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14-Inch Bradford Quick Change Gear Lathe

with

Five-Step Cone, Single Back Gear

or

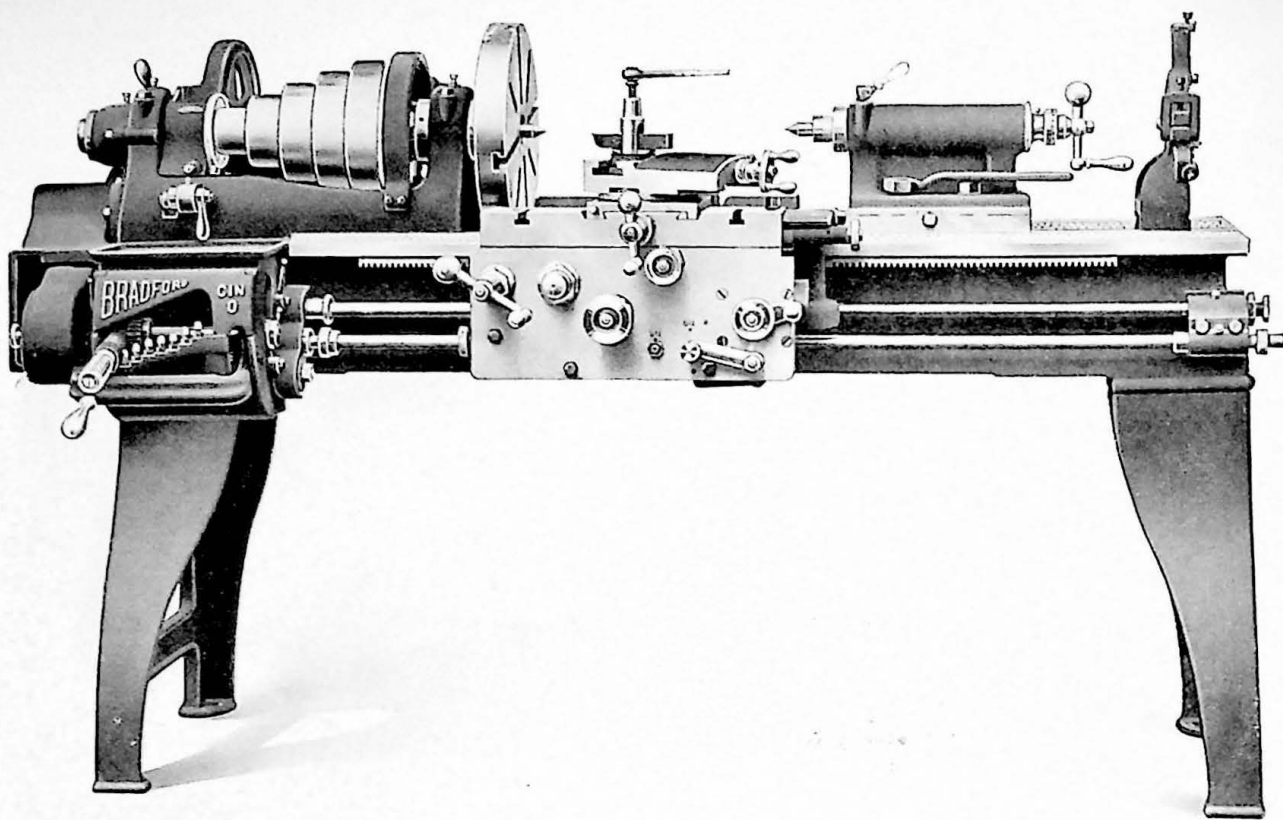
Three-Step Cone, Double Back Gears



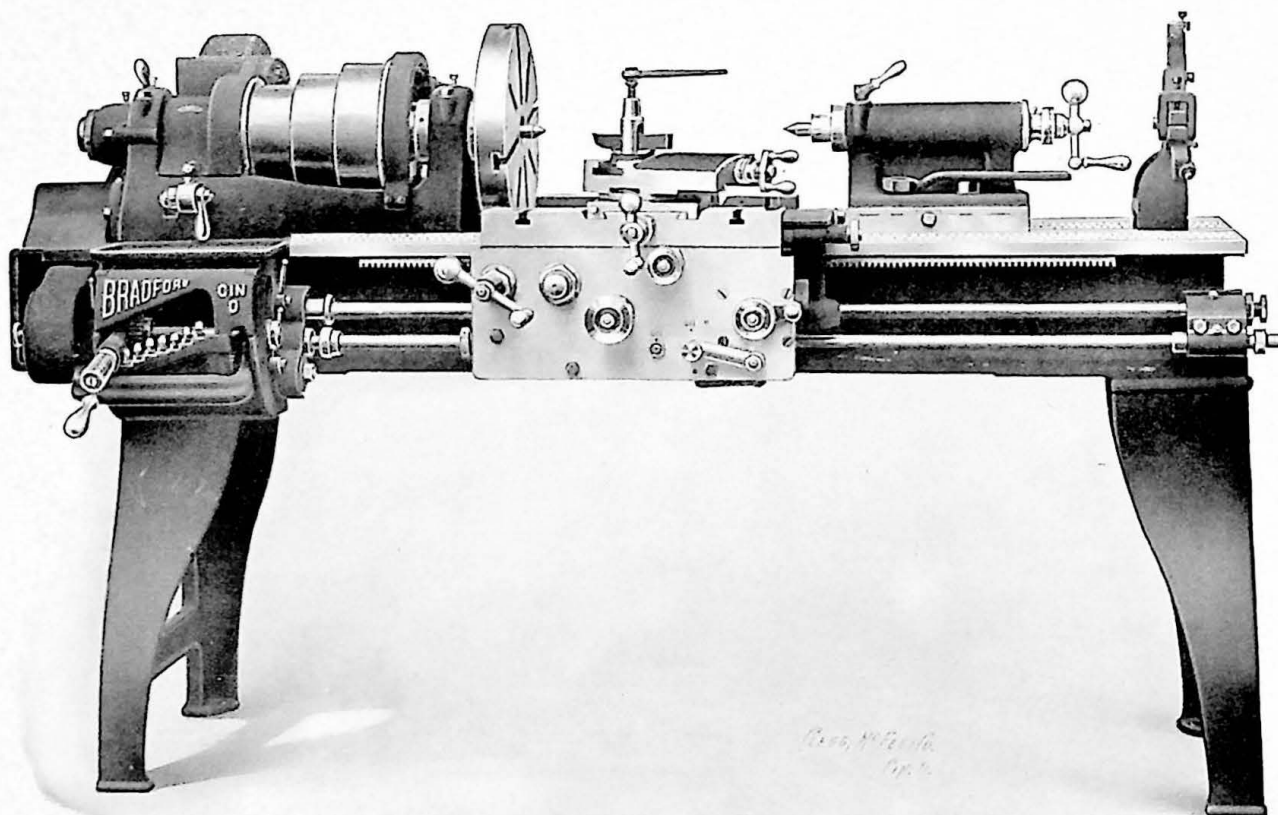
**Metal Working Lathes
14 to 42-Inch Swing**

The Bradford Machine Tool Co.

Cincinnati, Ohio, U. S. A.



14-inch Lathe with Five-Step Cone, Single Back Gear



14-inch Lathe with Three-Step Cone, Double Back Gears

14-Inch Bradford Quick Change Gear Lathe

PRINCIPAL CAPACITIES

	5 Step Cone Single Back Gear	3 Step Cone Double Back Gears
Swing over Bed.....	14 ⁷ / ₈ in.	14 ⁷ / ₈ in.
Swing over Rest.....	8 ³ / ₈ in.	8 ³ / ₈ in.
Swing over Carriage.....	9 ¹ / ₂ in.	9 ¹ / ₂ in.
6 ft. Lathe takes in between centers.....	30 in.	30 in.
Ratio of Back Gearing.....	8.14 to 1	8.14 to 1 and 2.92 to 1
Head Cone Pulley Diameters.....	4-5 ³ / ₈ -6 ³ / ₄ -8 ¹ / ₈ -9 ¹ / ₂	6 ¹ / ₈ -8-9 ¹ / ₂
Countershaft Cone Pulley Diameters.....	4-5 ³ / ₈ -6 ³ / ₄ -8 ¹ / ₈ -9 ¹ / ₂	6 ¹ / ₂ -8-9 ¹ / ₂
Width of Belt.....	2 ¹ / ₄ in.	2 ³ / ₄ in.
Size Pulleys on Countershaft.....	12 x 3 ³ / ₄ in.	12 x 3 ³ / ₄ in.
Speed of Countershaft.....	150-185 rev.	180-225 rev.
Front Bearing of Spindle.....	Dia. 2 ³ / ₄ in., Length 4 ⁷ / ₁₆ in.	Dia. 2 ³ / ₄ in., Length 4 ⁷ / ₁₆ in.
Rear Bearing of Spindle.....	Dia. 2 ¹ / ₁₆ in., Length 3 ³ / ₁₆ in.	Dia. 2 ¹ / ₁₆ in., Length 3 ³ / ₁₆ in.
Hole through Spindle.....	1 ¹ / ₄ in.	1 ¹ / ₄ in.
Spindle Speeds.....	20	18
Spindle Speed Range.....	7.5 to 440	15 to 329
Diameter of Tailstock Spindle....	1 ⁷ / ₈ in.	1 ⁷ / ₈ in.
Traverse of Tailstock Spindle....	6 in.	6 in.
Compound Rest Travel.....	4 in.	4 in.
Width of Cross Slide on Carriage.	7 in.	7 in.
Lead Screw Diameter and Thread	Dia. 1 ³ / ₁₆ in., 6 Thread	Dia. 1 ³ / ₁₆ in., 6 Thread
Lathe cuts Threads, including 11 ¹ / ₂ Pipe Thread and 19 Thread..	4 to 56	4 to 56
Size of Tools.....	5 ⁷ / ₈ x 1 in.	5 ⁷ / ₈ x 1 in.
Weight of 6 ft. Lathe.....	1,800 lbs	1,800 lbs.
Weight of Bed per ft.....	80 lbs	80 lbs.
Weight of 6 ft. Lathe, Boxed for Export.....	2,150 lbs	2,150 lbs.
Weight of Bed per ft., Boxed for Export.....	125 lbs	125 lbs.
Size of Case for 6 ft. Lathe, Boxed for Export.....	30 x 30 x 84 in 44 cubic ft	30 x 30 x 84 in 44 cubic ft.

Nose of Spindle is 2¹/₄ inches in diameter; length 2; length of Thread on Nose 1³/₈ inches; has 6 U. S. Standard Threads per inch.

Centers are made to Morse Taper No. 3.

Center Bushing for Head Spindle is made 5⁷/₈-inch taper per foot.

Taper Attachment turns all tapers up to 3³/₄ inches per foot, is graduated, and is available the full distance between centers.

ITS ADVANTAGES

Range of Threads and Feeds are unlimited.
The most direct drive from Spindle to Lead Screw or Feed Rod.
Cluster can be cut out entirely, driving the screw direct with ordinary change gears.
Automatic Stop for Feeds.
Adjustment provided admits of correctly meshed gears in case of wear.
No tumbler gear used in gear box.
Gears of Forged Steel.
All parts of easy access.

One lever for all threads.
Screw not in motion except for screw cutting.
SCREW CUTTING AND FEEDS WITHOUT THE REMOVAL OF A GEAR.
Cuts screws per inch: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 30, 32, 33, 36, 40, 44, 46, 48, 52, 56.
FEEDS 2½ TIMES THREADS.
EXTRA GEAR CAN BE SUPPLIED TO CUT ½ NUMBER OF THREADS ON INDEX.

DESCRIPTION

THE Lathe shown in the accompanying illustrations is of most recent design, heavy and powerful, with liberal bearings, and a correct distribution of metal to commend it for the most severe and exacting duties. The design shows both solidity and convenience, and has made it a thoroughly practical machine, and will give equal satisfaction in the toolroom or shop, as it meets the requirements of all modern work perfectly, and is absolutely without complicated or impractical features. Owing to the extreme precision the Lathe has shown under the most crucial tests, it is found in the toolrooms of many of our foremost manufacturing establishments. It has everything in the way of convenience and perfect adjustment to make it the ideal Lathe, for both light or heavy work. **Bradford Lathes are Lathes of quality and are fully guaranteed.**

Workmanship and Material employed in the manufacture of Bradford Lathes have long been a source of satisfaction to the user. Only such material as is best adapted to the parts for which intended is used, and no amount of skilled labor is spared in the finishing of these parts. We grind and hand scrape all bearings to the most exacting degree. In the manufacture and assembling of our machinery we would direct the attention of the trade to our complete equipment and facilities for the production of lathes, the building of which is our exclusive specialty. Only the most approved appliances and recent practices are followed throughout. Likewise, no less important is the provision made for the thorough lubrication of all wearing surfaces. On cylindrical surfaces oil channels are cut on our coarse screw cutting lathes, and not chipped in.

Headstock is well ribbed, closely fitted, and so clamped as to absolutely insure its non-chattering.

Spindle and its mountings is probably the most important part of the lathe, and as such we treat its construction with care and precision. These spindles are manufactured from a high carbon crucible steel, are first bored from the solid stock, **straight through from one end**, final finishing cuts taken, then put on the grinder and ground true to standard sizes. Threads are then chased on nose and bored to receive taper bush and center. The center and bush are ground carefully, fitted and tested as to their accuracy. The running balance is perfect and the thickness of spindle uniform, insuring against springing and consequent chattering, a very important feature. Spindle is then mounted in **Adjustable Taper Bronze Bearings**. The spindle extends through the hood, allowing the use of draw bars and tubes for **Draw-in Attachments**. These Draw-in Attachments can be furnished at any time, as special spindle is not required. Thrust collars run in oil bath.

Tailstock of the overhanging pattern is furnished, unless otherwise ordered, which permits the use of Compound Rest at right angles when turning between short centers. It can be set over, and the clamping is such as to insure rigidity.

Bed is of extra weight and depth, with unusual thickness of metal, webbed in two-foot sections, and will not spring under the heaviest cuts.

Compound Rest is solidly gibbed throughout. Base is graduated in degrees, and

wearing surfaces are of ample width. Tool Post with Ring and Wedge or Threaded Collar furnished as ordered. Also Plain Rest or other Rest furnished if desired.

Carriage and Apron have been designed with special reference to giving the maximum resistance to the springing and straining of these important parts of the Lathe.

The Carriage has full bearing on V's its entire length, is gibbed front and back, has wide Cross V, with an extra amount of metal in Cross Bridge. Our construction of the Carriage and Apron, and their connection with rod and screw are so closely fitted as to prevent all tendencies to unevenness of motion or springing when under load.

Apron is of the double-plate pattern, with noninterfering device so that feed rod and lead-screw can not be engaged simultaneously. Reverse for all feeds in Apron.

Quick-Change Gear Device is of the well-known Bradford type, and gives an unlimited range of feeds. All standard and pipe threads, including $11\frac{1}{2}$, can be cut. One lever only is required, and the drive from the spindle to the lead-screw is most direct. It is not necessary to remove any of the gears. Feeds $2\frac{1}{2}$ times threads. All parts are of easy access. Oiling facilities are perfect. **Gears are of forged steel.** Ordinary change gears can be used direct between the spindle and lead-screw for cutting any odd threads.

Gear Guards, covering all exposed gears on the machine, afford effective protection both to the operator and the machine.

Cones of Headstock and Countershaft are of large diameter and high speed, giving great belt power.

Pinions and Studs are of the best grade steel, hardened and ground.

Steel Rack in one section is used, and pinion meshing with same may be disengaged for screw cutting.

Lead Screw is cut from a Master Screw, and is not splined, as feed rod is furnished that can be used for feed purposes, thereby saving the lead screw and nut. Nut is of the split pattern, made of **Phosphor Bronze**. Great care is exercised in the cutting of the lead screw, and in the tapping and fitting of the nut, so that the greatest accuracy is maintained for thread cutting. **Automatic Stop** to the feed is placed on all lathes, which can be placed in any position on feed rod.

Thread Indicator—When not in use, the worm wheel on the Chasing Dial is swung out from the lead-screw to an inoperative position by means of a cam and knurled knob, avoiding all unnecessary wear on these parts. A thread indicator is regularly fitted to all Bradford lathes.

Feeds cover a wide range, from very coarse to very fine, are all positive geared through the feed rod and can be instantly employed, with sufficient change to cover all requirements.

Lathe has Friction Cross Feed graduated to read in thousandths, and similar micrometer adjustment for the compound rest and tailstock spindle screws; also, Friction Traverse Feed in Apron and Automatic Stop for Carriage.

Metric—To cut **standard Metric threads** our Metric Quick Change Gear Lathe with a Metric Lead Screw is furnished, or if desired these threads can be cut by the use of transposing gears on our American Quick Change Gear Lathe.

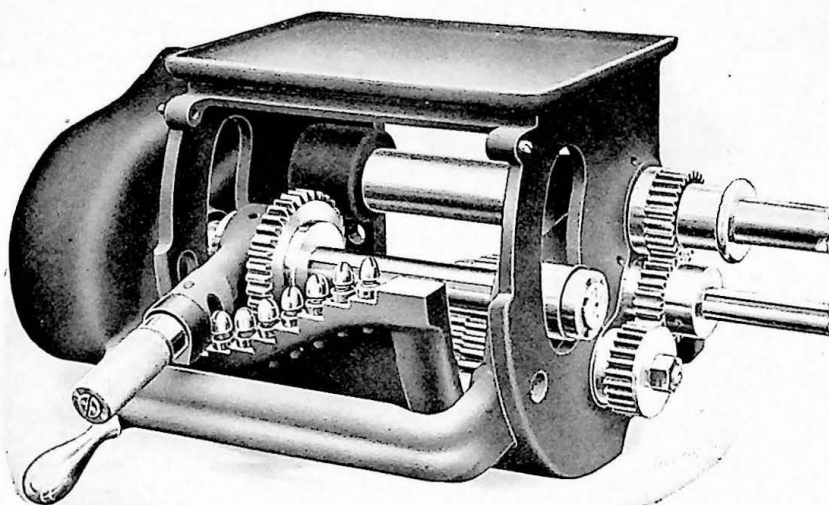
Countershaft—Each Lathe is regularly furnished with a two-speed double friction countershaft, both speeds being forward. Pulleys arranged so same can be oiled without throwing off the belt. Self-oiling bearings are also furnished with the hangers.

Parts—Large and small Face Plates, Compound Rest, Steady Rest, and necessary Wrenches, etc.

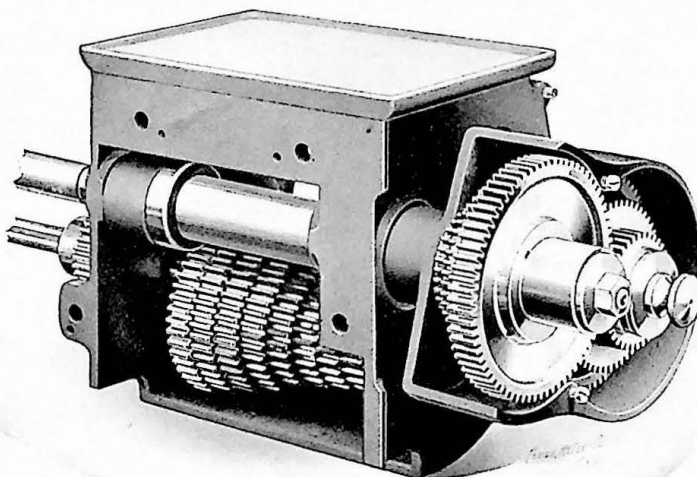
Extras—Our **Improved Taper Turning Attachment**, turns tapers up to $3\frac{3}{4}$ inches per foot, is graduated, and is available the full distance between centers by reason of its being bolted to and traveling with the lathe carriage, and is put in or out of operation by the tightening or releasing of one screw only. Coarse Screw Cutting Mechanism. Relieving Attachment, Friction Double Back Gears, Follow Rest, Turrets, Tools, Chucks, Cabinet Legs, Draw-in Attachment, etc., may be had at an extra charge.

Also made in 16, 18, 18 Heavy Pattern, 20, 22, 24, 26, 28, 30, 32, 36 and 42-inch sizes.

BRADFORD LATHES are LATHES OF QUALITY and are FULLY GUARANTEED



Front View of Quick-Change Gear Device



Rear View of Quick-Change Gear Device

TELEGRAPHIC CODE

Size	Quick Change Gear Lathes 5-Step Cone Single Back Gear Geared Feed	Quick Change Gear Lathes 5-Step Cone Single Back Gear and Taper Attachment Geared Feed	Size	Quick Change Gear Lathes 3-Step Cone Double Back Gears Geared Feed	Quick Change Gear Lathes 3-Step Cone Double Back Gears and Taper Attachment Geared Feed
14-inch . . .	Acute	Afar	14-inch . . .	Askew	Atone
14" x 6' . .	Adage	Afaint	14" x 6' . .	Asoka	Atic
14" x 8' . .	Adam	Affect	14" x 8' . .	Astern	Atlas
14" x 10' . .	Adelo	Aflame	14" x 10' . .	Astral	Atwix
14" x 12' . .	Addle	Affirm	14" x 12' . .	Aspect	Atomy
14" x 14' . .	Adhere	Afloat	14" x 14' . .	Ascend	Atoil