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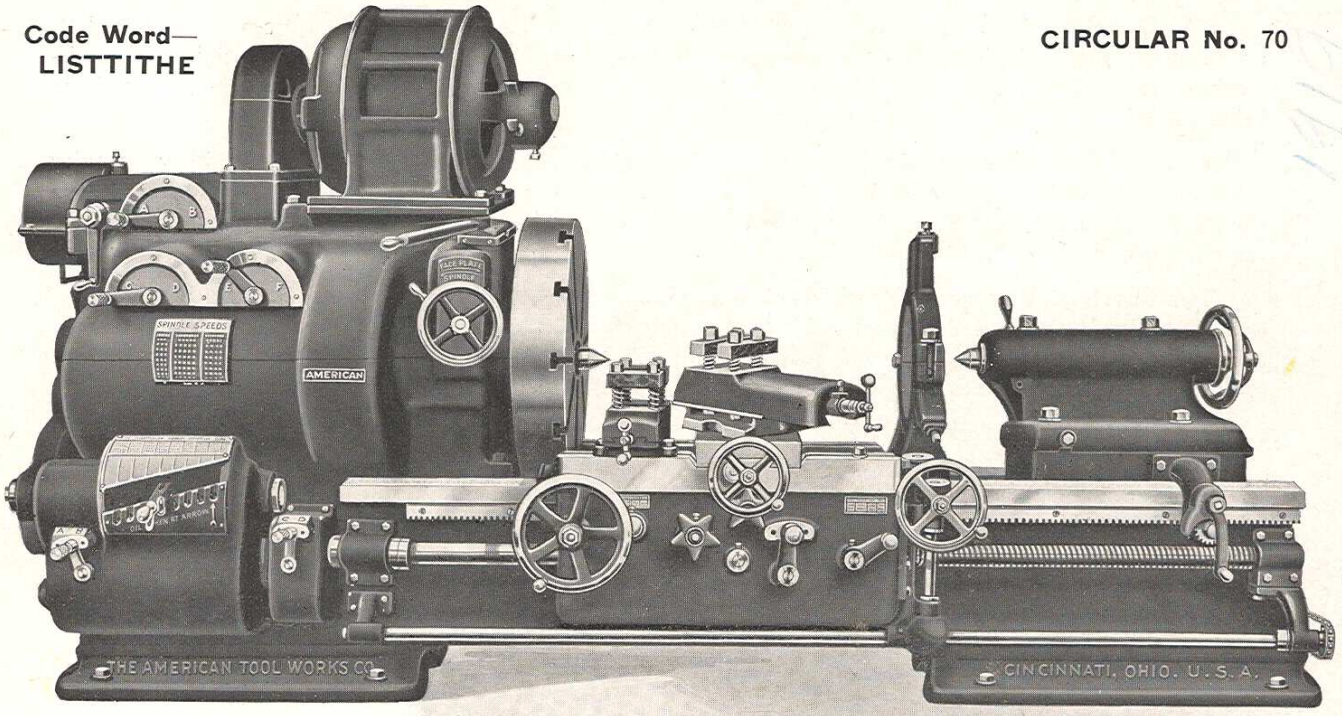
LISTTITHE

CIRCULAR No. 70



AMERICAN

36-inch High Duty Lathe

(Heavy Pattern)

Built in any Length of Bed, from 12 ft. up, advancing by 1 ft. lengths.

Swings over Bed	37¾ in.
Swings over Compound Rest Slide	23⅜ in.
Standard Length of Bed	12 ft.
12-ft. Bed takes between Centers, tailstock flush, Geared Head	5 ft. 1½ in.
12-ft. Bed takes between Centers, tailstock flush, Cone Head	5 ft. 1½ in.
Hole through Spindle to clear bar	$2\frac{9}{16}$ in.
Size of Tool ordinarily used	1 in. x 2 in.
Taper of Centers, Morse	No. 6
Power Angular Feed to Compound Rest	15 in.
Width of Driving Belt—Geared Head	6 in.
Dia. of Driving Pulley— "	20 in.
Speed of Driving Pulley, r.p.m. "	405
Width of Driving Belt—Cone Head	5¾ in.

The following description covers the very latest and most complete development in modern High Duty Lathes. The machine described herein has been designed to supply the demand for a more efficient engine lathe and contains a number of features absolutely new to lathe design.

THE AMERICAN TOOL WORKS CO.

LATHES, PLANERS, SHAPERS, RADIAL DRILLS

MAIN OFFICES AND WORKS

CINCINNATI, U. S. A.

2500-B-7-19.

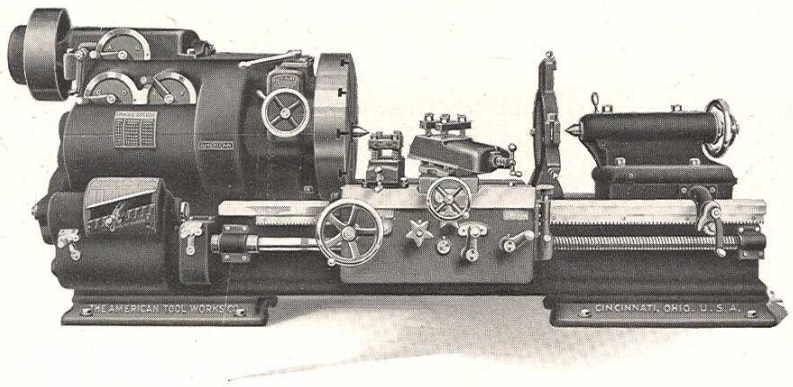
Bed Construction. The bed is ribbed transversely with heavy double walled cross girths spaced 2′ apart. A rib is carried lengthwise in the center of the bed which has a rack cast integral with it. The tailstock is provided with a pawl which engages this rack for resisting the end thrust when heavy work is being turned.

The Bed Casting is of semi-steel, which in addition to increasing its tensile strength and rigidity, provides a hard close grained metal for the V bearings. As this provides a harder metal on the shears than on the carriage bearings, the wear which takes place will be largely confined to the carriage, where it will not impair the accuracy or alignment of the machine.

The Carriage Vees are wider and the bearings longer than are usually provided on other makes. The carriage bridge has also been widened and is of unusually great depth, due to the patented drop Vee construction of the lathe bed. In addition, the carriage bridge is given a bearing on the front tailstock Vee, which provides a support for the carriage directly in line with the thrust from the cutting tool.

The Compound Rest is rigidly designed, the swivel being made completely circular and is graduated in degrees. It is clamped to the cross slide by means of four bolts. Full length taper gibs, having end screw adjustment are provided on both the cross and compound rest slides, these gibs being placed on the right hand side where they will not receive the thrust of the tool under ordinary working conditions.

The Tailstock is of our improved four bolt design, the rear bolts being carried to the top for convenience in clamping. The tailstock spindle is clamped in position by means of a double plug binder which is so constructed as to securely clamp the spindle at any position without affecting its alignment.



Belt Drive thru Patented 16-Speed Geared Head.

The Headstock Spindle is made from a special .75% carbon hammered crucible steel spindle stock, and all other shafts, including the leadscrew, are made of a .45% carbon special ground stock.

The Spindle Bearings are equipped with sight feed oil cups and all other important bearings are oiled by means of our improved gravity oiling system, the oil being carried to the bearings through oil pipes conspicuously located, which hold a generous supply of oil.

A Standard Thrust Bearing is provided which consists of five collars, alternately of bronze and hardened and ground steel. The bronze collars are provided with oil grooves.

Renewable Bronze Bushed Bearings are furnished throughout the machine, and the loose gears in the apron are also lined with bronze; the studs on which they run being case-hardened and ground, thus providing a hard bearing surface without impairing their strength.

The Apron is made in a complete double wall or box section, giving all studs and shafts an outboard bearing. The rack pinion can be withdrawn from the rack when cutting threads, consequently all possibility of chatter or vibration is avoided, when cutting coarse pitch screws.

A Thread Dial is regularly furnished, thus obviating the necessity of using a backing belt or a reversing motor for thread cutting. The thread dial is placed at the right of the apron and can be readily disengaged from the lead screw when not in use.

The Lead Screw is made from .45% carbon ground lead screw stock, and is 2½″ in diameter. The maximum variation allowed in chasing these screws is .001″ per lineal foot and they are guaranteed to be within this limit. These screws are chased by means of a special lead screw made with a Brown & Sharpe master screw.

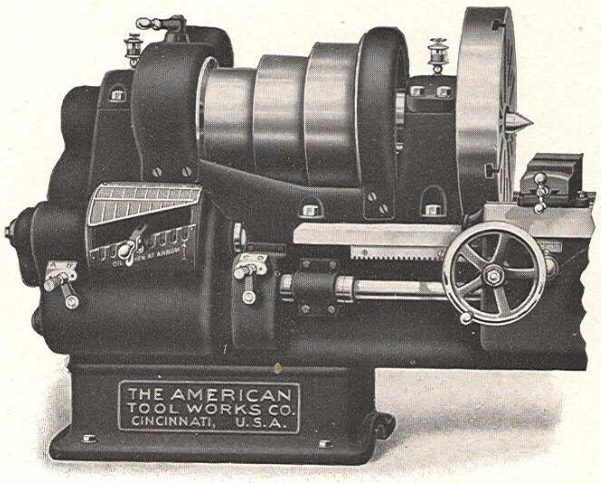
The 1″ Pitch Lead Screw permits engaging the half nuts at any point when chasing all threads excepting those having a fractional pitch. This is not only a great time saving feature, but is also a safeguard against errors when chasing unit threads.

The coarse pitch lead screw and the comparatively low apron ratio required obviates the necessity of speeding up through the quick change gear mechanism for the coarser pitches and feeds. As a matter of fact, no member of the quick change mechanism does at any time run faster than the initial driving shaft, and the compounding gears are therefore only used for cutting the finer threads and feeds. Consequently a very direct transmission is provided for heavy turning, etc.

Steel Gearing—All gears in the entire quick change gear mechanism are regularly made from .045 carbon bar steel. The apron gearing is also made of the same material with the exception of two large gears which are made from steel castings.

The Cone Gears of the quick change gear mechanism are cut with improved Brown & Sharpe 20 degree involute cutters which form a pointed tooth slightly rounded at the top. This is the only proper and satisfactory form of tooth to use in a tumbler gear mechanism, as it permits instantaneous engagement of the gears without clashing. The pointed tooth also has a wider and stronger section than the 14½ degree tooth.

The Tumbler Lever of the quick change mechanism is cast steel and is bronze bushed. It is guided into its respective positions by means of a slotted plate attached to the front of the box. Consequently, the gears cannot be engaged before they are in their proper position for meshing.



3-Step Cone, Double Back Geared Head.

The Quick Change Gear Mechanism forms a complete unit in itself and is mounted on the front of the machine, being fixed to the bed by means of a tongue and groove which insures permanently accurate alignment. This mechanism is also much more accessible for any necessary attention than where it is incorporated in the bed under the headstock. It provides a range of 48 threads and feeds, all of which are listed on a direct reading index plate located above the tumbler lever. Provision is made for cutting the following threads: ½, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1⅜, 1 7/16, 1½, 1⅝, 1¾, 2, 2¼, 2½, 2¾, 2⅞, 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. For additional threads see Auxiliary Quadrant.

All compounding in the feed box is done by means of taper jaw clutches which can be easily engaged. This construction is undoubtedly superior to that used on other designs, which have a compound mechanism of the tumbler gear type bolted on the end of the bed.

All Loose Gears in the quick change mechanism are bronze bushed.

Auxiliary Quadrant—While these new pattern lathes are provided with an unusually wide range for thread cutting and feeding, provision for applying extra change gears is also made by means of an auxiliary quadrant. This is located on the end of the bed and carries the gears connecting the head with the quick change mechanism. This arrangement enables the use or application of such extra change gears as will be necessary to cut all special or metric threads not regularly furnished with the standard equipment.

Guaranteed Accuracy—If properly set up and levelled "American" Lathes are guaranteed to bore and turn true to within .001 in. The material entering into their construction is also guaranteed in every essential to be the very best obtainable for the purposes used. We will further guarantee to repair any breakages or damage to the machine due to defective material or faulty workmanship.

Double Back Geared Head provides 9 spindle speeds both forward and reverse or 18 forward speeds providing the reverse speeds are not required. A back gear shifting lever is furnished by means of which the operation of the double sliding gear is greatly facilitated. The back gear quill and spindle driving pinion are made of steel and are bronze bushed.

Patented Geared Head provides sixteen spindle speeds, eight of which are obtained through the spindle drive, the other eight through the face plate drive. This head is very powerfully designed, being particularly adapted to the heaviest class of lathe work, such as is found in railroad shops, forge shops and steel mills. Some idea of its great driving power may be had from the fact that the greatest speed reduction thru the face plate drive is at the unusually high ratio of 202 to 1. At the normal countershaft speed, the belt will deliver from 30 to 35 horse power which is far in excess of the power heretofore provided on any lathe of this size or swing. When arranged for motor drive, a constant speed motor either of the direct or alternating current type is located on the top of the patented geared head, and connected to the main driving shaft through three spur gears. Sixteen fundamental spindle speeds are obtainable from 2 to 150 R. P. M. When apron control is furnished, the motor can be started and stopped by means of a controller hand wheel conveniently located on the right end of carriage where a dial indicates how the motor is set.

The Motor Speed can be comparatively high, 700 to 1000 R. P. M., thereby cutting down the size and first cost of same. A sensitive, but powerful friction clutch is provided on the driving gear for starting and stopping, or slightly moving the gears in head, to facilitate making speed changes without shock to the parts or interfering with the motor speed.

The Size of the Motor depends entirely upon the nature of the work to be handled. We prefer to have customer specify the size of the motor desired after having made a thorough investigation of the uses to which the lathe is to be put, so that a motor of proper horse power may be supplied. The services of our engineering department are at your disposal to properly determine the range of speeds and size of motor particularly suited to your requirements. If the lathe must stand up to continuous hard work, a large motor should be used, whereas, if it is intended only for a general line of work, a motor of normal horse power will be amply sufficient. Size of motor should be from 15 to 30 Horse Power.

Double Friction Countershaft is regularly supplied, with all belt driven lathes.

Countershaft Pulleys for Belt Driven Geared Head are 20 in. diameter, for 8 in. belt with speeds forward, 270, reverse 350 R. P. M. Pulleys for **double back geared head** are 24 in. diameter for 6 in. belt, with speeds forward, 150, reverse 190 R. P. M.

Regular Equipment, upon which base price is determined includes compound and steady rests, thread dial, countershaft for belt drives, large face plate and wrenches. An instruction book is regularly supplied giving directions for the installation and operation of our machines.

At Extra Cost, we can equip this Lathe with improved **taper attachment, turret** on **carriage, turret** on **shears, turret tool post, Double Back Geared Head, "Patented" Geared Head** for belt or motor drive, **extra gears** and **index plates** for special fine, coarse or metric threads, follow rest and full swing rest.