Cataract Lathe Bulletin No. 18

Cataract Precision Lathes and Attachments are manufactured by
Hardinge Brothers, Inc., Chicago, U. S. A.

Only during the past few years has the great value of Bench Lathes come to be appreciated. Today they are being installed in ever-increasing numbers in manufacturing plants and tool rooms, where they are proving more convenient, efficient and economical than larger lathes, for many kinds of work.

Cataract Precision Bench Lathes are the standard of efficiency, adaptability and ultimate worth. In design, material and workmanship, they are the pinnacle of perfection. And the saving of time alone, due to the interchangeability of parts, will more than pay for a Cataract Lathe.

There are ten designs of Cataract Bench Lathe Heads

Cataract No. 3, 7” swing, plain head, maximum capacity of chuck....................... ½” round
Cataract No. 4, 7” swing, plain head, maximum capacity of chuck....................... ¾” round
Cataract No. 4, 9” swing, plain head, maximum capacity of chuck....................... ¾” round
Cataract No. 4, 9” swing, back-geared, maximum capacity of chuck....................... ¾” round
Cataract No. 5, 7” swing, plain head, maximum capacity of chuck....................... 1” round
Cataract No. 5, 9” swing, plain head, maximum capacity of chuck....................... 1” round
Cataract No. 5, 9” swing, back-geared, maximum capacity of chuck....................... 1” round
Cataract No. 5, 9” swing, plain head, 4-step cone, maximum capacity of chuck........ 1” round
Cataract No. 6, 9” swing, plain head, maximum capacity of chuck....................... 1¾” round
Cataract No. 7, 9” swing, plain head, maximum capacity of chuck....................... 1¼” round

Interchangeability

All heads fit all beds, for all head castings are planed and scraped to the same master bed.

The various attachments also interchange on machines of like swing, being fitted to master gauges.

For Complete Information Send for Catalog

This Bulletin by no means covers the complete line of attachments. In the allotted space we have endeavored to illustrate most of the equipment regularly ordered.

Complete Catalog of Cataract Precision Bench Lathes and Attachments will be cheerfully mailed upon request. Ask for Catalog Number 15.
Cataract Lathe No. 3—Combination A-7-inch

Note: Combination "A" always indicates 32" plain bed.

Length of bed 32". Swing 7". Swing over slide rest 2⅛". Distance between centers 17". Maximum round stock which will pass through draw-in chuck and draw-in spindle ½". With draw-in spindle removed, ⅜" round stock will pass through live spindle, a three-jawed chuck being used for holding stock.

Cataract Lathe No. 4—Combination B-7-inch

Note: Combination "B" always indicates 32" bed, slotted to receive chasing attachment.

Length of bed 32". Swing 7". Swing over slide rest 2⅛". Distance between centers 16". Maximum round stock which will pass through draw-in chuck and draw-in spindle ¾". With draw-in spindle removed, ⅝" round stock will pass through live spindle, a three-jawed chuck being used for holding stock.

Cataract Lathe No. 5—Combination C-9-inch

Note: Combination "C" always indicates 38" bed, slotted to receive chasing attachment.

Length of bed 38". Swing 9". Swing over slide rest 3". Distance between centers 22". Maximum round stock which will pass through draw-in chuck and draw-in spindle 1½". With draw-in spindle removed, 1⅛" round stock will pass through live spindle, a three-jawed chuck being used for holding stock.
Compound Slide Rest

Made in two sizes:

Fig. D-7" for 7" Swing Lathes.
Fig. D 9" for 9" Swing Lathes.

Slides properly proportioned; accurately scraped and fitted. Graduations cut angularly on index slide to read forty-five degrees on either side of the zero line.

Base of slide rest in direct contact with bed when in position. Alignment maintained by bed-stop 5" long; slide rest can be removed and accurately replaced on bed. Troublesome shoe entirely eliminated.

The 10-pitch screws are well made, revolve in long bearings, and are fitted with adjustable indexes 1 3/8" in diameter (graduated in thousandths). If desired, slide rests will be furnished at no extra cost with screws of two millimeter pitch.

Tool post heavily constructed and hardened; revolves in oblong block which fits T-slot in top of slide. Chips cannot wedge when changing position of tool post.

With ordinary care, it is impossible to break T-slot, a common occurrence in slide rests with round block fitting T-slot.
Cataract Screw Cutting Attachment ("F")
and Slide Rest ("G")

The Screw Cutting Attachment (regularly furnished with set of gears as illustrated) is attached to the end of the bed by means of a screw, and connected to the longitudinal screw of the slide rest by a telescoping connection ("H").

The slide rest ("G") can therefore be set in different positions along the bed within range of the telescoping connection ("H"). Parallel or taper threads may be cut.

The screw cutting attachment ("F") may be used on No. 3, No. 4, and No. 5 7" swing Cataract Lathes; and when furnished with longer telescoping connection can be used on No. 4 and No. 5 9" swing lathes.

When ordering, please state if attachment is for No. 3, No. 4, or No. 5 Lathe, as the spindle gear ("D") varies for the different sizes.

A blue print table for threads is furnished with each attachment:

For No. 3, 7" swing lathe use Table No. 137.
For No. 4, 7" or 9" swing lathe use Table No. 138.
For No. 5, 7" or 9" swing lathe use Table No. 139.

For Metric threads refer to chart No. 618.

We furnish, when ordered, 127 and 50 translating gears and bracket for metric threads.
Automatic Chuck Closer, Cross Slide and Turret

Automatic Chuck Closers are made in five sizes to fit No. 3, 7" swing; No. 4, 7" or 9" swing; and No. 5, 7" or 9" swing lathes.

When using the Automatic Chuck Closer, as in making duplicate parts or in filing operations on stock of uniform size, it is unnecessary to stop the lathe spindle while feeding the stock.

Cross Slides are rigidly built. The top slides are 9" long, allowing clearance between forming and cut-off tools and the box tools, die holders, etc., of the turret.

The tools are adjustable longitudinally through T-slots and vertically by means of threaded blocks. The top slide is operated by rack and gear segment with lever.

The bottom slide is built on an angle which causes the oil to flow back, away from the operator.

Cataract Cross Slides are also built to fit 9" swing lathes.

Turrets for 7" swing lathes are made with single stops and known as Fig. W-7" and with independent stops, known as Fig. X-7".

Turrets for 9" swing lathes are built with independent stops only and known as Fig. X-9".

The principal working parts of turrets are hardened and ground, and the workmanship throughout is first class.

The base of the W-7" turret, and of the X-7" turret, is 6" long, stroke 2". There are six turret tool holes 5/8" in diameter and 1 3/4" deep. Brown and Sharpe No. 00 Automatic Screw Machine Tools may be used with these turrets. Cataract tap, die and drill holders are also made for this attachment.

The X-9" turrets for 9" swing lathes have a 3" stroke, the tool holes being of the same dimensions as in the W-7" and X-7" turrets, 5/8" in diameter, 1 3/4" deep.

Swivel attachment, not shown above but illustrated in Cataract General Catalog, is used in connection with cross slides for turning tapers, etc.
Rear View of Cataract Lathe Showing Chasing Attachment

The Cataract Chasing Attachment is fitted to beds having a T-slot their entire length on the rear side and regularly known as “slotted beds,” Combination “B” in 32” beds and Combination “C” in 38” beds.

Chasing Attachments are made in four sizes:

- Fig. 29-7” with hob Fig. 31, 4¼” long for 7” swing lathes.
- Fig. 29-9” with hob Fig. 31, 4½” long for 9” swing lathes.
- Fig. 30-7” with hob Fig. 32, 6¾” long for 7” swing lathes.
- Fig. 30-9” with hob Fig. 32, 6½” long for 9” swing lathes.

Unless otherwise specified, 10-pitch hobs are furnished regularly, and additional hobs at extra charge.

All hobs are fluted and tempered one inch from end for cutting thread in lead nut, the thread of which must be re-cut for different pitch hobs.

Internal and external threading tool blocks are held in the adjustable bracket. A slide, the movement of which is regulated by an index screw, is fitted to the adjustable bracket and used for determining the depths of cuts and final reading for finished diameter of threads.

Bearings, through which the 1¼” diameter chasing bar passes, are protected from dust and cuttings at each end by felt washers held in position by threaded caps.

For cutting duplicate threads accurately and rapidly, or for finishing threads which have been roughed with a die, the Cataract Chasing Attachment is invaluable.

A blue print threading chart is furnished with each machine. Gears are furnished with the following number of teeth: 25, 50, 60, 70, 80, 90, 100.

Note: For external threading, run lathe spindle backward. For internal threading, run lathe spindle forward.
Fig. 61

Adjustable Height Grinder

Used in connection with slide rest. Held in position by eccentric bolts and tongue which fits top slide T-slot.
Spindle, .400" in diameter; 1 1/8" stroke; hardened, ground and lapped.
Standard Hardinge No. 8 hole bored and ground in each end. Finger piece "C" and mount interchangeable. Nut "B" discharges taper mounts.
Spindle frame adjustable above or below center by means of knurled thumb-screw.
Adjustable bronze journals, protected by felt washers and threaded caps "A".
One internal and one external mount furnished with each attachment. See Table No. 93 for additional mounts.

Note: Order Fig. 61.7" for 7" swing lathe.
Order Fig. 61-9" for 9" swing lathe.

Fig. 60

Permanent Height Grinder

Used in connection with slide rest. Held in position by hexagon bolts and tongue which fits top slide T-slot.
Spindle .365" in diameter; 1 ½" stroke; hardened, ground and lapped.
Standard Hardinge No. 1 taper hole bored and ground in each end. Finger piece "C" and mount interchangeable. Nut "B" discharges mounts.
Solid bronze journals, protected by felt washers and threaded caps "A".
One internal and one external mount furnished with each attachment. See Table No. 93 for additional mounts.

Note: Order Fig. 60-7" for 7" swing lathe.
Order Fig. 60-9" for 9" swing lathe.
Face Plate (Fig. 57)
Made with T-slot to receive Angle Plate (Fig. 11).
Holes tapped ¼” x 20-pitch.

Guide for Ordering:
For No. 3 Machine, order “Fig. 57 for No. 3 Lathe.”
For No. 4, 7” Machine, order “Fig. 57 for No. 4 Lathe.”
For No. 5, 7” Machine, order “Fig. 57 for No. 5 Lathe.”
For No. 4, 9” Machine, order “Fig. 57 for No. 4 Lathe.”
For No. 5, 9” Machine, order “Fig. 57 for No. 5 Lathe.”

We also make a Face Plate (known as Fig. 56) 7” in diameter and tapped ⅛” x 20-pitch without T-slots which is preferable for some kinds of work.

Fig. 57

Angle Plate (Fig. 11)
Tongue fits T-slot of Face Plate (Fig. 57).
Dimensions of Angle Plate—1½” x 1½” x 3½”.
Made of cast iron.

Very convenient for many operations on irregular pieces.

Fig. 11

Center Rest
Fitted to standard bed and held in position by bolt and wing nut as illustrated. Jaws reversible and adjustable.
Made of cast iron.

Center Rests are made in six sizes:
3” (Fig. 18) for 7” or 9” swing lathes;
4½” (Fig. 19) for 7” or 9” swing lathes;
6” (Fig. 19-A) for 7” or 9” swing lathes.

In ordering, please state whether for lathe of 7” or 9” swing lathe.

Center Rest
Cataract Patent Tapered Spindle Showing Chuck and Mount

Included angle of spindle nose taper is 8 degrees. Drives right or left. More easily kept clean than a threaded nose.

With the use of this spindle, chucks, face plates and special mounts can be accurately interchanged, and in the shortest possible time.

Threaded nose spindles can be furnished if desired.

Cataract Wire Chucks

Cataract No. 3 Chuck (Fig. 33). Maximum capacity clear through \( \frac{3}{8} \)\". Outside diameter of shank or body .650\".

Cataract No. 4 Chuck (Fig. 34). Maximum capacity clear through \( \frac{3}{4} \)\". Outside diameter of shank or body .650\".

Cataract No. 5 Chuck (Fig. 35). Maximum capacity clear through 1\". Outside diameter of shank or body 1.860\".

Note:

In ordering chucks, check body diameter to assure proper filling of order.
Two-Speed Counter for Wall (Fig. E)

Recommended speed 750 R. P. M.

Driving pulley 5" in diameter for 1½" belt.
Cone pulley for 1" belt.

Patent Treadle (Fig. 186) regularly furnished.

Countershaft (Fig. 24, not illustrated) used in connection with Two-Speed Counter for operating slide rest grinders.

Three-Speed Universal Ceiling Counter

Recommended speed 750 R. P. M.

This is a rear view showing off-set hanger extensions and high speed pulley for operating slide rest grinders. Driving pulleys 6" in diameter for 1½" belt. This style of countershaft also made without off-set hanger extensions and high speed pulley (known as Fig. F-4 for hand shift, and as Fig. F-5 for foot shift).

Patent Treadle (Fig. 187) regularly furnished with either Fig. G-3 or Fig. F-5.

Automatic Locking Foot Treadle

The accompanying illustration shows three styles of foot treadles—No. 186 and No. 187 in locked position, and No. 185 unlocked.

The belt is shifted to the tight pulley by the downward movement of the treadle which is connected to the countershaft fork by a wire.

The upward pull of the wire locks the treadle. To unlock and stop lathe spindle, it is necessary only to touch the heel part of the treadle.
Three-Speed Universal Wall Counter

Recommended speed 750 R. P. M.

Countershaft shown with hanger extensions and high speed pulley for operating slide rest grinders. Driving pulleys 6" in diameter for 1 1/4" bolt.

This style of countershaft is also made without hanger extensions and high speed pulley (known as Fig. F-2 for hand shift, and as Fig. F-3 for foot shift).

Patent Treadle (Fig. 187) regularly furnished with either Fig. G-1 or Fig. F-3.

Hand Shift Fig. G.  
Foot Shift Fig. G-1

Three-Speed Universal Counter

Recommended speed 750 R. P. M.

Part of Cataract Standard Bench Equipment. Furnished with or without hanger extensions and high speed pulley for operating slide rest grinders.

Hanger bases bored to fit 1 1/4" standard pipe.

Should ceiling or wall type countershaft be inconvenient, 1 1/2" pipes (Fig. 5) and four feet (Fig. 98) can be ordered. Length of pipes determined by distance from top of bench to ceiling. Countershaft may be adjusted to any height.

With this countershaft a jackshaft (Fig. L-2) with driving pulley (Fig. K) is necessary.

When made without hanger extensions and high speed pulley, this style of countershaft is known as Fig. F for hand shift and as Fig. F-1 for foot shift.

Patent Treadle (Fig. 187) is regularly furnished with either Fig. H-1 or Fig. F-1.

Hand Shift Fig. H.  
Foot Shift Fig. H-1

www.OzarkToolManuals.com
Cataract Quick-Change Swing Precision Lathe

GENERAL DIMENSIONS

Length of bed, 52".
Total length of lathe, 65".
Distance between centers, 28".
Swing, 9" and 15".
Swing over carriage, 5½" and 11½".
Diameter of lead screw, 1" by 6-pitch.
Diameter of front bearing, 2½".
Diameter of rear bearing, 1½".

Length of spindle, 15", hardened, ground and lapped.
Hole through spindle, 1¼".
Draw-in chuck capacity, 1", maximum.
Net weight, 850 pounds.
Weight boxed, 1,200 pounds.
Floor space, 26" by 46".
Cubic feet, 48.

Details in Separate Catalog

The Cataract Quick Change Swing Precision Lathe, while a comparatively new addition to the Cataract line, will be found invaluable in tool rooms for accurate rapid work within its range, such as making taps, thread gauges, etc.

The swing of the lathe being 0" and arranged with change gears consequently is better adapted to small work than a 12" or 14" lathe.

The spindle which will take stock 1" in diameter through the draw-in chuck or 1½" stock when using a three-jawed chuck, is hardened, ground and lapped and revolves in adjustable bearings.

All shafts revolve in double bearings.

The carriage which is fitted with double apron is also fitted with gibbs in front and rear to prevent cramping when the taper attachment is being used.

There are many other valuable features which space will not permit us to explain here. These are covered in a special catalog which we will send on request.