½, 120 and 135 degrees. The etching shows that this is effected by a spring that forces a tapered pin into a tapered hole. Accuracy and speed are thus obtained. The gauges can be set at any of the intervening degrees by means of a thumb screw or clamp.



A Few Don'ts

Don't test with any old dirty stick; use clean, new material.
Don't see how thick a slice you can trim off with one cut.
Don't think a shaving one-eighth thick will leave a square end.
Don't try to use with a dull knife.

"Oliver" Wood Trimmers—Interesting Special Features

Continued



No. 143 "OLIVER" WOOD TRIMMER KNIFE VISE

Code, Fama

Wood Trimmer Knife Vise

We present herewith a handy device for users of Wood Trimmers. It's a case of "necessity the mother of invention." We use them ourselves; needed something of the kind and evolved this. This Knife Vise, together with our patent two-faced, genuine Turkish Emery Oil Stone, reduces the time required and makes comparatively easy a heretofore difficult task.

Trimmer Knives

Some knife manufacturers have attempted to furnish these knives without learning their essential qualities. If you desire results from the trimmer buy our knives which are made by a special process, ground properly, and will last for years with correct usage.

Care of Knives

Trimmer knives are not hard to sharpen. It is necessary to realize that you always obtain the exact duplicate of the face of the knife on the surface of the wood trimmed; hence care must be taken to preserve the face of the knives in perfect condition. They are purposely ground slightly concave, not to exceed two one-thousands of an inch, and even this is duplicated on the wood operated upon.

Grinding Trimmer Knives

Trimmer knives are very hard. The temper is easily drawn in grinding them on an emery wheel or grindstone. If the temper has been drawn thus, the only remedy is to grind back of the spot drawn. One grinding will last a long time if the knives are kept in condition by honing with a good oil stone. Do all your grinding or honing on the bevel side of the knife. Never touch the face except to remove the wire edge, and for this purpose use a fine, hard stone that is perfectly flat. Be careful not to more than remove the wire edge in this operation. The last time a stone is touched to a Trimmer knife it should be on the bevel side. If applied to the face the last time, the edge seems capable of being pointed the wrong way, and an accurate cut from the knives thus sharpened is an impossibility.

Directions For Cleaning and Using Trimmers

Remove all slushing grease, using clean waste and kerosene. Thoroughly clean all taper holes, remove grease from under and between the gauges and posts against which they bear. Clean the knives and fix them to machine with great care. Keep the knives sharp. A keen edge is a great essential. Secure the bench trimmers to something solid before using. Securely fasten the gauges before attempting a cut. To test the machine, use clean material. Trim thin slices if you expect square ends.

"Oliver" Wood Trimmers

Interesting Special Features—Continued

Triangle Gauges

Triangle Gauges

These are furnished with our wood trimmers when they are called for. There are many who never use them, so their cost in such cases is deducted from the price of the machine.

Uses and Advantages

We have found them desirable in working tenons, half laps, wide miters and compound angles, etc. A workman will often find other special things in his particular work in doing which these attachments enable him to save time and trouble.

Tenons and Half Laps

To trim the square shoulder of a tenon or half lap, place the attachment (as shown) against the gauge, located at 90 degrees. The lower corner of the wood must then rest on the bed of the Trimmer. If the shoulder is not desired to be square, the knife can be brought to bear at any angle by adjusting the wood upon the face of the Triangle Gauge.

Wide Miters

In order to trim a miter the length of the cut, utilize the attachments similarly to those illustrated, but with the gauges still located at the square. Small tongues on the triangles fit into



Showing a miter joint on wide stock

a groove adjacent to the knives to keep them in position, consequently no screws are required.

Compound Angles

When a piece must be made to the shape of a hopper a compound angle must be trimmed. This can be accomplished as illustrated, one of the angles being 45 degrees. The degree of pitch is determined by the regular gauge for one angle and the triangle for the other.

Crown Mouldings

If set on end, the attachments slide in the groove to and from the regular gauge. Set the latter at 45 degrees (if the mould is to be trimmed on the miter) and the cant of the moulding will then indicate the position of the triangle. Secure the latter at the back by the screw provided, which fits any of the tapped holes; adjust the teepiece; pull the lever, and a perfect compound miter will be obtained.

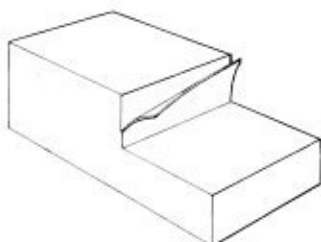
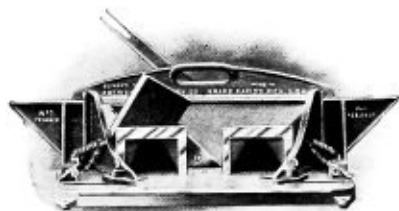
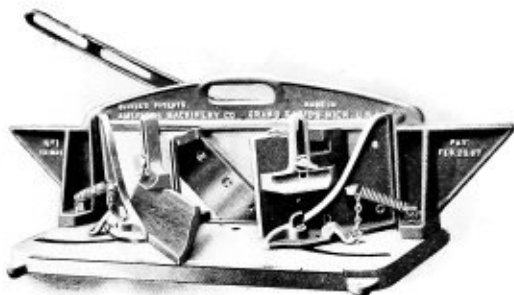
"Oliver" Wood Trimmers

Interesting Special Features—Continued

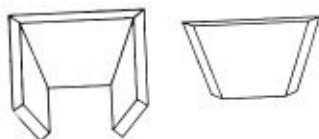
Triangle Gauges



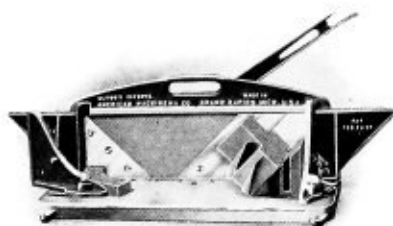
Showing compound angle and mitered frame molding



Showing a semi-trimmed shoulder to rabbet



Showing mitered sprung moldings



No. 0
"Oliver" Wood Trimmer
 The "Mighty" Little Fellow



Front View



Rear View

Adaptation This size of wood trimmer is adapted for the exclusive use of each pattern maker or cabinet worker and is strongly recommended for all bench service where the pieces do not exceed 5" x 2".

Details In construction we have adhered to the policy of producing the best that skill and precision tools are capable of and the following details will prove interesting:

Gauges cover degrees from 45 to 135.

Important angles are located by taper pins.

Gear and rack are cut from solid steel and placed out of the path of the shavings.

Knife is solid double edged, of finest steel, accurately tempered and rigidly tested.

Knife is warranted. May wear 1 1/4" from either end without detriment to its working qualities.

Capacity Length of stroke, 6". Depth of cut, 3".
 Superficial area removed by knife, 15 square inches.

CODE, WEIGHT, ETC.

Code	No.	Net Weight	Shipping Weight	Measurement in Cubic Feet
Famine	0	22 lbs.	35 lbs.	1

Triangle Gauges are never supplied with this machine.



No. 1 "Oliver" Improved Wood Trimmer



No. 1 "OLIVER" WOOD TRIMMER
Front view. Machine mounted on a column



No. 1 "OLIVER" WOOD TRIMMER
Rear view. Machine on stand with drawer

Popularity

This is one of the most popular of our small trimmers and is well suited to the needs of the pattern maker, carpenter, contractor, etc. Being strong, rigid, well made and convenient it has been successfully used in thousands of shops all over the world. It may be purchased without column or stand and placed up on the work bench if desired.

Improved Features

Location of gear at top of knife carriage out of the way of shavings.

Two series of holes for taking up wear of knives.

Gauges cover from 45 to 90 degrees.

When With Column or Stand

There are some advantages in having a machine of this size mounted upon a standard or column, viz.:

It takes no room on the bench.

It does not have to be fastened down.

It can be easily moved.

It can be substituted for more expensive tools of larger capacity when desirable to do small work.

The standard has iron legs, hardwood top, commodious drawer. Top, 24" x 30".

CAPACITY, CODE, WEIGHT, ETC.

Code	No.	Style	Length of Stroke	Depth of Cut	Super. Area	Size of Bed	Dom. Wt.	For. Wt.	Meas. in Cu. Ft.
Fancy	1-A	For Bench	8"	4 3/4"	24"	9"x20 1/2"	95	100	3
Fantan	1-B	On Column	8"	4 3/4"	24"	9"x20 1/2"	250	265	10
Farina	1-C	On Standard	8"	4 3/4"	24"	9"x20 1/2"	245	260	9

No. 9
"Oliver" New Style Wood Trimmer



No. 9 "OLIVER" NEW STYLE WOOD TRIMMER
For mounting on a bench

General Design

We have found the need of a Trimmer for use on the bench, that is about the size of our No. 1 machine, but arranged for trimming both the acute and obtuse angles. The design is much the same as our No. 1 Trimmer.

Knife Carriage

This carries two sets of bolt holes to allow the knives to be moved forward, doubling their usefulness. All sliding parts are milled and scraped.

Gauges

They rest flatly on the bed; are held back by springs, are easily clamped at any angle; may be accurately located by taper pins at the principal angles—45, 90, 135 degrees and move through angular paths whose centers are exactly in lines formed by points of the gauges with the cutting edge of the knives.

Driving Mechanism

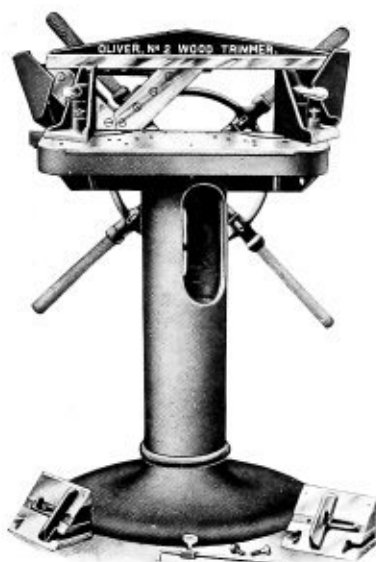
A malleable iron lever turns a pinion with cut teeth which meshes into steel cut racks—upper one fastened back of frame, lower one fastened to knife carriage out of the way of shavings.

CAPACITY, WEIGHT, CODE, ETC.

Code	No.	Style	Length of Stroke	Depth of Cut	Super. Area	Size of Bed	Dom. Wt.	For. Wt.	Mens. in Cu. Ft.
Femur	9-A	For Bench	8"	4 3/4"	25"	9"x24"	105	115	3 1/2
Fen	9-B	On Column	8"	4 3/4"	25"	9"x24"	250	262	9
Fenad	9-C	On Stand	8"	4 3/4"	25"	9"x24"	205	227	10

The same column and stand is used as illustrated with our No. 1 Wood Trimmer.

No. 2 "Oliver" Full Universal Wood Trimmers



Front View, Cuts 5 $\frac{3}{4}$ -inch high



Rear View, 15-inch Stroke

"OLIVER" No. 2 FULL UNIVERSAL WOOD TRIMMER

Its Character When the first universal machines were introduced this was the best size in demand, but since then we have changed its capacity and added such new features that bring it up to date, and large sales have resulted.

Quality Its quality in workmanship and finish is "right," its appointments modern and it has the same standard of excellence as the more expensive machines.

Details Graduations on the bed cover 30 to 135 degrees.
Segment graduations for circular work.
Adjustable bearings for the knives.
Automatic location of the gauges at important angles.
Four handle operating pilot wheel.
Automatic spring knife guards.
Cut Gear and Rack protected from shavings.
Adequate provision for wear of knives.
Spring stops and taper pins for locating gauges.
Triangle Attachment furnished when ordered.

CAPACITY, CODE, WEIGHT, ETC.

Code	No.	Stroke	Depth of Cut	Superficial Area	Size of Bed	Domestic Weight	Export Weight
Fasces	2	15"	5 $\frac{3}{4}$ "	70 sq. in.	11 $\frac{1}{2}$ " x 26"	375	450

No. 3

"Oliver" Full Universal Wood Trimmer

Over 2,000 in Daily Use

General Construction Our best knowledge gained through years of experience is incorporated in this machine. It is useful, convenient and popular because it not only has large capacity, but will work on the most delicate material with equal facility. It is made like a machine tool.

Principal Features Among the many features that are wrought into this powerful trimmer we can refer you to the following that have distinctive merit:

Six handle operating wheel, always in reach on small or large work. Can use two handles on the largest pieces.

Gauges are automatically located upon the prominent angles.

Segment graduations for circles from 6" to 72" in diameter.

Adjustable bearings, doubling its life on accurate work.

Entire top swivels on the column or can be held in a fixed position by a lock nut.

Fine Points Automatic spring knife guards furnish adequate protection at all times.

Faces of both gauges are graduated in inches for cutting positive lengths.

Rack, gear and bearings are protected from shavings and grit.

Cut gear and cut rack eliminate uneven and loose motion.

The bed is long and wide, making a valuable truing table.

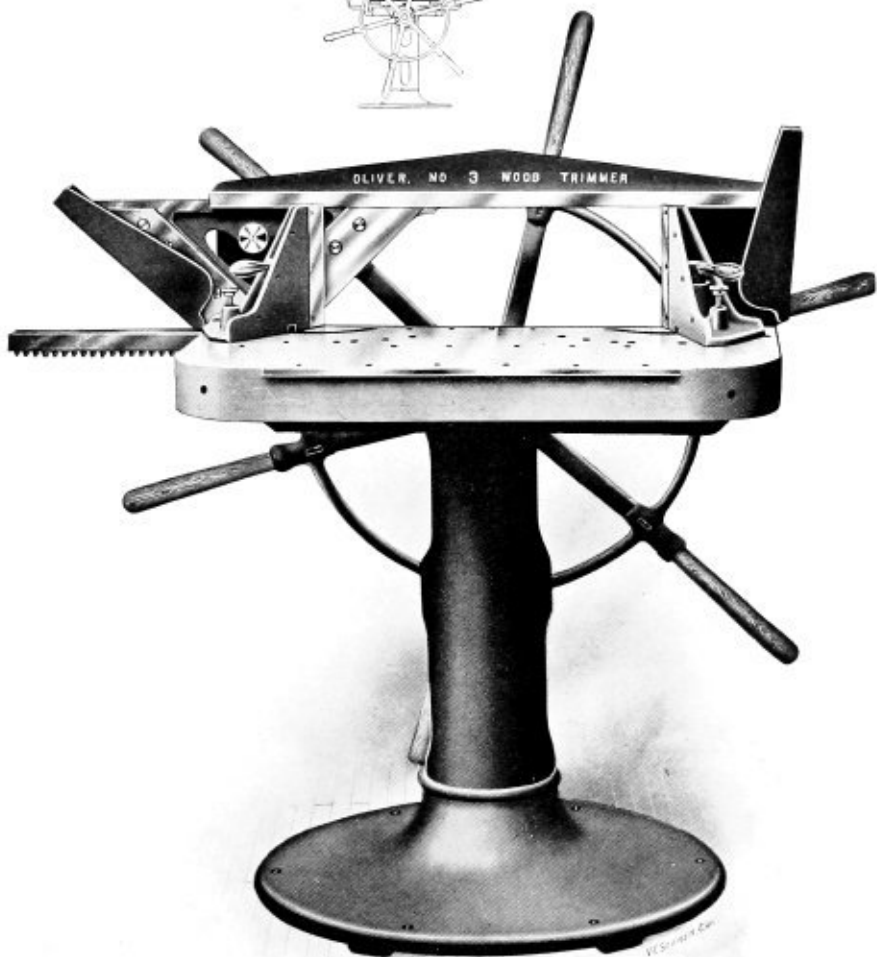
Wear to the knives is adequately provided for.

CODE, WEIGHT, ETC.

Code	No.	Stroke	Depth of Cut	Superficial Area	Size of Bed	Domestic Weight	Foreign Weight	Cubic Measure
Fasting	3	20 3/4"	7 1/2"	135 sq. in.	18"x34"	610 lbs.	730 lbs.	24

See preceding pages descriptive of the principal features of this machine.

Extra Knives Good results are never obtained with dull tools. Nowhere is this more true than in the case of Trimmers. Our advice is to always have one extra set of knives for each machine, which may be kept in condition to replace the pair on the machine, otherwise you are tempted to use dull knives when in haste. An "Oliver" Wood Trimmer will outlast at least three or four pairs of the best knives that can be made.



No. 3 "OLIVER" FULL UNIVERSAL WOOD TRIMMER
"The master of them all"

No. 10

"Oliver" Patent Adjustable Wood Trimmer

Introduction Some new features have been incorporated in the No. 10 that render it a more general machine than any of its predecessors. The introduction of an adjusting table for distributing evenly the wear along the full length of the knives and dulling the entire knife before re-sharpening is the new feature not found on other types of machines. It has also greater capacity.

Column and Bed We make the column in cored form 28" x 37", giving good floor surface. The bed is 18" x 41", graduated at each end from 30 to 135 degrees. Taper pins locate the gauges at all the important angles, viz.: 30, 45, 60, 67½, 90, 112½, 120 and 135 degrees. At the right hand gauge extending across the bed from 4" to 16" from the knife line are length graduations made in eighth inches.

Segment Graduation Graduations are shown for cutting segments for circles from 6" to 72" in diameter ranging from 4 to 12 segments. Raising screw is mounted on ball bearings.

Table Gibs The bed may be raised 5" by operating hand wheel and screw at the front. The entire cutting edges of the knives may be thus presented to the work before regrinding.

Gauges These are two in number, located one at each end of the bed. The front edges are faced with steel strips and are graduated to eighth inches. They are secured to bed by clamping levers.

Bridge and Knife Slide Bridge is cast iron and is bolted to the posts of the main frame. The knife slide is supported in dovetail bearings and by this means all wear in the slide is readily taken up. It is moved in either direction through cut rack fastened to the outside edge of the slide.

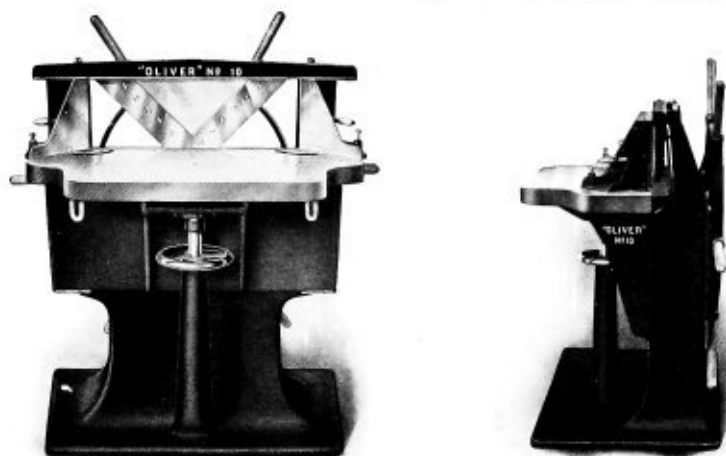
Knives These are made from special laid steel, are hollow ground and of correct temper.

Driving Method A six point pilot wheel is mounted at the back of the machine and carries a steel cut pinion that meshes into the rack on the knife slide. Revolving this wheel and pinion forces the slide and knives forward.

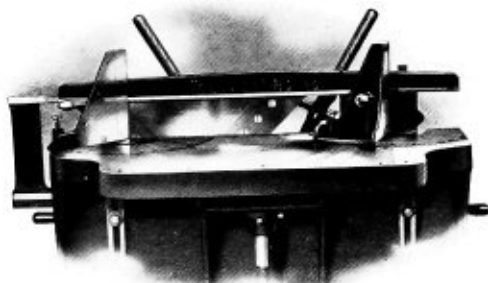
CAPACITY, CODE, WEIGHT, ETC.

Code	Length of Stroke	Depth of Cut	Trimming Area Sq. Inches	Floor Space	Domestic Weight	Export Weight	Measurement in Cubic Feet
Fennel	26½"	9"	198	41" x 28"	1400	1510	32

No. 10 "Oliver" Patent Adjustable Wood Trimmer



Front and end views



Showing bed elevated to its minimum height



Showing the broad bearings back of bed and the gear and rack cover, etc.

No. 132
"Oliver" Iron Surface Table



Adaptation There is an increasing demand for a surface table made of metal that may be relied upon to retain its shape and the table shown in the half-tone has met it.

Table This is made of cast iron, is strongly ribbed and is planed true. The standard size is 66" long, 30" wide, 31" high and a 3" deep flange around its edge. Concentric with the center of the table surface is a series of tapped holes to receive the supporting and clamping screws of general purpose clamps as shown.

Legs These are cast with wide bearing for the table, with a flaring base and with two adjustable screws in the bottom of each for service in aligning the table. In the top of one leg there is a central "V" knife bearing in which the table pivots. Each leg has four heavy bolts securing the table to them. Those in the leg with the "V" bearing are adjusting bolts for making the table easily adjustable on its three point bearing.

CODE, WEIGHT, ETC.

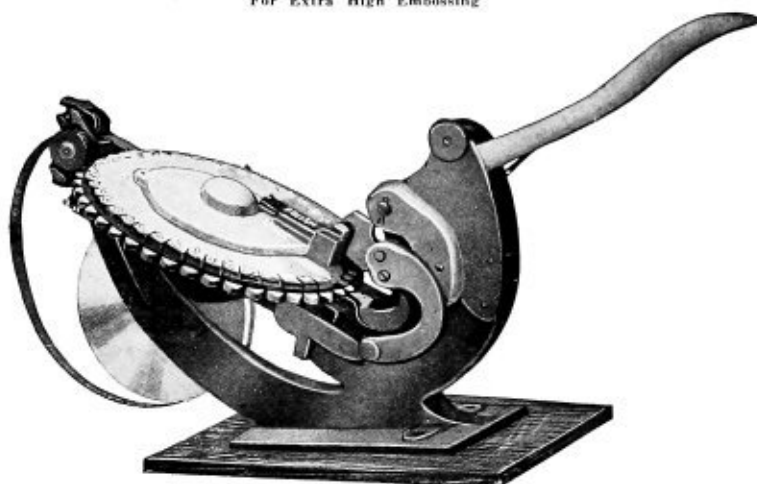
Code		Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Ferry	No. 132	1200	1310	42

EXTRAS

Ferta	No. 124-A	General Purpose Clamp, consisting of 6" clamp, wing nut, brace screw 5½" long and clamp screw 6" long.		
Ferte	No. 124-B	General Purpose Clamp, consisting of 8" clamp, wing nut, brace screw 6" long and clamp screw 6½" long.		

"Oliver" Type Embossing Machines

For Extra High Embossing



The Demand Durable pattern plates, tags, labels, etc., can be finished in such fine style and at such small expense that the demand for them is becoming world wide. They are simple, strong and efficient.

Zinc This is the substance into which the letters and figures are ordinarily embossed though soft brass and aluminum tapes are sometimes used. It comes in rolls, and plates can be made with one letter or figure to any number of letters and figures desired.

Feed The zinc strip is fed automatically through a guide chute situated between circular die plates. By pressing down the handle it feeds the strip to the correct place, the dial is then turned to bring the desired letter or figure into place, then the handle is pressed down causing the strip to receive the character and embosses it on the strip. The process is repeated until the plate is finished.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight	Measure in Cu. Ft.
Ferteb	475-A	High Embossing Press, $\frac{1}{8}$ " for pattern plates, labels, tags, complete with one roll of zinc tape $\frac{3}{8}$ " wide...	80	3
Fertec	475-B	High Embossing Press, $\frac{1}{8}$ " as above, except the roll of tape is $\frac{1}{4}$ " wide.....	80	3
Ferted	475-C	High Embossing Press, $\frac{1}{4}$ " as above, except the roll of tape is $\frac{1}{2}$ " wide.....	80	3
Fertef	476-F	High Embossing Press, $\frac{3}{8}$ " as above, except the roll of tape is $\frac{1}{2}$ " wide.....	120	6
Ferteg	476-A	High Embossing Press, $\frac{1}{8}$ " as above, except the roll of tape is $\frac{3}{4}$ " wide.....	120	6
Fertek	476-B	High Embossing Press, $\frac{3}{8}$ " as above, except the roll of tape is $\frac{7}{8}$ " wide.....	120	6
Fertel	476-C	High Embossing Press, $\frac{1}{2}$ " as above, except the roll of tape is $1\frac{1}{8}$ " wide.....	350	12
Fertem	476-D	High Embossing Press, $\frac{5}{8}$ " as above, except the roll of tape is $1\frac{1}{4}$ " wide.....	350	12
Ferten	476-E	High Embossing Press, $\frac{3}{4}$ " as above, except the roll of tape is $1\frac{1}{2}$ " wide.....	350	12

No. 130

"Oliver" Down Draft Forges

Single or Double

Introduction This forge is the result of a thorough investigation of the needs in educational institutions for this class of machinery. In it we have incorporated those features that have been clearly indicated as essentials for a perfect working, convenient and cleanly device.

Installation These forges may be set absolutely in line whether the underground tiling or exhaust ducts are so located or not. This means that it will make no difference whether the exhaust or blast connections come in the center of the pedestal or at either side so long as they come within the base dimensions. Contractors are sometimes careless or indifferent as to the exactness of following the drawings for laying the blast and exhaust ducts, and the construction of our forge forestalls any inconvenience in making connections.

Forge Pan Forge Pan is heavy cast iron, 32" square, 29" from floor. Fitted with cast iron combined water tank and coal box. Supported by one iron leg and a pedestal.

Pedestal Pedestal is massive cast iron in the cored form. Placed over underground openings. Encases all exhaust and blower connections. Door on inner side of pedestal provides easy access for regulating volume damper, connecting blast pipe, or cleaning out any clinkers which may drop down through exhaust hood.

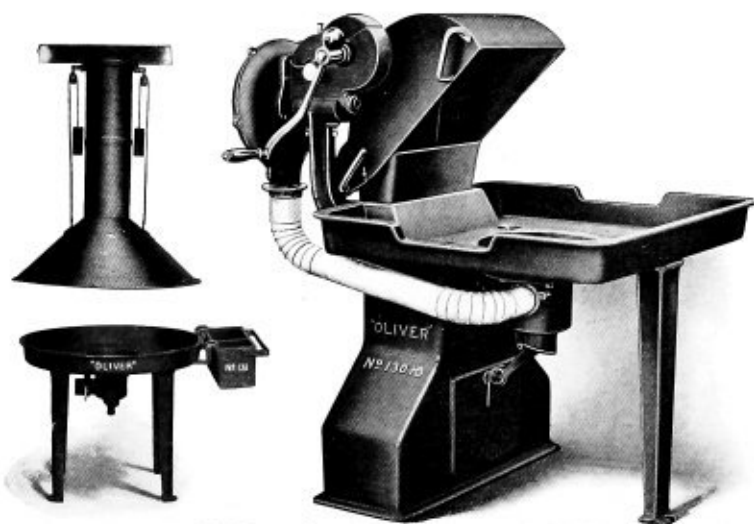
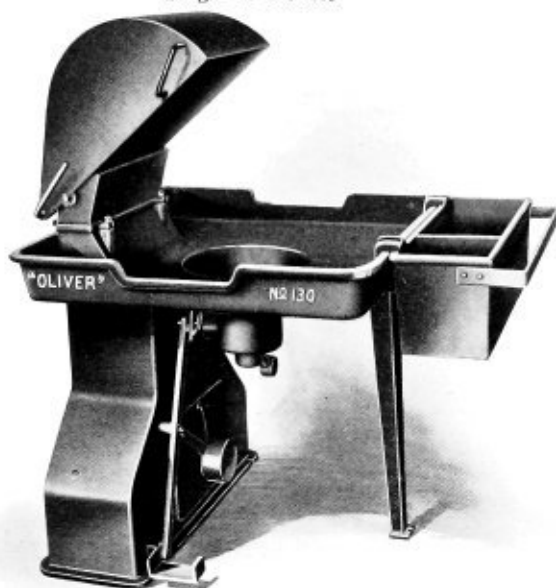
Down Draft Hood Down Draft Hood is cast iron, made heavy to withstand heat and prevent warping. It consists of one adjustable hood held by substantial locking device.

Exhaust Exhaust is drawn through down draft hood into the hollow pedestal thence through a conically shaped $\frac{1}{4}$ " mesh wire screen into a 7" galvanized iron exhaust pipe which has volume damper and leads to exhaust duct.

Clinker Guard This latter consists of a conical shaped screen made of heavy wire $\frac{1}{4}$ " mesh, covering the 8" exhaust pipe, which prevents cinders and clinkers getting into the exhaust ducts. This is of special value because it avoids the necessity of a large clean-out pit. Instead of raking or washing them out of the underground ducts, we simply open a door in the pedestal and rake them out.

"Oliver" No. 130 Down Draft Forges

Single or Double



No. 131 INSTRUCTOR FORGE

No. 130-HB, equipped with a ball bearing hand blower

No. 130

"Oliver" Down Draft Forges

Single or Double

Continued

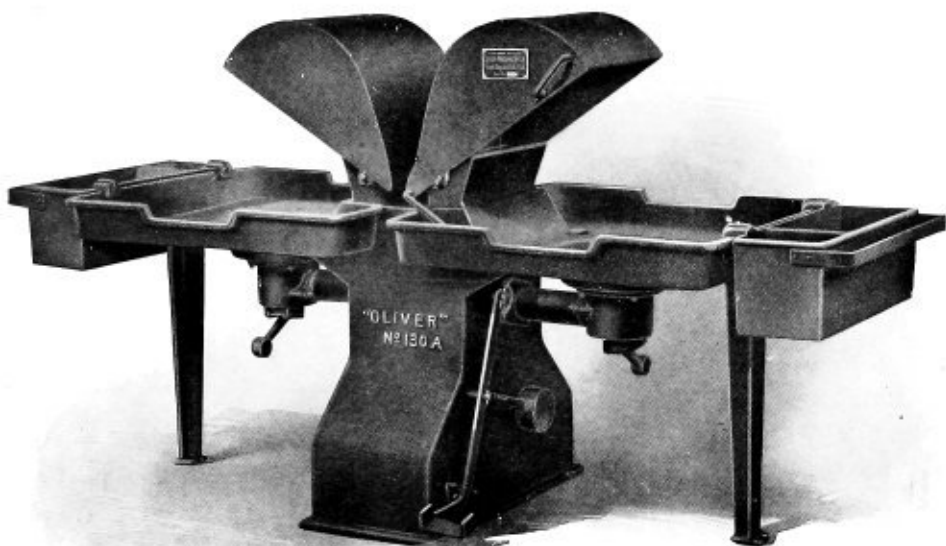
- Blast Pipe** Blast Pipe is galvanized iron 3" diameter. Is encased by the pedestal. Connects with tuyere through a simple valve, with which the blast is easily regulated. Has foot treadle blast control; self-closing.
- Blast Connections** These come up through the floor opposite the exhaust connection and on the inside of the smoke chamber, thus being protected from damage and out of the way. A door in the smoke chamber permits of easy access when necessary to get at the volume damper and blast pipe.
- Tuyere** This is the simplest and best made. There are no hinged joints on the interior and the dumping device is self-closing. It has a large air chamber and suitable opening to permit a uniform volume of air for blowing the fire. The tuyere cover is of cast iron, easily removable when necessary.
- Foot Treadle Blast Control** By means of this treadle connection the control of the blast is regulated by the operator's foot, and blast is shut off when the operator leaves the forge for an indefinite period. The destruction of the work by burning the metal is thus avoided.
- Hand Power** This style forge is exactly the same as our No. 130 Single Down Draft Forge, except that it is equipped with a ball bearing hand blower mounted on cast iron bracket attached to forge column. Blast gate and foot treadle control are not furnished on this type forge. See page 245.
- Equipment** Equipment consists of forge complete with everything complete above the floor line.
- Floor Space** Floor space of No. 130 Single is 30" x 30½" and No. 130 Double is 30" x 85" on floor, 32" x 41½" maximum for the single.

CODE, WEIGHT, ETC.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Ferti	No. 130 Single Forge, power blast.....	700	850	20
Fertile	No. 130 Double Forge, power blast.....	1100	1300	62
Fertim	No. 130-HB Single Forge, fitted with one 12" ball bearing Hand Blower	750	900	30
Fertin	No. 130-HB Double Forge, fitted with two 12" ball bearing Hand Blowers	1200	1500	65

No. 130
"Oliver" Down Draft Forge

Single or Double



"OLIVER" No. 130 DOUBLE DOWN DRAFT FORGE—Weighs 1100 pounds

Oliver Forges are quality forges, scientifically proportioned and thoroughly reliable. They are all cast iron to insure durability. Coal gas rusts sheet steel very rapidly, rust eats steel more rapidly than cast iron. Fix in mind that a single forge of the Oliver make weighs 700 pounds, and a double forge 1100 pounds. A steel one could be made that would weigh less than half as much and look fairly well, but soon rusts out.

INSTRUCTORS UP DRAFT FORGE

See Picture on Page 245

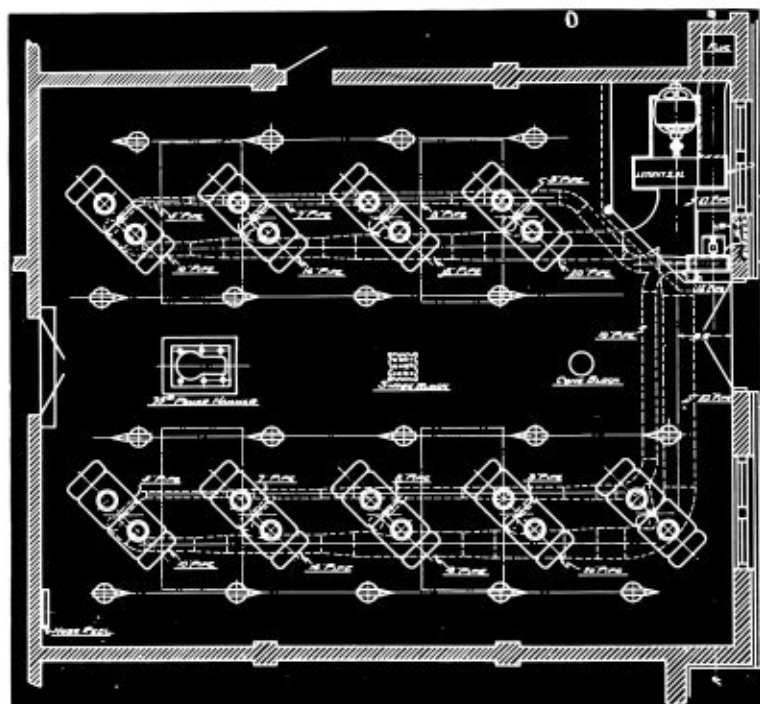
Code
Fertio

No. 131 with sheet metal hood adjustable up and down, 36" diameter cast iron fire pan, 9" exhaust, 3" blow pipe connection, cast iron legs, cast iron tuyere with large air chamber, arranged with self-closing clinker device, weighs 500 pounds.

Fertion

No. 131-HB, same as above except equipped with 12" ball bearing hand blower mounted on forge, weighs 550 pounds.

"Oliver" Forge Shop "Layouts"



Forge Shop of High School, Inglewood, California
"Oliver" Forges fit into any shape room

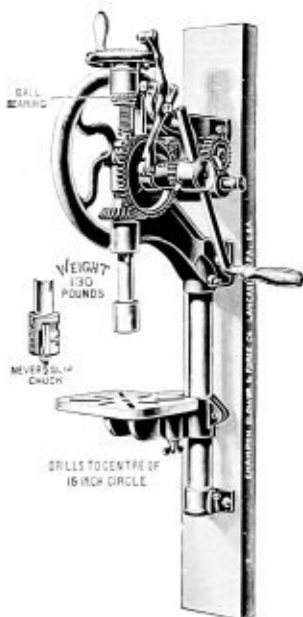
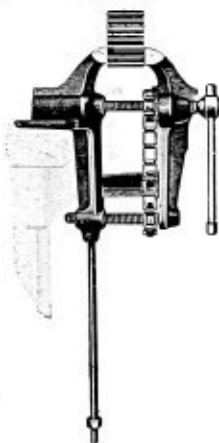
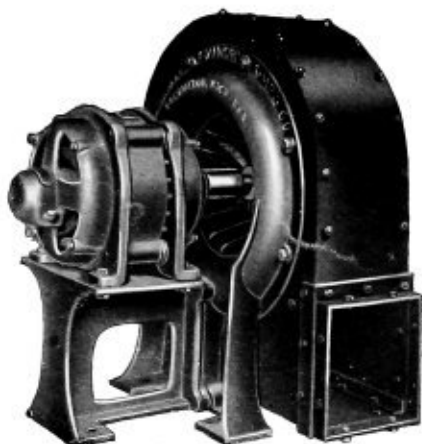
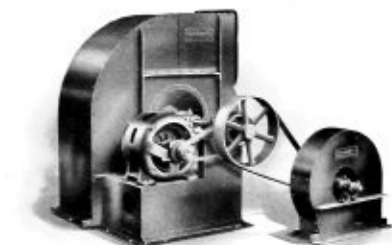
A forge "layout" should be made by engineers who have made a study of the subject. We have equipped and laid the plans for a great many forge rooms. Our engineering talent is second to none and we have yet to make our first unsuccessful installation.

Send us the floor plan of your forge room and we will draw up the plan of piping showing arrangement of forges indicating the blower and exhauster best suited for your room. **We guarantee our installations.**

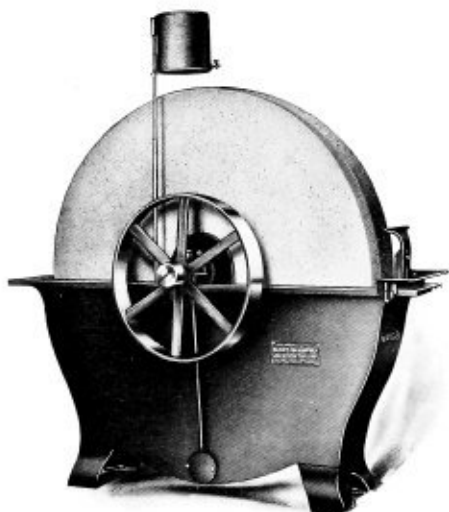
There are many schools now using "Oliver" forges and proud of the fact. Send for list of users and special circular on "Oliver" forges.

"Oliver" Forge Shop Accessories

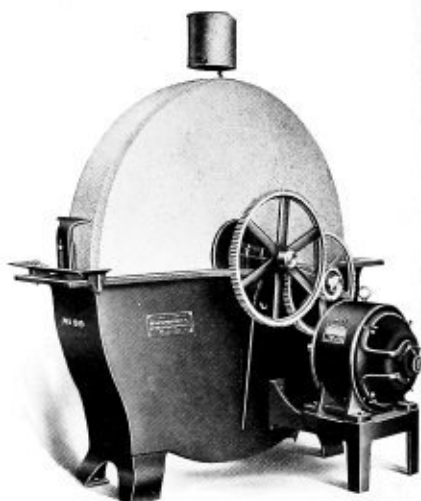
We do not manufacture Forge Shop accessories, such as Exhaust and Blast Fans, Anvils, Vises, Grinders, Drill Presses, Power Hammers, Tongs, Small Tools, etc., but we can furnish all these if necessary in connection with "Oliver" Down Draft Forges.



"Oliver" No. 98 Grindstone



No. 98 LARGE GRINDSTONE—Belt Drive



Motor Drive, Gear Guards Off

Introduction Tool grinding being a necessity in nearly all factories for wood and iron products, it is preferable to have a substantial machine of ample capacity.

Frame This is a solid, cored casting mounted on four legs. It is provided with an outlet in the base for convenience in removing sediment.

Mandrel It is made of steel 2¼" diameter, 33" long, is mounted in babbitted bearings 6" long, lubricated through oil cups. Pulley 24" diameter, 7" face—speed 35 R. P. M.

Stone This is desirable grit for sharpening edge tools and is ordinarily furnished 60" in diameter with either 9" or 12" face.

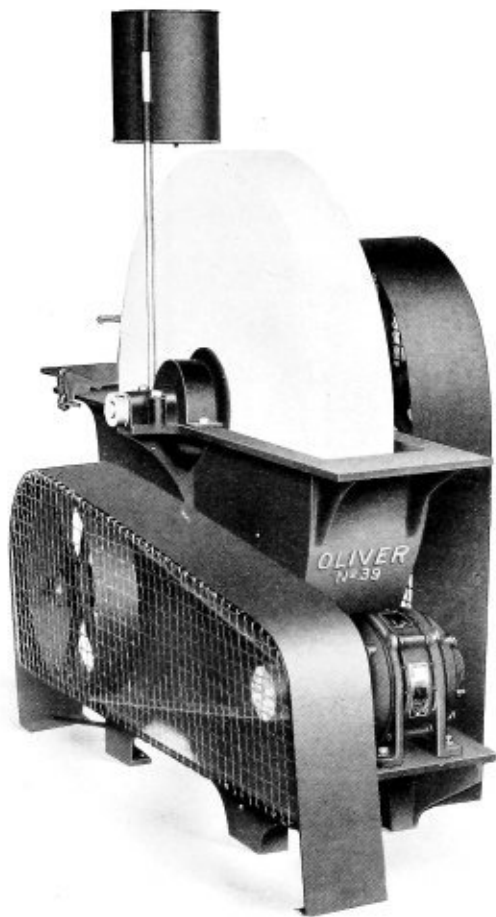
Tool Rest This is mounted on the frame, is 9" long and has a vertical adjustment of 3¾".

Motor Drive When it is desired to drive this with an electric motor we have a bracket to receive it that is bolted to the frame and a standard speed motor connected to the mandrel by a suitable reduction of speed through countershaft, all properly guarded, noiseless and very effective, as illustrated by No. 39 Grindstone, motor drive.

CODE, WEIGHT, ETC.

Code	No.	Size of Stone	Domestic Weight	Foreign Weight	Measurement in Cubic Feet
Fetish	98-A	60" x 9"	3500	3800	72
Fetter	98-B	60" x 12"	4400	4800	80

"Oliver" No. 39 Grind Stones



No. 39 NEW MOTOR DRIVE GRINDSTONE

Illustration shows our new self-contained motor, belt drive grindstone. The belts are completely protected and the drive is powerful.

QUIET OPERATION

Quietness in a grinding machine is very desirable. This is the most quiet motor drive ever designed for a grindstone.



No. 39 Gear Drive



No. 39 Belt Drive

“Oliver” No. 39 Grindstone Frame

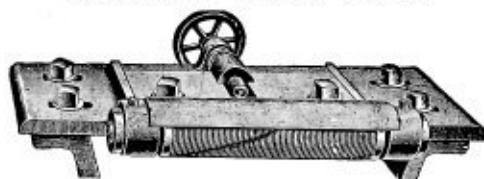
In general appearance and construction this machine is similar to the machine described on page 250. The capacity and dimensions of it are as follows:

Frame	27" high, made of cast iron.
Mandrel	1¼" diameter, 22¼" long, made of steel.
Bearings	4" long and babbitted.
Pulley	12" diameter, 4" face; speed, 50 revolutions per minute.
Flanges	Diameter to suit the stone.
Tool Rest	6" long; vertical adjustment 2".
Floor Space	51" x 22" for 36" stone and 62" x 27" for 48" stone.

CODE, WEIGHT, ETC.

Code	No.	Size Stone	H. P.	Domestic Weight	Foreign Weight	Measurement in Cubic Feet
Fettic	39-A	36" x 6"	½	1150	1350	33
Fettif	39-B	48" x 8"	1	2050	2300	42
Fettik	39-C	36" x 6"	½	1200	1400	33

Grindstone Truing Device



Truing Device

When specially ordered we will supply a device for truing the grinding surface of the stone, and it may be equipped for either hand or automatic service. The hand operating device is illustrated. It is made in three sizes. The No. 3 is the one to select for the larger stones.

Construction

This is made in three sizes and is adjustable to any size frame. The threaded cutter is of hardened steel and runs in hardened steel bearings, and it can be re-cut many times. It is well adapted for keeping the stone constantly in a gritty condition for grinding.

Code	No.	Length of Roll	Diam. of Roll	Length over all	Domestic Weight	Foreign Weight	Measurement in Cubic Feet
Fettile	1	5½"	1½"	13"	22	26	2
Fetu	2	8½"	2"	18"	28	35	2
Fetua	3	12½"	3¼"	24"	40	50	3

No. 473 "Oliver" Alundum or Corundum Grinder

12-inch Wheels, 1½-inch Wide

Design

This is a modern grinder in every respect — thoroughly safe guarded, large self-oiling bearings, heavy well-proportioned substantial base, place to lay tools being ground, adjustable tool rest and water pot.

Equipment

Two 12" Alundum or Corundum grinding wheels, one 1½" wide medium grain, one 1" wide fine grain, two metal wheel guards or hoods arranged for exhaust connection, one cast iron floor column, one water pot and one 4" x 4" single spindle pulley.

Dimensions

Spindle 22" long, ¾" in bearings, ¾" in wheels, 40" from floor; flanges 5" diameter; bearings 4" long; base on floor 12" x 16"; single spindle pulley 4" x 4"; cone pulley for spindle, furnished without extra cost in place of single pulley, when so ordered, two steps 3¾" and 4½" diameter, 2¼" face.



No. 473-D
COUNTERSHAFT
Code, Fifan

Shaft 21" long, 1½" diameter. Driving Cone 16" and 15¼" diameter, T & L pulleys 6" x 2¾" face. Speed 530 R. P. M.



No. 473-C
COUNTERSHAFT
Code, Fifak

Shaft 15¾" long, 1" diameter. Driving pulley 12" x 2½" face, T & L pulleys 5" x 2¼" face. Speed 530 R. P. M.

Code	Description	Domestic Weight	Foreign Weight	Measurement in Cubic Ft.
Fifa	No. 473-A Grinder with regular equipment	300	350	9
Fifab	No. 473-B Grinder with two-step cone	300	350	9

Motor Head Grinders

Either for Direct or Alternating Current

- Motor** The motors in these grinders are designed for this work. They are completely inclosed, making it impossible for dirt or grit to get in the moving parts. Each machine is self-contained, complete ready for use.
- Bearings** Motor bearings are self-oiling and completely protected from the grinding dust.
- Starting Device** The starters made for these motors only are conveniently located in pedestal and all connections are completely housed; operator cannot come in contact with them.
- Electric Current** Made for alternating or direct current. It is necessary to know voltage for D. C. and voltage, phase and cycle for A. C. when quoting price.
- Wheels** All wheels are equipped with safety flanges with ample dimensions, and guards are supplied for the wheels.

SPECIFICATIONS

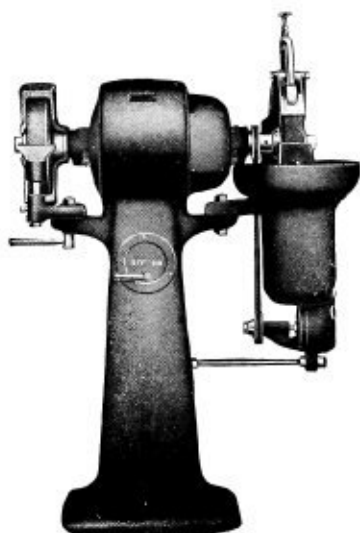
- | Code | No. | Machine Description |
|-------|--------|--|
| Figac | 484-A— | Motor Head Bench Grinder , consisting of a $\frac{1}{2}$ H. P., 2400 R. P. M., D. C. or 1800 R. P. M. A. C., 110 or 220 Volt completely enclosed Motor with self-contained resistance starter; fitted with two 8" x $\frac{3}{4}$ " emery wheels with steel guards or hoods, one straight tool rest, one right angle tool rest and one water pot. Weight, 125 pounds. |
| Figaf | 484-B— | Motor Head Bench Grinder , consisting of a 1 H. P., 1800 R. P. M., 110 or 220 Volt completely enclosed Motor with self-contained resistance starter; fitted with two 12" x 1" emery wheels with steel guards, or hoods; one straight tool rest, one right angle tool rest and one water pot. Weight, 230 pounds. |
| Figah | 484-C— | Motor Head Column Grinder , consisting of a 2 H. P., 1800 R. P. M., 110 or 220 Volt completely enclosed Motor with self-contained resistance starter and main line fuse block in base mounted on floor column; fitted with two 12" x 2" emery wheels with steel guards or hoods; one straight tool rest, one right angle tool rest and one water pot. Weight, 550 pounds. |
| Figak | 489— | Water Tool Grinder , consisting of a 2 H. P., 1200 R. P. M., 110 or 220 Volt completely enclosed Motor with self-contained resistance starter and main line fuse block in base mounted on floor column; fitted with one 16" x 2" wet emery wheel with metal guard or hood, centrifugal pump with three adjustable nozzles, clean out drawer and necessary belts. Weight, 900 pounds. |
| Figam | 490— | Combined Wet and Dry Grinder , consisting of a 2 H. P., 1800 R. P. M., 110 or 220 Volt completely enclosed Motor with self-contained resistance starter and main line fuse block in base mounted on floor column; fitted with two 12" x 2" emery wheels (one for dry grinding, one for either wet or dry) with metal guards or hoods, one straight rest, one water attachment consisting of splash bowl, water reservoir, settling chamber, centrifugal pump with pulleys and belt. Weight, 900 pounds. |

EXTRAS

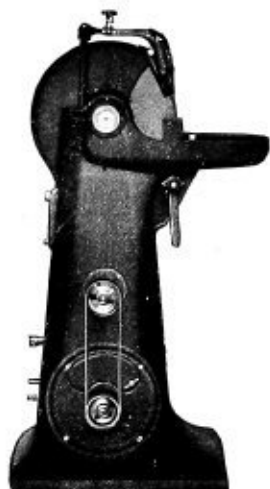
We can furnish extra attachments usable on above machines. State your requirements.

Motor Head Grinders

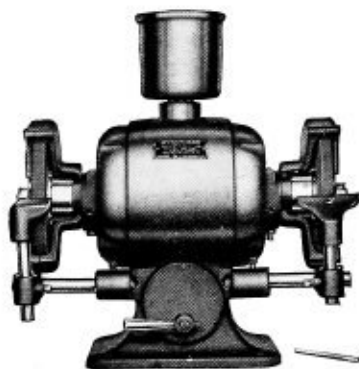
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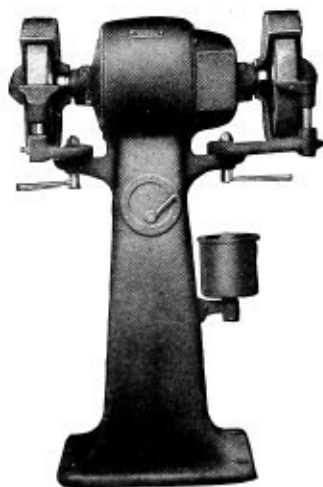
No. 490 MOTOR HEAD COMBINED
WET AND DRY GRINDER



No. 489 MOTOR DRIVEN
WATER TOOL GRINDER

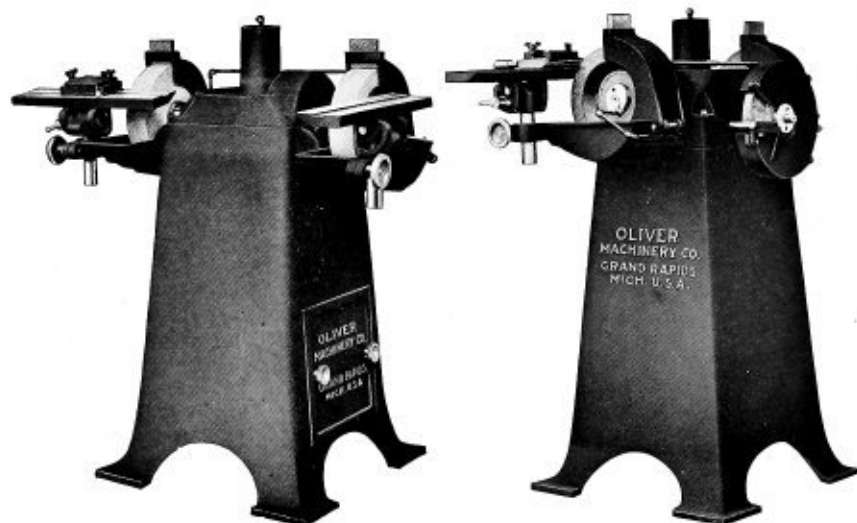


No. 484-A MOTOR HEAD
BENCH GRINDER



No. 484-C MOTOR HEAD
COLUMN GRINDER

"Oliver" Revolving Oilstone Grinders



No. 550 "OLIVER" OILSTONE GRINDER

No. 551 "OLIVER" OILSTONE GRINDER

Introduction These machines are designed for quickly grinding and sharpening various edge tools, general grinding, beveling knives, etc. They take the place of the ordinary grindstone and bench whetstone, doing the work quicker and better. "The modern way of grinding edge tools, planer and jointer knives."

Oilstone Wheels Oilstone wheels are 10" diameter by $2\frac{1}{2}$ " face, one intended for rapid abrasion, the other for putting the smooth keen edge on the tool. They are mounted on a steel arbor driven by spiral gearing and run 225 R. P. M.

Cutting Lubricant Kerosene oil discharged on the inside of the cup wheels is the best lubricant for the grinding wheels. This method of applying the lubricant keeps the wheels well saturated. A special appliance prevents the oil from being thrown off by centrifugal force.

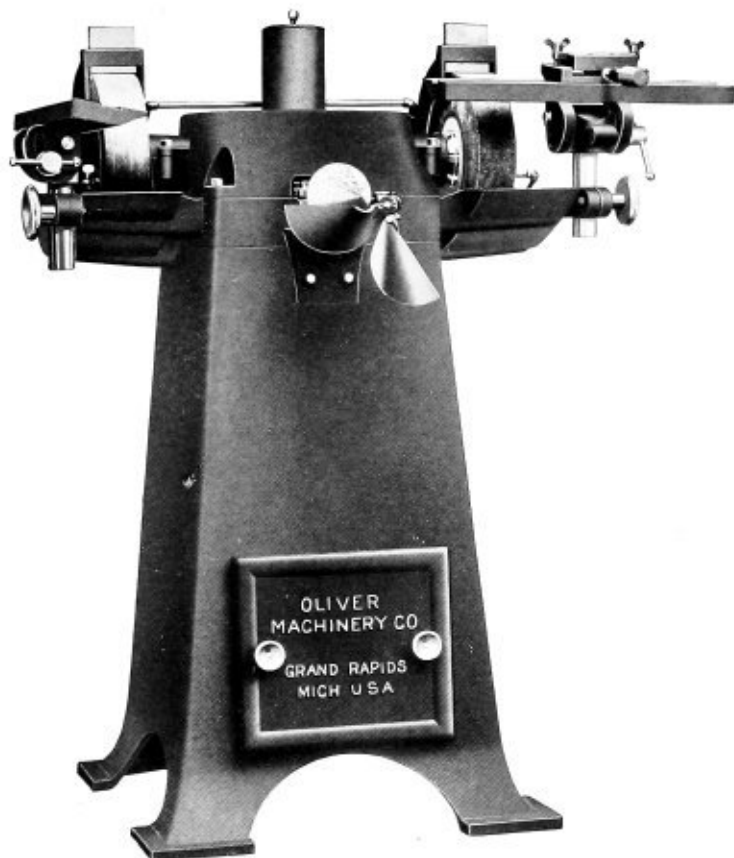
Emery Cone An emery cone 4" diameter by $5\frac{1}{4}$ " long, for grinding gouges, is located on one end of lower arbor.

Emery Wheel An emery wheel 10" diameter by 1" face is mounted on opposite end of arbor for general dry grinding.

Tables Tables are tilting, fully universal and adjustable for face grinding, giving plain straight surface as well as peripheral grinding.

"Oliver" Revolving Oilstone Grinders

Continued



No. 581 "OLIVER" REVOLVING OILSTONE GRINDER

Frame

The frame is very rigid and substantial, cast in one piece cored with 25" x 25" base. Height of spindles 35" x 37½". Height over oil receptacle 45½". The arbors are made of high carbon steel and run in self-oiling bearings, all bearings and transmission fully enclosed with cast iron covers. Single arbor machines carry two oilstones, one fine and one course. Two arbor machines carry two oilstones, one fine and one course, one emery wheel and one emery cone.

"Oliver" Revolving Oilstone Grinders

Continued



No. 582 "OLIVER" OILSTONE GRINDER

Single arbor machines carry two oilstones, one fine and one coarse. Two arbor machines carry two oilstones, one fine and one coarse, one emery wheel.

Tool Holder

The tool holder is adjustable with micrometer adjustments for holding small tools when grinding, and can be taken from table for inspection of tool and replaced instantly.

Knife Grinding Attachment

The knife grinding attachment is fully automatic and made in two sizes, viz.: to grind 24" and 30" knives. It has a rigid knife bar equipped with dial and indicator, adjustable for grinding to any usual knife angle. It is pivoted at the center and has provision for bringing knife into contact with the wheel so that either straight or concaved bevels may be ground. This attachment may be removed quickly by loosening two bolts.

Safety First

Special attention is called to the manner in which these machines are guarded. All bearings and transmission are fully enclosed with a heavy cast iron cover and all grinding wheels have the latest improved guards, and the grinding cone is equipped with a housing of cast iron. Down belt and motor drive machines have all the belting inside the column.

Equipment

Single arbor machines are equipped with two 10" x 2½" oilstones, with guards and oil wipers, two tilting universal tables, one adjustable tool holder with micrometer adjustment. Oil tank with oil pipes and spigots, one spanner wrench and one 8" Wescott wrench. A stropping wheel attached to cone may be supplied as an extra.

Countershaft

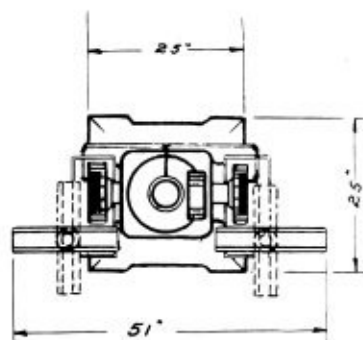
For No. 580 Grinder, tight and loose pulleys are 5" dia., 2¼" face, driving pulley 5" dia., 2¼" face, speed 110 R. P. M. For Nos. 581, 2 and 3 Grinders tight and loose pulleys are 5" dia., 2¼" face, driving pulley 12" dia., 2¼" face, speed 390 R. P. M.

Motor Drive

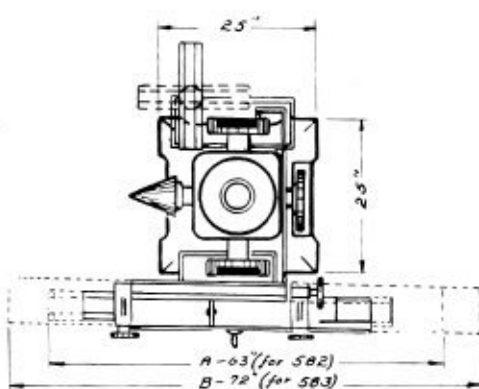
The column is constructed to receive adjustable motor base which is supplied when machines are ordered for motor drive.

"Oliver" Revolving Oilstone Grinders

Continued



OLIVER No 580-A GRINDER



OLIVER No 582 & 583-A GRINDERS.

Code	No.	Machine Description	H. P.	Dom. Wt.	For. Wt.	Cubic Feet
Foat	580-A	Single Arbor Oilstone Grinder arranged for Belt Drive.....	1½	800	900	16
Foax	580-B	Single Arbor Oilstone Grinder arranged for Motor Drive....	1½	800	900	16
Fobac	581-A	Two Arbor Oilstone Grinder arranged for Belt Drive.....	1	825	950	23
Fobaf	581-B	Two Arbor Oilstone Grinder arranged for Motor Drive....	1	825	950	23
Fobah	582-A	Two Arbor Oilstone Grinder with 24" Knife Grinding Attachment, Belt Drive.....	2	1200	1400	33
Fobak	582-B	Two Arbor Oilstone Grinder with 24" Knife Grinding Attachment, Motor Drive.....	2	1200	1400	33
Fobam	583-A	Two Arbor Oilstone Grinder with 30" Knife Grinding Attachment, Belt Drive.....	2	1250	1450	33
Fobap	583-B	Two Arbor Oilstone Grinder with 30" Knife Grinding Attachment, Motor Drive.....	2	1250	1450	33

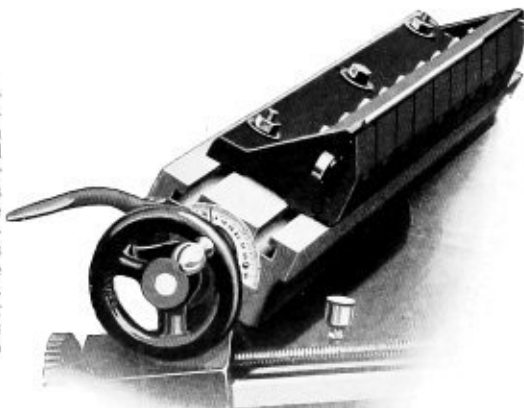
"Oliver" No. 555 **Full Automatic Straight Wheel Knife Grinders**

24, 30, 36 and 42-inch Sizes

- Advantages** These Grinders are full automatic in all movements, practically universal in their adaptation for grinding thick or thin knives in all industries. They are simple in adjustments and require practically no attention from operator during the grinding process.
- Frame** Cored type, cast in one piece, with $24\frac{1}{2}$ " x $25\frac{1}{2}$ " base. Height to spindle, 36"; 51" high over all. Bed, slide and knife bar, exceptionally heavy and rigidly mounted, all slides scraped and ground to a bearing. Spindle of $1\frac{3}{4}$ " steel, in $7\frac{1}{2}$ " bearings, hand scraped and ring oiling.
- Feeds** Feed works within the column, entirely protected from dust. Drive pinion of bronze, cut from the solid, running in oil. Reversing mechanism adjustable to suit length of knife.
- Carriage** Bed, slide and knife bar exceptionally heavy and well reinforced. Knife bar has T slots planed from the solid, permitting the use of bolts, clamps or special thin knife attachment.
- Water Attachments** Regularly furnished unless ordered omitted. Consist of water tank, rotary pump, piping and hose, with stop cock to regulate the flow of water at the grinding contact.
- Equipment** Comprises one 26" x $1\frac{1}{2}$ " straight wheel, all necessary internal belting, bolts and gauges for knives, guard for wheel, water attachments and tight and loose drive pulleys.
- Motor Equipment** When so required we will furnish equipped with motor mounted on rear side of base, with cut gear drive for counter-shaft, and two speeds for the grinding wheel, otherwise as regularly constructed. Mention current, voltage, cycle and phase.

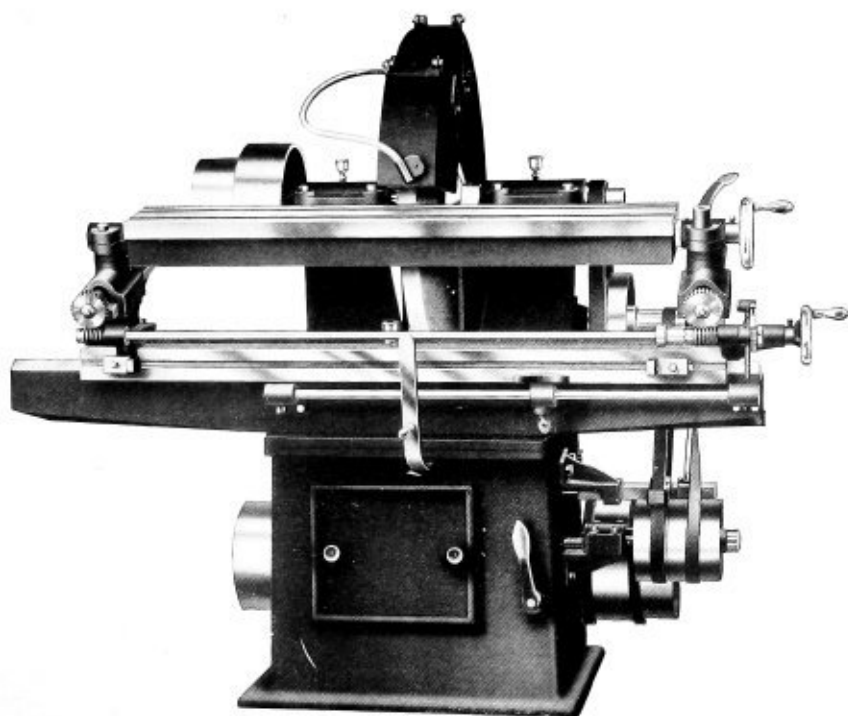
The Thin Knife Grinding Attachment as illustrated is essential when grinding thin high speed knives. One long knife or a series of short knives may be ground at one time. Clamp is adjustable to suit varying widths of knives and cutting edge and back are kept parallel.

This thin knife grinding attachment is extra and is furnished only when so ordered.



"Oliver" No. 555
Full Automatic Straight Wheel Knife Grinders

Continued



No. 555 FULL AUTOMATIC GRINDER

This is our Full Automatic Straight Wheel Knife Grinder. It carries a 26" x 2" grinding wheel and is regularly furnished with water attachment for wet grinding. The carriage travels by means of a worm and gear mechanism all enclosed within the base. Runs in oil and is adjustable to suit length of knife. This machine is built in 24, 30, 36 and 42-inch sizes.

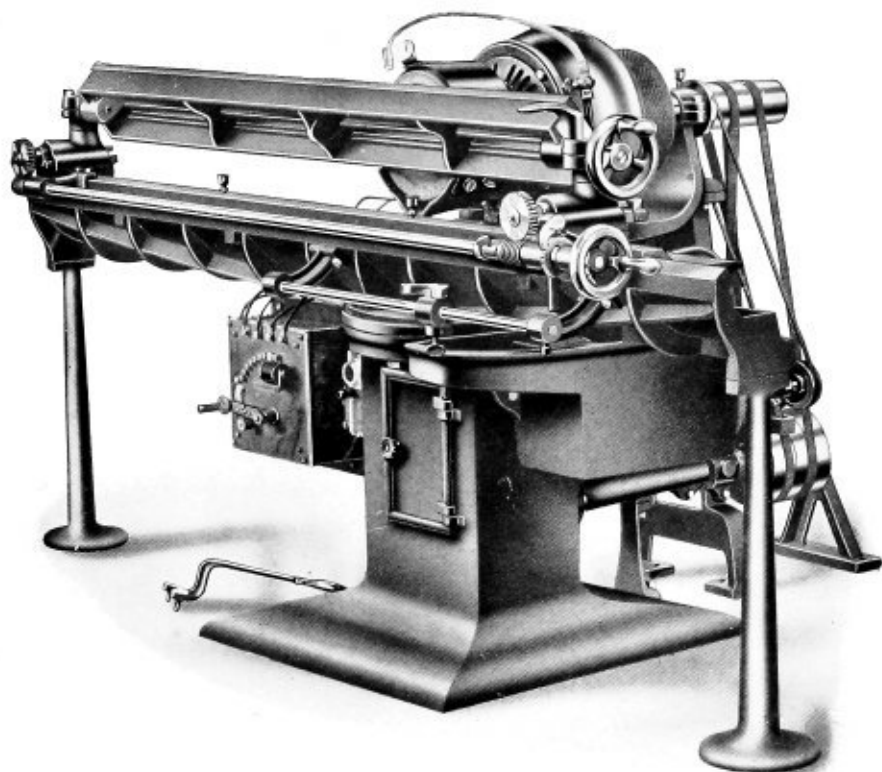
Code	No.	Capacity	Crated	Boxed	Cu. Ft.
Fudim	555-B	30-inch Grinder	1725	2025	68
Fudel	555-C	36-inch Grinder	1840	2150	71
Fudum	555-D	42-inch Grinder	1950	2250	75

"Oliver" No. 444 **Full Automatic Cup Wheel Knife Grinder**

26-inch to 48-inch Sizes

- Adaptation** This takes care of knives for use in planing, leather splitting, veneer making, beading, matching, paper cutting, tobacco cutting, excelsior making, etc. It will grind flat, bevel, concave or square edge.
- Frame** This is made in the cored form, with broad floor support, 26" x 26", and carries all the working mechanism in a rigid manner. The knife carriage is heavy, with automatic feed, and carries a reversible knife holder for front and back beveling. Adjustable post supports (not shown in the cut) are furnished with 32", 38", 44" and 48" sizes.
- Feed** The feed works are in the column, they give the carriage an even traverse and the reversing is done without jar. Stops are provided to regulate the travel. Shafts are of steel with long bearings hand scraped and self-oiling.
- Carriage** This is substantial and has hand wheel adjustment for setting knife bar to any desired angle before the wheel. Bed swings to an angle for either flat or concave grinding.
- Water Attachment** This is furnished regularly, but is left off whenever so required. This attachment is very complete, and takes care of the water so it does not escape. The device is good to use because it avoids the possibility of excessive heating and makes a smoother surface to the bevel of the knife.
- Equipment** This consists of one cup emery wheel, 8" diameter, 3½" deep, wheel guard, set of knife bolts, water attachment and tight and loose pulleys.
- Advantages** These Grinders, being full automatic in all movements, practically universal in their adaptation for all manner of knife grinding, simple in adjustments, requiring practically no attention from operator during the grinding process, and being especially rapid where a heavy cut or fast grinding is important, are obviously a bargain in every respect.

"Oliver" No. 444
Full Automatic Cup Wheel Knife Grinder



View of Motor Driven Grinder
 Belt driven machine same as above except Tight and Loose
 pulleys located in place of the motor

Write for special bulletin describing our Cup Wheel Knife Grinders.

CODE, WEIGHT, ETC.

Code	No.	Capacity	T & L	Speed	Domestic Weight	Foreign Weight	Measurement in Cubic Feet
Fuka	444-A	26"	4½" x 3¼"		800	950	25
Fukab	444-B	32"	4½" x 3¼"	1500	875	1050	33
Fukef	444-C	38"	4½" x 3¼"	to	950	1100	40
Fukog	444-D	44"	4½" x 3¼"	1800	1000	1150	43
Fukim	444-E	48"	4½" x 3¼"		1050	1200	46

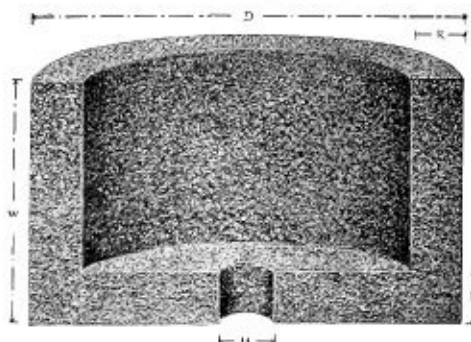
Alundum, Corundum and Emery Wheels

These are furnished in any grade of hardness and any shape of cutting edge.

If you need any wheels for any purpose give us the essential dimensions of straight wheels, such as diameter, thickness, arbor hole, shape of face and edge and the particular use, and the essential dimensions of cup wheels, such as diameter, height, arbor hole and thickness of rim and edge.



Code, Haba



Code, Haco

We invite orders for cup or straight face wheels for any type of knife grinder.

Huntington Emery Wheel Dresser



Code, Hage. Code for Extra Cutters, Fray

Truing, Shaping, Sharpening and removing Glaze from solid emery wheels running at full speed. All parts are made in duplicate, though repairs are slight.

No. 128

"Oliver" Pattern Maker's Bench



Adaptation This bench is well adapted for pattern shop service and was originally designed for use in the large shops where a number of benches of a durable and semi-attractive type and of uniform design were in demand. It has come into very general favor and we do not hesitate to claim it the best standard bench on the market.

Material Like all our benches it is of the "Quality" type, made from Michigan hard maple that has been air seasoned for two years and then kiln-dried by special process. The legs are of cast iron.

Dimensions The maple top is 8' long, 30" wide, 2½" thick, built from strips double doweled, and glued together. It has ten square mortises at the front. The iron legs are 2' 7" high. The drawers are two in number, 24" long, 20" and 36" wide and 6½" deep, all inside measurements, are carried on machined cast iron slides fitted with 2" brass lock and key. Top is oiled.

Vises It is equipped with one No. 1 Emmert front vise, one No. 221-A "Oliver" tail vise with 4" jaws, adjustable front jaw, to open 6".

CODE, WEIGHT, ETC.

Code	No.	Size	Domestic Weight	Foreign Weight	Measurement in Cubic Feet
Hearty	128	30" x 8'	400	450	30

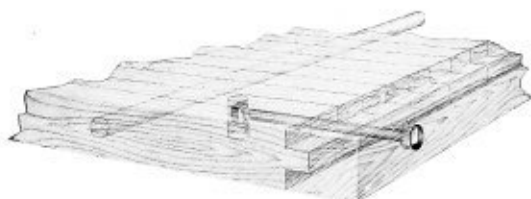
"Oliver" No. 1250 Series Woodworking Benches of Quality

52 inches Long, 22 inches Wide

Introduction In bringing out our new line of benches we have met the demand for better constructed benches. We show only the very best types and our construction is first class.

Material We use clear, tough and close grained Michigan Hard Maple, thoroughly air and kiln dried. After kiln drying we store in a hot room until used.

Construction The tops are built up of narrow strips well glued and bound by our special spiral grooved dowel construction. The spiral grooved dowel holds like a wood screw. The bolsters on end of benches are both tenoned, glued and bolted in place. The tongue at this place is end grain. This is important, for the tongue might otherwise split its entire length. Full mortised and tenoned and bolted joints are used in frame.



The Other Way

Equipment Regularly equipped as illustrated; each bench with one "Oliver" quick acting or solid nut Vise, adjustable, metal planing stop, steel bench dog, tool rack. Solid cast brass drawer pulls and master keylock on all drawers.

Finish Bench tops are finished with oil and varnish. Frames and drawers are varnished; drawers varnished inside.

Service The benches shown in this catalog are stock benches. Prices on special benches will be quoted on receipt of specifications. Our factory is especially well equipped to do this work. It is our aim to make every bench an "Oliver" Salesman.



End Grain in tongue where bolster is glued at end of bench and then bolted

The "Oliver" Way

General Description of No. 1250 Series Benches

All tops are 52" long, 22" wide, $2\frac{1}{4}$ " thick and 32" high. The built-up portion is 13" wide and tool well 8" wide. Tool rack is set flush with table. Legs and girts are $2\frac{3}{4}$ " x $1\frac{1}{4}$ ". All large drawers are 30" wide, 16" deep and 5" high. All small drawers are 14" wide, 16" deep and 5" high.

"Oliver" No. 1250 Series Benches

Continued



"OLIVER" No. 1255 BENCH



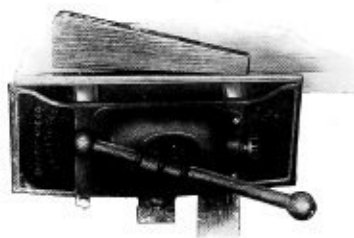
"OLIVER" No. 1251 BENCH



"OLIVER" No. 1257 BENCH

Code	Bench No.	Drawers	"Oliver" Vise	Weight
Hiarto	1251	One large drawer, with	either No. 151-D or 161-D	225 lbs.
Hiars	1255	One large and 4 small	either No. 151-D or 161-D	280 lbs.
Hiar	1257	One large and 6 small	either No. 151-D or 161-D	325 lbs.

“Emmert” Universal Pattern Makers’ Vise



Introduction It is generally accepted as a fact that this vise is the most desirable for pattern makers’ use that has ever been introduced. It needs no elaborate explanation, as there have been thousands of them sold and used, and the pattern maker is as familiar with it as he is with his planes and chisels.

Jaws Seven different pairs of jaws are supplied with each No. 1 Vise, any pair of which may be instantly adjusted to the position required by the operator for gripping irregular shapes. One pair is 18” wide. Three pairs are 7” wide. Two pairs are 1” wide. One pair is 3” wide. The No. 2 Vise has one less pair of holding dogs so arranged that they may be secreted when not required for service. The jaws are made to carry wood pads of shapes of the greatest possible variety.

Position A Vise holds work in a fixed position. “The Universal” holds work in any position. This is its normal position on the side of the work bench. It can be instantly unlocked and swung around the complete arc of a circle whose plane is vertical. By tripping a trigger it will travel 90 degrees in the arc of another circle whose plane is also vertical, but at a right angle to the plane of the former circle. This brings the vise into a horizontal position where it will again swing around the complete arc of a circle.

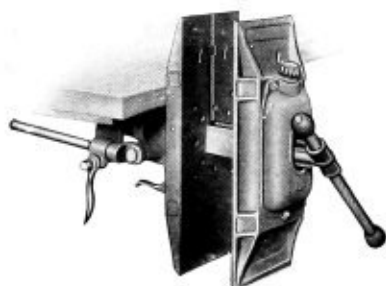
At any point on the arc of 90 degrees mentioned above it will swing 180 degrees. May be firmly locked in any of these positions. No matter what its position, it presents the work so the workman can operate with comfort. He never needs to twist or bend himself to suit the work, but simply turns the work in any position or direction that is convenient.

CODE, WEIGHT, ETC.

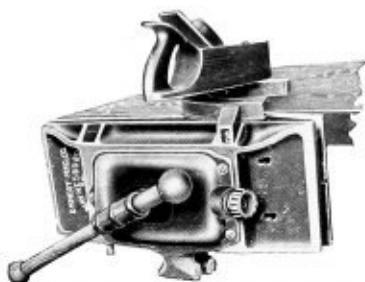
Code	No.	Size of Jaw	Jaws Open	Domestic Weight	Foreign Weight	Measurement in Cubic Feet
Locav	1	18½” x 7”	14”	86	95	2
Loced	2	14” x 5”	12”	56	63	1½

"Emmert" Universal Pattern Makers' Vises

Continued



To hold work above level of bench top



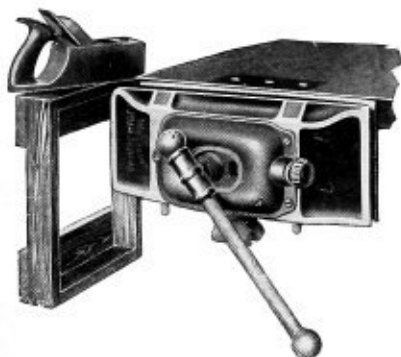
Use of vise dogs to hold segments of rings



To hold boxes or drawers above bench top



Showing use of steel faced jaws



Holding box forms for work on outside faces



Angle of Tilting Jaw in place

"Oliver" Woodworkers' Vises

SOLID NUT OR QUICK ACTING



PLAIN FRONT JAW VISE
(Solid Nut or Quick Acting)



VISE WITH STEEL DOG

Solid Nut or Quick Acting

A double thread screw represents all the quick action necessary. It only differs from the quick action vise in having a solid nut in place of the half nut. The appearance, the workmanship and material all show "Oliver" quality.

These vises have passed the experimental stage. We now say that they are better made, are more serviceable and satisfactory than any other vise.

These vises are entirely new in design and are exceptionally strong.

"Oliver" Vises Nos. 150 to 221 are furnished with Buttress Thread Screws. No other vise on the market has this important feature.

The Solid Nut Continuous Screw Vises in which a double thread screw represents all the quick action necessary, differs from the quick action vise only in having a solid nut in place of the half nut.

Quick action is easily secured by lifting up the screw free from contact with the nut. At any position the front jaw may be let go and the screw and nut again engaged for screwing any distance. The tighter the vise the closer the screw hugs the nut.



QUICK ACTING TAIL VISE

CODE, WEIGHT, ETC.

Code	No.	Kind	Jaw Width	Length Open	Shipping Weight
Luba	150-A	Quick Acting Vise, plain front jaw..	7"	9"	55 lbs.
Lubad	150-D	Quick Acting Vise, 1" steel dog.....	7"	9"	55 lbs.
Lube	151-A	Quick Acting Vise, plain front jaw..	10"	12"	65 lbs.
Lubef	151-D	Quick Acting Vise, 1" steel dog.....	10"	12"	65 lbs.
Lubo	160-A	Solid Nut Vise, plain front jaw.....	7"	9"	55 lbs.
Lubok	160-D	Solid Nut Vise, 1" steel dog.....	7"	9"	55 lbs.
Lubom	161-A	Solid Nut Vise, plain front jaw.....	10"	12"	65 lbs.
Lubuf	161-D	Solid Nut Vise, 1" steel dog.....	10"	12"	65 lbs.
Lubum	221-A	Quick Acting Tail Vise, 1" steel dog	4"	6"	45 lbs.

"Oliver" Electric Glue Pots

For Direct or Alternating Current



TYPE "A" WATER JACKETED GLUE POTS

Water Jacket Heaters

The "Oliver" Water Jacket Glue Pots have a high starting heat and can be used on circuits with extreme voltage fluctuations. Furnished regularly with three heats.

Material

These heaters have pots of spun aluminum and water jackets of cast iron.

Service

We recommend this type for general use, as it is designed for both intermittent and continuous service. The cartridge units supplied in all of these pots are easily replaced but seldom burn out.

TYPE "B" JACKETLESS GLUE POTS

Jacketless Heaters

The "Oliver" Jacketless Glue Pots are cast aluminum. Aluminum possesses remarkable qualities as a heat distributor and has an unctuous surface, preventing the glue from sticking to the sides of the pots.

Economical

These pots have one heat, designed to keep the glue at the proper working temperature and they use only half the electric current of the average glue pot. No water to dry up and the pot is light and portable.

CODE, WEIGHT, ETC.

Code Type A	Code Type B	Capacity Glue	Volt of D.C. or A.C.	Power Required in Watts Type A	Type B, 3 Heats
Madad	Mafad	1 Quart	110	70	110-220-440
Madaf	Mafaf	1 Quart	220	70	110-220-440
Madah	Mafah	2 Quarts	110	90	170-340-680
Madaaj	Mafaj	2 Quarts	220	90	170-340-680
Madal	Mafal	4 Quarts	110	140	275-550-1100
Madan	Mafan	4 Quarts	220	140	275-550-1100

“Oliver” Wood Spindle Hand Screws

These are as strong as the sturdy hickory from which they are made. Spindles are made of well seasoned second-growth hickory. Jaws are made from Michigan hard maple.

STANDARD DIMENSIONS

Code	No.	Diameter Screw Inches	Length Screw Inches	Length Jaw Inches	Size of Jaw Inches	Opens Inches	No.
Mental	800	1 1/4	28	24	3 x 3	17	800
Mercer	801	1 1/4	26	22	2 3/4 x 2 3/4	15 1/2	801
Mercury	802	1 1/4	24	20	2 3/8 x 2 3/8	13 3/4	802
Merge	803	1 1/4	22	20	2 1/2 x 2 1/2	12	803
Merino	804	1 1/8	22	18	2 1/2 x 2 1/2	12 1/4	804
Merit	805	1 1/8	20	18	2 3/8 x 2 3/8	10 1/2	805
Merlon	806	1	20	16	2 3/8 x 2 3/8	11	806
Merry	807	1	18	16	2 1/4 x 2 1/4	9 1/4	807
Mesa	808	7/8	18	14	2 1/8 x 2 1/8	10	808
Mesne	809	7/8	16	14	2 x 2	8 1/4	809
Meta	810	7/8	16	12	1 7/8 x 1 7/8	8 1/2	810
Meteor	811	3/4	14	12	1 3/4 x 1 3/4	7 1/4	811
Method	812	3/4	12	10	1 1/2 x 1 1/2	5 1/2	812
Metric	813	5/8	10	8	1 3/8 x 1 3/8	4 1/2	813
Mettle	814	5/8	8	7	1 1/8 x 1 1/8	3	814
Mica	815	1/2	6	5	1 x 1	2	815
Micro	816	3/8	5	4	7/8 x 7/8	1 1/4	816

Parts, either Screws or Jaws, list one-third price complete Hand Screw.

“Oliver” Steel Spindle Hand Screws

Numbers 900 to 913 Inclusive

The jaws are of the best grade of Michigan hard maple properly seasoned and well machined. The spindles are made from cold rolled steel, threads are cut in a special lathe to a correct size. They are cut with a double thread working in a strong bronze nut. The handles are made from hard wood protected by a strong ferrule and secured by pins to the screws. Glue does not adhere to these spindles.

NOTE—The steel spindle Hand Screws are furnished with the same length screws and the corresponding length of jaws and capacity as above. Therefore the numbers 900 to 913 designate measurements given above.

Peerless Screw Clamps

A single clamp will adjust to any of the positions shown by the cuts.

It is about twice as rapid acting as any other clamp, its screws being equipped with a right and left hand thread. Glue will not adhere to the screws and cause the threads to strip. The screws are made of fine steel, and the workmanship is right. The sockets for the spindles are also made of steel.

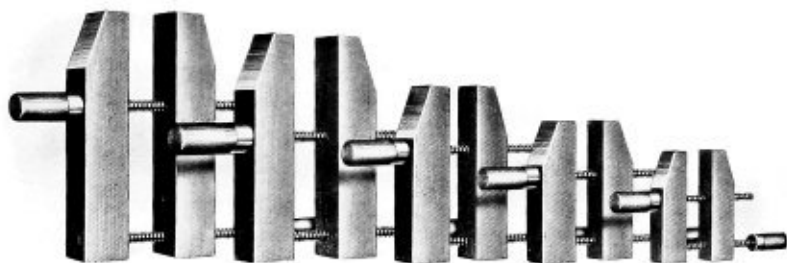
The jaws are made of a fine quality of kiln-dried maple. One jaw can be made to overlap the other, forming a position very often desirable and obtained in no other clamp.

Code	No.	Length of Jaws	Opening Between Jaws
Middy	81	7 1/2"	4"
Mighty	82	9 1/2"	6"
Mignon	83	11 1/2"	8"
Mikado	84	14"	10"
Mildew	85	16"	12"
Militia	86	18"	14"

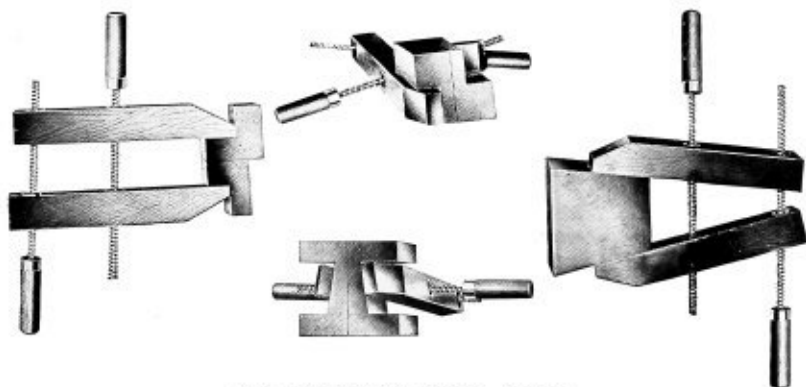
"Oliver" Hand Screws



"OLIVER" WOOD SPINDLE HAND SCREWS



"OLIVER" STEEL SPINDLE HAND SCREWS



THE "PEERLESS" SCREW CLAMPS
Jorgensen Patent

"Oliver" Handy Clamp

No. 227 Eccentric Lever or No. 228 Screw Type

U Bar—All Steel



"OLIVER" No. 227
Code—Moab

Made of the best open hearth steel plate pressed into U form while cold, which process stiffens the bar. Has a fixed head supporting an eccentric lever, and a movable paw which has a strong fixed tongue pressing in the bottom of the U bar, making a broad, strong grip.



"OLIVER" No. 228
Code—Moac

Size Opens	Reach of Jaw	U Bar Size
6"	2 1/8"	1"
8"	2 3/4"	1 1/8"
10"	2 3/4"	1 1/8"
12"	2 3/4"	1 1/8"

"Oliver" Universal Clamp

No. 229 Eccentric Lever or No. 230 Screw Type

U Bar—All Steel



"OLIVER" No. 229
Code—Moaf

This clamp has the broad jaw clamping surface of the wood hand screw and all the convenience of handling and quick acting advantages of "Oliver" clamps. The clamping plate attached to the end of the plunger or screw finds its own bevel and parallel automatically and may be used for a large variety of purposes including all forms of woodworking, pattern making, cement-concrete, block and curb, and foundry core making, as they do not injure molds, veneering and all work requiring a long broad pressure.



"OLIVER" No. 230
Code—Moag

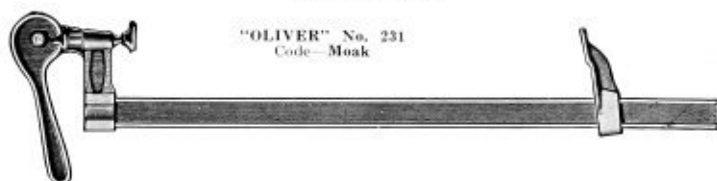
Size Opens	Size of Jaw	U Bar Size
4"	3 5/8" x 1 3/8"	1"
6"	3 5/8" x 1 3/8"	1"
8"	4 1/2" x 1 1/2"	1 1/8"
10"	4 1/2" x 1 1/2"	1 1/8"
12"	4 1/2" x 1 1/2"	1 1/8"
18"	4 1/2" x 1 1/2"	1 1/4"
24"	4 1/2" x 1 1/2"	1 1/4"
30"	4 1/2" x 1 1/2"	1 1/4"
36"	4 1/2" x 1 1/2"	1 1/4"
48"	4 1/2" x 1 1/2"	1 1/4"
60"	4 1/2" x 1 1/2"	1 1/4"
72"	4 1/2" x 1 1/2"	1 1/4"

NOTE—18" and larger sizes can be furnished with I bar when so requested, same price as U bar, which is regular.

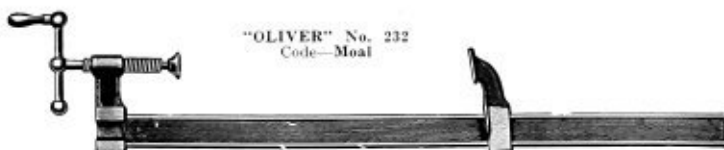
"Oliver" Cabinet Clamp

No. 231 Eccentric Lever or No. 232 Screw Type

I Bar—All Steel



"OLIVER" No. 231
Code—Moak



"OLIVER" No. 232
Code—Moal

This long steel bar is double flanged on each side, making it light and portable and greatly increasing its strength, and the flanges prevent it twisting. It has a fixed head supporting an eccentric lever with improved movable jaw, instant in action, perfect in work. Made with a crank or bar screw when desired.

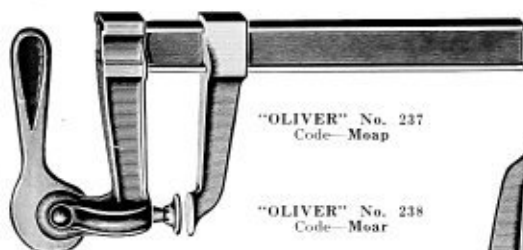
The I bar is $1\frac{1}{4}$ " x $\frac{1}{2}$ "; reach from bar to center, 2".

Sizes, 18", 24", 30", 36", 48", 60", 72", 84", 96".

"Oliver" Long Reach Clamp

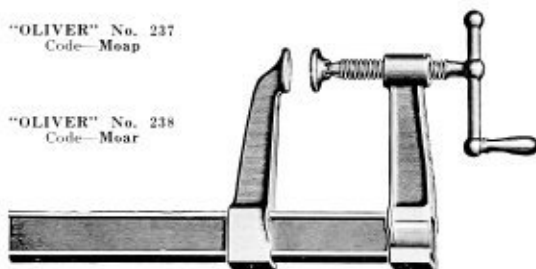
No. 237 Eccentric Lever or No. 238 Screw Type

I Bar—All Steel



"OLIVER" No. 237
Code—Meap

"OLIVER" No. 238
Code—Meat



This clamp has an extra heavy double flanged steel bar $1\frac{3}{8}$ " x $\frac{3}{4}$ " known as the I bar, supporting an eccentric lever, operating a plunger with self-adjusting button and the improved movable jaw with its double locking device.

Has a 6" reach. It is made strong throughout. Especially adapted to carpentering and building.

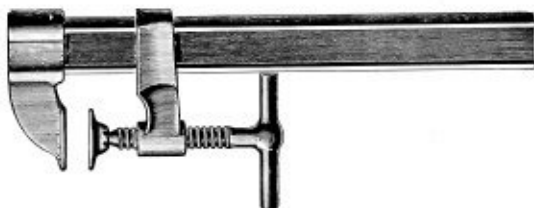
Sizes, 12", 18", 24", 30", 36", 48", 60", 72", 84", 96".

"Oliver" Finishing Clamp

Screw Type Only

No. 217—2-inch Reach or No. 224—4-inch Reach

1 Bar—All Steel



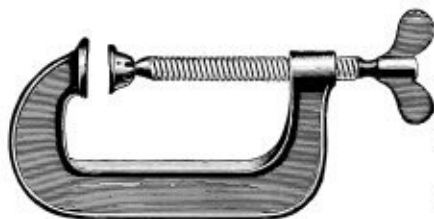
This clamp has a fixed jaw or foot and a movable head which has advantages over a fixed head on some kinds of work. Having a smooth end, there is nothing to prevent the use of the auger or brace bit.

This is a heavy, strong clamp.

- Moba** No. 217 Finishing Clamp, $1\frac{1}{4}$ " I Bar, 2" reach.
 Sizes 12", 18", 24", 30", 36", 48", 60", 72", 84", 96".
Mobe No. 224 Finishing Clamp, $1\frac{1}{4}$ " I Bar, 4" reach.
 Sizes 12", 18", 24", 30", 36", 48", 60", 72", 84", 96".

No. 225 "Oliver" "C" Clamp

Code, Moba



This malleable iron screw "C" clamp is well proportioned, strong and durable.

Screws furnished with swivel button.

Finished in Japan.

Sizes $2\frac{1}{2}$ ", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 14".

No. 226 "Oliver" Mitre Clamp

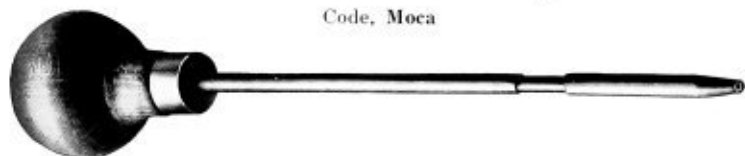
Code, Mobu

One motion of the cam sets the mitre and firmly clamps it in place, the pressure being made direct on the clamp jaw, giving it great power. Special attention has been given the design to make it light as well as strong. Positive in action, easy to apply, no springs to get out of order. Made of best refined malleable iron with tempered drill steel spurs.



No. 280 Patent Brad Driving Tool

Code, Moca



Advantages It places brads into difficult places under any unfavorable conditions. It avoids handling brads with sticky or cold fingers, and for this reason it can be used in ordinary bradding. Brads may be driven into deep corners impossible to reach by ordinary methods.

Its Operation The brad is magnetically picked up, inserted into and securely held in the end of the tool until with light pressure it is driven home and if desired, is countersunk. As the brads are fully supported they may be driven in without bending. Do not have to use a nail set with this tool.

No. 283 Core Box Plane



Weight, 4 $\frac{3}{4}$ lbs. Code, Mocab

Capacity It will work out a core box from $\frac{3}{4}$ " to 6" in diameter and any length. Five cutters are furnished with it. Circles are accurate.

Adjustments The screw in central casting at the rear determines movement of handle and thus regulates the rapidity of cutter revolution by giving pawl one or more notches of ratchet wheel. Screw in head locates steel cutter to size of core box desired and permits removal of one cutter and replacement of another. Two screws, one on each side, in the guide locate guides at proper distance apart for core box to be made.

How to Use After selecting a suitably sized block, straightening top and one edge, and squaring ends, roughly mark out part to be removed with compass and scratch awl. Use gouge and mallet or a circular sawing machine to rough out the center before adjusting the plane to the work, then proceed as with an ordinary plane. The spring attached to one side may be removed when desired to cut groove in an excessively wide block.

Economic Seamless Steel Can



For Shellac, Paint, Varnish, Etc.

Code, Mocap

SAVES BRUSHES
PREVENTS EVAPORATION
SAVES COST

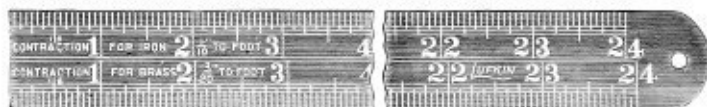
This can is made from smooth surface, cold rolled "Swedish" steel, drawn seamless, in two parts. It is well finished and heavily enameled outside, the interior being coated with a light varnish that will not discolor the material kept in the can.

It commends itself at once to pattern and cabinet makers and all who use fine paints, varnish, shellac, etc.

Size, 9½" high, 6" diameter.

Steel Shrink Rules

Tempered Steel, 1½" wide, 17 gauge, 24" long. Graduated Inches and Sixteenths.



Code	Type	
Moda	A	Graduated both sides. Bottom edge one side 1/5 inch contraction per foot, bottom edge other side 1/10 inch contraction per foot. Top edge both sides regular inches and 16ths. Weight per dozen, 6 pounds.
Modab	B	Graduated both sides; 1/10, 3/20, 1/5 inch contraction per foot, and one line regular inches and 16ths. Weight per dozen, 6 pounds.
Modac	C	Graduated one side only. Two edges, 1/5 and 1/10 inch contraction per foot. Weight per dozen, 6 pounds.

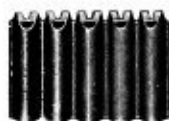
"Oliver" Pinch Dogs

Code, Modam



These Pinch Dogs are forged from bar steel, have square corners over legs, making easy driving. They are indispensable to pattern or cabinet makers, wonderfully perfect in every detail, easily drawn from wood, leaving very small holes to be filled. Get the "Oliver" kind — satisfaction guaranteed.

Length in inches.....	$\frac{3}{4}$ "	1"	1 $\frac{1}{4}$ "	2"	3"	4"	5"	6"
Size of steel, square.....	$\frac{5}{16}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{5}{16}$ "	$\frac{3}{8}$ "	$\frac{7}{16}$ "	$\frac{1}{2}$ "



Saw Edge

Corrugated Steel Fasteners



Plain Edge

Code, Model

Packed in paper cartons of 1,000; large sizes, 500 and 250.

In ordering, give depth and number of corrugations, and whether straight or divergent. Makes a perfect and secure joint, is simple, effective and easily applied; insures great strength and is inexpensive.

No. of corrugations.....	2	3	4	5	6	7	8
Depth in inches.....	$\frac{1}{8}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"

"Oliver" Wood Dowels

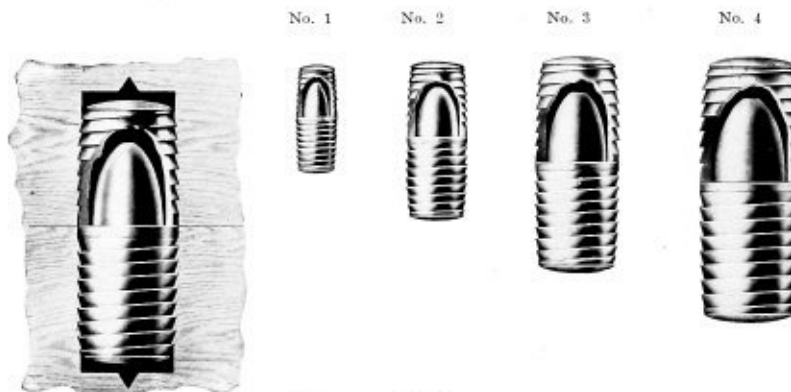
Code, Model



These are high grade dowels in every respect. They are made from white birch or other suitable hard wood—good sound stock throughout. Can be furnished smooth, with two grooves only, with pressed spiral only or with two grooves and also pressed spiral.

Diameter, inches.....	$\frac{3}{16}$ "	$\frac{1}{4}$ "	$\frac{5}{16}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"
Length of each Rod....	36"	36"	36"	36"	36"	36"	36"	36"	36"

No. 300 "Oliver" Brass Dowel Pins

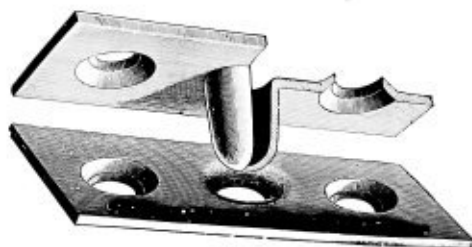


Cuts are full size

Code	No.	Dimensions
Moor	300-A	for $\frac{3}{16}$ " hole, size $\frac{1}{8}$ "
Moose	300-B	for $\frac{1}{8}$ " hole, size $\frac{1}{4}$ "
Moraine	300-C	for $\frac{1}{16}$ " hole, size $\frac{5}{16}$ "
Morale	300-D	for $\frac{3}{16}$ " hole, size $\frac{7}{16}$ "
Moreen	300-E	for $\frac{1}{4}$ " hole, size $\frac{1}{2}$ "

Threaded, so may be driven or screwed into place and removed at any time by unscrewing. Made to size that fits holes made by Jennings Bits. Particularly desirable where hard wood is used for patterns. No danger of splitting wood. Upper half fills itself as soon as well started. Inductive to good, smooth joints on castings. Makers of fine machine tools use them to good advantage.

No. 301 "Oliver" Brass Plate Dowels



Code, Morgue

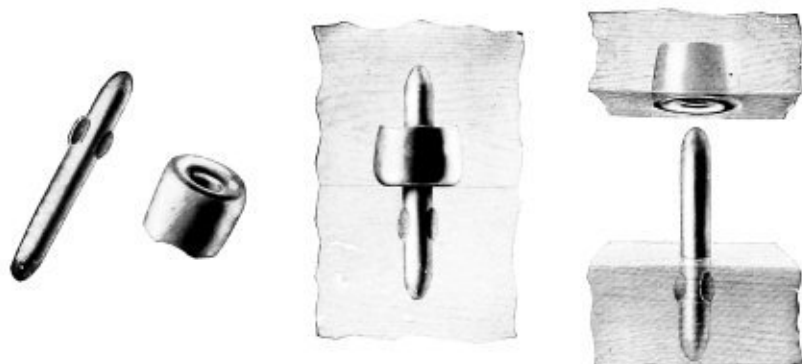
No.	301-A	301-B	301-C	301-D	301-E
Length of Plate.....	1"	1 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	2"	2 $\frac{1}{2}$ "

No. 304

"Oliver" Malleable Dowels

Something New—Put up in packages of 100

Code, Mother



Malleable Dowel Pins are something new and interesting to the pattern maker, and certainly worth a trial. They are made in one size only, and intended for a great variety of patterns. On all ordinary work they fill the bill and are so cheaply sold that there is no excuse for not using them. The socket is $\frac{1}{2}$ " outside diameter and hole in it to fit the pin properly. The top of the socket flares, thus enabling the pin to be directed into place the more readily. It tapers toward the bottom, and to $\frac{1}{16}$ " diameter. If you bore the hole to this size and drive the socket home, it is there for good.

The pin is $\frac{1}{16}$ " diameter and $1\frac{1}{4}$ " long, provided with fins near one end to hold it into place properly.

The cuts show the full size of both parts; also the pair in position. These little conveniences are nearly as cheap as common nails. So cheap that you do not need to bother about using them over and over, as you do brass dowels. Just think of it, only **one dollar** for a hundred pairs—give them a trial and you will use no other.

No. 305

"Oliver" Malleable Iron Dowel Pins

Code, Moti

Pins and Holes Finished to Fit

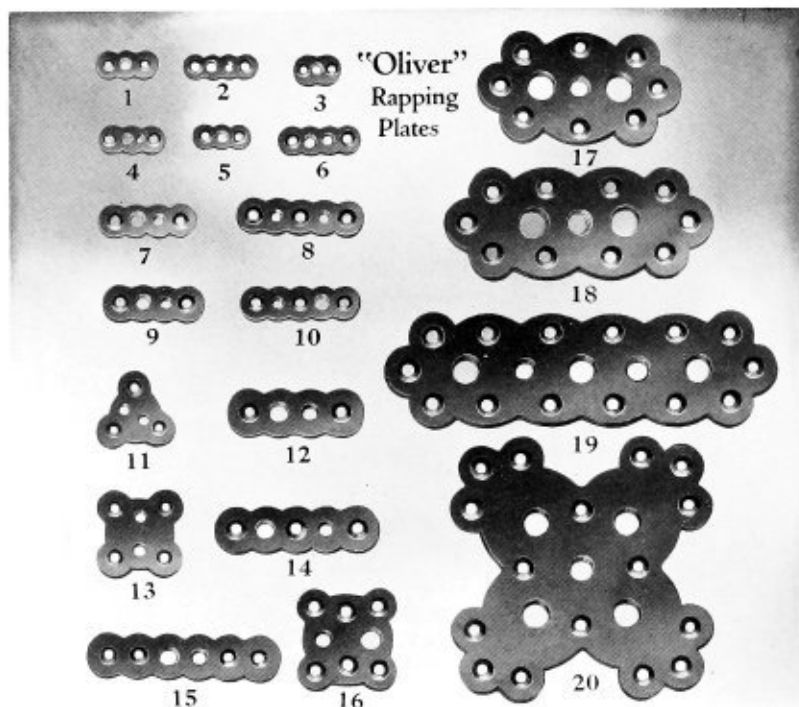
No.	305-A	305-B	305-C	305-D
Diam. of pin.....	$\frac{1}{4}$ "	$\frac{5}{16}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "
No.	305-E	305-F	305-G	305-H
Diam. of pin.....	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"

We carry a large assortment of the above and can ship promptly from stock.



Malleable Iron Rapping Plates

Code, Motid

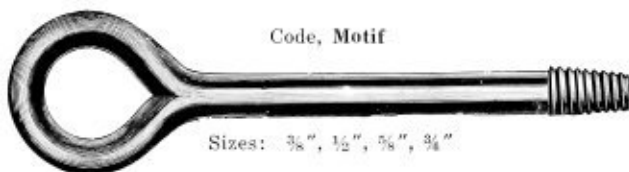


These Rapping Plates are quickly inserted, all cutting being done with bits. All runners and rough edges are carefully ground off. Guaranteed to be good, serviceable plates. We have full size diagrams showing exact size of each. Write for one.

Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
Tapped $\frac{3}{8}$ ", $\frac{3}{8}$ ", $\frac{3}{8}$ ", $\frac{3}{8}$ ", $\frac{3}{8}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{1}{2}$ ", $\frac{1}{2}$ ", $\frac{1}{2}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{5}{8}$ ", $\frac{5}{8}$ ", $\frac{5}{8}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{3}{4}$ ", $\frac{3}{4}$ "

Lifting Screws for Rapping Plates

Code, Motif



Sizes: $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ "

"Oliver" Fillet Sticker

Code, Motig



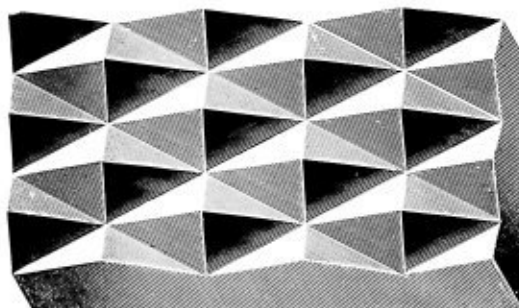
This is a wonderful tool—a new invention for easily applying any kind of fillet to wood patterns and being sure that the fillet sticks. These Fillet Stickers are correct to size, made of metal, highly polished and warranted to give satisfaction.

Style	A	B	C	D
For sizes	$\frac{1}{16}$ " and $\frac{1}{8}$ "	$\frac{3}{16}$ " and $\frac{1}{4}$ "	$\frac{1}{8}$ " and $\frac{3}{8}$ "	$\frac{1}{2}$ " and $\frac{5}{8}$ "

"Perfecto" Pattern Glue

We have, after many years of study and experiment, at last discovered a scientifically perfect pattern glue. Can be furnished in crystalline golden flakes or evenly ground powder form. When ordering, state which is desired. Remember this is not ordinary glue—it is an extra superfine "Perfecto" Pattern Glue. One order will convince you.

Diamond Pattern Lumber



This is for sill and step-plates, stair treads, engine platforms or any use where a good foothold, combined strength and lightness is desired, and is unequalled.

You cannot afford to waste time in working out this kind of pattern by hand when you can buy it from us at so reasonable a figure.

Sizes

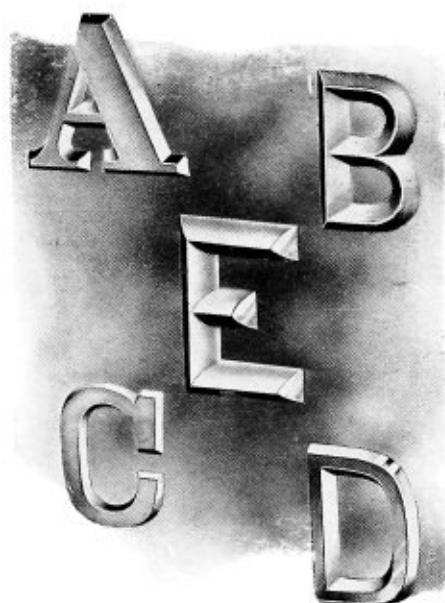
Made in pieces 8' long, 6" to 12" wide, either $\frac{1}{2}$ ", $\frac{5}{8}$ " or $\frac{3}{4}$ " thick, as desired. The $\frac{1}{2}$ " thickness is the standard. Any other size of diamond will be furnished if required.

CODE, WEIGHT, ETC.

Code	Style	Thickness	Length of Diamonds	Width of Diamond
Mowed	A	$\frac{1}{2}$ "	$1\frac{1}{8}$ "	$\frac{3}{16}$ "
Mowix	B	$\frac{5}{8}$ "	$1\frac{1}{8}$ "	$\frac{3}{16}$ "
Mowob	C	$\frac{3}{4}$ "	$1\frac{1}{8}$ "	$\frac{3}{16}$ "

"Oliver" Pattern Letters and Figures

Code—Motiv—White Metal. Code—Mottle—Brass



A
Roman Flat

B
Sharp Face
Gothic

C
Flat Face
Gothic
Thin

D
Flat Face
Gothic
Thick

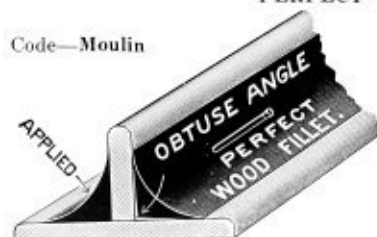
E
Round Face
Gothic

These are made of white metal and also of brass. State which is wanted. Above half-tone shows the most popular styles. State what style is wanted. When so ordered we drill them with two or more holes at extra price. Spurs and tacks cast in the back at extra price. State if desired.

White metal letters and figures are made in the following sizes: $\frac{1}{8}$ ", $\frac{3}{16}$ ", $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", 1 ", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", $1\frac{3}{4}$ ", 2 ", $2\frac{1}{2}$ ", 3 ", 4 ".
Brass letters and figures are made in the following sizes: $\frac{1}{8}$ ", $\frac{3}{16}$ ", $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", 1 ", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", $1\frac{3}{4}$ ", 2 ", $2\frac{1}{2}$ ", 3 ", 4 ".

PERFECT WOOD FILLET

Code—Moulin



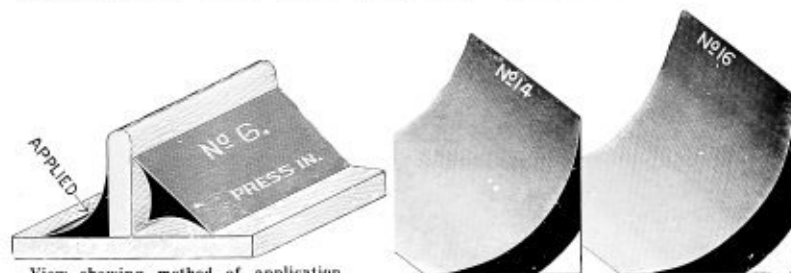
Our perfect wood fillet is constructed upon an obtuse angle, the back being worked sufficiently more than 90 degrees to permit the feather edges to press firmly to the pattern when applied. Made of the best clear white pine, kiln-dried, and free from blemishes. Worked perfect in curve to feather edge. Guaranteed entirely satisfactory.

Number	4	6	8	10	12	14	16	20	24	28	32
Size or Radius in inches.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2

Perfect Leather Fillet



Full Size Diagram



View showing method of application

"Oliver" Leather Fillet is recognized as the BEST. It may be freely and rapidly applied on either single or compound curves or straight work by simply applying the glue and pressing to position. All tacking and clamping dispensed with. Not affected by heat, cold or moisture. Is light, neat and durable. Materially strengthens the pattern. Feather edges blend perfectly with the face of the pattern. Geometrically correct in its curved sides. Economical for constructing wood patterns for castings. It is guaranteed.

Code, Moun. Order by number or width.

Number	1	2	3	4	5	6	8	10	12	14	16
Radius in inches....	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Width in inches....	$\frac{3}{32}$	$\frac{1}{16}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{11}{16}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{1}{2}$

Garnet Sand Paper

Code, Moxa

We furnish this in reams 9" x 11" or in rolls 24", 30", 36", 40", 42" and 48" wide. It is the best paper on the market. It is made in the following grades to suit all classes of work:

Nos. 0000, 000, 00, 0, $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$ and 4.

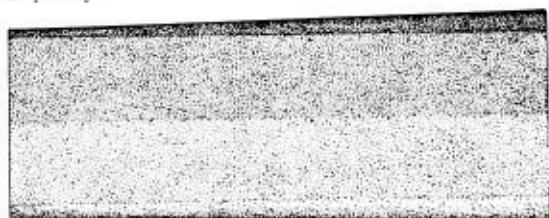
We use the standard list and will be pleased to quote a discount upon request.

"Oliver" Oil Stones

Prepared specially for Trimmer, Planer, Moulding, Paper and other knives of superior quality.



Code—Moxab



Style A $6\frac{1}{4}$ " long, $2\frac{1}{2}$ " wide, $\frac{3}{8}$ " thick



Two grades



Code—Moxad

$3" \times 1" \times \frac{1}{2}"$



Code—Moxaf

$4" \times 1\frac{1}{2}" \times \frac{7}{16}"$



Code
Moxah
Moxak
Moxam

Style

C $4" \times 1\frac{3}{8}" \times \frac{1}{2}"$
D $6" \times 1\frac{3}{8}" \times \frac{3}{4}"$
E $8" \times 2" \times 1"$

Code
Moxap
Moxar
Moxat

Style

G $10" \times 3" \times 1"$
N $4" \times 1\frac{3}{8}" \times \frac{5}{8}"$
O $4" \times 2\frac{1}{4}" \times \frac{3}{4}"$



Code—Moxav. $5\frac{1}{2}" \times \frac{3}{4}" \times \frac{1}{2}"$.

The "Oliver" Oilstones in Patent Boxes

Three Sizes—Stones D, E, and G



Quality

These oilstones are made of the best grade of Turkish Emery, one-half the thickness being medium coarse for fast cutting and the other fine for finishing a smooth, keen edge.

Stones

These stones are the result of a search for something suitable for sharpening "Oliver" Wood Trimmer knives. Trimmer knives are large and hard. This makes a fast-cutting stone necessary. They must be left with a very smooth, keen edge, so the stone must be capable of putting it on.

Patent Boxes

These are well constructed of selected cherry wood, and nicely finished in oil. Little spurs set in each corner of the box bottom prevent its slipping on the bench while in use. A reservoir of sheet steel, tin plated, is fitted snugly inside the outer case. The stone fits inside the reservoir with enough play to turn it over easily. It is held above the bottom of the reservoir by a piece of wood one-quarter of an inch thick.

The space in the center of this piece is filled with waste.

Capillary Attraction

By capillary attraction the oil, which should fill the bottom of the reservoir to the depth of the wood, is fed through the waste to the top of the stone, leaving it moist and ready for use. The stone being saturated with oil, either face will be oiled as soon as turned. It is unnecessary to put oil on the top of the stone.

Ordinary stones cut nicely when new, but soon gum with oil and glaze with particles of steel, the inevitable result of the oil soaking down from above and carrying the particles with it. When the oil is constantly coming up from below, as with the "Oliver" Oil Stone Box, the particles of steel cannot work down, hence they work over the edge and are deposited in the reservoir. The pure oil is fed to the top of the stone; the sediment stays in the bottom. It is self-cleansing.

The stone being filled with oil will remain in condition for satisfactory use some time after taking it from the box.

Directions for Use

Use kerosene or a very thin clear oil (such as a fine grade of lard oil only). Fill reservoir with oil until stone is saturated. This takes from five to twenty-four hours. Always keep a little oil in the reservoir. Take stone out and turn it over when you wish to use opposite side. Thin clear oil will leave even a smoother edge than kerosene.

CODE, SIZES, ETC.

Code	Designation	Dimensions
Muba	Style D	6" x 1 1/2" x 3/4"
Mubab	Style E	8" x 2" x 1"
Mubac	Style G	10" x 3" x 1"

"Oliver"

26-Inch Extra Heavy Duty Engine Lathe

All Geared Head—Single Pulley Drive

Either Motor or Belt Driven

The "Oliver" 26-inch Extra Heavy Duty Engine Lathe is the result of a demand for a lathe powerful enough to completely utilize the capabilities of the most enduring tool steels under modern, most severe, high speed, extra heavy duty requirements.

In beauty of outline, strength of materials, practicability of design, distribution of weight where needed, accuracy of workmanship and thoroughness of mechanical finish the "Oliver" 26-inch Extra Heavy Duty Engine Lathe cannot be excelled.

Notwithstanding the exceptional capacity, extraordinary power, weight and rigidity of this lathe, the control by the operator is simple and easy, requiring for a lathe of this capacity comparatively little effort because of the proper distribution of weight and proportion of mechanisms. You will agree with us upon the careful perusal of the following specifications or, better still, upon examining the lathe itself.

All parts are manufactured to gauges and jigs and fixtures, thereby assuring the most perfect interchangeability.

SPECIFICATIONS

NOTE—These specifications are subject to change as improvements direct.

Capacity	Swing over bed, 28½"; over carriage, 16"; between centers, 68". Spindle speeds 12, ranging 8 to 300 R. P. M. Threads, 33 in number; range per inch, 1 to 16. Feeds, range per revolution, .021" to .333".
Head Stock	Base length, 52"; spindle length, total 64". Spindle Front Bearing, 6½"x10"; rear, 3½"x7"; nose, 8". Hole through spindle, 3"; spindle threads, per inch, 4.
Carriage	Length saddle on shears, 40"; width of bridge, 12". Compound rest angular travel, 9"; cross slide travel, 11".
Tail Stock	Base length, 24"; spindle diameter, 4"; movement, 12".
Lead Screw	Diameter, 2¼"; threads per inch, 2.
Bed	Regular length, 13' 6"; height, 19¾"; width across shears, 25½".

CODE, WEIGHT, ETC.

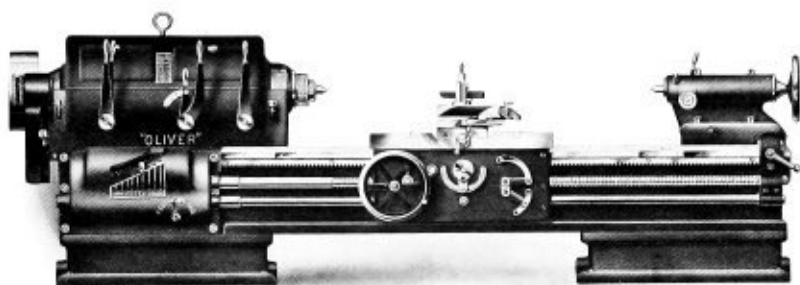
Code		Weight in Pounds		Cubic Feet
		Crated	Boxed	
Soba	26-inch Lathe, Whitworth system, belt drive	12600	14000	260
Sobaf	26-inch Lathe, Metric system, belt drive	12600	14000	260

EXTRAS

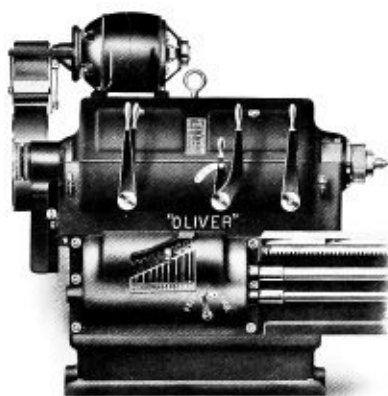
We can furnish all desirable extras for above lathe, such as Motor Drive, Taper Attachment, Follow Rest, Square Tool Post, Turret Head, Chuck Plate, etc. State your requirements. Send for special complete circular of this machine.

26-Inch Extra Heavy Duty Engine Lathe

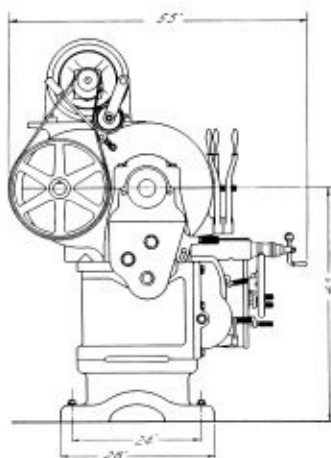
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"OLIVER" 26-INCH ENGINE LATHE, BELT DRIVE, REGULAR BED 13'-6"



Motor Drive Arrangement
Any Kind of Motor Can be Used



End View Showing
Motor Drive

"Oliver" Engine Lathes

16 and 18-inch Heavy Duty Engine Lathes

General

The "Oliver" Engine Lathe embodies in its construction the newest ideas in design. It is built with "Oliver" precision, has ample power and is rigid enough for heavy and fast cuts. All parts of this lathe are jig machined and fitted to templates, thus interchangeability of parts and accuracy are assured. The materials are the best obtainable and the workmanship unexcelled. Spindle bearings are hammered genuine babbitt. Each piece undergoes rigid inspection and the completed machine is given a long running test.

Lathe is of massive, heavy duty, double back geared type with three-step cone using $3\frac{3}{4}$ " driving belt. The headstock column is provided with a door and corner brackets for shelving inside. All gears are guarded and where necessary for oiling or inspection, the guards are hinged to afford quick access. Extra heavy case hardened cap screws secure the main spindle caps in place, and throughout the machine wherever desirable case hardened studs and nuts are employed.

Headstock

Is of three step double back geared type. The spindle is large in diameter with long bearings lubricated by means of felt wipers feeding from large pockets. Spindle is of special high carbon steel accurately ground. The cone pulley is so designed as to carry a large oil reservoir which provides lubricant at all times. The drive pinions for the back gears are one solid forging made of special high carbon steel and pressed into the cone pulley, keyed on and reinforced by three filister head screws. A replaceable bronze bushing gives the proper bearing for the spindle in these gears. Thrust is taken against the front end of the rear bearing housing on a hardened and ground steel collar.

Tailstock

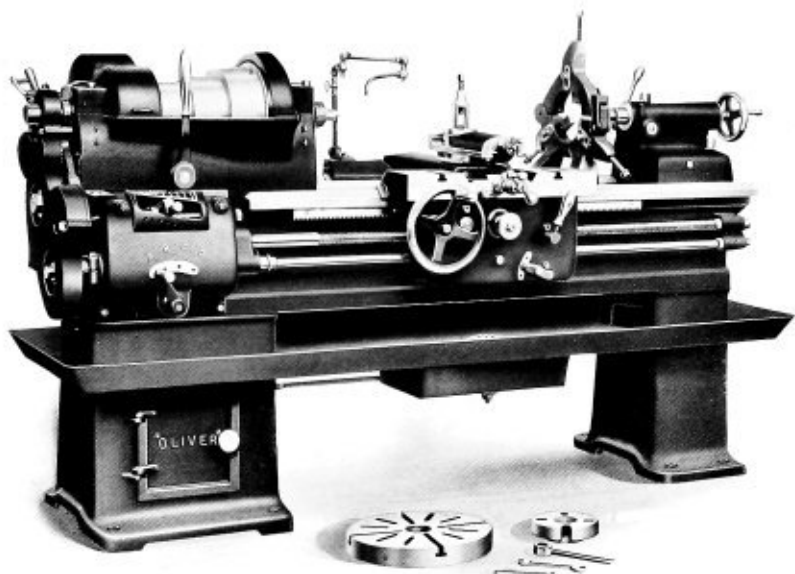
The tailstock is very powerful and rigid. The spindle is of special high carbon steel, accurately ground. Tailstock is clamped to the bed by means of a single heavy cast iron clamp operating the whole length of the tailstock, and secured by two bolts diagonally placed, which secures a most perfect locking device. Tailstock casting is not split but the spindle is locked by means of a clamping lever acting on double nuts machined to fit perfectly to tailstock spindle.

Lubricating Outfit

A pressed steel pan is a part of the regular equipment of this lathe and is arranged to drain to a cast iron pot which is connected with a rotary pump. A copper screen prevents chips from being drawn into the oil or cutting lubricant and thus clogging up the pump. Being connected directly to the spindle, an ample flow of lubricant is assured.

"Oliver" Engine Lathes

Continued

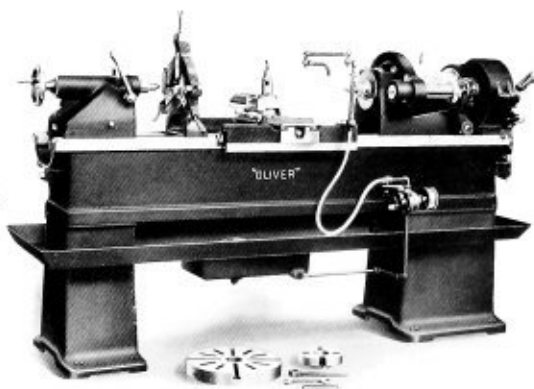


16-INCH "OLIVER" HEAVY DUTY ENGINE LATHE

We also make 16-inch Tool Room Lathes



End View of
"Oliver" 16-inch Engine Lathe



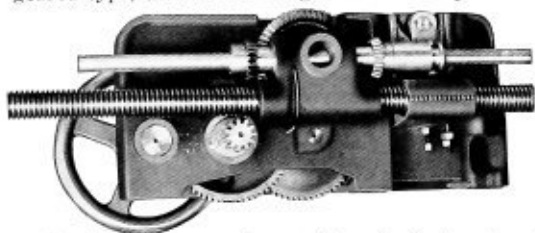
Rear View "Oliver" 16-inch Engine Lathe
Every buyer is a booster

"Oliver" Engine Lathes

Continued

Bed and Carriage

The bed is unusually deep and strong, reinforced by boxed sections. The supporting columns are so placed as to allow no overhang at the end of the bed and they are made wide so as to shorten the span of the bed between the columns. The bed is 13" deep x 15" wide. Saddle carrying cross slides to the post and apron is unusually heavy and generous in its measurements. It is 7" wide at the bridge, with a 24½" bearing on the shears. Cross slide and compound slide are both provided with taper gibs to take up wear and both screws for this slide are indexed to read to .001 inch. The Power Cross Feed is of the positive geared type, driven from large friction in apron.



Apron

This is cast in one piece, giving double bearing to all gears. The apron nut is of brass and is of the double sliding nut type actuated by a cam and is so arranged that it is impossible to throw in the feed when the lead screw is in operation or to throw the lead screw in when feed is in operation. The friction feed has a large gripping surface which gives plenty of power. The apron is provided with eccentric bushings for adjusting the gear with the rack, compensating for wear. The lead screw is unusually large, being 1½" diameter, and accurately made. All details of lubrication have been worked out with extreme care.

Gear Box

The gear box for the quick change gears is very compact, requiring only two levers to obtain the thirty-two threads ranging from three per inch to forty-six. Feeds, thirty-two in number, range from .0076" to .111" per revolution of spindle. All gears and shafts in the gear box are lubricated from but two oil cups and there is no multiplicity of oil holes to become clogged with dirt. Gears are all steel machine cut. The gear box is so arranged that part of the box extends into the bed and projection beyond the front of the bed is reduced to a minimum, making a very compact drive. All shafts in the gear box are bronze bushed.

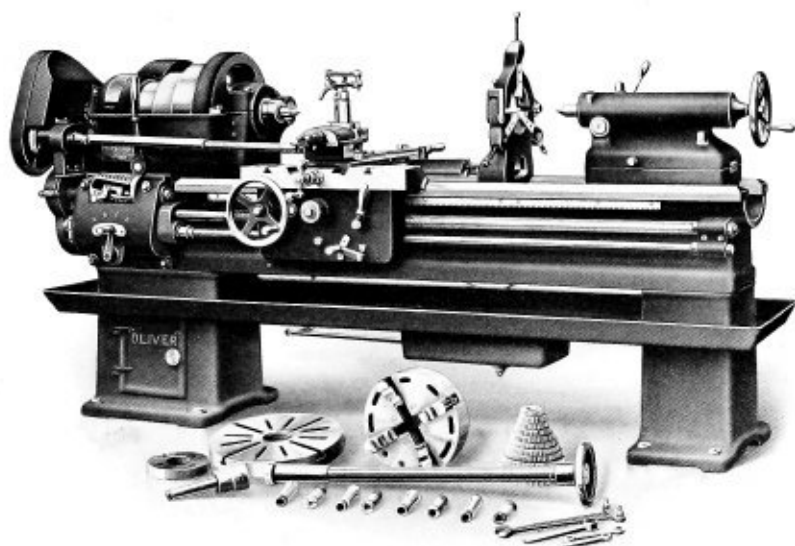
Taper Attachment

The Taper Attachment is particularly rigid and heavy. It is carried on the back of the bed in a heavy T slot, relieving the carriage of all extra weight. This permits free and accurate operation of the carriage. The bracket is graduated at one end in tenths, up to 4" per foot. Screw adjustment is provided. After the taper is set the slide is secured by clamping screws at the extreme ends of the slide.



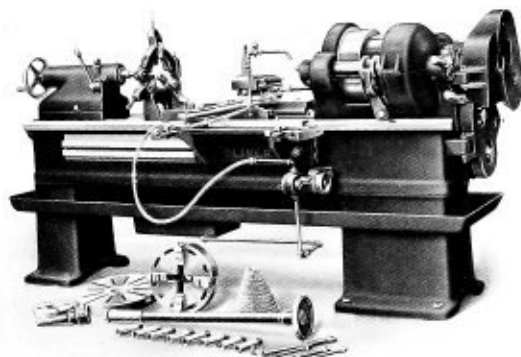
"Oliver" Engine Lathes

Continued



18-INCH "OLIVER" TOOL ROOM ENGINE LATHE

We also build 18-inch Production Lathes



18-inch "Oliver" Tool Room Lathe
Rear View



Square Tool Post
(Furnished to Order)

"Oliver" Engine Lathes

Continued

Regular Equipment Double friction countershaft, tool post, 7" and 16" face plates for 16" lathes and 8½" and 18" for 18" lathes; 6" steady rest, center bushing and knock out plug, pump, piping and flexible hose, steel chip pan, two No. 4 Morse taper centers and necessary wrenches.

SPECIFICATIONS, GENERAL DIMENSIONS

		16-inch	18-inch
Capacity	Swing over shears.....	17½"	20"
	Swing over carriage.....	10"	12"
	Distance between centers.....	38"	41"
	Feeds, 32 in number, range per inch.....	9-132	9-138
Headstock	Back gear ratio, first.....	2.9 to 1	3.13 to 1
	Back gear ratio, second.....	9.02 to 1	10 to 1
	Number of spindle speeds.....	18	18
	Spindle speeds, range, R. P. M.....	14-335	14-335
	Driving cone diameters.....	7", 8½", 10½", 9", 11½", 14"	
	Driving cone, belt (width).....	3¾"	4"
	Hole through spindle.....	1⅞"	2⅛"
	Front spindle bearing.....	3⅝"x5"	4"x5½"
	Spindle nose, diameter.....	3"	3⅜"
	Spindle nose, length.....	2"	2¼"
	Spindle nose, threads per inch.....	5	5
Tailstock	Size centers, Morse taper.....	No. 4	No. 6
	Rear spindle bearing.....	2⅜"x3¾"	3"x4⅝"
	Tailstock spindle, diameter.....	2⅛"	3"
	Tailstock spindle, travel.....	8"	12"
Lead Screw	Lead screw, diameter.....	1½"	1½"
	Lead screw, threads per inch.....	4	4
	Threads, 32 in number: 3, 3¼, 3½, 4, 4½, 5, 5½, 5¾, 6, 6½, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 16, 18, 20, 22, 23, 24, 26, 28, 32, 36, 40, 44, 46		
			Same
Carriage	Size tools.....	⅞"x2"	⅞"x2"
	Angular travel, compound rest.....	4"	4"
	Width of carriage on bridge.....	7"	7"
	Cross slide travel.....	16"	14"
	Saddle on shears, length.....	24½"	24½"
Bed	Bed, height for either size 13", width.....	15"	15"
	Length of bed.....	7' 2"	8' 2"
Pump and Pan	Pump (rotary type) takes piping.....	½"	½"
	Pan (size).....	8"x24"x3"	9"x24"x3"
Countershaft	Countershaft pulley speeds.....	180-220	160-220
	Countershaft pulleys.....	14"x4"	14"x4"

CODE, WEIGHT, ETC.

Code	Size	Description	Weight in Pounds		Meas.
			Crated	Boxed	Cu. Ft.
Flier	16"	Heavy Duty, regular equipment..	3600	4175	121
Flour	18"	Engine Lathe, regular equipment	4500	4900	140

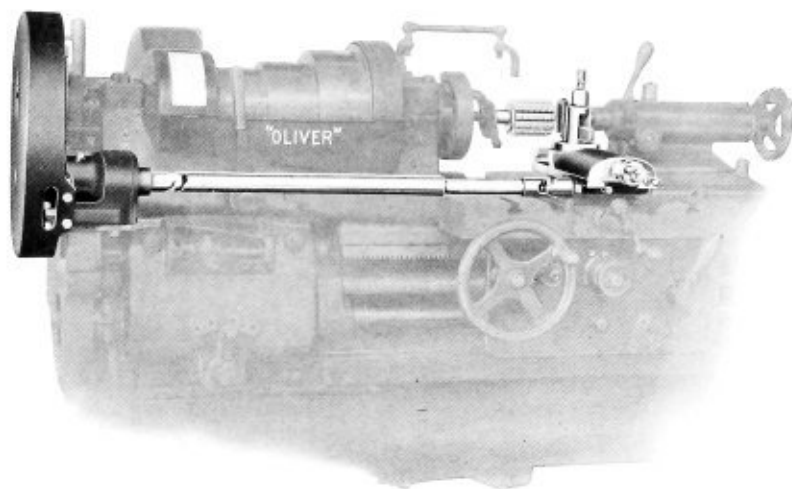
EXTRAS

For Either 16 or 18-inch Lathe

Flub	Taper Attachment, maximum taper per foot 4", turns at one setting 24".
Flud	Follow Rest.
Fluf	Relieving Attachment.
Fluk	Draw-in Collet Attachment; maximum size ⅞" for 16" Lathe; 1" for 18" Lathe.
Flum	Extra length of bed with oil pan, per foot, 150 pounds.
Flup	Motor Drive, motor geared to headstock.

"Oliver" Engine Lathes

Continued

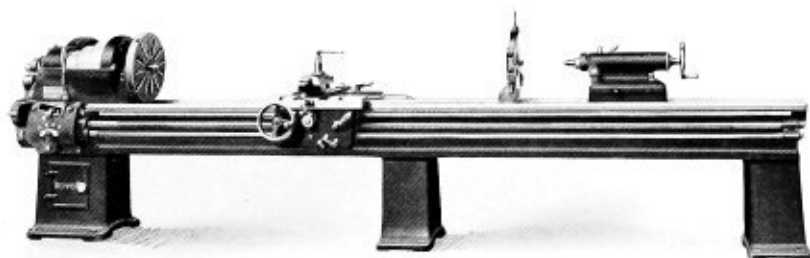


THE COMPLETE RELIEVING ATTACHMENT RELIEVING A HOBGING CUTTER



DRAW-IN ATTACHMENT WITH COLLETS

Maximum capacity, $\frac{3}{8}$ " for 16" Lathe, 1" for 18" Lathe



18" x 20' BED ENGINE LATHE WITHOUT PAN OR PUMP

"Oliver" Lathes can be furnished with any length of bed desired

Regular equipment always includes pan and pump for 16" and 18" Lathes

"Oliver"

12-Inch Metal Turning Speed Lathe

"Most Modern Speed Lathe Made"

**Motor or Belt Driven. Four-step Cone Pulley
White Bronze Removable Ring-oiling Bearings. Hand Feeding Carriage with
Compound Swivel Rest Set-over Tailstock**

- Capacity** Swings 12" diameter over the bed, 9½" over the carriage, 36" long between centers.
- Head Stock** 12¼" long, 10½" wide; very substantial and effective.
- Bearings** Fitted with adjustable split bronze bushings (3" long) grooved inside for oil passage, and ring-oiling from ample oil wells having level and drain plugs.
- Spindle** 15" long, 1½" diameter in front bearing, 1⅜" diameter in rear bearing, has regularly a ⅝" hole its entire length (larger holes to order), bored for No. 2 Morse Taper.
- The Bed** This is a cored casting 6¼" deep, 6¾" wide, and regularly 60" long.
- Legs** Lathe is furnished with long floor legs, making top of bed 36" from floor.
- Tailstock** 7" long, 6" wide. Spindle is 1¼" diameter, 8" long, bored for No. 2 Morse Taper.
- Tool Carriage** Hand-feed tool carriage with cross feed and compound swivel rest is furnished with this lathe regularly; but when so ordered the carriage may be omitted. The apron has a bearing of 10" on the bed and a travel of 37" on a bed 60" long.
- Countershaft** Length, 27"; tight and loose pulleys 8" x 2¼"; 700 R. P. M. Has lever and rod belt shifting device operated from front of headstock.
- Motor Drive** A very simple motor drive is obtainable with this lathe. Write for particulars.
- Floor Space** 65" long, 24" wide for a 5' bed machine.

CODE, WEIGHT, ETC.

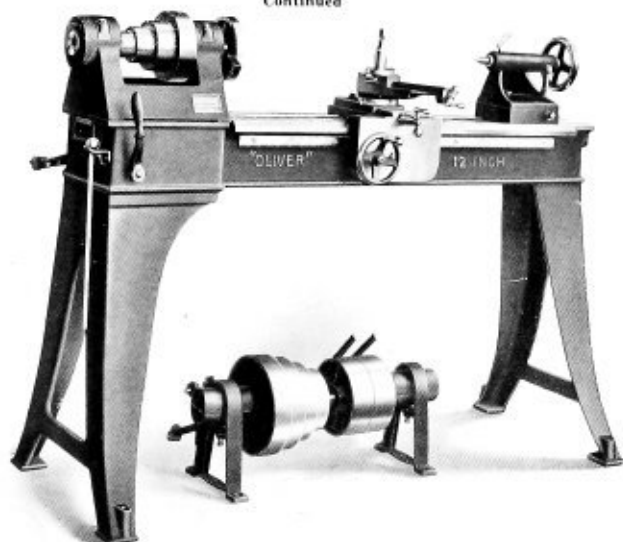
Code	Description	Weight in Pounds		Meas. Cu. Ft.
		Crated	Boxed	
Sabat	12-inch Speed Lathe, belt driven, with 5' bed	700	800	37
	12-inch Speed Lathe, motor driven, with 5' bed	750	850	37

EXTRAS

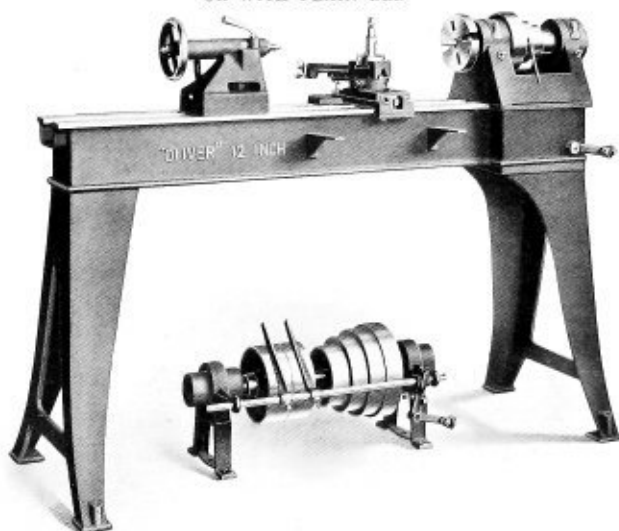
We can furnish almost any extra attachments desired. State your requirements fully.

"Oliver" 12-Inch Metal Turning Speed Lathe

Continued



12" x 5' BED SPEED LATHE EITHER WITH CARRIAGE AS SHOWN
OR WITH PLAIN BED



REAR VIEW OF 12" SPEED LATHE
Note Countershaft Shifting Arrangement

"Oliver"

16-Inch Heavy Duty Turret Lathe

2 1/4" Screw Machine

Introduction

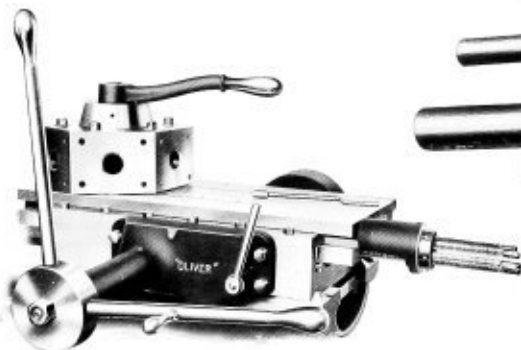
The same care and precision characteristic of all "Oliver" Tools is apparent in this Turret Lathe. It has ample power and is rigid enough for heavy and fast cuts. All parts of the machine are jig machined, insuring interchangeability of parts as well as accuracy. The material and workmanship are the best obtainable. All gears are guarded and where necessary for oiling or inspection, the guards are hinged to permit of quick access.

Headstock

Three-step cone and double back geared. The spindle is large in diameter with long bearings lubricated by means of felt wipers feeding from large pockets. Spindle is of special high carbon steel accurately ground. The cone pulley is so designed as to carry a large oil reservoir which provides lubricant for long periods. The drive pinions for the back gears are one solid forging made of special high carbon steel and pressed into the cone pulley, keyed on and re-inforced by three filister head screws. Thrust is taken against the front end of the rear bearing housing on a hardened and ground steel collar.

Bed

The bed is unusually deep and strong, being reinforced by boxed sections. The supporting columns are so placed as to allow no overhang at the ends of the bed and they are made wide so as to shorten the span between columns.



SIX INDIVIDUAL STOPS OF TURRET
Note the Four to One Reducing Gear Arrangement



BORING BARS

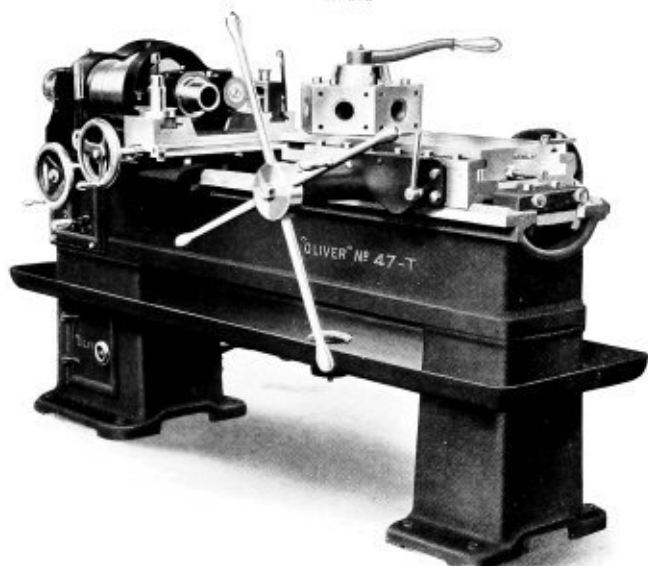


DRILL OR BAR HOLDER

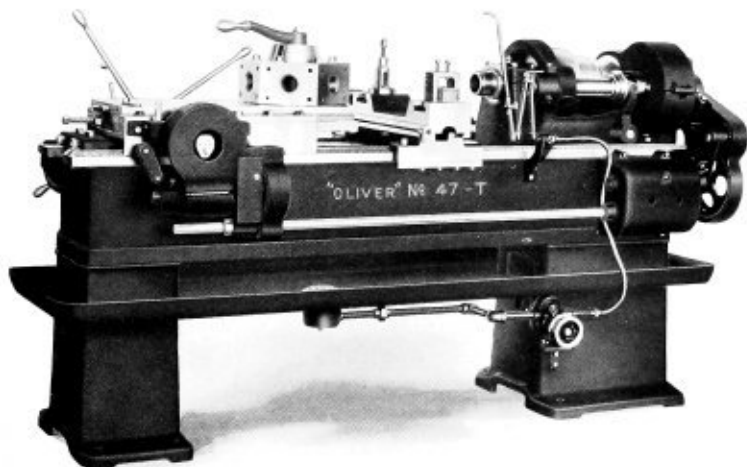
"Oliver" 16-Inch Heavy Duty Turret Lathe

2 1/4" Screw Machine

Continued



16-INCH TURRET LATHE—Front View



16-INCH TURRET LATHE—Rear View

"Oliver"

16-Inch Heavy Duty Turret Lathe

2 1/4" Screw Machine

Continued

Turret

The heavy hexagonal Turret measures 12" diameter across the flat. The bore for the tools is 2 1/4" and on each face four holes are tapped to secure tool holders or other special equipment as desired. The Turret slides in a heavy base secured to the bed. The hexagonal shape is very good for box tools.

**Turret
Mechanism**

The turret head revolves on a very large stud, fitting it exactly so that it is not necessary to use the clamping lever at each operation unless heavy cuts are being taken. The turret is self-indexing, the locking plunger being tool steel kept in line with taper gibs and seating itself in hardened steel ring underneath the turret. By means of gearing the turret is connected to the spindle and may be operated by positive power feed if desired. To change to hand feed it is simply necessary to trip the power feed lever, dropping the worm out of mesh with the worm wheel. The feed shaft is keywayed for 30" from the end, permitting the whole turret mechanism to be moved up closer to the headstock if it is found desirable to machine short work.

Gear Box

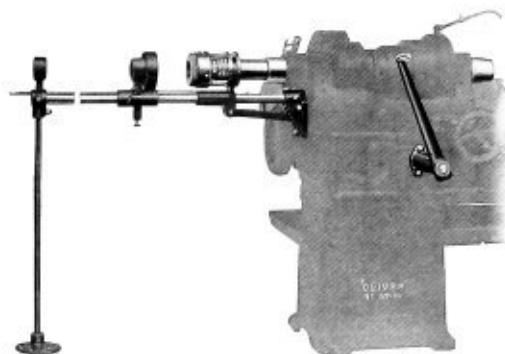
The feed gear box of unique design is located on bed in rear and controlled from front of machine. This eliminates the changing of gears.

Cross Slide

Cross Slide is 6" wide, and is adjustable for wear by means of taper gib. The Tool Post has capacity for large tools and forming tool holder is equipped with hardened steel corrugated raising blocks. A large hand wheel and coarse cross feed screw permit rapid and powerful cross feed. The T slots are alike and the tool post and forming tool holder are interchangeable. Hardened steel positive stops, forward and back, are provided.

**Oil Pan
and Pump**

A pressed steel pan is regularly furnished and is arranged to drain to a cast iron pot connected with a rotary pump. A copper screen prevents chips clogging up the pump.



Wire Feed Attachment which makes this Turret Lathe a 2 1/4" Screw Machine



"Oliver"

16-Inch Heavy Duty Turret Lathe

2 1/4" Screw Machine

Continued

Regular Equipment

Consists of double friction countershaft, longitudinal feed cross slide with tool post and forming tool holder, pump, piping, flexible hose, steel chip pan and necessary wrenches.

Wire Feed Attachments

The headstock and spindle are so constructed as to readily permit attaching wire feed mechanism. Stock up to 2 1/4" round can be run thru the spring collets. Any one size collet is furnished as a part of the wire feed attachment, others will be considered as extras. The machine with the wire feed attachment is known as the "Oliver" 2 1/4" Screw Machine.

SPECIFICATIONS, GENERAL DIMENSIONS

Front Spindle Bearing.....	4"x5"
Hole through Spindle.....	2 5/8"
Capacity Wire Feed.....	2 1/4" Round
Swing over Shears.....	17 1/2"
Swing over Tool Post.....	8"
Maximum distance between Turret and Spindle.....	34 1/2"
Length of Bed (other lengths are special).....	7' 2"
Bed, height and width.....	13"x15"
Spindle Nose Diameter.....	3 1/2"
Spindle Nose, Length.....	2 1/2"
Spindle Nose, threads per inch.....	6
Rear Spindle Bearing.....	3 1/2"x3 3/4"
Driving Cone, diameters.....	7", 8 1/8", 10 1/4"
Driving Cone Belt (width).....	3 3/4"
Countershaft Pulley Speeds.....	180-220 R. P. M.
Countershaft Pulleys.....	12"x4"
Back Gear Ratio, First.....	2.9 to 1
Back Gear Ratio, Second.....	6.07 to 1
Number of Spindle Speeds.....	18
Spindle, Range Speeds.....	14—335 R. P. M.
Number of Feeds.....	4
Feed Range.....	.010", .013", .016", .020"
Size Tools (Tool Post).....	7/8"x1 3/8"
Size Tools (Forming Tools).....	2 1/2"x1 1/4"
Measure Across Flats of Turret.....	12"
Height Turret.....	5 1/4"
Bore of Turret.....	2 5/8"
Height from Top Slide to Center Line of Holes.....	2 5/8"
Length Automatic Feed.....	12"
Feed Rod Diameter.....	1 1/4"
Turret Bed Slide (width of lathe bed).....	15 1/4"
Length Turret Slide.....	30"
Length Turret Ways.....	24"
Pump (rotary type) takes piping.....	1/2"
Pan (size).....	8"x24"x3"

CODE, WEIGHT, ETC.

Code Turnip Turret

Description	Weight in Pounds		Meas. Cu. Ft.
	Crated	Boxed	
16" Turret Lathe, regular equipment.....	3600	4100	125
2 1/4" Screw Machine or the Turret Lathe with Wire Feed Attachment.....	4300	4800	130

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