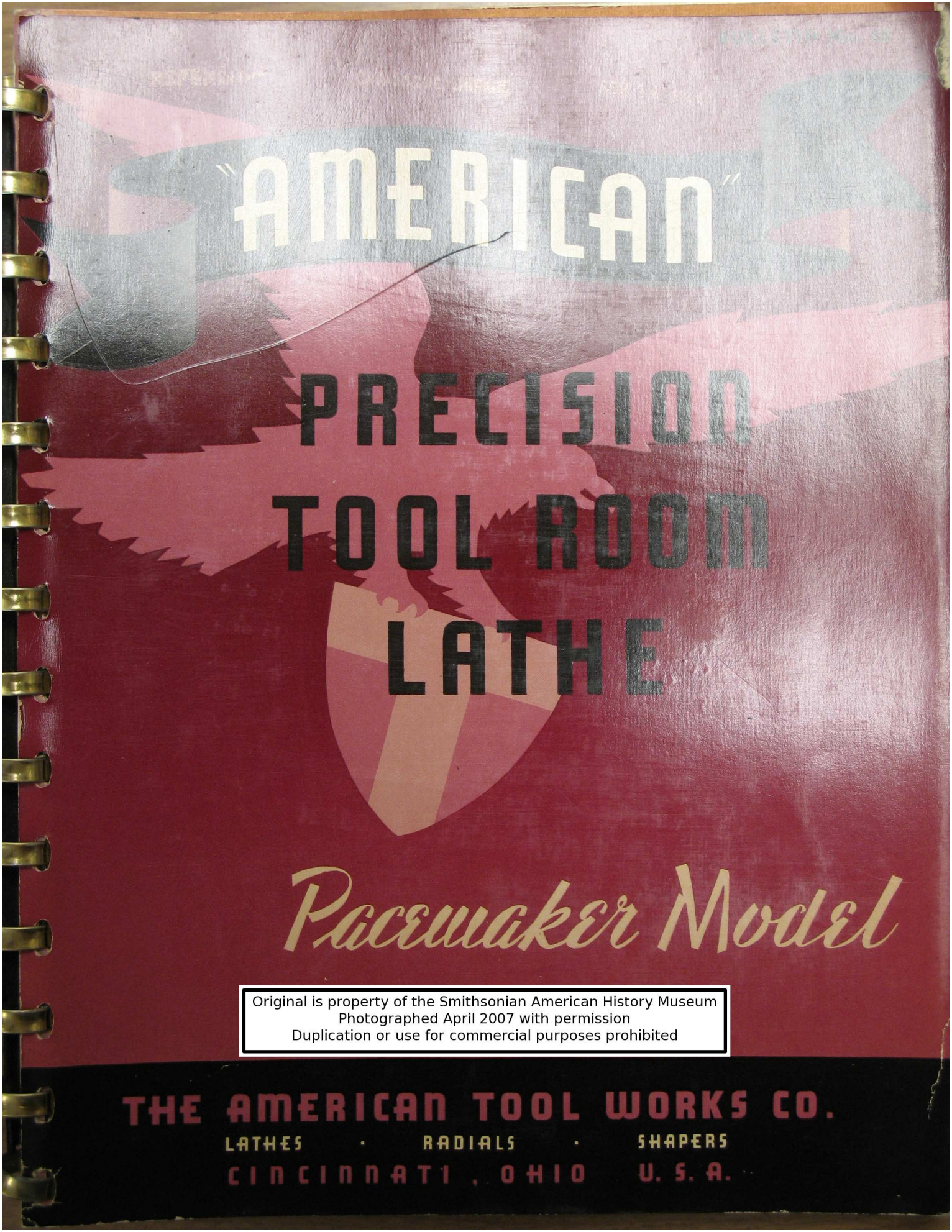


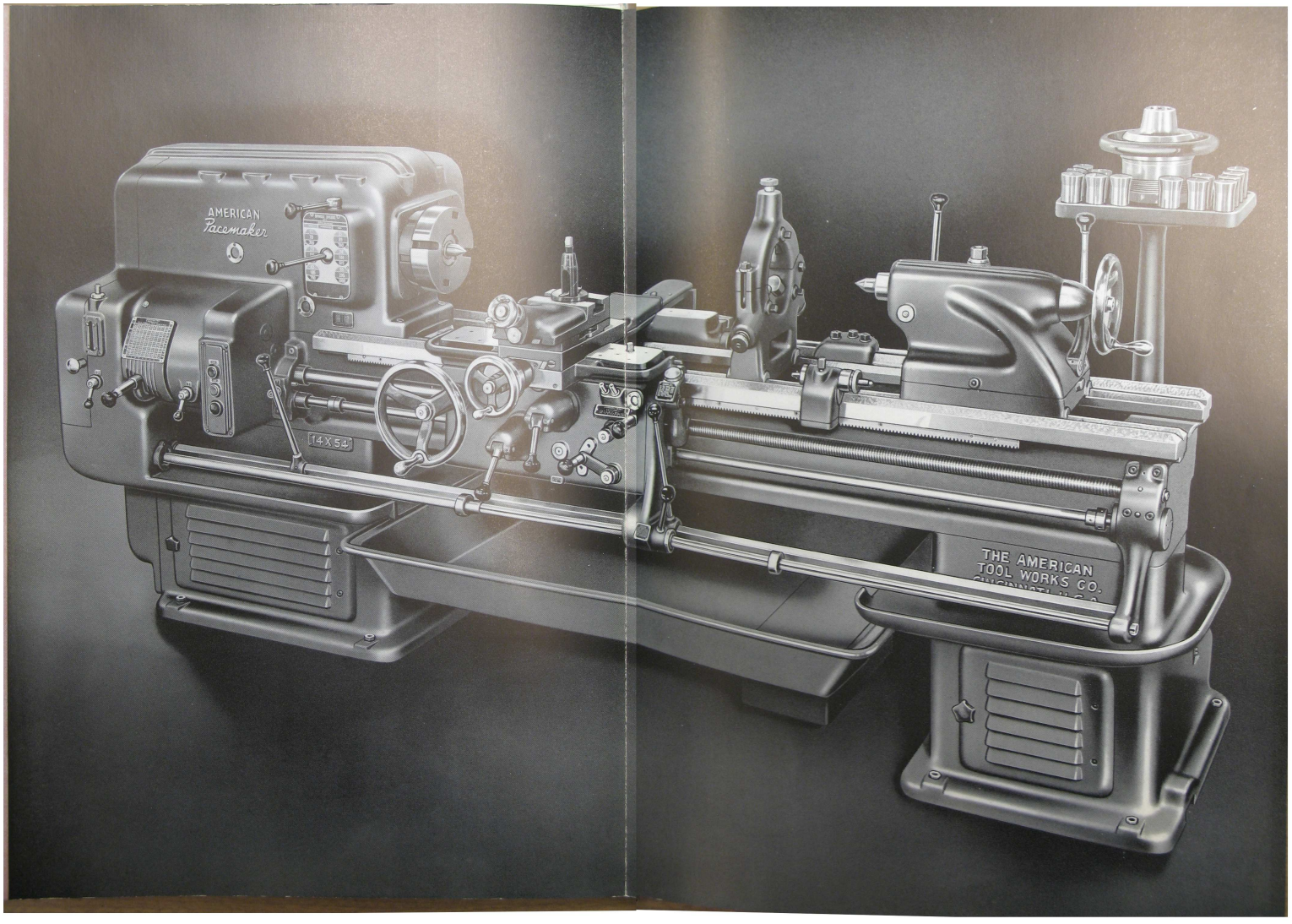
STANDARD EQUIPMENT

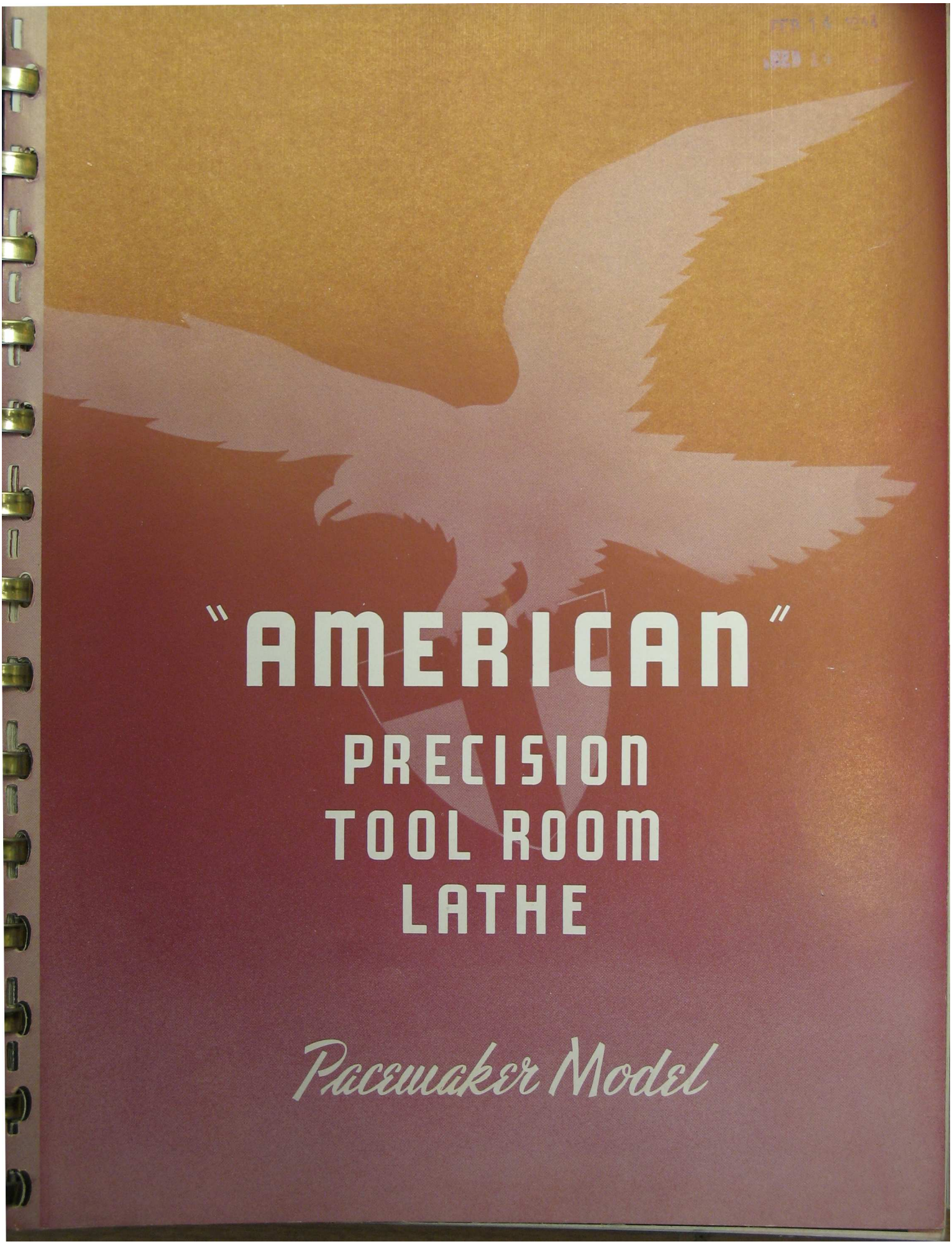
"American" Pacemaker Precision Tool Room Lathes

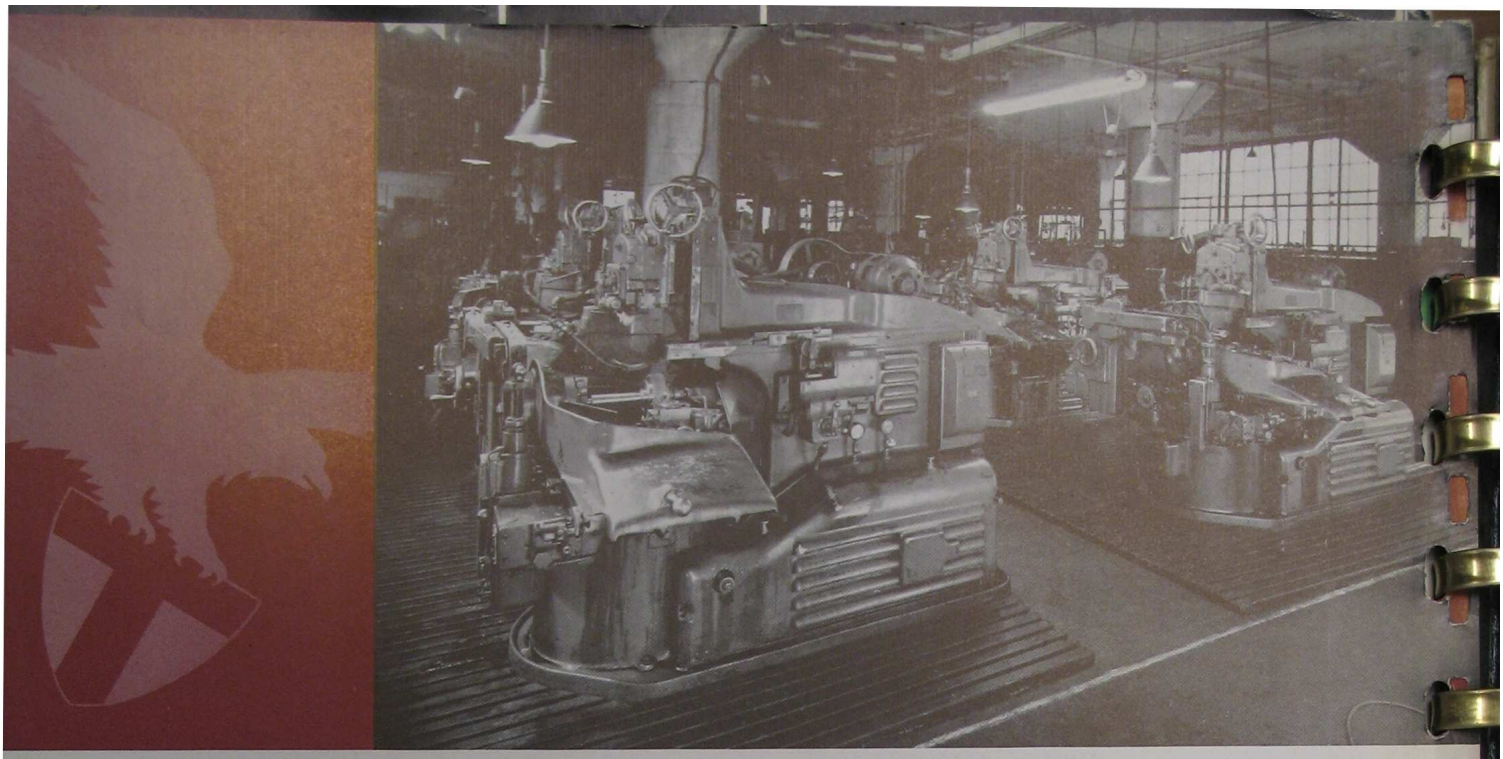
Micrometer ball threading stop.
Chasing dial.
Chip and coolant pan with reservoir.
Chromium-plated hand wheels and handles.
Compound rest and round tool post.
English leadscrew (Metric optional).
Face plates—large and small.
Knockout rod.
Mechanical apron control of spindle.
Micrometer carriage stop.
Multiple vee belt motor drive not including electrical equipment.
Precision leadscrew.
Quick clamping tailstock (lever actuated) on 14" and 16" sizes only.
Reversing leadscrew with automatic chasing stop in both directions.
Spindle nose—Cam-Lockor Standard Key Drive Taper (Optional).
Stainless steel dials and scales.
Steady rest.
Timken mounted spindle.
Wiring complete when we furnish electrical equipment.

Guaranteed Accuracy

"AMERICAN" Pacemaker Precision Tool Room Lathes are guaranteed to meet or excel the tool room lathe accuracy standards established by the Lathe Group of the National Machine Tool Builders' Association.


AMERICAN
Pacemaker
14 X 54
THE AMERICAN
TOOL WORKS CO.


"AMERICAN"
PRECISION
TOOL ROOM
LATHE
Pacemaker Model



View of Gear Grinding Department

The advent of the new "AMERICAN" Pacemaker Precision Tool Room Lathe marks the culmination of a decade of unbroken progress in lathe development. The past ten years have witnessed the greatest advancement in tool room lathe design that the industry has ever before encountered in a like period and, coming as it does, at what appears to be the end of a cycle of development, our designing engineers have had an unusual opportunity of selecting and incorporating in this new "AMERICAN" the most practicable and advantageous of advanced ideas and conceptions of design.

This lathe has established a new perspective of tool room lathe value. Its many outstanding features of advanced design—its inherent stamina—its highly developed sensitivity of control—its mechanical perfection, precision and minimized maintenance cost have definitely raised the standard of tool room lathe service and efficiency.

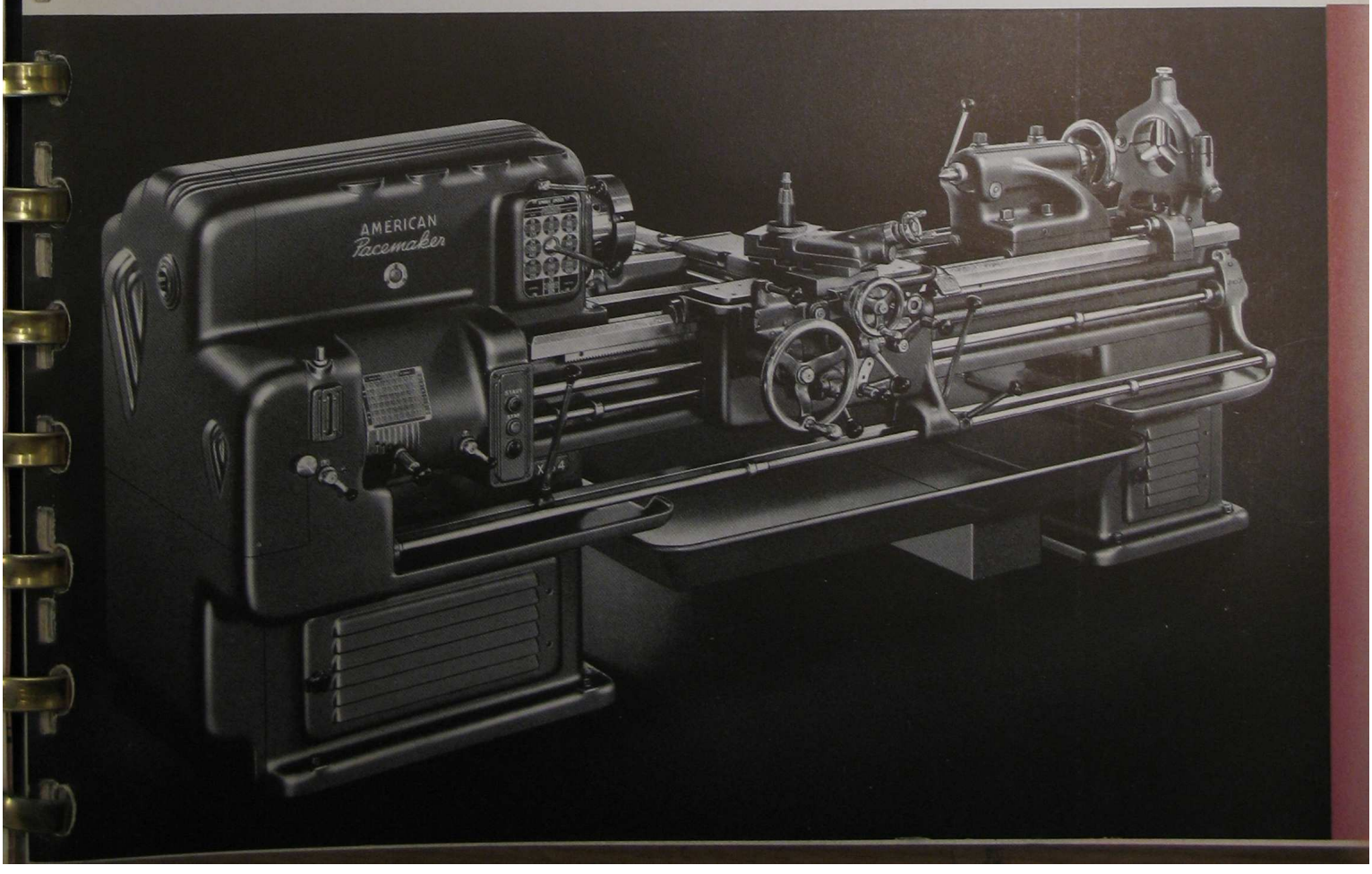
"AMERICAN" Pacemaker Precision Tool Room Lathes are entirely new in design from the drafting board to the finishing paint that is used to give them their beautiful and lasting luster. The function of every individual unit has been analyzed and studied and the unit then designed to accommodate every requirement of modern service. Nothing has been overlooked, either in design or construction, to make this the finest Tool Room Lathe that money, brains, experience and determination can produce.

OUTSTANDING ADVANTAGES

The description which follows will be devoted primarily to a portrayal of the remarkable adaptability of this new Pacemaker Lathe to tool room requirements, to those inherent characteristics which insure a permanency of its original accuracy, and to its sensitivity and responsiveness which, in themselves, are largely accountable for the universal popularity of this new lathe in the leading tool rooms throughout the world.

CONVENIENCE and EASE OF OPERATION

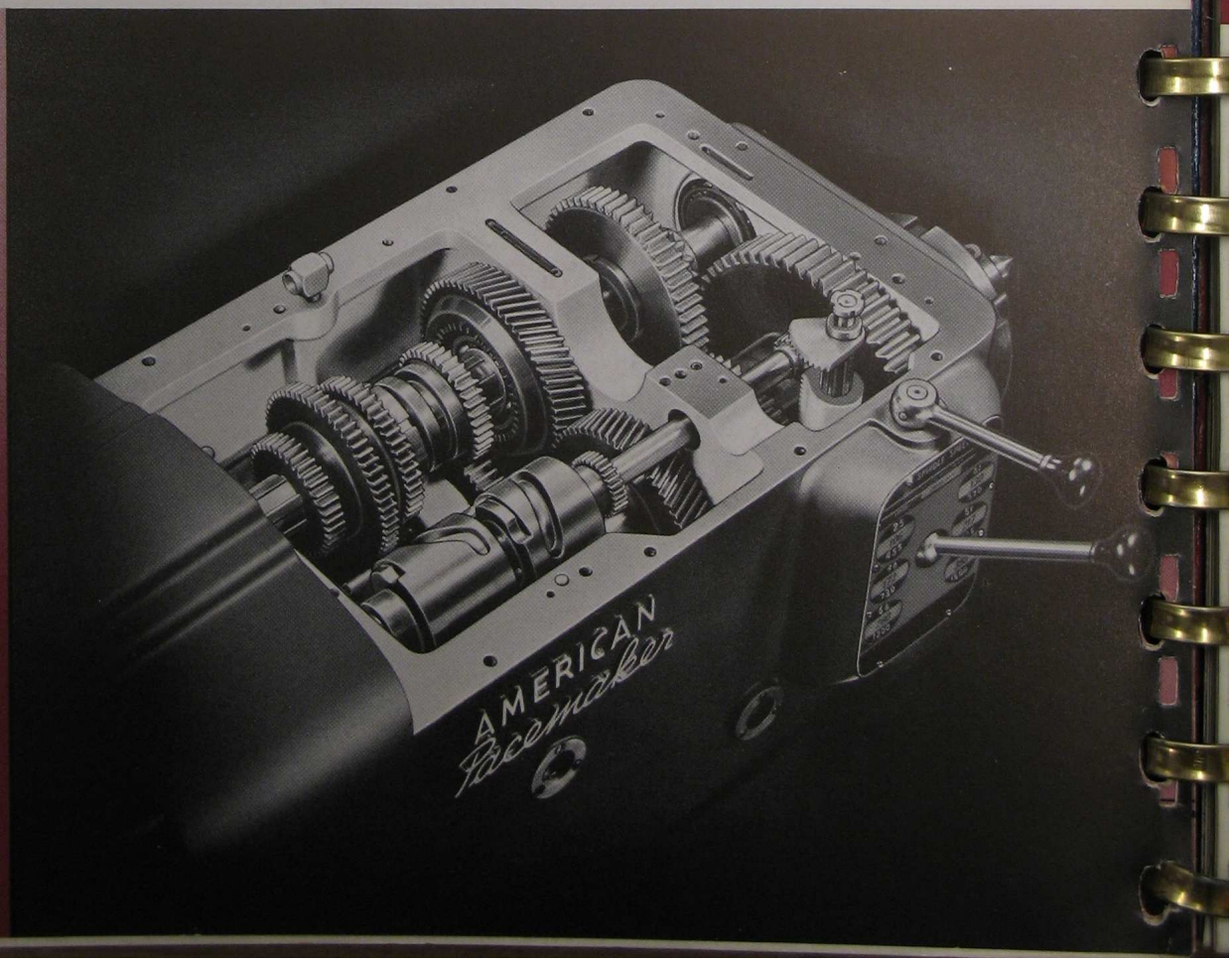
If we were asked what, in our opinion, is the outstanding requirement for a highly satisfactory tool room lathe, our answer would unhesitantly be Convenience of Control and Ease and Smoothness of Operation. Realizing the absolute necessity for these characteristics in a modern tool room lathe, we have concentrated upon and emphasized these features, perhaps above all others, in the new "AMERICAN" Pacemaker. It is next to impossible to adequately describe by words the degree of operative ease and convenience inherent in this machine—the lathe must be seen, handled and operated to fully appreciate how closely it approaches absolute perfection in this respect. To our prospective customers we say without fear of contradiction that the new "AMERICAN" Pacemaker Tool Room Lathe is unsurpassed in handling efficiency, while to ourselves, we can honestly say that in our own opinion, it is the most convenient to handle, the easiest to operate and the smoothest running tool room lathe that has ever been designed.

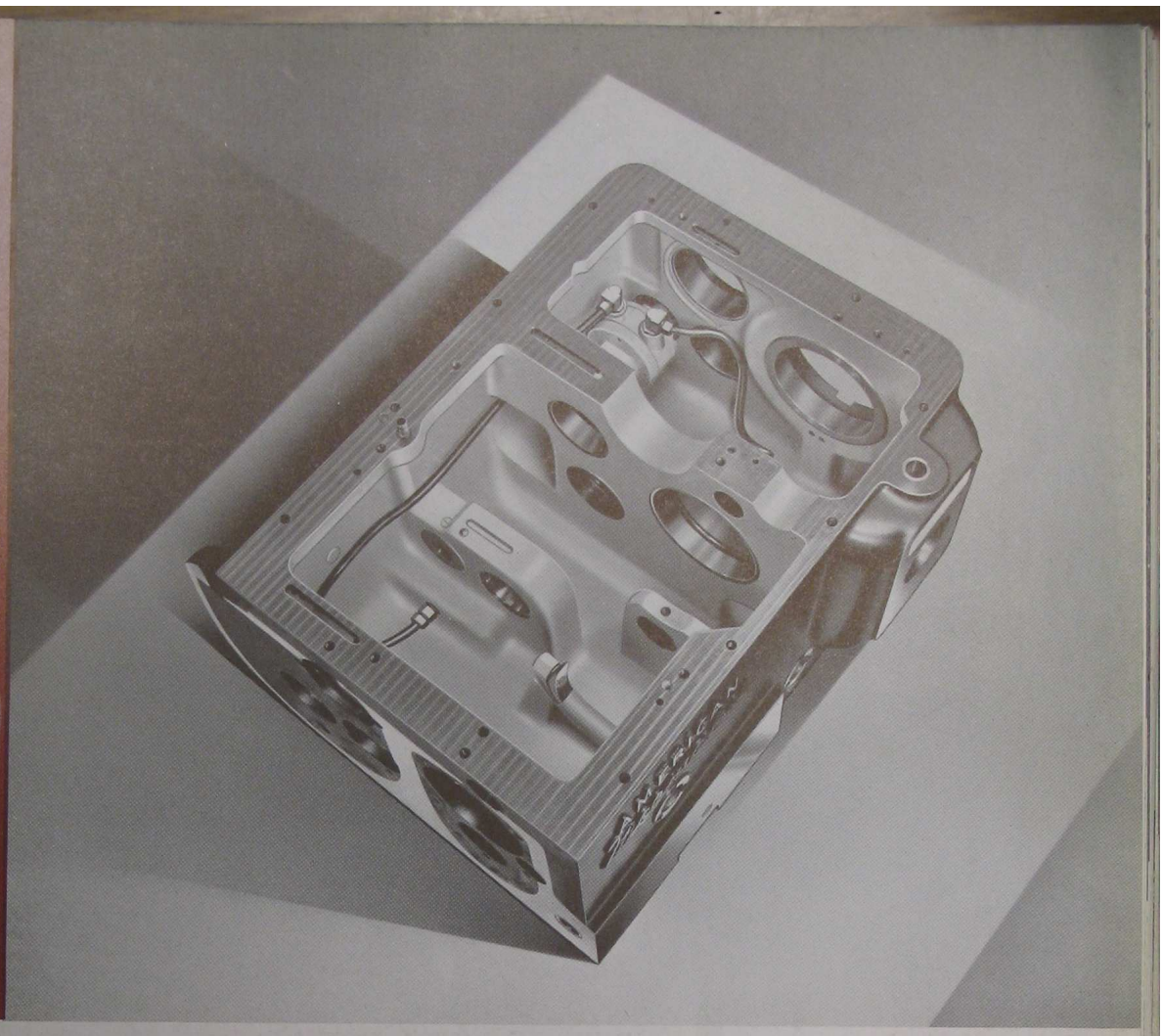


HEADSTOCK

The trend of progress in the art of metal cutting is definitely toward higher cutting speeds. What an inexcusable oversight it would be, therefore, if, in the development of a new lathe, the highest speeds of the present and probably higher speeds of the future were not adequately provided for. The headstock of the new "AMERICAN" Pacemaker provides not only for the high speeds made practicable by Cemented Carbide cutting tools, but supplies an ideal range of lower spindle speeds for the great variety of operations not included in the category of high-speed work. Twenty-seven (27) spindle speeds are provided, in geometric progression, which may properly be divided into three ranges—a low-speed range, an intermediate range and a high-speed range. The low and intermediate ranges are secured thru hardened spur gears, while the high-speed range is thru wide-faced, 20° helical gears. All gears are finish ground except the large slow speed spindle gear on 18″ and 20″ sizes which, owing to its size, is beyond the capacity of our Pratt & Whitney gear tooth grinders. On these three sizes this large gear is finished lapped on a "Michigan" Cross Axis gear lapping machine.

Headstock Assembly



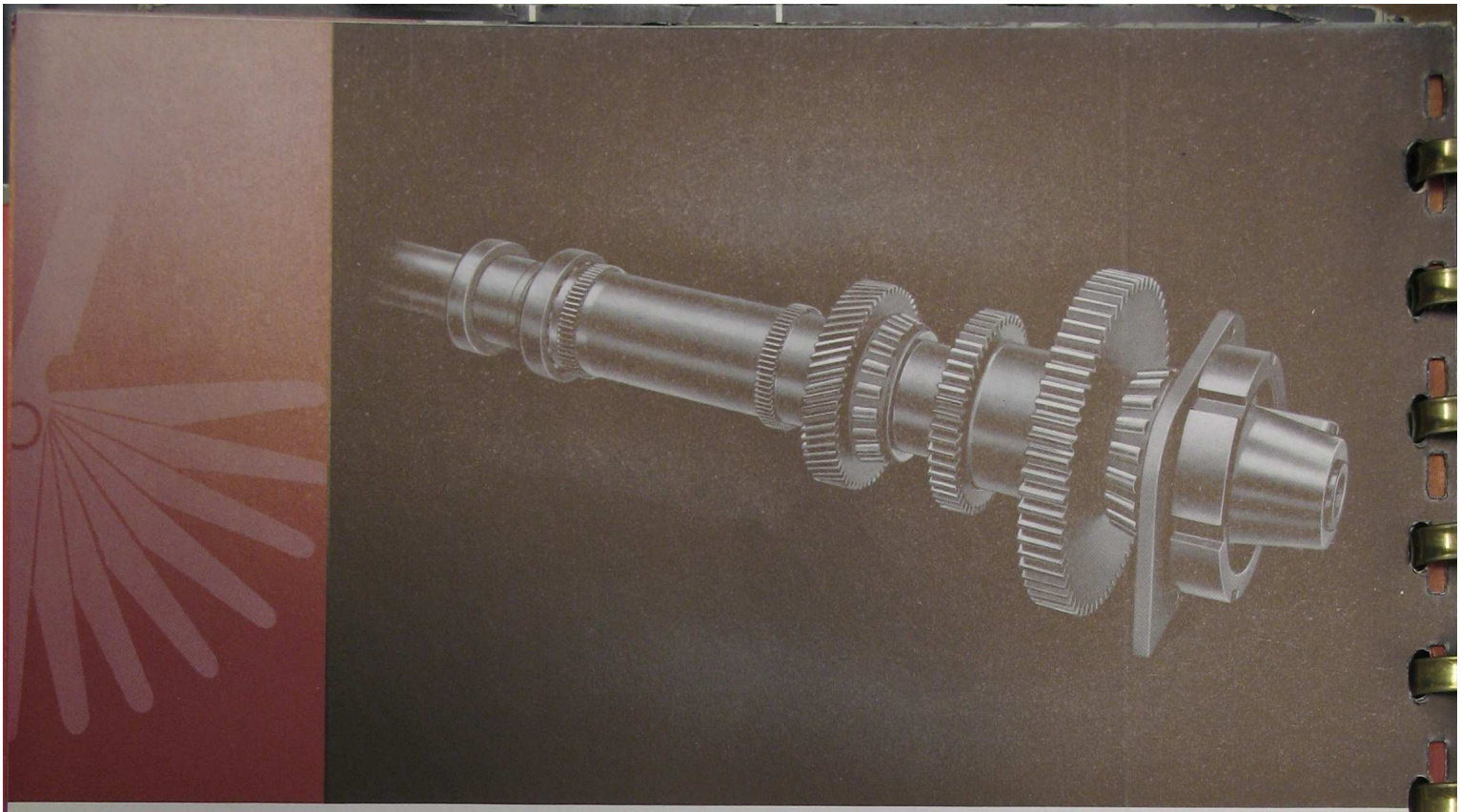


Headstock Frame showing Transverse Ribbing and Intermediate Supports for Spindle and Shafts

All speeds are selective, and in no way is it possible to simultaneously engage conflicting gear runs. Should the prospective customer feel that he does not require the close speed increments provided by the full range of 27 spindle speeds, the headstock mechanism may be simplified to produce either 9 or 18 speeds, with a corresponding reduction in price.

100% ANTI-FRICTION

There are no sleeve or plain bearings in the head mechanism. Only short, stub shafts are used and all are mounted on anti-friction bearings. This construction brings the shaft bearings close to the gears when in the driving position and minimizes the tendency to deflect under load. Shafts are made from heat-treated alloy steel, are multiple splined and finished ground on latest model spline grinders.



Spindle Assembly showing Selective Triple Drive

SPINDLE

The spindle, which is of unusually liberal proportions, is a hammered forging made from special, high tensile alloy spindle steel and is mounted in large Timken Zero Precision Taper Roller Bearings at the front and center and floats in a ball bearing at the rear. This type of spindle mounting has proven to possess unquestionable merit for the most advanced lathe service. The front and center bearings are opposed to provide for easy adjustment without removing the head cover and to absorb spindle thrusts in either direction, thus completely eliminating the necessity for the usual thrust washers at the rear bearing. The center bearing also supplies a rigid support for the spindle midway between the front and rear bearings and prevents deflection even under the heaviest loads.

A very convenient and novel means is provided for adjusting the front and intermediate spindle bearings. The removal of a small plate at the rear of the head exposes the adjusting shaft, the movement of which actuates a worm and worm wheel which in turn actuate the adjusting collar. This adjusting mechanism is self-locking, resulting in positive and lasting adjustment. One turn of the adjusting shaft supplies .001″ adjustment to the bearings.

The spindle nose is exceptionally large and is regularly provided with the almost universally accepted Standard Key Drive Taper Nose, although the Cam-Lock type of nose will be furnished on all sizes when preferred and specified by the purchaser.

All gears employed throughout the entire head mechanism are made of alloy steel, oil hardened. In addition to being accurately machined on the very latest and most modern gear cutting equipment, they are finished ground for accurate tooth spacing and profile. The entire head transmission is located in the headstock bowl, all transmission mechanism being eliminated from the cover.

AUTOMATIC OILING

The entire mechanism of the new headstock is automatically oiled by a pump system which forces thoroughly filtered oil directly to all the bearings, including the spindle bearings, and sprays oil onto the tranmission gears. The entire starting clutch and brake mechanism is also oiled directly by the pump system. The oil supply is carried in the bowl of the headstock below the gear line to prevent churning of the oil by the gears when revolving at high speeds. This is an important feature which is deserving of consideration, for, experience has shown that churning of the oil by immersed gears running at high speeds not only generates heat but rapidly destroys its lubricating efficiency. A reversing type, packless pump driven from the initial drive shaft forces the oil through a quick-cleansing metal oil filter to a flow indicator at the front of the head, which constantly assures the operator that the oiling system is functioning. An oil level gauge, also at the front of the headstock, shows at a glance the amount of oil in the reservoir.

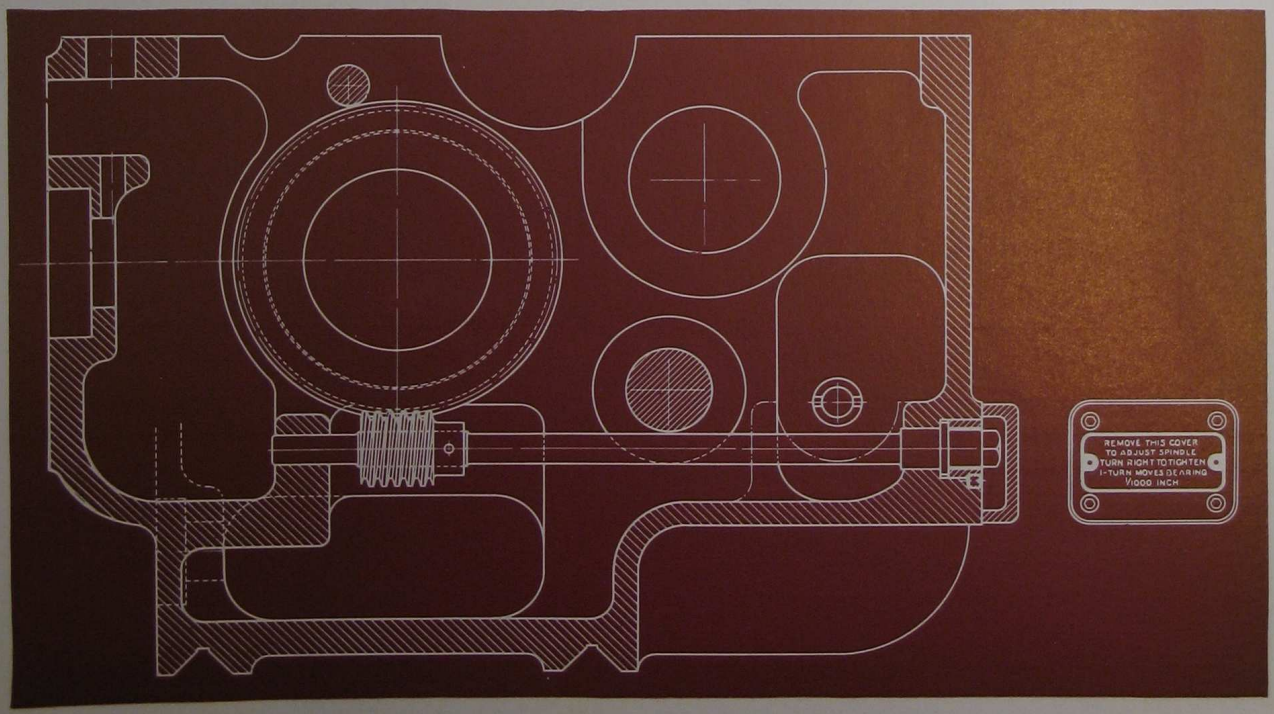
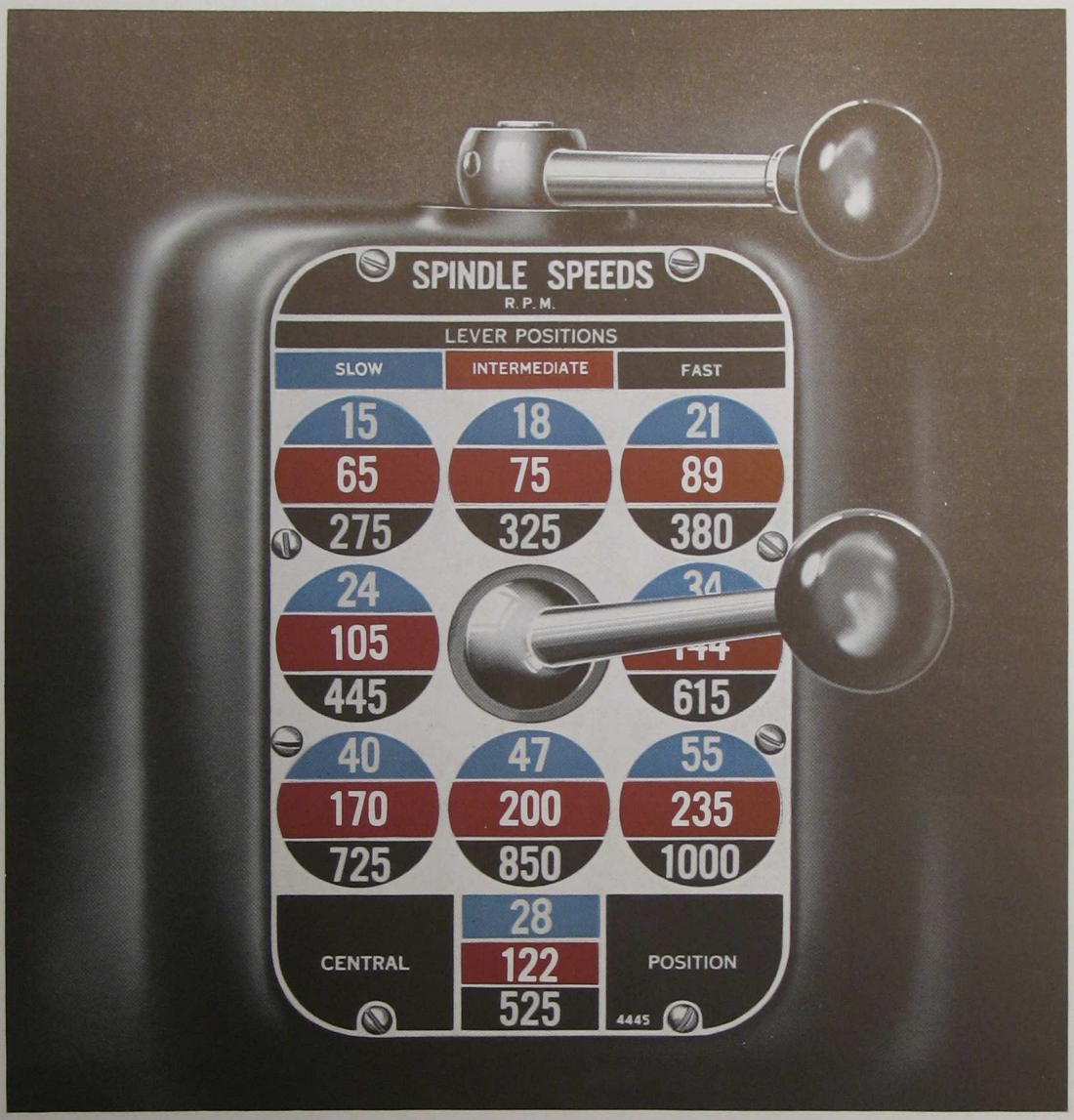


Diagram showing means for adjusting Spindle Bearings

INSTANTANEOUS DIRECT READING SPEED CONTROL



Perhaps the predominant contributing factor to the unprecedented convenience and ease of operation of this new lathe is the newly developed direct reading speed control. This is one of the outstanding features of this new design and is by far the simplest, fastest and most direct reading mechanical control ever furnished on a lathe.

On the 18-speed and 27-speed heads only two levers are used to secure the entire range of spindle speeds, while on the 9-speed head, the entire range is secured thru one lever. These levers are direct reading, thus eliminating the necessity of the operator referring to speed or index plates or of keeping lever positions in his mind while changing speeds. With this new speed control, operators can make speed changes instantly and without confusion or error.

STARTING CLUTCH and BRAKE

This very important unit of the new Pacemaker Lathe is unquestionably an outstanding example of masterly machine tool design. It is a highly developed, complete and compact unit, mounted on anti-friction bearings. It is solidly bolted and doweled to the head, provides an outboard bearing for the initial driving shaft and carries a patented hard plate multiple driving clutch and brake, operated by either of two levers, one located at the head, the other attached to and traveling with the apron. This entire unit is automatically oiled by means of the pump system with pure, filtered oil. The outstanding characteristics of this mechanism are its tremendous pulling power, its dependability and its extreme ease of operation. The clutch, itself, is composed of a series of plates made from the best saw blade steel, with each alternate plate die formed to cause it to spring away from the mating flat plate the instant the pressure of engagement is removed. This action completely frees the adjacent plates of contact when the clutch is released and overcomes any tendency for the plates to drag and cause spindle creepage. This clearance of the plates also permits the oil to flow in ample volume to thoroughly lubricate the mechanism and to carry away any heat that might develop under severe service. Adjustment for the driving clutch is very convenient. The adjusting mechanism is located outside the headstock at the end of the initial drive shaft. The multiple disc brake is self-adjusting for wear.

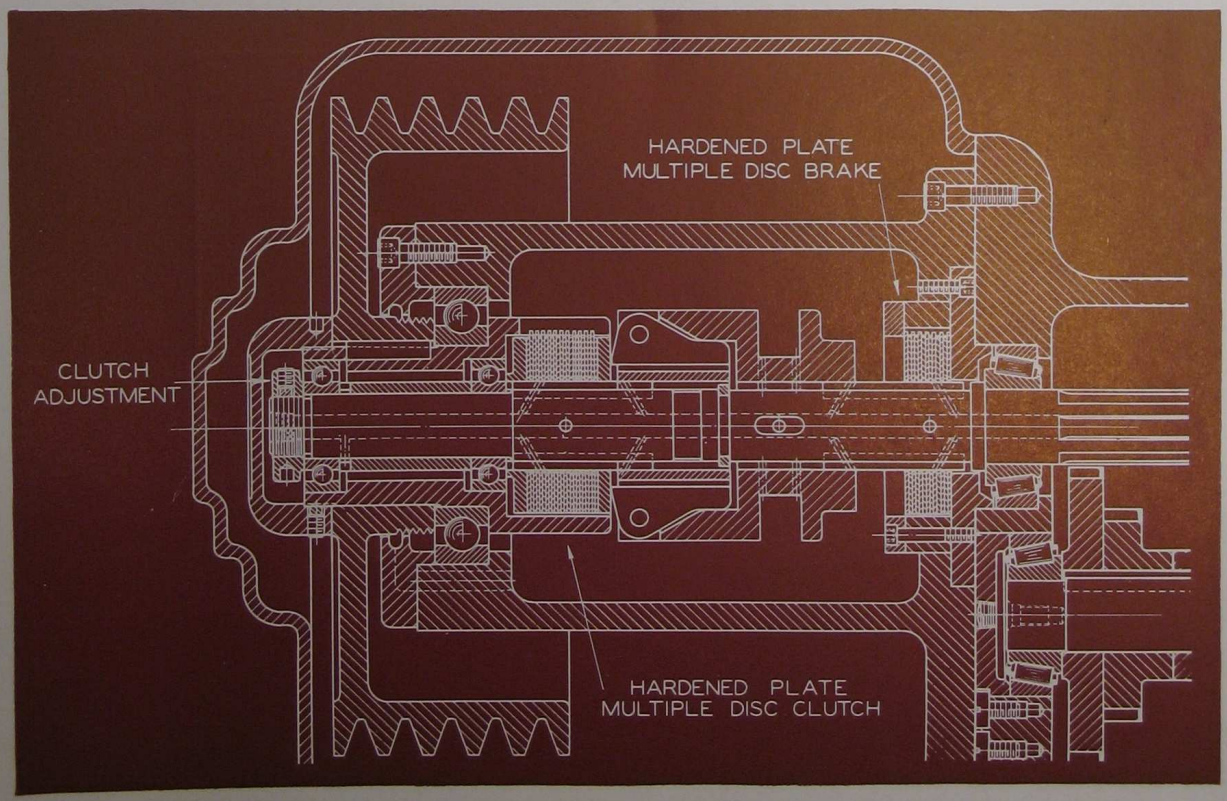


Diagram of Clutch and Brake Unit

TYPE OF SPINDLE NOSE OPTIONAL

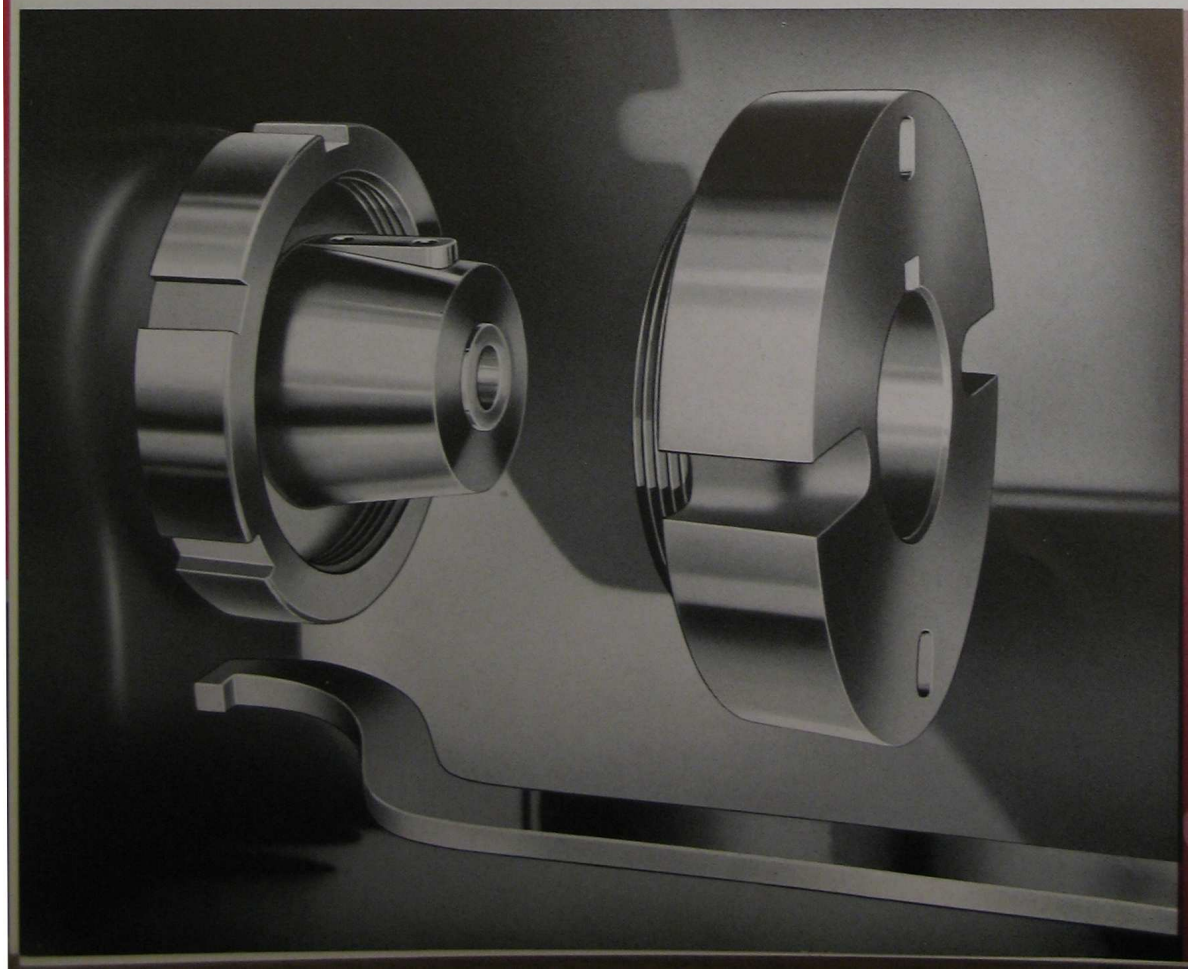
Two types of spindle noses are offered for the customer to choose from. The character of the work to be done by the lathe should be carefully considered, and the type of spindle nose selected that is best suited to the service.

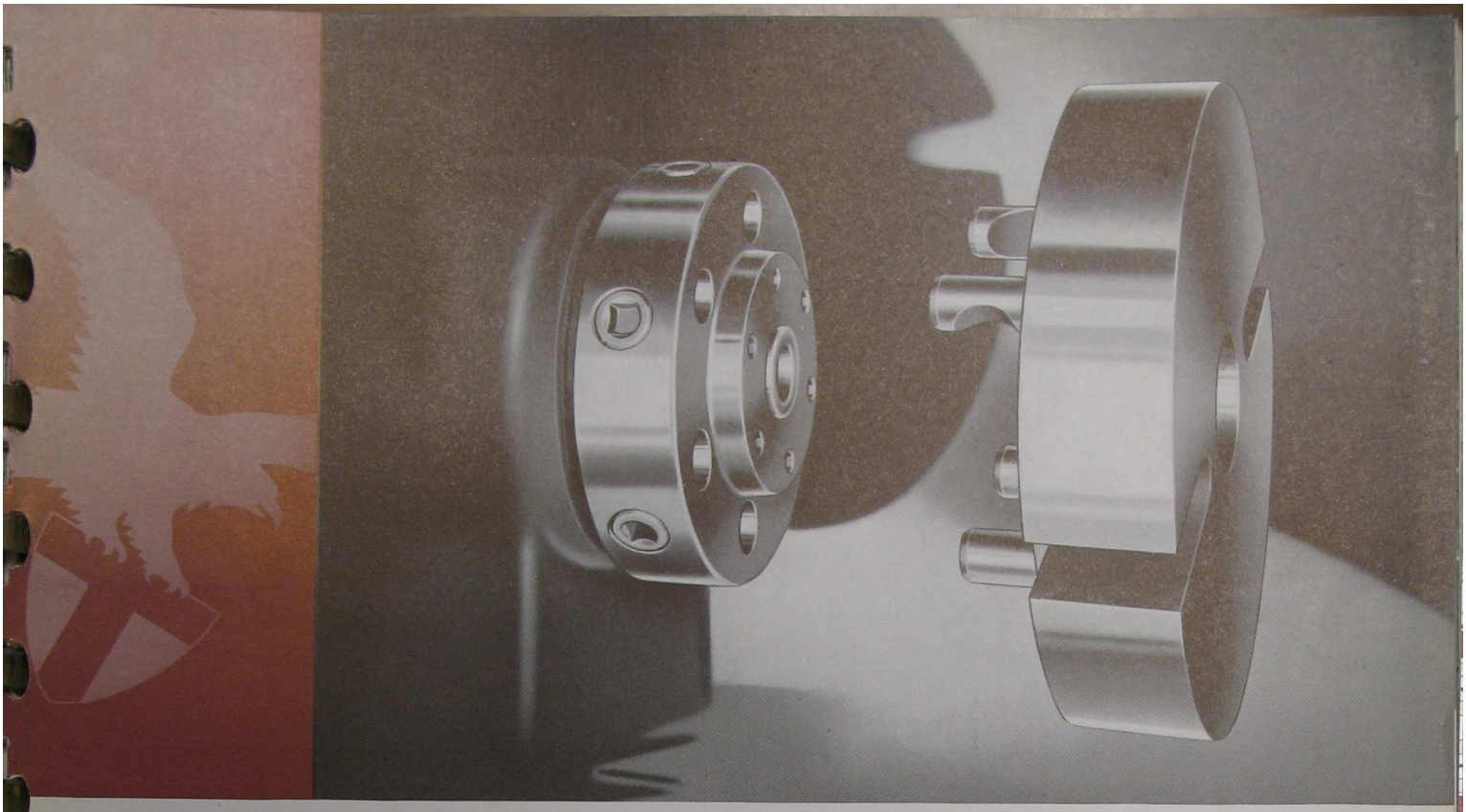
Type No. 1. Standard Key Drive Taper Nose

This type of nose is the most recent development in spindle noses and is offered for all sizes of "AMERICAN" Pacemaker Lathes. For the more severe classes of service it is preferable to the Cam-Lock type. It is very simple in design, having but a few component parts, is substantial and long lived. It consists primarily of a locating and seating taper for guiding and seating chucks, face plates and fixtures, has a substantial driving key and a large locking collar for securely holding the fixture in place. Application and removal of chucks, face plates and fixtures are accomplished quickly and with the greatest safety, as the taper prevents the fixture from falling when the locking collar is released.

This type of nose is offered in two sizes: No. 1 for 14″ and 16″; No. 2 for 18″ and 20″ lathes.

Standard Key Drive Taper Nose





Cam-Lock Spindle Nose

Type No. 2. "Cam-Lock" Spindle Nose

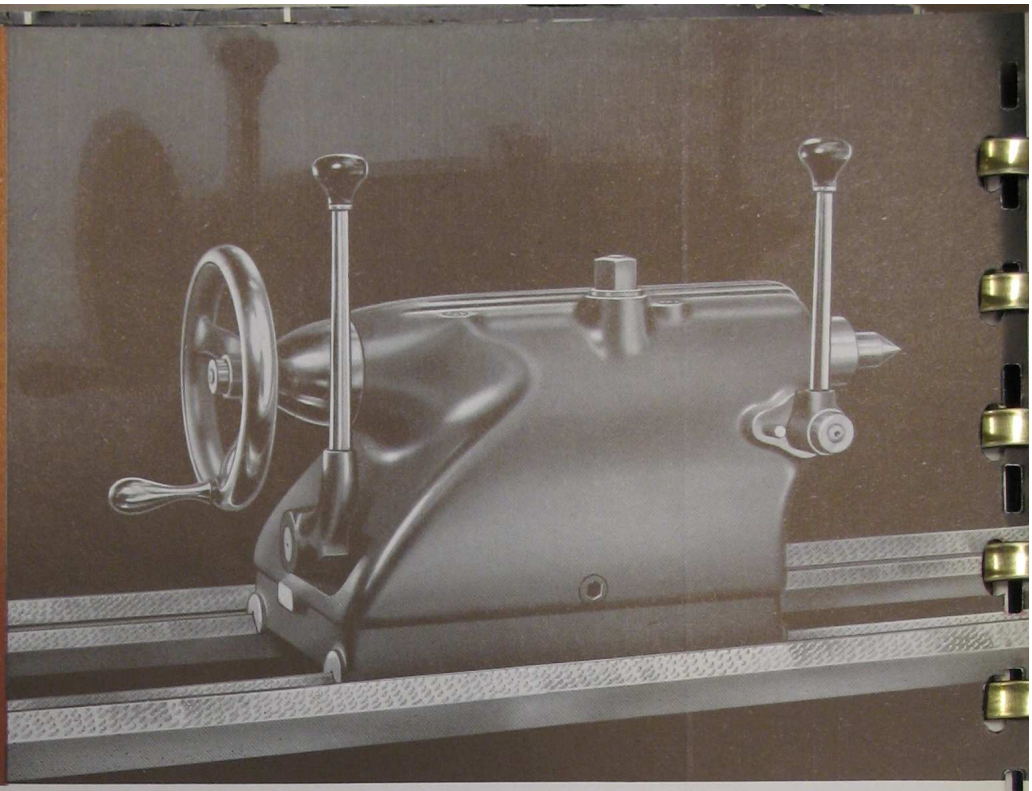
The Cam-Lock spindle nose is offered for all sizes of lathes up to and including the 20″ size. This type of nose offers quick and convenient means for applying and removing chucks and face plates with emphasis upon convenience of clamping such fixtures to the nose.

The 6″ diameter nose is used on 14″ and 16″ sizes. On 18″ and 20″ sizes the 8″ diameter nose is used. Chuck manufacturers supply steel body chucks to fit directly to Standard Key Drive Taper and Cam-Lock noses without using adapter plates, but the type and size of spindle nose must be specified when ordering chucks.

OPTIONAL SPINDLE SPEED RANGES

14″ — 16″									18″—20″								
27 Speeds			18 Speeds			9 Speeds			27 Speeds			18 Speeds			9 Speeds		
Low	Med.	High	Low	Med.	High	Low	Med.	High	Low	Med.	High	Low	Med.	High	Low	Med.	High
15	23	30	17	25	34	21	31	42	12	18	24	13	20	26	17	25	34
18	26	36							14	21	28						
21	31	42	21	31	42				17	25	34	17	25	34			
24	37	48	27	40	54	34	51	68	20	30	40	21	32	42	27	41	54
28	43	56							23	35	46						
34	51	68	34	51	68				27	41	54	27	41	54			
40	60	80	43	66	86	55	83	110	32	48	64	34	51	68	44	65	88
47	70	94							37	56	74						
55	83	110	55	83	110				44	65	88	44	65	88			
65	97	130	70	106	140	89	133	178	51	77	102	55	82	110	71	106	142
75	113	150							60	91	120						
89	133	178	89	133	178				71	106	142	71	106	142			
105	157	210	114	172	228	144	217	288	84	126	168	90	135	180	115	174	230
122	183	244							98	148	196						
144	217	288	144	217	288				115	174	230	115	174	230			
170	256	340	185	280	370	235	355	470	135	203	270	145	217	290	186	279	372
200	300	400							159	238	318						
235	355	470	235	355	470				186	279	372	186	279	372			
275	415	550	300	455	600	380	570	760	220	330	440	235	353	470	304	455	608
325	480	650							258	388	516						
380	570	760	380	570	760				304	455	608	304	455	608			
445	670	890	485	730	970	615	925	1230	360	540	720	385	580	770	495	745	990
525	780	1050							420	630	840						
615	925	1230	615	925	1230				495	745	990	495	745	990			
725	1090	1450	790	1200	1580	1000	1500	2000	580	870	1160	620	930	1240	800	1200	1600
850	1270	1700							680	1020	1360						
1000	1500	2000	1000	1500	2000				800	1200	1600	800	1200	1600			

QUICK CLAMPING TAILSTOCK



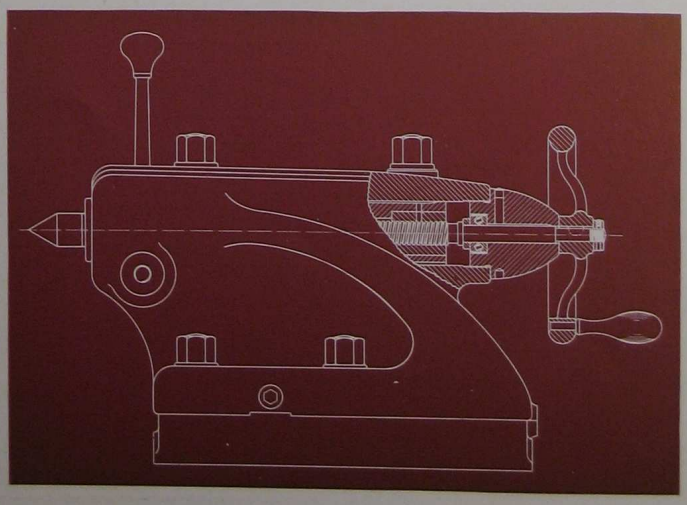
Quick Clamping Tailstock. (Fig. No. 1)

On 14″ and 16″ Tool Room Lathes a quick clamping (lever operated) tailstock is furnished as standard equipment. The purpose of this type of tailstock is to provide faster and more convenient clamping and unclamping and thus to increase the ease and convenience of operation. Clamping and unclamping are accomplished through a convenient lever which actuates the front and rear clamps simultaneously through an equalizing mechanism which in turn insures equal clamping pressure at the four contact points. An auxiliary clamping bolt is also provided for extra clamping effort if needed for severe work.

On 18″ and 20″ sizes a 4-bolt tailstock is regularly furnished.

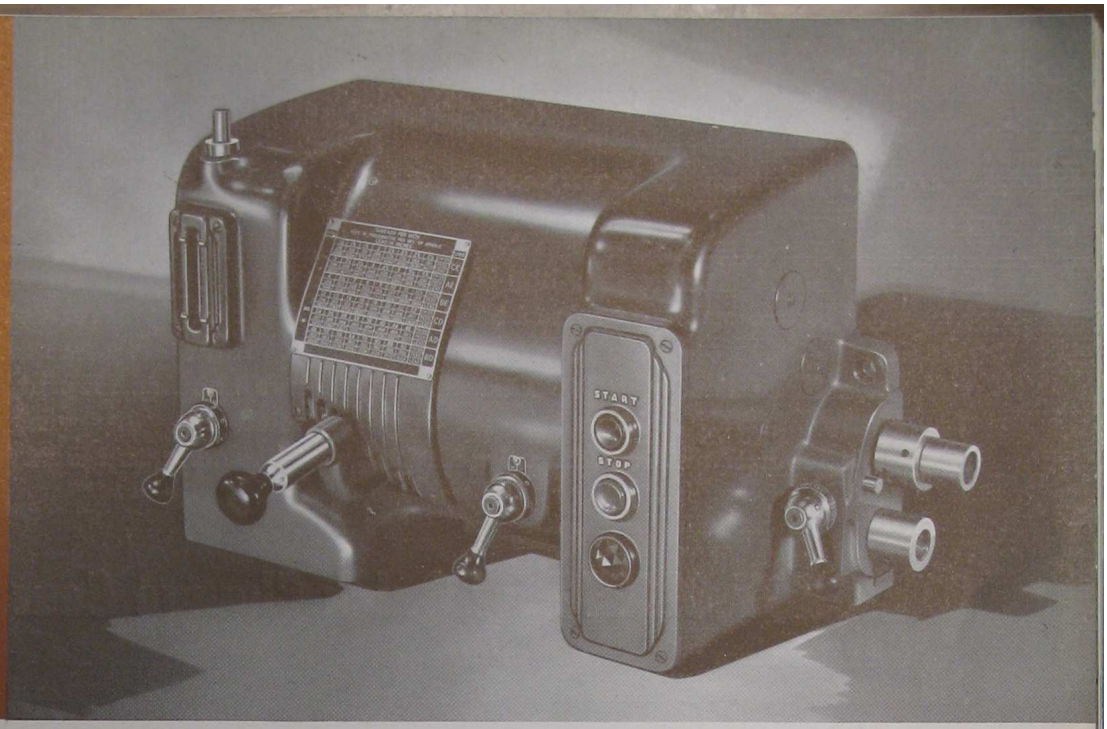
Both of these tailstocks have large diameter extension barrels, giving clearance to the carriage bridge for short work. The barrels are solid, the spindles in each case being clamped by a double plug binder which clamps without affecting the spindle alignment.

The spindles are made over-size and carry a large center. The tailstock screws are provided with ball thrust bearings for absorbing the thrusts imposed.



Standard 4-Bolt Tailstock. (Fig. No. 2)

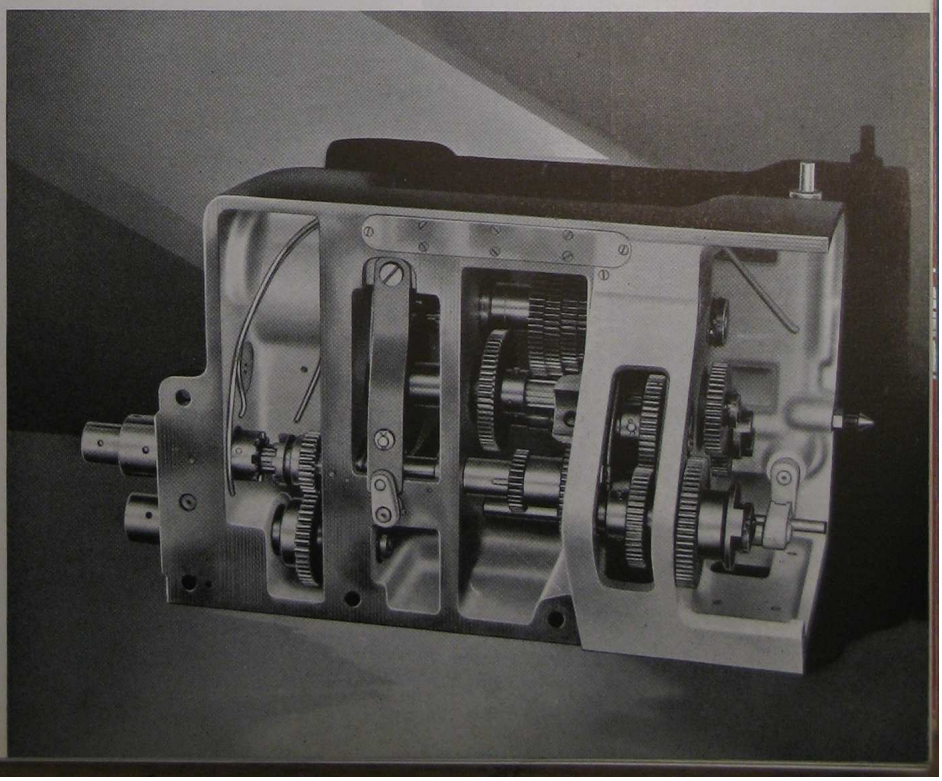
QUICK CHANGE GEAR MECHANISM



No. 1. Quick Change Gear Box—Exterior

The new quick change gear mechanism designed for "AMERICAN" Pacemaker Lathes is one of the most universal mechanisms of its kind ever developed. It cuts every standard thread ordinarily used without transposing or adding gears, and by the substitution of a very few gears can be quickly converted to metric, or vice versa. Means is also provided thru the addition of a few gears to the quadrant and first stud of the gear box to cut either a coarser or finer range than standard, also diametral and module pitches. To secure the full range of standard threads and feeds, however, no substitutions or additions are required as all changes are made in the gear box. On the 14″ and 16″ sizes a standard range of 48 threads 1½ to 92 and feeds from .002″ to .118″ is furnished, while on the 18″ and 20″ sizes, a range of 60 threads and feeds is provided from 1 to 60 per inch and feeds .003″ to .200″.

No. 2. Quick Change Gear Box—Interior



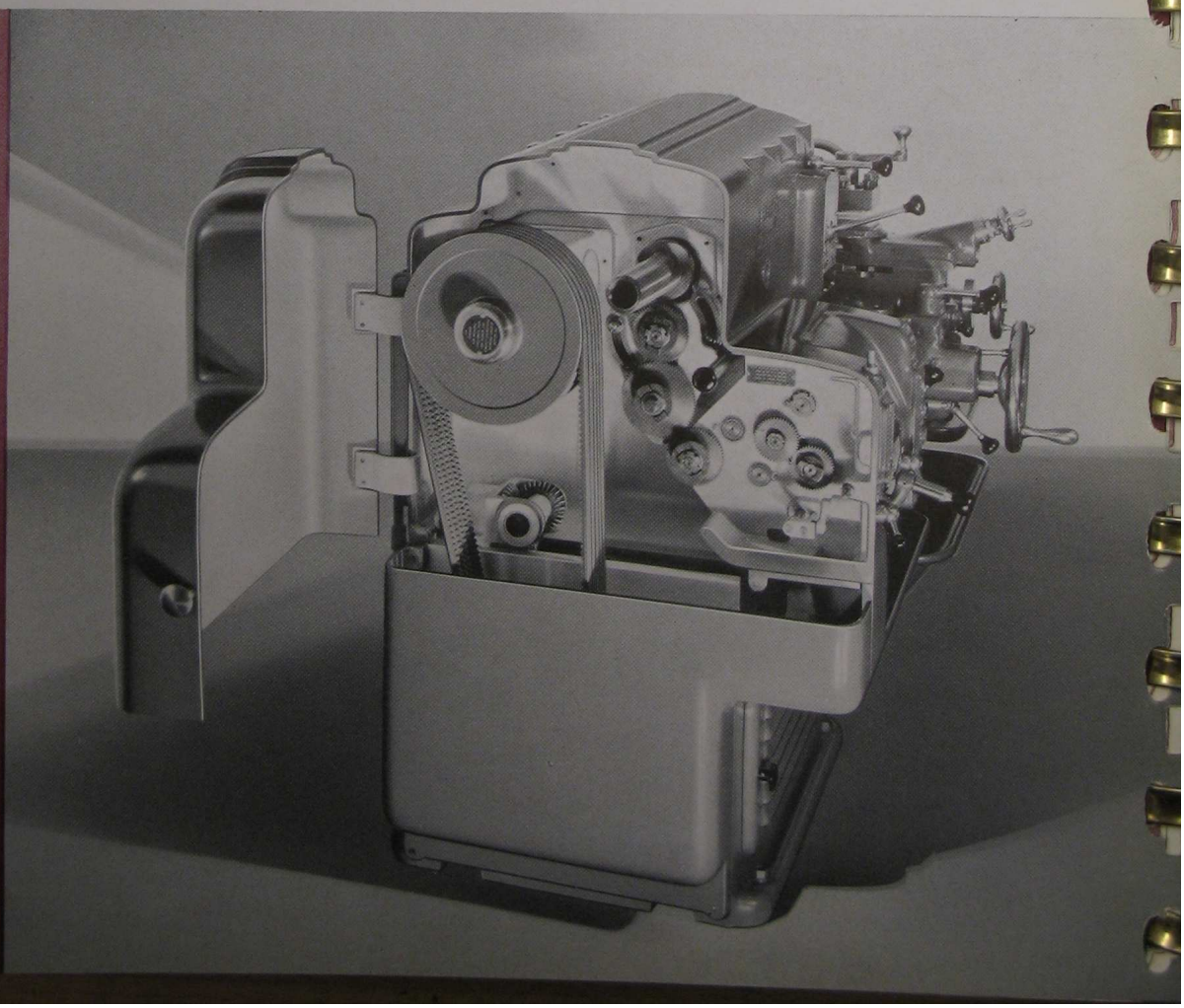
Means is provided for the addition of extra gears for cutting special threads and pitches.

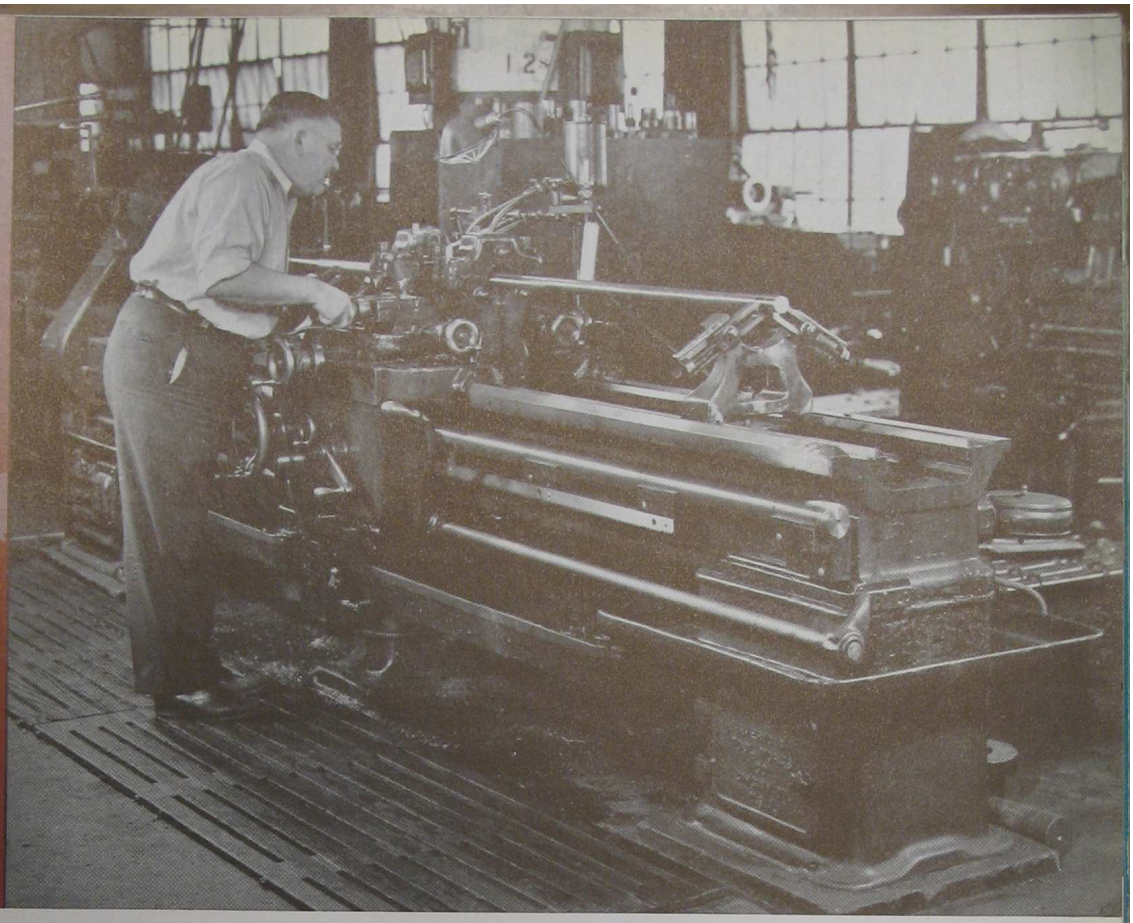
This new quick change gear box is a complete unit of the tumbler gear type, securely attached to the outside of the bed where it is most easily accessible. It is 100% anti-friction in design and contains only heat-treated alloy steel gears and shafts. Likewise, the gears from the spindle to the quick change box are all anti-friction mounted. The tumbler itself is locked in its various positions by a spring locking pin which materially reduces vibration and wear between the cone and tumbler gears.

ONE-SHOT OILING for Quick Change Gear Box

An instantaneous "one-shot" plunger oiling system provides adequate lubrication to the entire gear box. Actuation of the plunger supplies sufficient oil to the distributing reservoir to thoroughly lubricate the entire mechanism for a whole day's work.

End Door Open—Exposing All Head End Mechanism





Chasing Precision Leadscrews

PRECISION LEADSCREWS

One of the major requirements of the modern tool room lathe is a precision threading mechanism. This requirement is met in the "AMERICAN" by a precision quick change gear threading mechanism including precisely cut and accurately machine-lapped gears and, as regular equipment without additional cost to the purchaser, a precision, minimum error, tested and guaranteed leadscrew.

Our precision leadscrews are produced on a highly specialized, recently developed, super-accurate leadscrew lathe which has been engineered, designed and developed for the express purpose of producing leadscrews of great precision. The utmost care is exercised in the production of these screws, and an exhaustive accuracy test is made upon completion, a record of which is retained for reference and upon which our accuracy guarantee is based.

All precision leadscrews are first roughed out to within approximately .015″ of the finished size and are then removed from the lathe and set up on end to season. After seasoning they are returned to the leadscrew lathe and finished from the master screw, after which they are carefully tested for accuracy on a machine built especially for that purpose, which measures the pitch of the screw in .0001″. Readings can be taken at

each pitch, inch or multiple, by means of precision gauges, clock indicators, and a master nut. Every leadscrew is tested separately and individually in this machine, and, in addition, each screw, after it has been installed in the lathe, is again tested for the production of accurate threads. Consequently, we have no hesitancy in guaranteeing the accuracy of our leadscrews for the most exacting tool and gauge work.

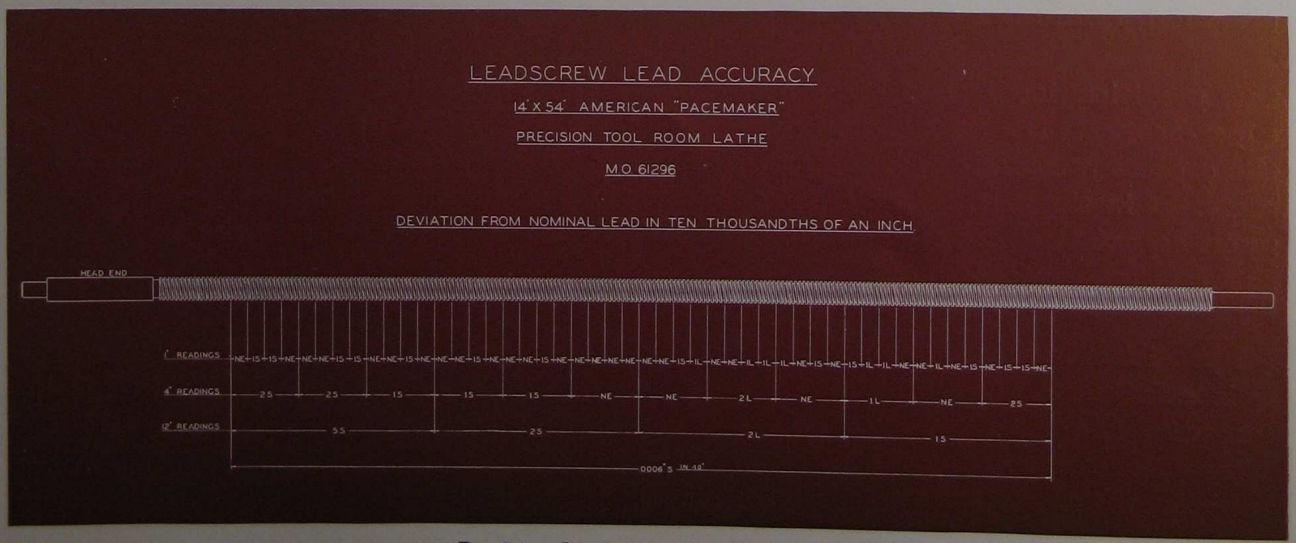
INDEPENDENT LEADSCREW and FEED ROD

There can be no conflict between the leadscrew and feed rod. These units are entirely independent of one another and can not function simultaneously. A small, easily operated lever at the right-hand side of the box selectively engages either the leadscrew or feed rod. When the leadscrew is in operation, the feed rod is at rest; consequently, there is no waste motion with its resultant wear and power consumption. The original accuracy of the leadscrew is thus preserved, resulting in accurate functioning over a long period of service.

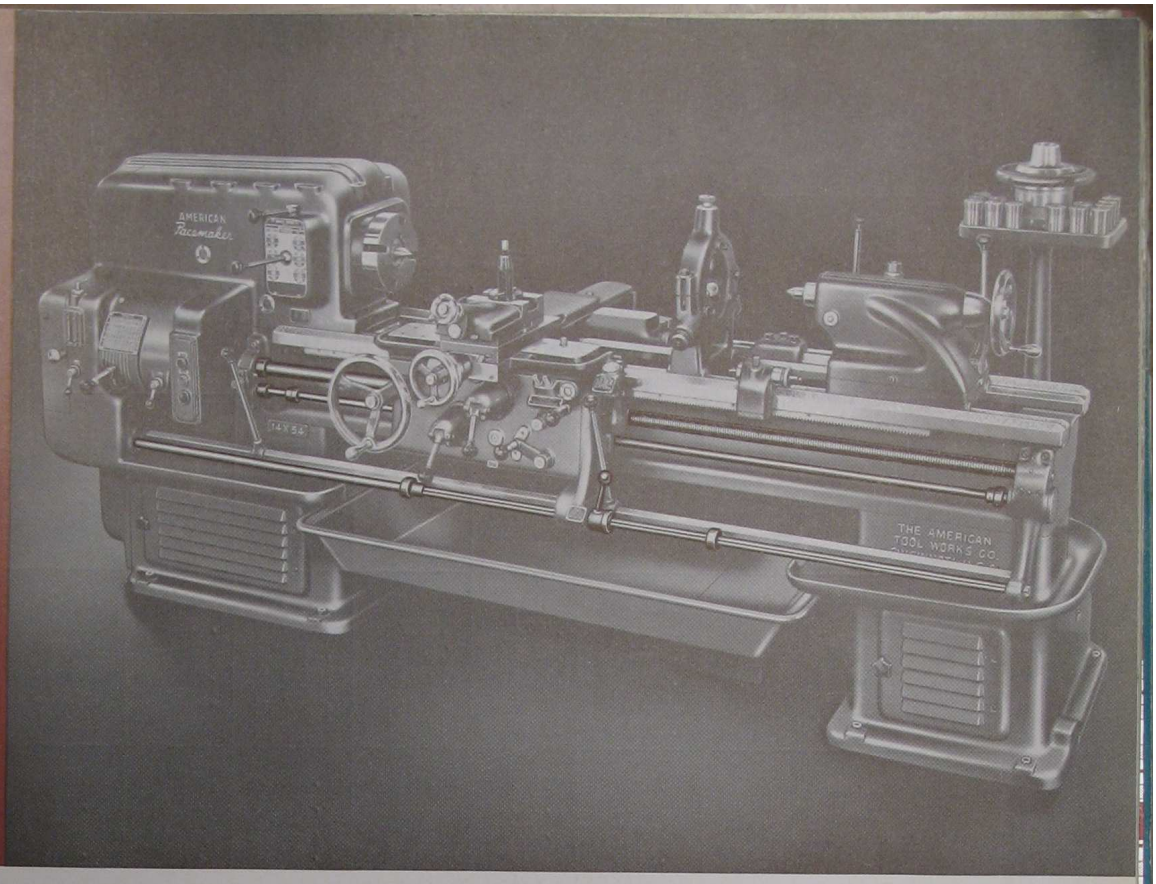
The feed rod is regularly supplied with adjustable stop collars for automatically stopping the carriage traverse in either direction.

CARRIAGE STOPS and REVERSE (Leadscrew Reverse)

A highly developed and perfectly dependable carriage stop and reverse is regularly furnished, which stops the carriage and reverses its motion through a two-sided, single tooth clutch in the thread and feed gear train. By means of this the direction of rota-



Precision Leadscrew Test Chart



Reversing Leadscrew With Automatic Chasing Stops

tion of the leadscrew and feed rod is changed without changing the direction of the spindle rotation. This reversing mechanism is located entirely within the head and runs in oil.

An automatic stop collar is provided for each direction of carriage travel by means of which the carriage travel may be stopped instantly at any predetermined point. When these stops are used the entire quick change gear mechanism is disconnected by contact between the contactor attached to the apron and the stop collar. The quick change gear mechanism may then be re-engaged and the direction of the leadscrew or feed rod reversed, by means of the manual control lever at the right-hand side of the apron. When the automatic stop collars are not used, the carriage may be stopped through the disconnection of the quick change gear mechanism and its direction of travel reversed by manually operating this control lever.

In order to relieve the highly accurate change gearing which actuates the precision thread chasing mechanism from excessive service, and in that way to prolong its original accuracy, a mechanical feed reverse is regularly provided in the apron through a double bevel gear through which the direction of the carriage may be reversed without reversing the direction of the spindle, or using the leadscrew reversing mechanism for this purpose.

ENGLISH LEADSCREW LATHES

Standard Range

Standard Range of English or Whitworth Threads and Feeds obtainable on 14-in. and 16-in. "American" Pacemaker Lathes.

Threads Per Inch	1½ 3 6 12 24 48	1⅝ 3¼ 6½ 13 26 52	1¾ 3½ 7 14 28 56	2 4 8 16 32 64	2¼ 4½ 9 18 36 72	2½ 5 10 20 40 80	2¾ 5½ 11 22 44 88	2⅞ 5¾ 11½ 23 46 92
Leads in Inches	.6666 .3333 .1666 .0833 .0416 .0208	.6154 .3077 .1538 .0769 .0384 .0192	.5715 .2857 .1428 .0714 .0357 .0178	.5000 .2500 .1250 .0625 .0312 .0156	.4444 .2222 .1111 .0555 .0277 .0138	.4000 .2000 .1000 .0500 .0250 .0125	.3636 .1818 .0909 .0454 .0227 .0113	.3477 .1738 .0869 .0434 .0217 .0108
Feeds in Thousandths Per Revolution of Spindle	.118 .059 .029 .014 .007 .003	.109 .055 .027 .013 .006 .003	.101 .050 .025 .012 .006 .003	.088 .044 .022 .011 .005 .002	.078 .039 .019 .009 .004 .002	.070 .035 .017 .008 .004 .002	.064 .032 .016 .008 .004 .002	.061 .030 .015 .007 .003 .002

Standard Range of English or Whitworth Threads and Feeds obtainable on 18-in. and 20-in. "American" Pacemaker Lathes.

Threads Per Inch	1 2 4 8 16 32	1⅛ 2¼ 4½ 9 18 36	1¼ 2½ 5 10 20 40	1⅜ 2¾ 5½ 11 22 44	1 7/16 2⅞ 5¾ 11½ 23 46	1½ 3 6 12 24 48	1⅝ 3¼ 6½ 13 26 52	1 11/16 3⅜ 6¾ 13½ 27 54	1¾ 3½ 7 14 28 56	1⅞ 3¾ 7½ 15 30 60
Leads in Inches	1.0000 .5000 .2500 .1250 .0625 .0312	.8888 .4444 .2222 .1111 .0555 .0277	.8000 .4000 .2000 .1000 .0500 .0250	.7272 .3636 .1818 .0909 .0454 .0227	.6956 .3478 .1739 .0869 .0434 .0217	.6666 .3333 .1666 .0833 .0416 .0208	.6154 .3077 .1538 .0769 .0384 .0192	.5925 .2962 .1481 .0740 .0370 .0185	.5714 .2857 .1428 .0714 .0357 .0178	.5333 .2666 .1333 .0666 .0333 .0166
Feeds in Thousandths Per Revolution of Spindle	.2000 .1000 .0500 .0250 .0125 .0062	.1777 .0888 .0444 .0222 .0111 .0055	.1600 .0800 .0400 .0200 .0100 .0050	.1454 .0727 .0363 .0181 .0091 .0045	.1390 .0695 .0347 .0173 .0086 .0043	.1333 .0666 .0333 .0166 .0083 .0041	.1230 .0615 .0307 .0153 .0076 .0038	.1185 .0592 .0296 .0148 .0074 .0037	.1143 .0571 .0285 .0142 .0071 .0035	.1066 .0533 .0266 .0133 .0066 .0033

ENGLISH LEADSCREW LATHES

Coarse Range

Coarser than standard range of English or Whitworth Threads, Leads and Feeds that may be secured on 14-in. and 16-in. Lathes by the addition of special gearing to the standard quadrant (coarse threading attachment).

Threads Per Inch	¾ 1½ 3 6 12 24	13/16 1⅝ 3¼ 6½ 13 26	⅞ 1¾ 3½ 7 14 28	1 2 4 8 16 32	1⅛ 2¼ 4½ 9 18 36	1¼ 2½ 5 10 20 40	1⅜ 2¾ 5½ 11 22 44	1 7/16 2⅞ 5¾ 11½ 23 46
Leads in Inches	1.3333 .6666 .3333 .1666 .0833 .0416	1.2307 .6154 .3077 .1538 .0769 .0384	1.1428 .5714 .2857 .1428 .0714 .0357	1.0000 .5000 .2500 .1250 .0625 .0312	.8888 .4444 .2222 .1111 .0555 .0277	.8000 .4000 .2000 .1000 .0500 .0250	.7272 .3636 .1818 .0909 .0454 .0227	.6956 .3478 .1739 .0869 .0434 .0217
Feeds in Thousandths Per Revolution of Spindle	.236 .118 .059 .029 .014 .007	.218 .109 .055 .027 .013 .006	.202 .101 .050 .025 .012 .006	.177 .088 .044 .022 .011 .005	.157 .078 .039 .019 .009 .004	.141 .070 .035 .017 .008 .004	.128 .064 .032 .016 .008 .004	.123 .061 .030 .015 .007 .003

Coarser than standard range of English or Whitworth Threads, Leads and Feeds that may be secured on 18-in. and 20-in. Lathes by the addition of special gearing to a special quadrant (coarse threading attachment).

Threads Per Inch	½ 1 2 4	9/16 1⅛ 2¼ 4½	⅝ 1¼ 2½ 5	11/16 1⅜ 2¾ 5½	23/32 1 7/16 2⅞ 5¾	¾ 1½ 3 6	13/16 1⅝ 3¼ 6½	27/32 1 11/16 3⅜ 6¾	⅞ 1¾ 3½ 7	15/16 1⅞ 3¾ 7½
Leads in Inches	2.0000 1.0000 .5000 .2500	1.7777 .8888 .4444 .2222	1.6000 .8000 .4000 .2000	1.4545 .7272 .3636 .1818	1.3913 .6956 .3478 .1738	1.3333 .6666 .3333 .1666	1.2307 .6154 .3077 .1538	1.1851 .5925 .2962 .1481	1.1429 .5714 .2857 .1428	1.0666 .5333 .2666 .1333
Feeds in Thousandths Per Revolution of Spindle	.4000 .2000 .1000 .0500	.3554 .1777 .0888 .0444	.3200 .1600 .0800 .0400	.2908 .1454 .0727 .0363	.2780 .1390 .0695 .0347	.2666 .1333 .0666 .0333	.2460 .1230 .0615 .0307	.2370 .1185 .0592 .0296	.2286 .1143 .0571 .0285	.2132 .1066 .0533 .0266

Reversing leadscrew mechanism or electrical reverse should be used when chasing coarse leads.

ENGLISH LEADSCREW LATHES

Diametral Pitch Leads

Range of Diametral Pitch Leads obtainable on 14-in. and 16-in. Lathes by the addition of special gearing and a special quadrant.

Diametral Pitch Leads	2¼ 2½ 2¾ 3 3¼ 3½ 3¾ 4	4½ 5 5½ 6 6½ 7 7½ 8	9 10 11 12 13 14 15 16	18 20 22 24 26 28 30 32	36 40 44 48 52 56 60 64	72 80 88 96 104 112 120 128
Equivalent Circular Pitches in Inches	1.3963 1.2566 1.1424 1.0472 .9666 .8976 .8378 .7854	.6981 .6283 .5712 .5236 .4833 .4488 .4189 .3927	.3491 .3142 .2856 .2618 .2417 .2244 .2094 .1963	.1745 .1571 .1428 .1309 .1208 .1122 .1047 .0982	.0873 .0785 .0714 .0654 .0604 .0561 .0524 .0491	.0436 .0393 .0357 .0327 .0302 .0280 .0262 .0245

Range of Diametral Pitch Leads obtainable on 18-in. and 20-in. Lathes by the addition of special gearing to a special quadrant.

Diametral Pitch Leads	1½ 1⅝ 1¾ 1⅞ 2 2⅛ 2¼ 2⅜ 2½ 2¾	3 3¼ 3½ 3¾ 4 4¼ 4½ 4¾ 5 5½	6 6½ 7 7½ 8 8½ 9 9½ 10 11	12 13 14 15 16 17 18 19 20 22
Equivalent Circular Pitches in Inches	2.0944 1.9333 1.7952 1.6755 1.5708 1.4783 1.3963 1.3228 1.2566 1.1424	1.0472 .9666 .8976 .8378 .7854 .7392 .6981 .6614 .6283 .5712	.5236 .4833 .4488 .4189 .3927 .3696 .3491 .3307 .3142 .2856	.2618 .2417 .2244 .2094 .1963 .1848 .1745 .1653 .1571 .1428

Reversing leadscrew mechanism or electrical reverse should be used when chasing diametral pitch leads.

ENGLISH LEADSCREW LATHES

Conversion to Metric (Standard Range)

Standard range of Metric Leads and Feeds that may be secured on 14-in. and 16-in. English Lathes by addition of conversion gears to the standard quadrant.

Leads in Millimeters	16	8	4	2	1	.5
	15	7.5	3.75	1.875	.9375	.46875
	14	7	3.5	1.75	.875	.4375
	13	6.5	3.25	1.625	.8125	.40625
	12.8	6.4	3.2	1.6	.8	.4
	12	6	3	1.5	.75	.375
	11.2	5.6	2.8	1.4	.7	.35
	11	5.5	2.75	1.375	.6875	.34375
	10.5	5.25	2.625	1.3125	.65625	.328125
	10	5	2.5	1.25	.625	.3125
	9.6	4.8	2.4	1.2	.6	.3
	9	4.5	2.25	1.125	.5625	.28125
Feeds in Millimeters	2.8294	1.4147	.7073	.3536	.1768	.0884
	2.6526	1.3263	.6631	.3315	.1657	.0828
	2.4757	1.2378	.6189	.3094	.1547	.0773
	2.2989	1.1494	.5747	.2873	.1436	.0718
	2.2635	1.1317	.5658	.2829	.1414	.0707
	2.1220	1.0610	.5305	.2652	.1326	.0663
	1.9806	.9903	.4951	.2475	.1237	.0618
	1.9452	.9726	.4863	.2431	.1215	.0607
	1.8568	.9284	.4642	.2321	.1160	.0580
	1.7684	.8842	.4421	.2210	.1105	.0552
	1.6976	.8488	.4244	.2122	.1061	.0530
	1.5915	.7957	.3978	.1989	.0994	.0497

Standard range of Metric Leads and Feeds that may be secured on 18-in. and 20-in. English Lathes by addition of conversion gears to the standard quadrant.

Leads in Millimeters	30	15	7.5	3.75	1.875	.9375
	28	14	7	3.5	1.75	.875
	26	13	6.5	3.25	1.625	.8125
	24	12	6	3	1.5	.75
	22.4	11.2	5.6	2.8	1.4	.7
	22	11	5.5	2.75	1.375	.6875
	20.8	10.4	5.2	2.6	1.3	.65
	20	10	5	2.5	1.25	.625
	19.2	9.6	4.8	2.4	1.2	.6
	18	9	4.5	2.25	1.125	.5625
	17.6	8.8	4.4	2.2	1.1	.55
	16	8	4	2	1	.5
Feeds in Millimeters	6	3	1.5	.75	.375	.1875
	5.6	2.8	1.4	.7	.35	.175
	5.2	2.6	1.3	.65	.325	.1625
	4.8	2.4	1.2	.6	.3	.15
	4.48	2.24	1.12	.56	.28	.14
	4.4	2.2	1.1	.55	.275	.1375
	4.16	2.08	1.04	.52	.26	.13
	4	2	1	.5	.25	.125
	3.84	1.92	.96	.48	.24	.12
	3.6	1.8	.9	.45	.225	.1125
	3.52	1.76	.88	.44	.22	.11
	3.2	1.6	.8	.4	.2	.1

Reversing leadscrew mechanism or electrical reverse should be used when chasing metric leads.

ENGLISH LEADSCREW LATHES

Conversion to Metric (Coarse Range)

Coarser than standard range of Metric Leads and Feeds that may be secured on 14-in. and 16-in. Lathes by the addition of special Metric conversion gearing and a special quadrant.

Leads in Millimeters	32	16	8	4	2	1
	30	15	7.5	3.75	1.875	.9375
	28.8	14.4	7.2	3.6	1.8	.9
	28	14	7	3.5	1.75	.875
	26	13	6.5	3.25	1.625	.8125
	24	12	6	3	1.5	.75
	23	11.5	5.75	2.875	1.4375	.71875
	22	11	5.5	2.75	1.375	.6875
	20	10	5	2.5	1.25	.625
	18	9	4.5	2.25	1.125	.5625
	17	8.5	4.25	2.125	1.0625	.53125
	16	8	4	2	1	.5

Coarser than standard range of Metric Leads and Feeds that may be secured on 18-in. and 20-in. Lathes by the addition of special Metric conversion gearing to a special quadrant.

Leads in Millimeters	60	30	15	7.5
	56	28	14	7
	52	26	13	6.5
	48	24	12	6
	44.8	22.4	11.2	5.6
	44	22	11	5.5
	41.6	20.8	10.4	5.2
	40	20	10	5
	36	18	9	4.5
	35.2	17.6	8.8	4.4
	32	16	8	4
	28.8	14.4	7.2	3.6
	24	12	6	3
	19.2	9.6	4.8	2.4

Reversing leadscrew mechanism or electrical reverse should be used when chasing coarse range metric leads.

ENGLISH LEADSCREW LATHES

Module Leads

Module Leads obtainable on 14-in. and 16-in. Lathes by use of special gearing and a special quadrant.

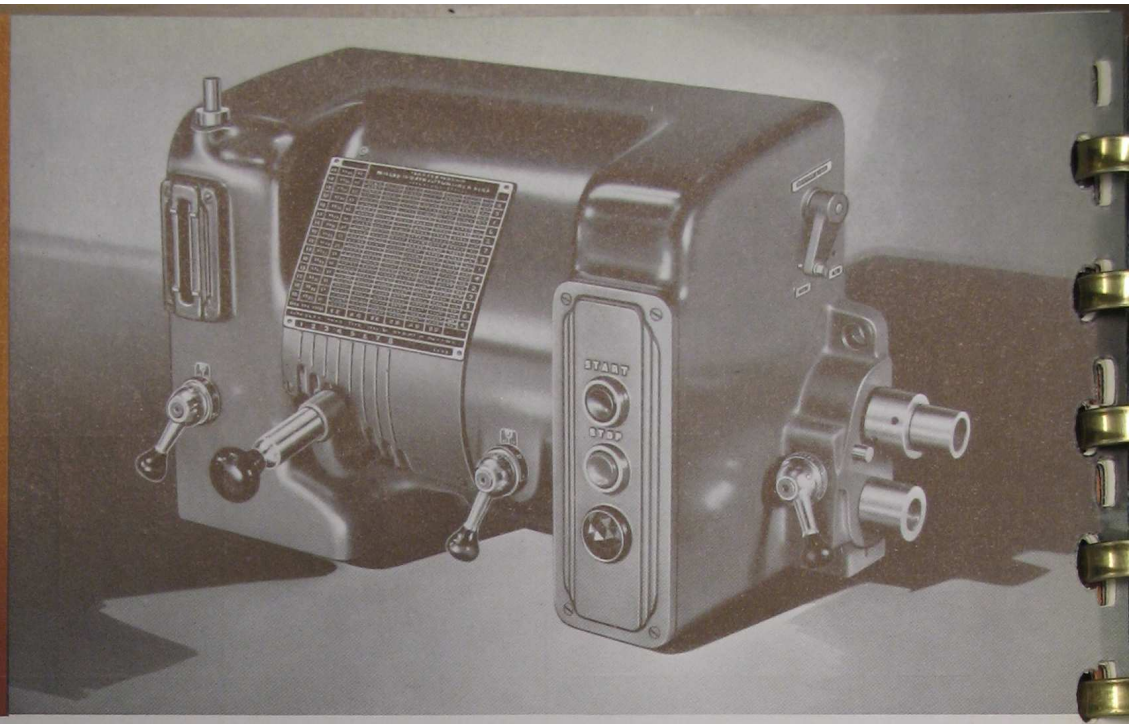
Module Leads	10	5	2.5	1.25	.625	.3125
	9	4.5	2.25	1.125	.5625	.28125
	8	4	2	1	.5	.25
	7	3.5	1.75	.875	.4375	.21875
	6	3	1.5	.75	.375	.1875
Circular Pitch in Millimeters	31.416	15.708	7.854	3.927	1.9635	.98175
	28.274	14.137	7.068	3.534	1.767	.8835
	25.133	12.566	6.283	3.1416	1.5708	.7854
	21.991	10.995	5.498	2.749	1.374	.6872
	18.850	9.425	4.712	2.356	1.178	.5891

Module Leads obtainable on 18-in. and 20-in. Lathes by the addition of special gearing to a special quadrant.

Module Leads	15	7.5	3.75	1.875
	14	7	3.5	1.75
	13	6.5	3.25	1.625
	12	6	3	1.5
	11	5.5	2.75	1.375
	10	5	2.5	1.25
	9	4.5	2.25	1.125
	8	4	2	1
Circular Pitch in Millimeters	47.1240	23.5620	11.7810	5.8905
	43.9824	21.9912	10.9956	5.4978
	40.8408	20.4204	10.2102	5.1051
	37.6992	18.8496	9.4248	4.7124
	34.5576	17.2788	8.6394	4.3197
	31.4160	15.7080	7.8540	3.9270
	28.2744	14.1372	7.0686	3.5343
	25.1328	12.5664	6.2832	3.1416

Reversing leadscrew mechanism or electrical reverse should be used when chasing module leads.

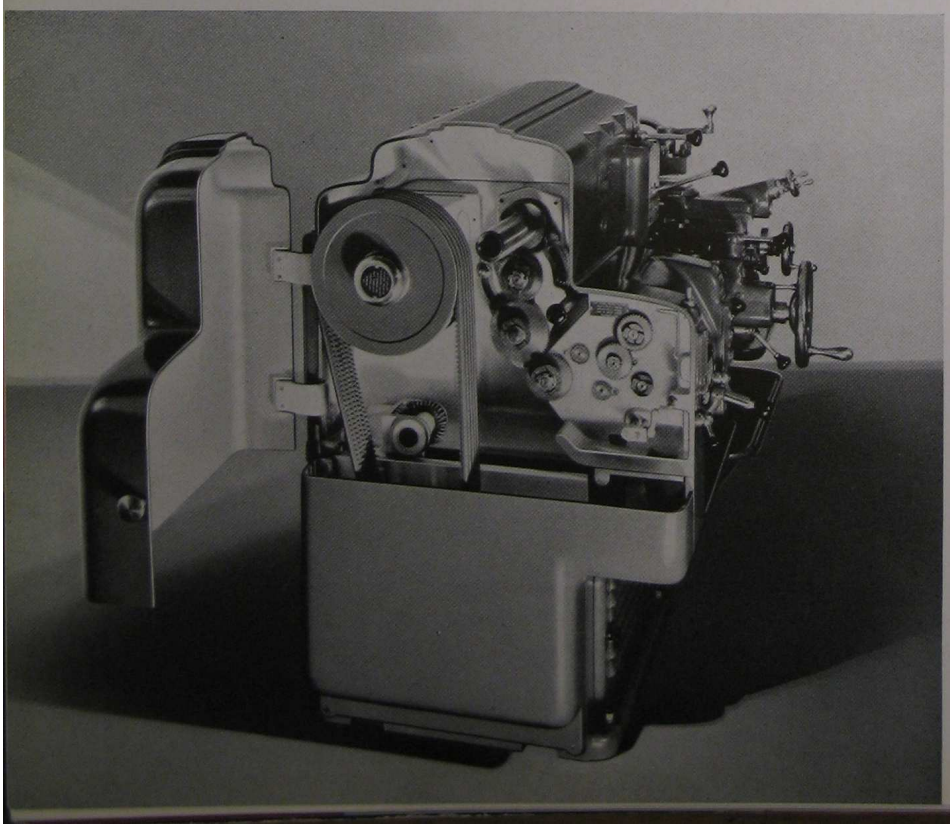
PATENTED METRIC QUICK CHANGE MECHANISM



Metric Quick Change Gear Box

The patented Metric Quick Change Mechanism of "AMERICAN" Pacemaker Lathes is one of the most universal as well as one of the simplest and most convenient mechanisms of its kind ever developed. It is new in design, embodying the latest features of superior machine tool construction and offers a versatility of operation that is unsurpassed. This new mechanism without any changes in or additions to the standard equipment provides a wide range of metric threads and feeds as disclosed by the accompanying charts. However, by the simple addition of a few gears this entire range may be converted to English threads and feeds or a coarser range of threads and feeds than standard, or module or Diametral Pitch leads may be provided. The versatility of this mechanism is not only amazing but a decidedly valuable feature as it presents almost unlimited possibilities in the realm of thread and worm production.

Head End Feed Gearing



The thread and feed charts that follow testify decisively to the universal character and great possibilities of this new quick change gear mechanism.

METRIC LEADSCREW LATHES

Standard Range

Standard Range of Metric Leads and Feeds obtainable on 14-in. and 16-in. "American" Pacemaker Metric Lathes.

Leads in Millimeters	8	4	2	1	.5	.25
	9	4.5	2.25	1.125	.5625	.28125
	9.6	4.8	2.4	1.2	.6	.3
	10	5	2.5	1.25	.625	.3125
	10.4	5.2	2.6	1.3	.65	.325
	11	5.5	2.75	1.375	.6875	.34375
	11.2	5.6	2.8	1.4	.7	.35
	12	6	3	1.5	.75	.375
	12.8	6.4	3.2	1.6	.8	.4
	13	6.5	3.25	1.625	.8125	.40625
	14	7	3.5	1.75	.875	.4375
	14.4	7.2	3.6	1.8	.9	.45
	15	7.5	3.75	1.875	.9375	.46875
	16	8	4	2	1	.5
Feeds in Millimeters	1.123	.562	.281	.140	.070	.035
	1.264	.632	.316	.158	.079	.039
	1.347	.673	.337	.168	.084	.042
	1.404	.702	.351	.175	.088	.044
	1.460	.730	.365	.183	.091	.045
	1.544	.772	.386	.193	.096	.048
	1.572	.786	.393	.196	.098	.049
	1.685	.842	.421	.210	.105	.052
	1.797	.898	.449	.225	.113	.056
	1.825	.912	.456	.228	.114	.057
	1.965	.982	.491	.246	.123	.061
	2.022	1.011	.505	.252	.126	.063
	2.106	1.053	.526	.263	.132	.066
	2.246	1.123	.562	.281	.140	.070

Standard Range of Metric Leads and Feeds obtainable on 18-in. and 20-in. "American" Pacemaker Metric Lathes.

Leads in Millimeters	6.4	3.2	1.6	.8
	7.2	3.6	1.8	.9
	8	4	2	1
	8.8	4.4	2.2	1.1
	9.2	4.6	2.3	1.15
	9.6	4.8	2.4	1.2
	10.4	5.2	2.6	1.3
	10.8	5.4	2.7	1.35
	11.2	5.6	2.8	1.4
	16	8	4	2
	18	9	4.5	2.25
	20	10	5	2.5
	22	11	5.5	2.75
	23	11.5	5.75	2.875
	24	12	6	3
	26	13	6.5	3.25
	27	13.5	6.75	3.375
	28	14	7	3.5
	30	15	7.5	3.75
Feeds in Millimeters	1.016	.508	.254	.127
	1.143	.571	.285	.142
	1.270	.635	.317	.158
	1.397	.698	.349	.174
	1.460	.730	.365	.182
	1.524	.762	.381	.190
	1.651	.825	.412	.206
	1.714	.857	.428	.214
	1.778	.889	.444	.222
	2.540	1.270	.635	.317
	2.857	1.428	.714	.357
	3.175	1.587	.793	.396
	3.492	1.746	.873	.436
	3.651	1.825	.912	.456
	3.810	1.905	.952	.476
	4.127	2.064	1.032	.516
	4.286	2.143	1.071	.535
	4.445	2.222	1.111	.555
	4.763	2.381	1.190	.595

Reversing leadscrew mechanism or electrical reverse should be used when chasing standard range of metric leads.

METRIC LEADSCREW LATHES

Coarse Range

Coarser than standard range of Metric Leads and Feeds that may be secured on 14-in. and 16-in. Metric Lathes by the addition of special gearing to the standard quadrant.

Leads in Millimeters	18	9	4.5	2.25	1.125	.5625
	20	10	5	2.5	1.25	.625
	22	11	5.5	2.75	1.375	.6875
	23	11.5	5.75	2.875	1.4375	.71875
	24	12	6	3	1.5	.75
	26	13	6.5	3.25	1.625	.8125
	28	14	7	3.5	1.75	.875
	28.8	14.4	7.2	3.6	1.8	.9
	30	15	7.5	3.75	1.875	.9375
	32	16	8	4	2	1

Coarser than standard range of Metric Leads and Feeds that may be secured on 18-in. and 20-in. Metric Lathes by the addition of special gearing to the standard quadrant.

Leads in Millimeters	12.8	6.4	3.2	1.6	.8	.4
	14.4	7.2	3.6	1.8	.9	.45
	16	8	4	2	1	.5
	17.6	8.8	4.4	2.2	1.1	.55
	18.4	9.2	4.6	2.3	1.15	.575
	19.2	9.6	4.8	2.4	1.2	.6
	20.8	10.4	5.2	2.6	1.3	.65
	21.6	10.8	5.4	2.7	1.35	.675
	22.4	11.2	5.6	2.8	1.4	.7
	32	16	8	4	2	1
	36	18	9	4.5	2.25	1.125
	40	20	10	5	2.5	1.25
	44	22	11	5.5	2.75	1.375
	46	23	11.5	5.75	2.875	1.4375
	48	24	12	6	3	1.5
	52	26	13	6.5	3.25	1.625
	54	27	13.5	6.75	3.375	1.6875
	56	28	14	7	3.5	1.75
	60	30	15	7.5	3.75	1.875

Reversing leadscrew mechanism or electrical reverse should be used when chasing coarse range metric leads.

METRIC LEADSCREW LATHES

Module Leads

Module Leads obtainable on 14-in. and 16-in. Metric Lathes by the use of special gearing and standard quadrant.

Module Leads	6	3	1.5	.75	.375	.1875
	6.5	3.25	1.625	.8125	.40625	.203125
	7	3.5	1.75	.875	.4375	.21875
	8	4	2	1	.5	.25
	9	4.5	2.25	1.125	.5625	.28125
	10	5	2.5	1.25	.625	.3125
	11	5.5	2.75	1.375	.6875	.34375
	11.5	5.75	2.875	1.4375	.71875	.359375
Circular Pitch in Millimeters	18.8496	9.4248	4.7124	2.3562	1.1781	.58905
	20.4204	10.2102	5.1051	2.5525	1.2762	.6381
	21.9912	10.9956	5.4978	2.7489	1.3744	.6872
	25.1328	12.5664	6.2832	3.1416	1.5708	.7854
	28.2744	14.1372	7.0686	3.5343	1.7671	.8835
	31.416	15.708	7.854	3.927	1.9635	.98175
	34.5576	17.2788	8.6394	4.3197	2.1598	1.0799
	36.1284	18.0642	9.0321	4.5160	2.2580	1.1290

Module Leads obtainable on 18-in. and 20-in. Metric Lathes by the addition of special gearing to standard quadrant.

Module Leads	8	4	2	1	.50	.25
	9	4.5	2.25	1.125	.5625	.28125
	10	5	2.5	1.25	.625	.3125
	11	5.5	2.75	1.375	.6875	.34375
	11.5	5.75	2.875	1.4375	.71875	.35937
	12	6	3	1.5	.75	.375
	13	6.5	3.25	1.625	.8125	.40625
	13.5	6.75	3.375	1.6875	.84375	.421875
	14	7	3.5	1.75	.875	.4375
	15	7.5	3.75	1.875	.9375	.46875
Circular Pitch in Millimeters	25.1328	12.5664	6.2832	3.1416	1.5708	.7854
	28.2744	14.1372	7.0686	3.5343	1.7671	.8835
	31.4160	15.7080	7.8540	3.9270	1.9635	.9817
	34.5576	17.2788	8.6394	4.3197	2.1598	1.0799
	36.1284	18.0642	9.0321	4.5160	2.2580	1.1290
	37.6992	18.8496	9.4248	4.7124	2.3562	1.1781
	40.8408	20.4204	10.2102	5.1051	2.5525	1.2762
	42.4116	21.2058	10.6029	5.3014	2.6507	1.3253
	43.9824	21.9912	10.9956	5.4978	2.7489	1.3744
	47.1240	23.5620	11.7810	5.8905	2.9452	1.4726

Reversing leadscrew mechanism or electrical reverse should be used when chasing module leads.

METRIC LEADSCREW LATHES

Conversion to English

Standard range of English Threads—Leads and Feeds that may be secured on 14-in. and 16-in. Metric Lathes by the addition of conversion gears to the standard quadrant.

Threads Per Inch	1½	3	6	12	24	48
	1⅝	3¼	6½	13	26	52
	1¾	3½	7	14	28	56
	2	4	8	16	32	64
	2¼	4½	9	18	36	72
	2½	5	10	20	40	80
	2¾	5½	11	22	44	88
	2⅞	5¾	11½	23	46	92
Leads in Inches	.6666	.3333	.1666	.0833	.0416	.0208
	.6154	.3077	.1538	.0769	.0384	.0192
	.5714	.2857	.1428	.0714	.0357	.0178
	.5000	.2500	.1250	.0625	.0312	.0156
	.4444	.2222	.1111	.0555	.0277	.0138
	.4000	.2000	.1000	.0500	.0250	.0125
	.3636	.1818	.0909	.0454	.0227	.0113
	.3478	.1739	.0869	.0434	.0217	.0108
Feeds in Thousandths Per Revolution of Spindle	.0935	.0467	.0233	.0116	.0058	.0029
	.0864	.0432	.0216	.0108	.0054	.0027
	.0802	.0401	.0200	.0100	.0050	.0025
	.0702	.0351	.0175	.0087	.0043	.0021
	.0624	.0312	.0156	.0078	.0039	.0019
	.0561	.0280	.0140	.0070	.0035	.0017
	.0510	.0255	.0127	.0063	.0031	.0015
	.0488	.0244	.0122	.0061	.0030	.0015

Standard range of English Threads—Leads and Feeds that may be secured on 18-in. and 20-in. Metric Lathes by the addition of conversion gears to the standard quadrant.

Threads Per Inch	1	2	4	8	16	32
	1⅛	2¼	4½	9	18	36
	1¼	2½	5	10	20	40
	1⅜	2¾	5½	11	22	44
	1 1/16	2⅞	5¾	11½	23	46
	1½	3	6	12	24	48
	1⅝	3¼	6½	13	26	52
	1 11/16	3⅜	6¾	13½	27	54
	1¾	3½	7	14	28	56
	1⅞	3¾	7½	15	30	60
Leads in Inches	1.0000	.5000	.2500	.1250	.0625	.0312
	.8888	.4444	.2222	.1111	.0555	.0277
	.8000	.4000	.2000	.1000	.0500	.0250
	.7272	.3636	.1818	.0909	.0454	.0227
	.6956	.3478	.1739	.0869	.0434	.0217
	.6666	.3333	.1666	.0833	.0416	.0208
	.6154	.3077	.1538	.0769	.0384	.0192
	.5926	.2963	.1481	.0740	.0370	.0185
	.5714	.2857	.1428	.0714	.0357	.0178
	.5333	.2666	.1333	.0666	.0333	.0166
Feeds in Thousandths Per Revolution of Spindle	.1587	.0793	.0396	.0198	.0099	.0049
	.1411	.0705	.0352	.0176	.0088	.0044
	.1270	.0635	.0317	.0158	.0079	.0039
	.1154	.0577	.0288	.0144	.0072	.0036
	.1104	.0552	.0275	.0137	.0068	.0034
	.1058	.0529	.0264	.0132	.0066	.0033
	.0976	.0488	.0244	.0122	.0061	.0030
	.0940	.0470	.0235	.0117	.0058	.0029
	.0907	.0453	.0226	.0113	.0056	.0028
	.0846	.0423	.0211	.0105	.0052	.0026

Reversing leadscrew mechanism or electrical reverse should be used with metric lathes.

METRIC LEADSCREW LATHES

Conversion to English (Coarse Range)

Coarser than standard range of English Threads, Leads and Feeds secured on 14-in. and 16-in. Metric Lathes by the addition of special conversion gearing to the standard quadrant.

Threads Per Inch	¾ 13/16 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 32 36 40 44 46
Leads in Inches	1.3333 1.2307 1.1428 1.0000 .8888 .8000 .7272 .6956	.6666 .6154 .5714 .5000 .4444 .4000 .3636 .3478	.3333 .3077 .2857 .2500 .2222 .2000 .1818 .1739	.1666 .1538 .1428 .1250 .1111 .1000 .0909 .0869	.0833 .0769 .0714 .0625 .0555 .0500 .0454 .0434	.0416 .0384 .0357 .0312 .0277 .0250 .0227 .0217

Coarser than standard range of English Threads, Leads and Feeds secured on 18-in. and 20-in. Metric Lathes by the addition of special conversion gearing to a special quadrant.

Threads Per Inch	½ 9/16 ⅝ 11/16 23/32 ¾ 13/16 27/32 ⅞ 15/16	1 1⅛ 1¼ 1⅜ 1 7/16 1½ 1⅝ 1 11/16 1¾ 1⅞	2 2¼ 2½ 2¾ 2⅞ 3 3¼ 3⅜ 3½ 3¾	4 4½ 5 5½ 5¾ 6 6½ 6¾ 7 7½
Leads in Inches	2.0000 1.7777 1.6000 1.4545 1.3913 1.3333 1.2307 1.1851 1.1428 1.0666	1.0000 .8888 .8000 .7272 .6956 .6666 .6153 .5925 .5714 .5333	.5000 .4444 .4000 .3636 .3478 .3333 .3076 .2962 .2857 .2666	.2500 .2222 .2000 .1818 .1739 .1666 .1538 .1481 .1428 .1333

Reversing leadscrew mechanism or electrical reverse should be used with metric lathes.

METRIC LEADSCREW LATHES

Diametral Pitch Leads

Range of English Diametral Pitch Leads obtainable on 14-in. and 16-in. Metric Lathes by the addition of special gearing to a special quadrant.

Diametral Pitch Leads	2¼ 2½ 2¾ 3 3¼ 3½ 3¾ 4	4½ 5 5½ 6 6½ 7 7½ 8	9 10 11 12 13 14 15 16	18 20 22 24 26 28 30 32	36 40 44 48 52 56 60 64	72 80 88 96 104 112 120 128
Equivalent Circular Pitches in Inches	1.3963 1.2566 1.1424 1.0472 .9666 .8976 .8378 .7854	.6981 .6283 .5712 .5236 .4833 .4488 .4189 .3927	.3491 .3142 .2856 .2618 .2417 .2244 .2094 .1963	.1745 .1571 .1428 .1309 .1208 .1122 .1047 .0982	.0873 .0785 .0714 .0654 .0604 .0561 .0524 .0491	.0436 .0393 .0357 .0327 .0302 .0280 .0262 .0245

Range of English Diametral Pitch Leads obtainable on 18-in. and 20-in. Metric Lathes by the addition of special gearing to a special quadrant.

Diametral Pitch Leads	1½ 1⅝ 1¾ 1⅞ 2 2⅛ 2¼ 2⅜ 2½ 2¾	3 3¼ 3½ 3¾ 4 4¼ 4½ 4¾ 5 5½	6 6½ 7 7½ 8 8½ 9 9½ 10 11	12 13 14 15 16 17 18 19 20 22
Equivalent Circular Pitches in Inches	2.0944 1.9333 1.7952 1.6755 1.5708 1.4783 1.3963 1.3228 1.2566 1.1424	1.0472 .9666 .8976 .8378 .7854 .7392 .6981 .6614 .6283 .5712	.5236 .4833 .4488 .4189 .3927 .3696 .3491 .3307 .3142 .2856	.2618 .2417 .2244 .2094 .1963 .1848 .1745 .1653 .1571 .1428

Reversing leadscrew mechanism or electrical reverse should be used when chasing diametral pitch leads.

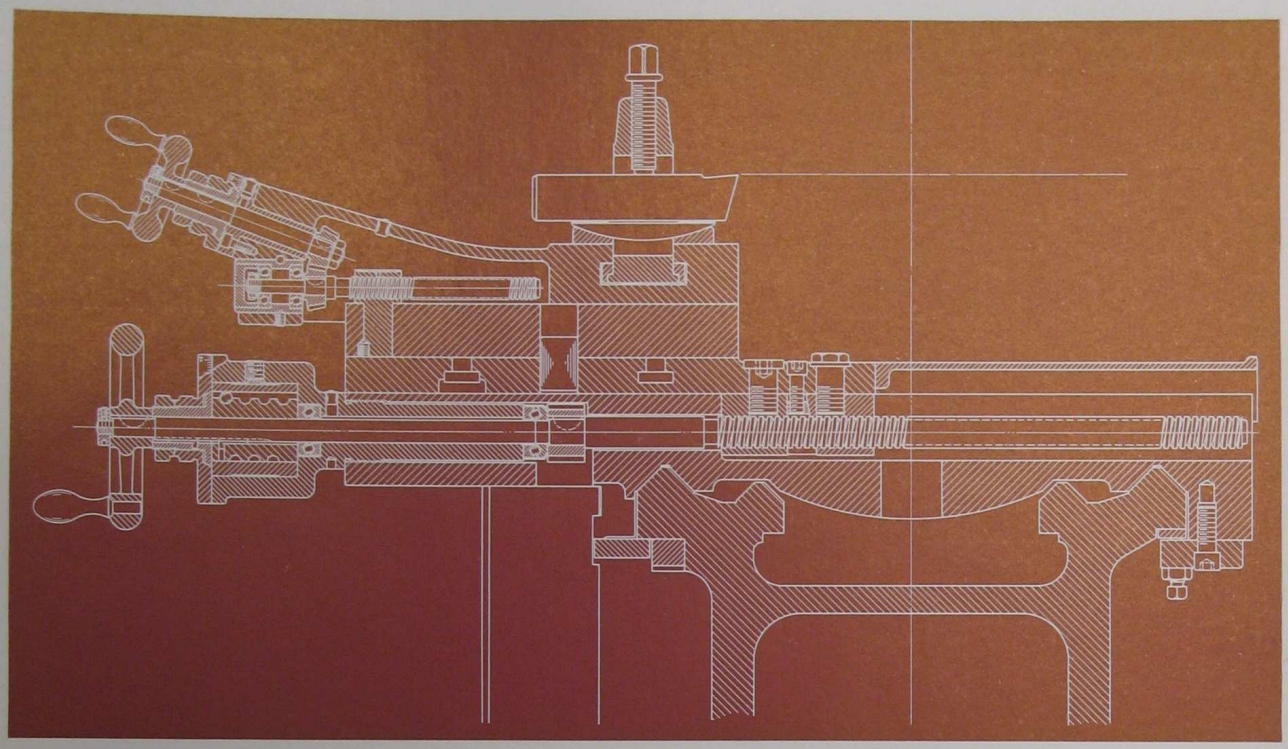


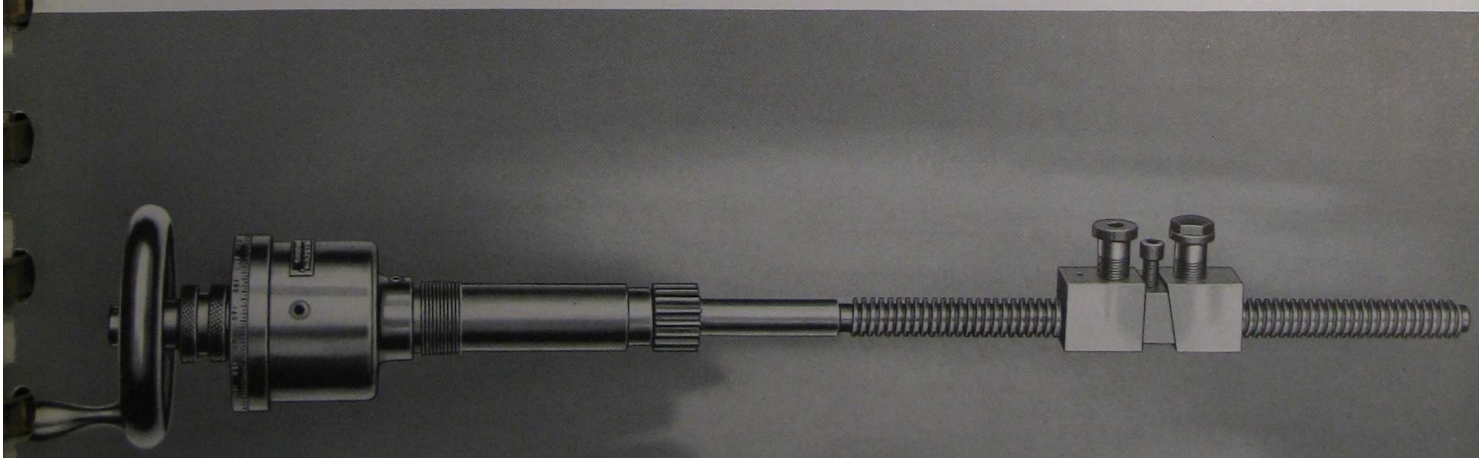
Diagram of Carriage and Compound Rest (Fig. No. 1)

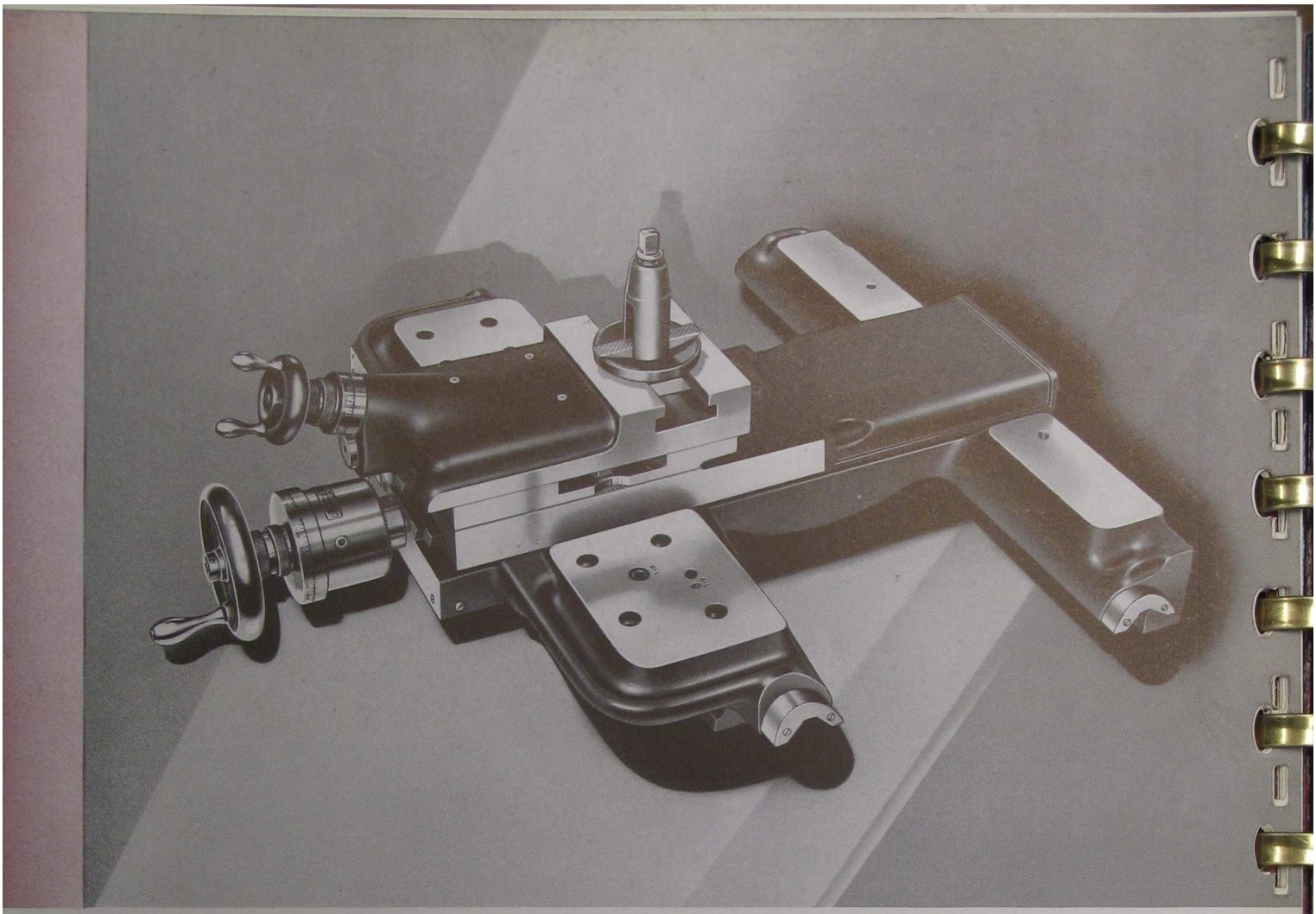
CARRIAGE

The carriage construction is one of the outstanding "PACEMAKER" features. It is unusually rigid, offering the greatest resistance to the cutting thrusts, yet is surprisingly easy in its movement along the bed. Hardened wipers honed to perfectly fit the bed "ways" exclude all chips and dirt and prevent scoring of the bed.

It has two vee bearings on the bed which insure long maintenance of original alignments and equal wear on the front and rear bearings. Due to the patented Vee Drop Bed, the carriage bridge can be made very deep which, coupled with its large area of contact on the wide angle bed vees, accounts, in a large measure, for its strength and

Hardened Cross Feed Screw and Compensating Nut. (Fig. No. 2)





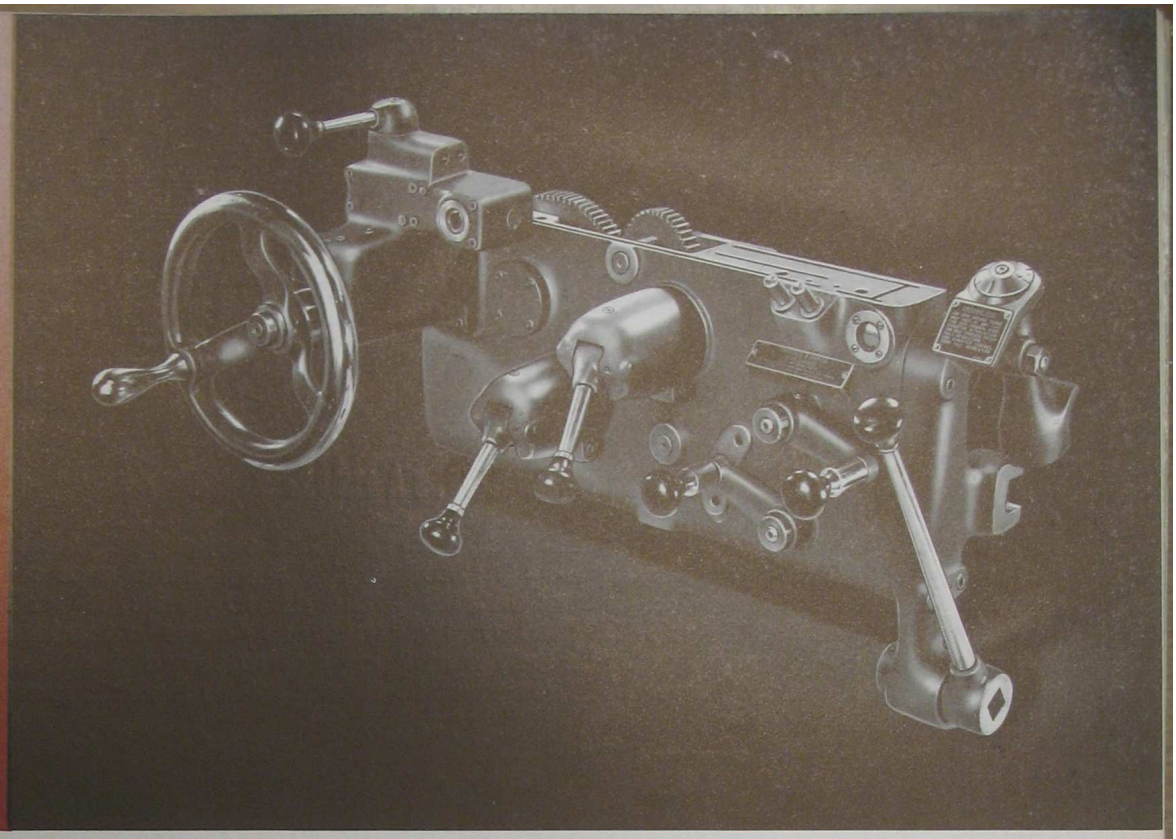
Carriage and Compound Rest with Single Screw, Round Tool Post

rigidity. The dovetail has been materially increased in width, giving the compound rest a most substantial mounting which, coupled with its very wide bearing on the widened bridge, provides a rigidity of mounting rarely encountered in other makes.

Both the carriage vees and the cross slide are adequately lubricated by means of approved "one-shot" oiling systems which function instantaneously and, at the same time, prevent the oil drip and waste encountered in many automatic systems.

For rigidly securing the carriage to the bed, clamps are provided at the front and rear with an adjustable gib at the rear for maintaining the proper contact with the bed vees. The compound rest and cross feed screws are very large in diameter, and have large, stainless steel, easily read, direct-reading micrometer dials.

The cross feed screw is surface hardened to about 70 scleroscope in such a manner that the original accuracy is retained. It is equipped with ball thrust bearings and a large automatically oiled, bronze compensating cross feed nut, which is conveniently and quickly adjustable for wear.

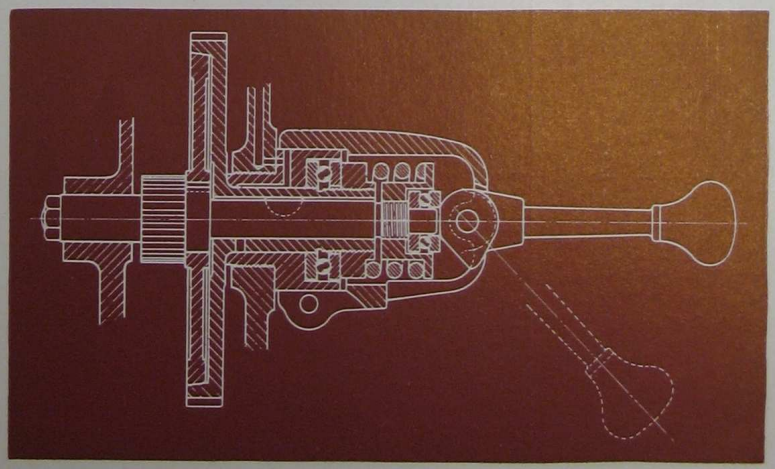


No. 1. Front View of Apron

APRON

The "PACEMAKER" Lathe apron is a substantial, compact unit using all heat-treated, carefully processed gears and providing outer supports for all studs. The first stud and rack pinion are anti-friction mounted, which contributes materially to the extremely easy and smooth movement of the carriage along the bed, which in turn minimizes drag when chasing threads and eliminates the necessity of withdrawing the rack pinion.

The control for both the cross and longitudinal feeds is through convenient and easily operated drop levers which actuate clutches of the well-known "automobile" spring control type. The longitudinal friction is of the cone type, while the cross feed is through a safety angular tooth type clutch. Both units are held in engagement by heavy coil springs the same as the automobile clutch and consequently rarely, if ever, require adjustment.



No. 2. Diagram of Longitudinal Feed Clutch

Both are disengaged positively and instantly without effort, even under the heaviest cuts, by means of a cam, actuated by the drop type control levers.

Both the longitudinal and cross-feed units are provided with overload safety features. The longitudinal friction will slip when overloaded, and the cross feed clutch will automatically disengage.

The oiling of the entire apron is accomplished by means of an instantaneous "one-shot" oiling system. Actuation of the plunger supplies sufficient oil to distributing reservoir to thoroughly lubricate the entire mechanism for one day. The "one-shot" system delivers an adequate supply of oil, but does not supply it in the wasteful abundance of some other systems.

MECHANICAL APRON CONTROL

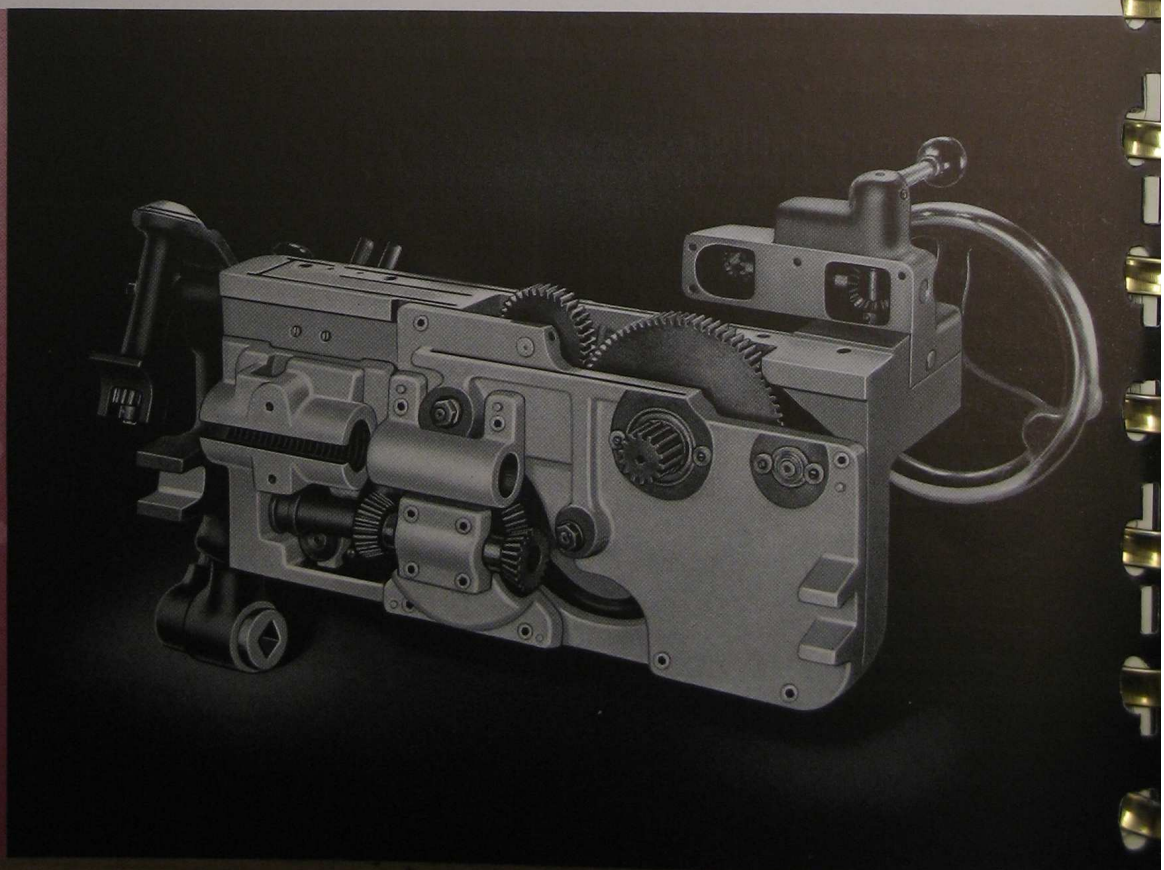
This unit provides means for instantly starting and stopping the lathe spindle from the apron. The control handle is located at the right-hand side of the apron and operates the multiple disc clutch in the initial driving unit, as well as a powerful brake. A secondary lever is located on the control rod close to the headstock for convenience when changing speeds and examining work close to the face plate or chuck. Both of these control levers are designed to operate with a minimum of effort.

COMPOUND REST

The compound rest, while very rigid, is exceptionally sensitive and amazingly easy to operate. The top slide hand wheel is set at an angle so as to provide additional clearance and to facilitate its operation.

The swivel is rectangular in form and has greater bearing contact with the bottom slide than is possible with the circular swivel used on many designs. It is also graduated

Rear View of Apron

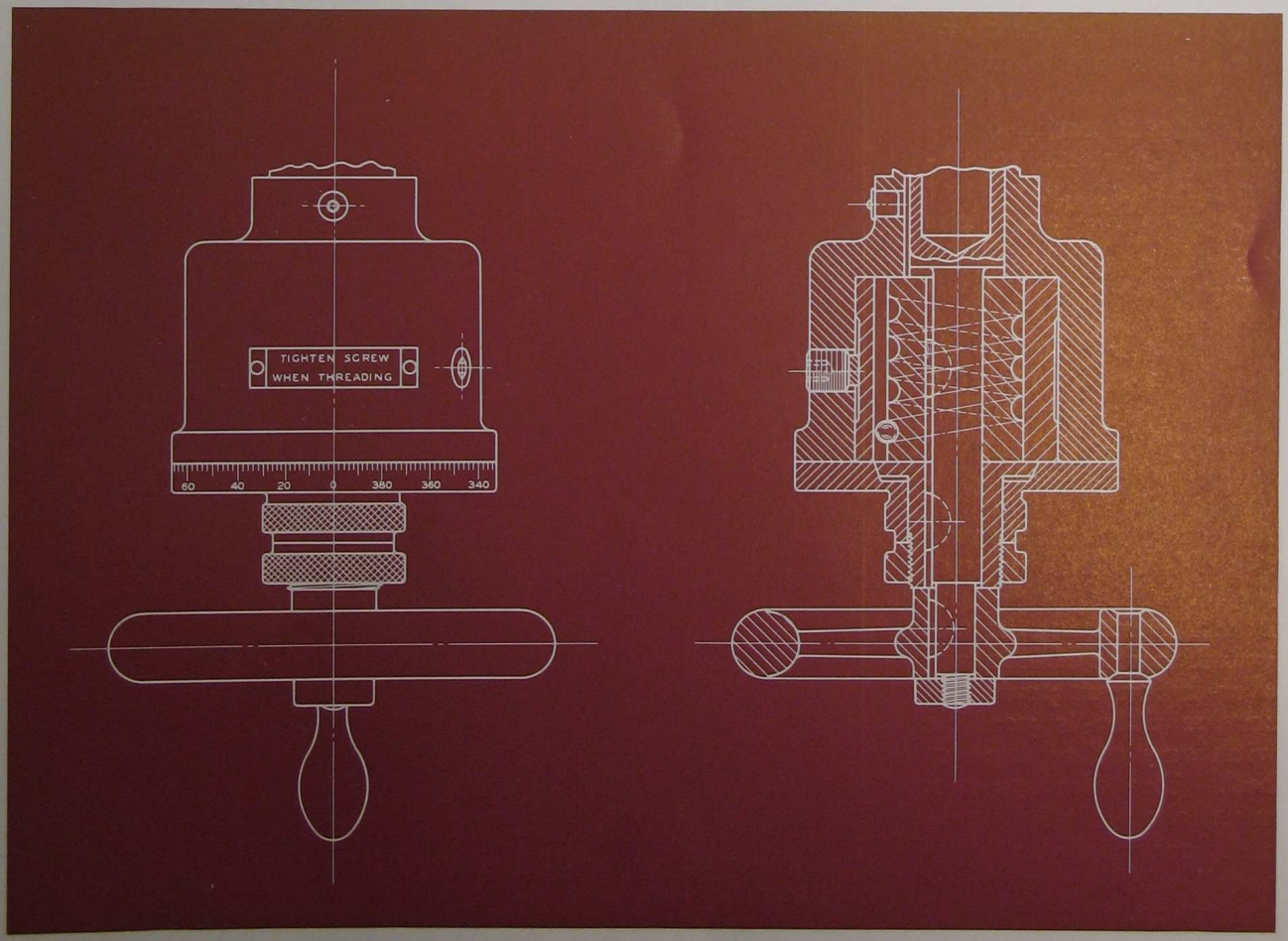


on both sides to facilitate setting. Full length taper gibs are used on both the compound rest top and bottom slides, and are located on the right-hand side, where they are free from the tool thrust under normal working conditions.

MICROMETER BALL STOP

To facilitate threading operations a micrometer ball threading stop is provided as standard equipment on Pacemaker Tool Room Lathes. This stop permits the withdrawal of the tool from the cut up to three revolutions of the cross feed screw without disturbing the tool setting. At the end of each cut this permits the quick withdrawal of the tool to the starting point; the tool may then be quickly advanced to the original depth, after which additional depth may be secured thru the compound rest top slide screw and nut and accurately determined by means of the stainless steel compound rest top slide micrometer collar. When circumstances prevent the use of the top slide screw for securing additional depth of cut, the ball stop unit may be used as a "slip-stop" for this purpose simply by loosening the binder screw slightly. This permits it to yield under pressure and thus to provide additional depth for succeeding cuts through the cross feed screw.

This stop is quite versatile as it will function in both forward and reverse directions and may be used for both external and internal chasing operations. Furthermore, on occasions it may be employed as a positive single diameter stop for duplicating diameters.



Micrometer Ball Stop

THREAD DIAL

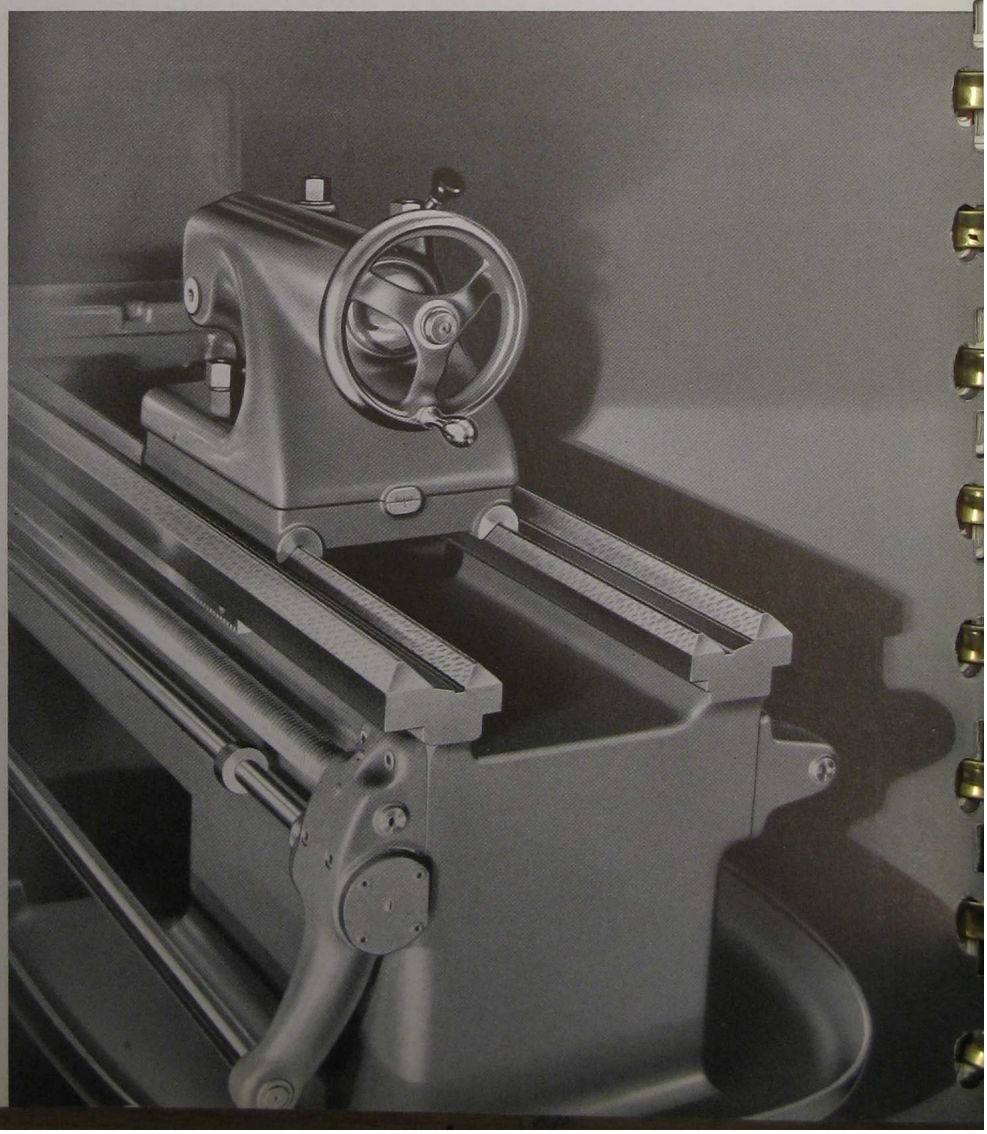
A thread dial conveniently located at the right-hand side of the apron in full view of the operator is regularly furnished. This dial is marked plainly to indicate the correct point for engaging the half nuts for the thread being chased, and carries instructions to guide the inexperienced operator so as to avoid mistakes.

PATENTED 4-VEE BED

The bed has been made unusually rigid by increased depth, thicker walls and heavier ribbing. A special mixture is used, containing 40% steel scrap and other ingredients, which produces a semi-steel of approximately 40,000 pounds tensile strength and a scleroscopic hardness of 35 to 38 degrees. The outstanding characteristic of this special metal is the close-grained, wear-resisting surface it provides for the carriage bearings.

"AMERICAN" Pacemaker beds provide 4 large vees for the carriage and tailstock guides, the two inner Vees being dropped below the outer Vees to provide greater swing over the bed and additional carriage bridge thickness. In our opinion, the vee bearing is much easier to keep clean and consequently offers greater resistance to cutting and wear than a flat bearing. When wear does occur, the 4-vee bed wears more evenly than one using a vee and a flat bearing, for it is perfectly obvious that a vee bearing and a flat bearing will not wear equally. The 4-vee bed, in providing 2 vee guides for both the carriage and the tailstock, insures longer life for their alignments, resulting in the maintenance of accuracy over a longer period of service than is possible with any other type of bed. The carriage vees are thoroughly lubricated by means of the "one-shot" oiling system in the apron.

"American" Four Vee Bed



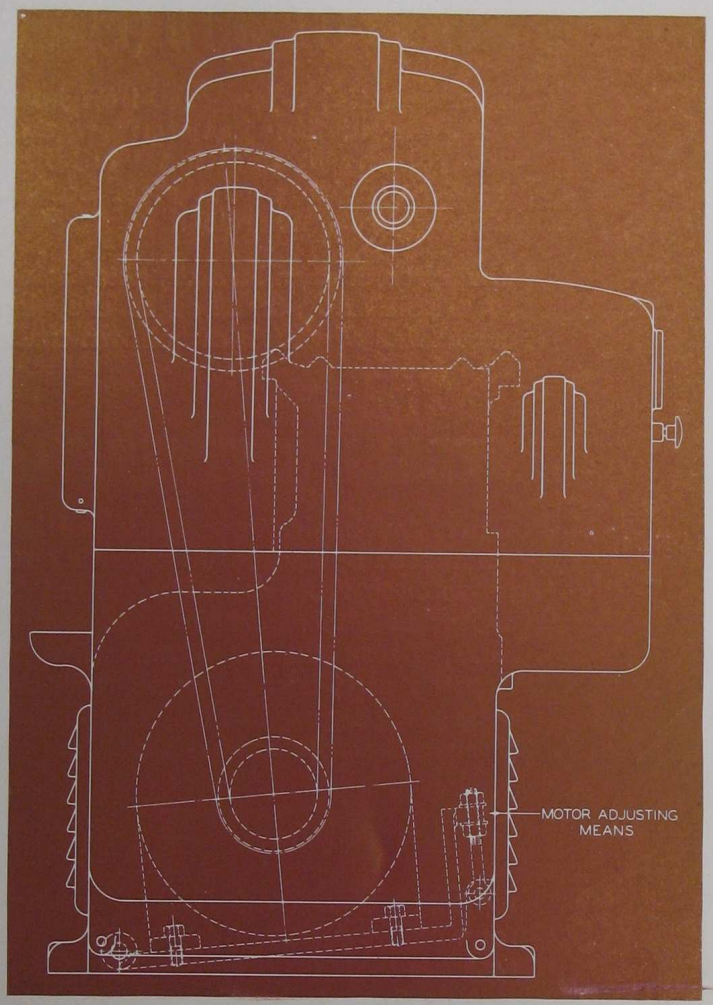


Diagram showing Standard Motor Mounting

MOTOR DRIVE

"AMERICAN" Pacemaker Tool Room Lathes are built only in the motor driven type. The motor drive consists of either A. C. or D. C. constant speed motor, mounted inside the cabinet leg under headstock, and connected to the initial driving unit of head, preferably by multiple vee belts, although a silent chain may be substituted if preferred.

The motor mounting includes a hinged motor plate to permit motor adjustment to compensate for belt stretch. For the maximum horse-power motor recommended for each size lathe, see specifications, page 54.

For lathes driven by adjustable speed motors in frames too large for mounting inside of the cabinet leg a platform mounting is provided at the rear of the head end cabinet leg. Connection to the head driving sheave is made thru multiple Vee belts. Adjustment for the motor to compensate for belt stretch is supplied.

Motors of the following maximum round diameter are the largest that can be mounted inside the headstock cabinet leg.

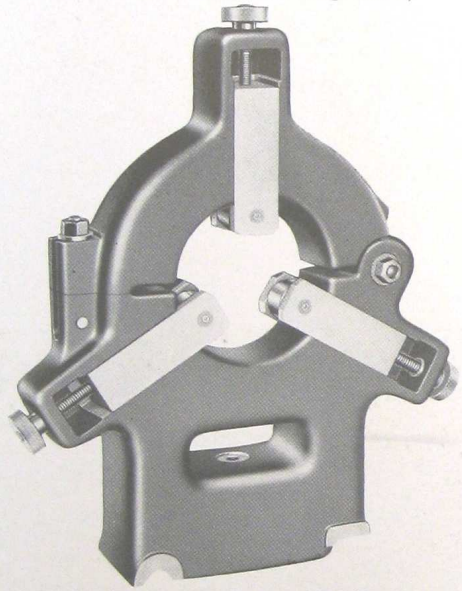
Size of lathe	14″	16″	18″	20″
Diameter of motor	16″	16″	17″	17″

Plain Jaw Steady Rest. (Fig. No. 1)

STEADY RESTS (Plain Jaw Type)

A substantial 3-jaw cast-iron body steady rest is regularly furnished as standard equipment. When desired, and at additional cost, this rest may be furnished with a cast steel body to better adapt it to very severe service.

Larger than standard capacity steady rests in both cast iron and steel bodies are also available, the capacities of which are shown under specifications on page 55.



Roller Jaw Steady Rest. (Fig. No. 2)

STEADY RESTS (Roller Jaw Type)

When machining work at the high surface speeds permitted by cemented carbide cutting tools, plain jaw steady rests are often found to be inadequate owing to the rapid wear of the plain jaws. We have, therefore, developed and are prepared to furnish anti-friction mounted roller jaw steady rests with approximately the same capacities as the plain jaw rests as indicated on page 55.

FOLLOW RESTS (Plain Jaw Type)

A more substantial follow rest has been designed for work requiring a follow rest support. This new rest has a three-bearing support on the carriage, two on the carriage wings and one on the carriage bridge. This triple support construction imparts a degree of rigidity to the rest that is absent in other designs having fewer supports. This rest is provided with round jaws with wedge-shaped tips, affording an area of contact with the work equal to the full diameter of the jaw. The wedge tips also permit closer setting of the jaws, an advantage on small diameter work. See page 55 for follow rest capacities.

Plain Jaw Follow Rest. (Fig. No. 3)

FOLLOW RESTS (Roller Jaw Type)

For work revolving at surface speeds too high for plain jaw rests, we offer our new type triple support follow rest with anti-friction mounted roller jaws. For capacities of these roller jaw follow rests, refer to page 55.

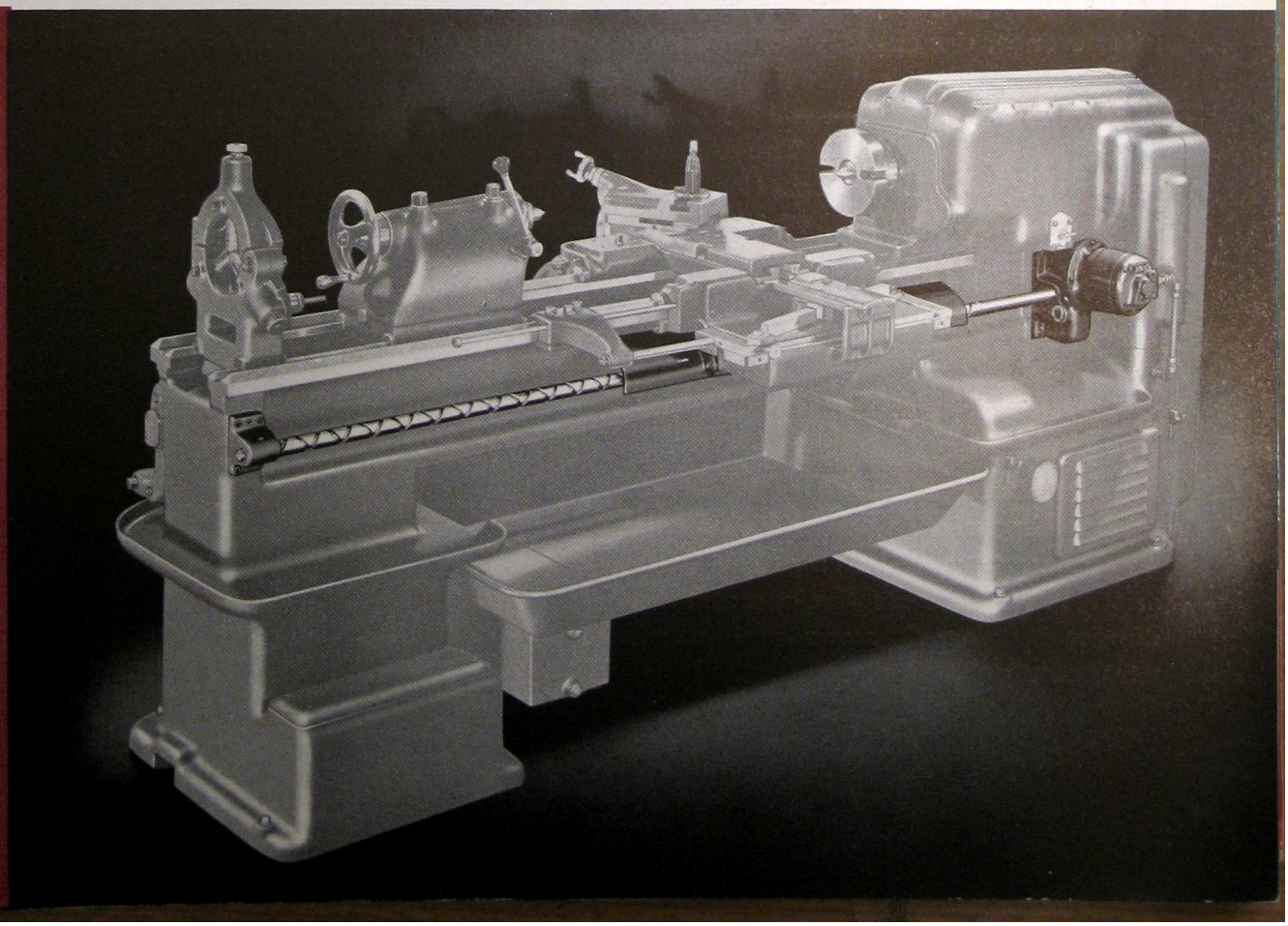
POWER RAPID TRAVERSE for CARRIAGE... PATENTED...FOOL PROOF

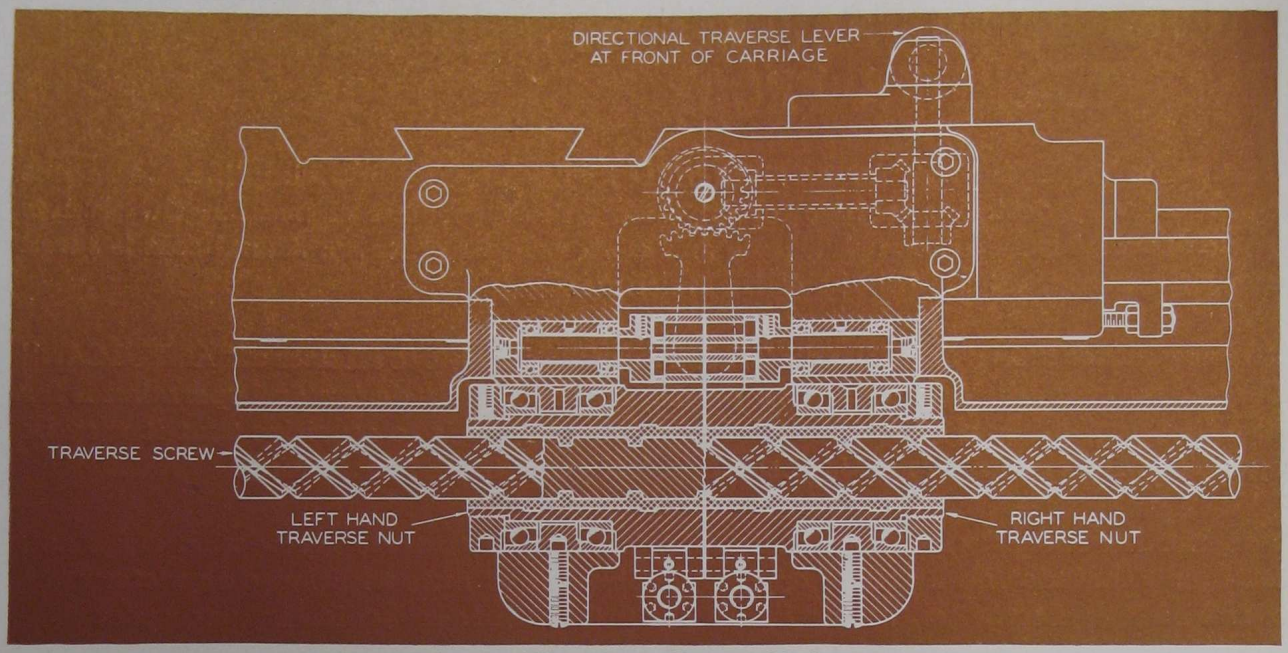
The power rapid traverse for carriage in its highly efficient and simplified form has become a very desirable feature for any size lathe regardless of bed length. It has proven conclusively to be such a time and work saver that its additional cost is saved many times over during the life of the machine.

The new motor driven Power Rapid Traverse now applicable to all sizes of "AMERICAN" Pacemaker Lathes is an outstanding development which in design and operation is far in advance of other mechanisms of this character. It is so sensitive that it may be operated with one finger and is absolutely fool proof in its functioning.

This mechanism consists essentially of a full length traverse screw with right and left-hand threads and a pair of opposed babbitt-lined nuts with large diameter hubs over which raybestos contacting bands are fitted. It is embodied in a compact self-contained unit attached to the rear of the carriage where it will not interfere with any of the other operating members of the lathe, the only member brought to the front being the directional control lever which is conveniently located on the left-front carriage wing.

Motor Driven Power Rapid Traverse



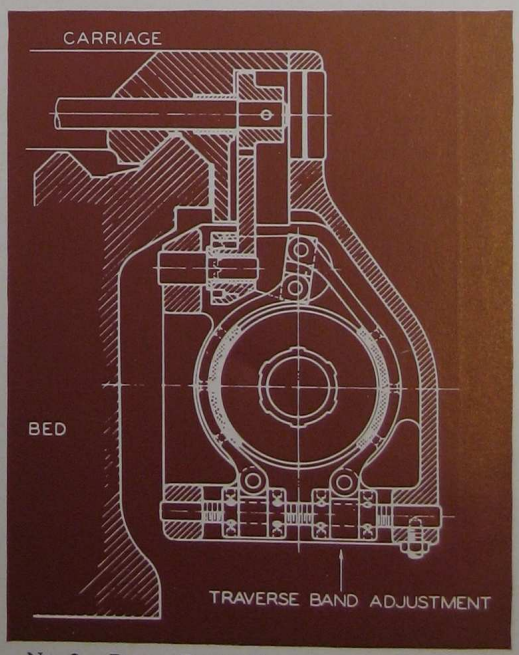


No. 1. Diagram of Power Rapid Traverse Mechanism

This control lever actuates either of the two contacting bands, which causes it to grip the hub of its traverse nut, which in turn imparts the traverse to the carriage. The operation of this mechanism is absolutely fool proof. It is so constructed that in event of the carriage being accidentally run into the headstock, the tailstock or any other interference, the engaged contacting band will simply slip and no damage will result. A further safety feature is provided by the control lever, which must be held in engagement by the operator. The moment he releases this lever, it automatically snaps back to the neutral position, which disengages the contact band and stops the carriage traverse.

SAFETY FEATURE

An outstanding safety feature is the automatic declutching of the traverse handwheel when the power traverse is engaged. This important feature protects the operator against the danger of a rapidly revolving handwheel when using the power traverse.



No. 2. Power Rapid Traverse, End View

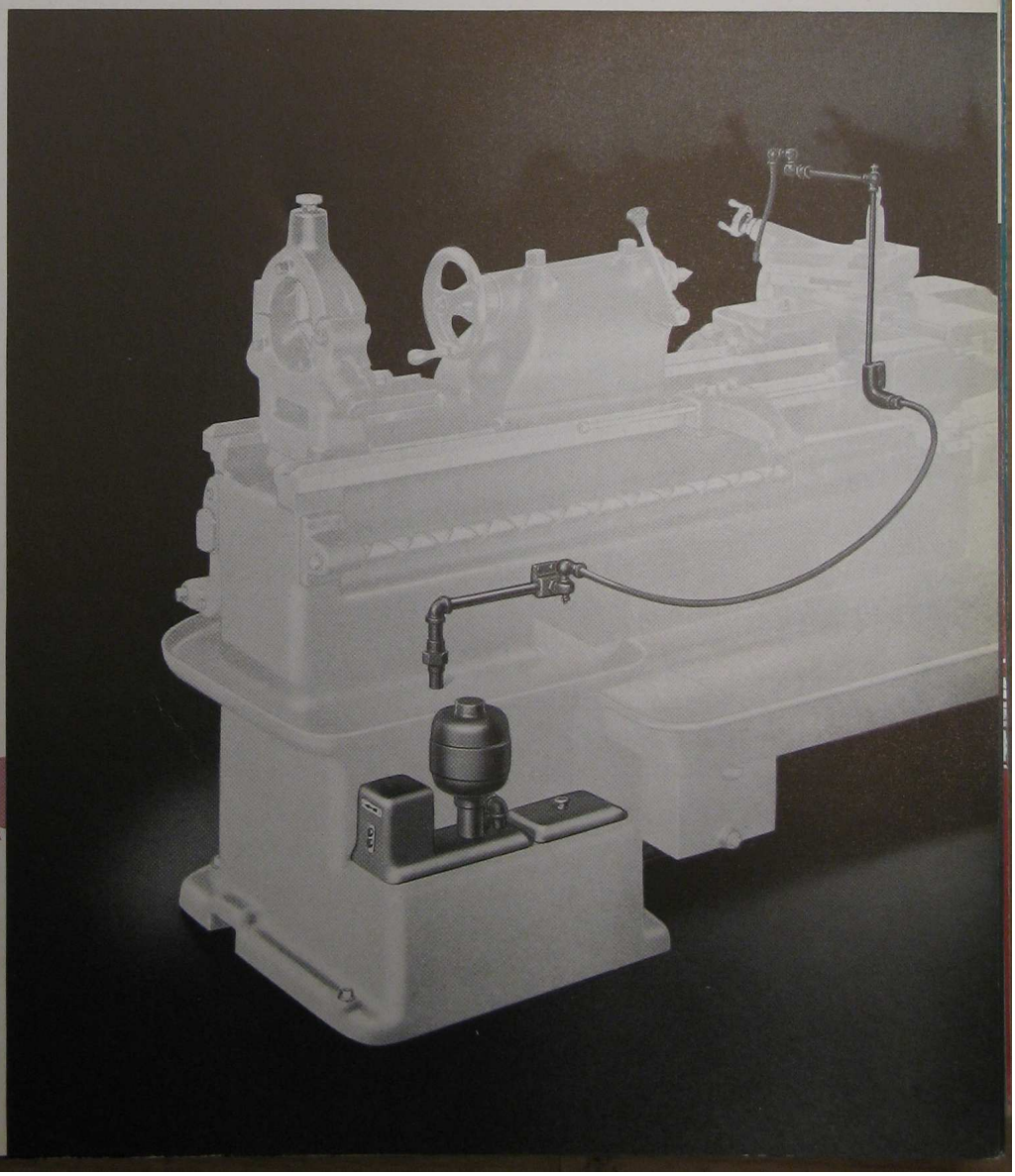
PAN (Integral Chip and Coolant Pan with Reservoir)

All Pacemaker Tool Room Lathes are regularly equipped with chip and coolant pans. The standard cabinet legs are provided with oil troughs for catching chips and coolant and draining the coolant into the pan.

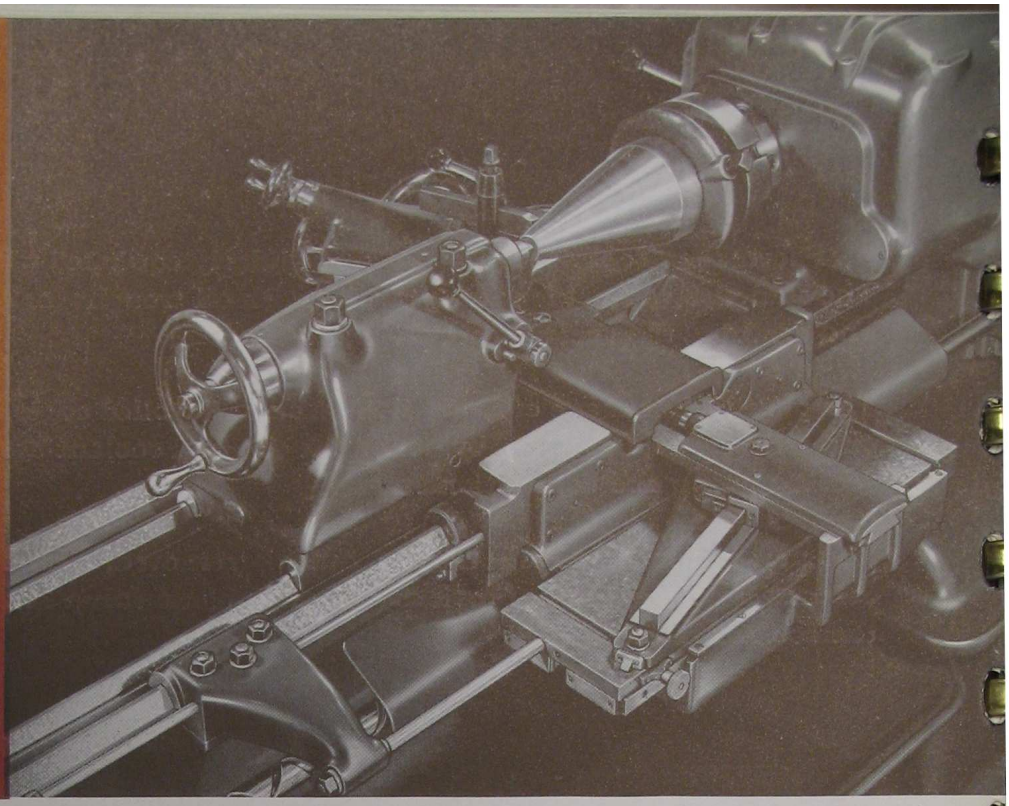
The pan itself is made of heavy sheet iron with rolled edges and carries a settling tank and strainer in order to provide for the use of a coolant system by simply adding the coolant pump and connections.

The pan is removable and may be quickly removed, cleaned and replaced. The rear cabinet leg is regularly provided with a coolant sump and provisions for mounting the coolant pump.

Application of Coolant Pump and Piping



"AMERICAN" BALL BEARING TAPER ATTACHMENT



Ball Bearing Taper Attachment

A new and greatly improved ball bearing taper attachment, providing a maximum capacity of 6″ taper per foot, is now available for all "AMERICAN" Pacemaker Lathes. This new attachment is the very last word in accuracy, ease of control and frictionless operation.

Twenty-four (24) permanently sealed anti-friction bearings reduce frictional loads, especially on the steepest tapers, to a fraction of those encountered on the standard type of plain bearing attachment, resulting in faster work, with better finish and of greater accuracy.

The anti-friction bearings employed in this mechanism are concealed in such a manner that they are never exposed to dust, dirt or chips, which in itself is a decided advantage, as such an application eliminates the necessity of cumbersome guards, exposing the entire mechanism to the view of the operator at all times. A very simple wedge adjusting means is provided to compensate for any wear that might occur in the anti-friction bearings.

To insure permanent accuracy and minimize wear, hardened and ground steel contacting surfaces or "ways" are supplied for the anti-friction bearings, both in the sliding shoe and the bottom slide. These surfaces are extremely hard and are kept scrupulously clean by improved Duprene wipers.

This new taper attachment is of the carriage type with telescopic cross feed screw control. Bolted to and traveling with the carriage, it is always in position for instant service and is so designed and its weight so distributed as not to destroy the easy and sensitive movement of the carriage along the bed.

The U-type supporting bracket, tied rigidly together at the top into a complete box section, effectually resists the severest stresses and distributes them equally throughout the box section, preventing a concentration of stresses at any one location. The taper bar support, which slides on the base of the U bracket, has a very large bearing area on the bracket, giving a solid and unyielding support to the taper bar.

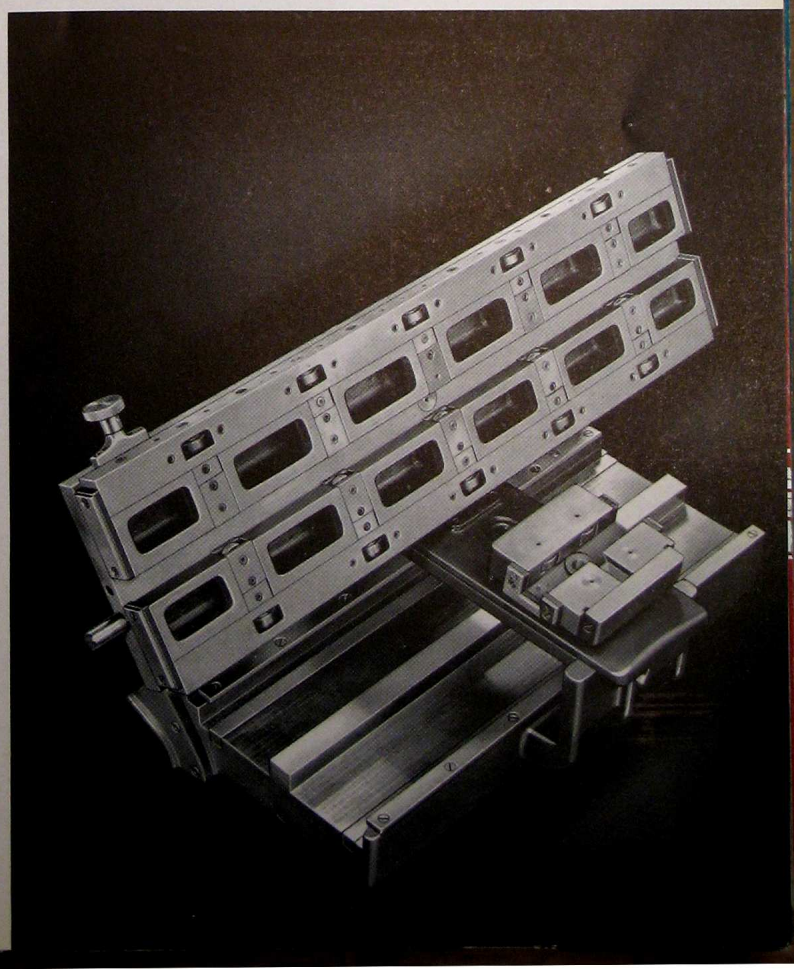
The taper bar bearing on the bar support has been made unusually large to resist the thrust of the sliding shoe and to insure extreme accuracy on steepest tapers. A very sensitive adjustment for the taper bar, for accurate settings, is provided thru a knurled knob and fine pitch screw. The sliding shoe which contacts the taper bar is rectangular in form, is of generous proportions, and is equipped with adjustable anti-friction bearings, resulting in a smooth, steady, frictionless movement along the bar.

The clamp dog is of generous proportions and is clamped to the bed by two heavy bolts and a large area clamp under the outer vee. To insure smooth and easy movement of the dog along the bed when unclamped and traveling with the carriage, an auxiliary draw bar is provided close to the bed bearing, which, when clamped to the dog by the bolt provided for that purpose, directs the pull of the carriage close to the bearing on the bed and eliminates the cramping tendency which would otherwise be encountered were all of the moving effort applied at the outer end of the dog.

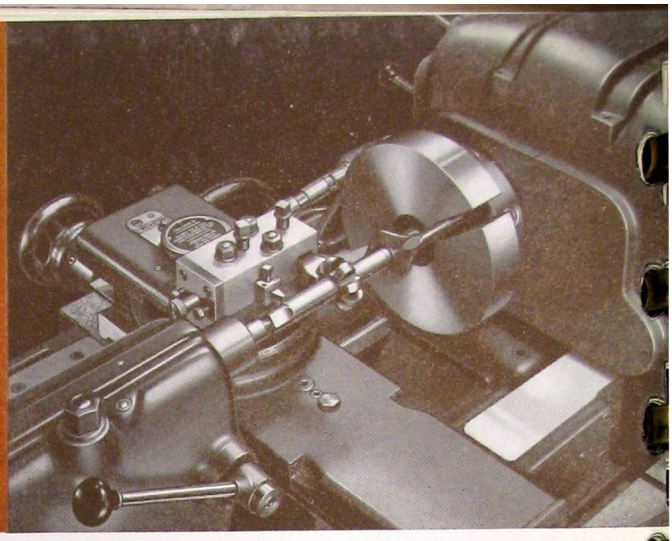
The telescopic cross-feed screw is of large diameter and made of a fine grade of steel heat treated and hardened. It is provided with a bronzed-lined journal in the yoke and is equipped with ball thrust bearings at each end. The cross feed nut is made of heat-treated bronze and is automatically oiled. It is of the two-piece compensating type, with wedge adjustment for wear.

A dirt guard shields the cross feed screw and nut from chips and dirt.

Showing Anti-friction Bearing Application to Taper Attachment and hardened steel "ways"



"AMERICAN" UNIVERSAL RELIEVING ATTACHMENT ..Pacemaker Model

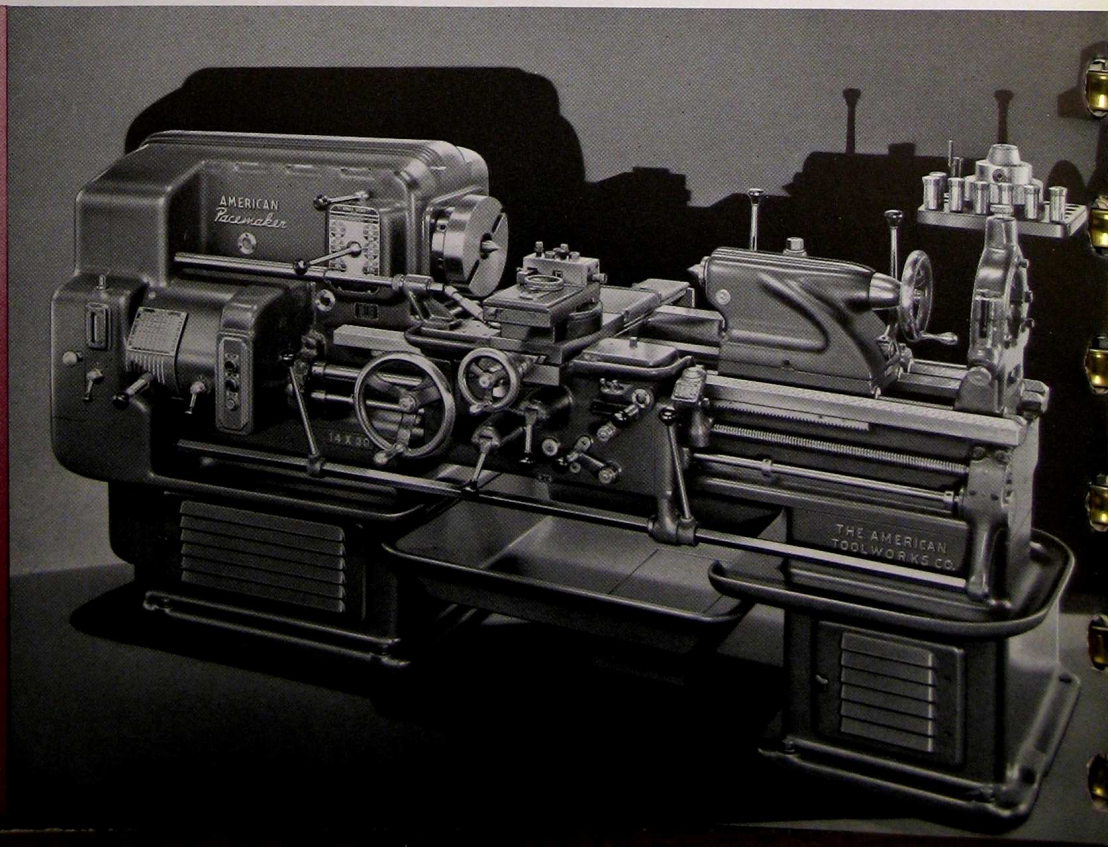


Cutter Relief. (Fig. No. 1)

A new and greatly improved relieving attachment has been developed along strictly modern lines for the "AMERICAN" Pacemaker Lathe. This attachment is fully universal and provides for right and left-hand leads as well as for end, internal and external, plain, angular and spiral relieving operations. It may be used either with or without a taper attachment. Because of its desirable built-in features, this new attachment must be ordered with the Lathe as it can not be applied after the Lathe is shipped.

The outstanding characteristic of this new universal relieving attachment is its convenience and ease of adjustment for the different types of relieving work. For example, the change from external to internal relief is accomplished merely by transferring screw "A" in the top slide from the "Push" to the "Pull" position, while to vary the depth of relief a convenient quick-acting adjusting screw is provided in the top slide.

"American" Tool Room Lathe with Relieving Attachment



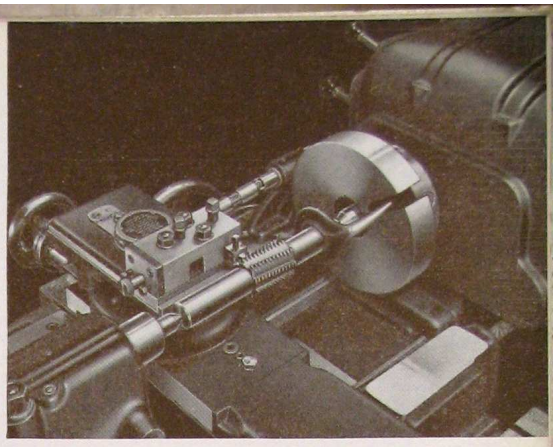
The full range of 25 standard flutes is secured through the quadrant and change gears supplied with the attachment; however, additional flutes may be relieved by the application of additional change gears.

Spiral relief is accomplished by simple change gear combinations. However, when relieving spiral work a spindle reversing means is essential for the carriage return, for when returning the carriage for the succeeding cut its travel must be reversed with the half nuts engaged at the same time the relieving attachment and the work are reversed in order to maintain the exact register between the lead of the leadscrew, the lead of the work and the reciprocating mechanism. For this purpose electrical reverse to the spindle through a reversing motor and electrical apron control for the reverse are strongly recommended.

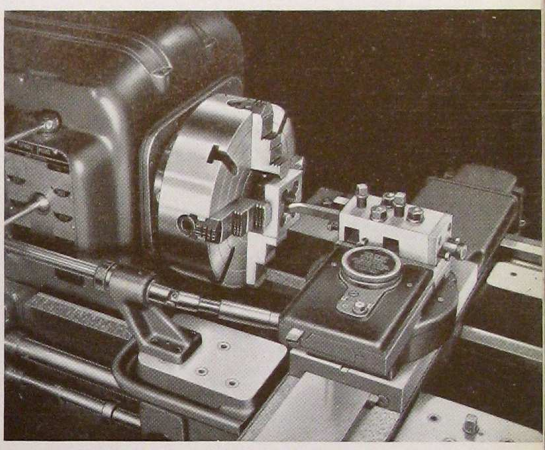
The relieving attachment drive unit, consisting of the main drive and change gears, all anti-friction mounted, is located at the end of the headstock and is an integral part of the Lathe. The hinged cover at the head end completely encloses this mechanism, thus thoroughly protecting it and at the same time making access quick and convenient.

The relieving attachment drive is taken from the spindle through gearing to the splined shaft which connects with the relieving rest. Incorporated in this drive is a selective slip gear unit actuated by a pull rod for selecting the correct drive for the attachment when used either with or without a sub-head. This unit also provides a neutral point for completely disconnecting the relieving attachment drive at its source when the attachment is not in use.

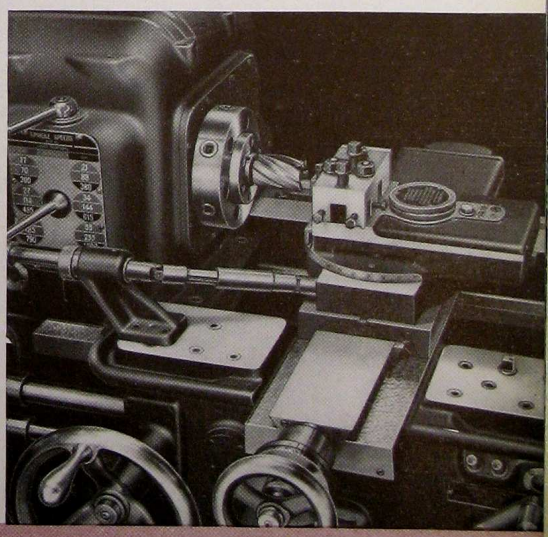
This drive mechanism also provides means through a single tooth, one-way driving clutch for disconnecting the relieving rest when the lathe spindle is reversed, thus stopping the reciprocal action at that time.



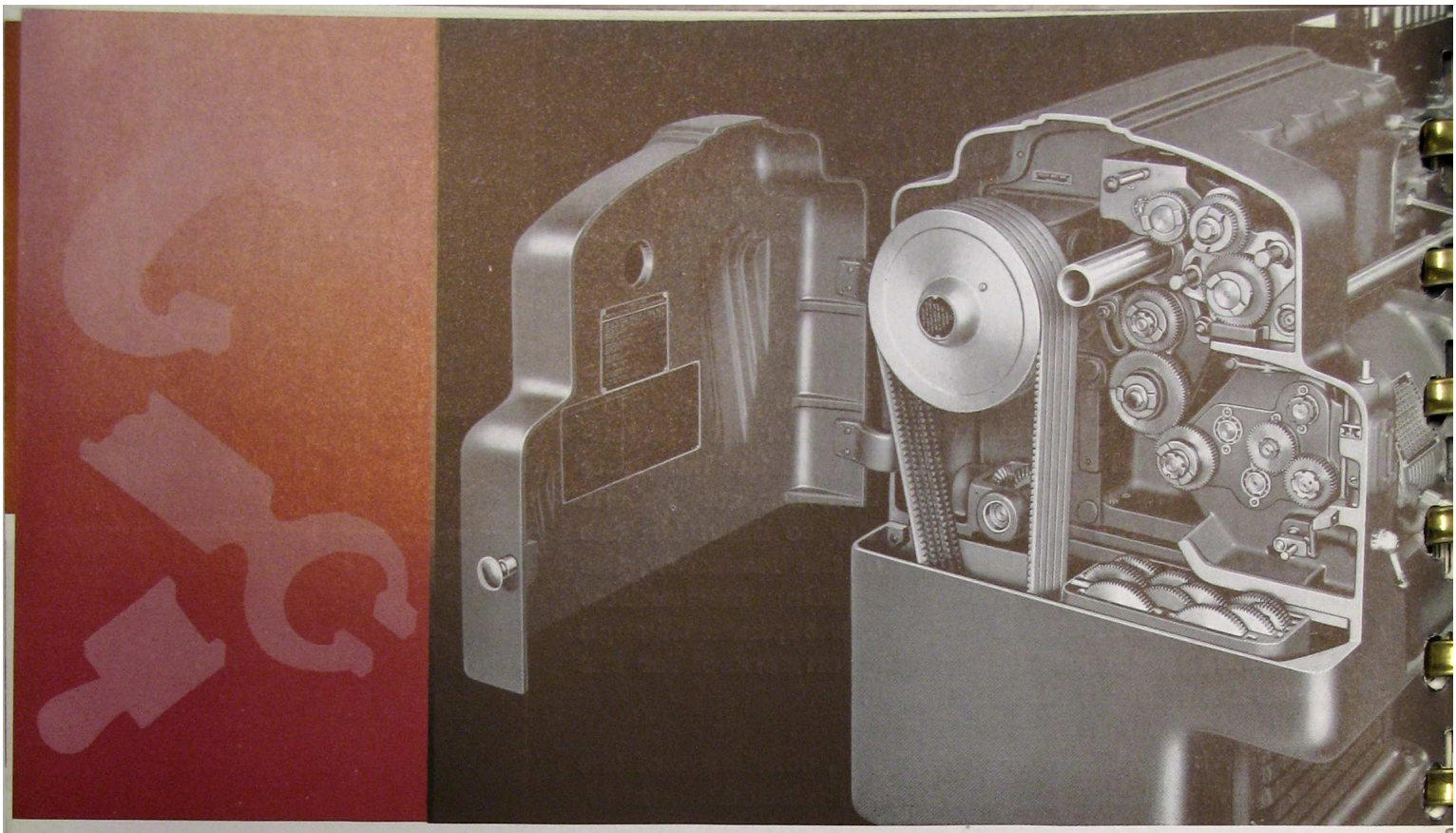
Spiral Relief (Fig. No. 1)



Internal Relief (Fig. No. 2)



End Relief (Fig. No. 3)



Relieving Attachment Gearing

An outstanding improvement in relieving attachments is the use of but one cam in the new "AMERICAN" for the entire relieving range. This is a single lobe cam which, by eliminating the inaccuracies resulting from uneven wear on multi-lobe cams, insures the same amount of relief on each flute of the work; thus the work produced by the new "AMERICAN" sets a new standard of accuracy.

As a further insurance of accuracy, a special relieving rest of very substantial construction is supplied as standard relieving attachment equipment. This rest is quickly interchangeable with the standard compound rest, only a few minutes being required to make the change. By confining the use of this especially designed rest to relieving operations, its accuracy is maintained over a long period of service.

The especially designed relieving tool holder is also a very substantial unit firmly bolted directly to the top slide of the relieving rest. A very valuable side adjustment for the tool, independent of the rest setting, is provided through a convenient adjusting screw which makes possible the adjustment of the tool to the work to compensate for slight errors in the original setting of the tool in relation to the work. The original setting of the tool to the work is also greatly facilitated by a fine tooth clutch mechanism built into the splined shaft connection which is located on the left carriage wing. This permits fine adjustment of the cam until the tool is brought into proper register with the work flute and is by far more convenient and rapid than changing the work setting to suit the position of the tool.

Whenever a relieving attachment is furnished, the Lathe should be driven by a two-speed, 2 to 1, 900/1800 r. p. m. motor in order to provide the slow spindle speeds essential to satisfactory relieving operations. With this type of motor the following spindle ranges are available:

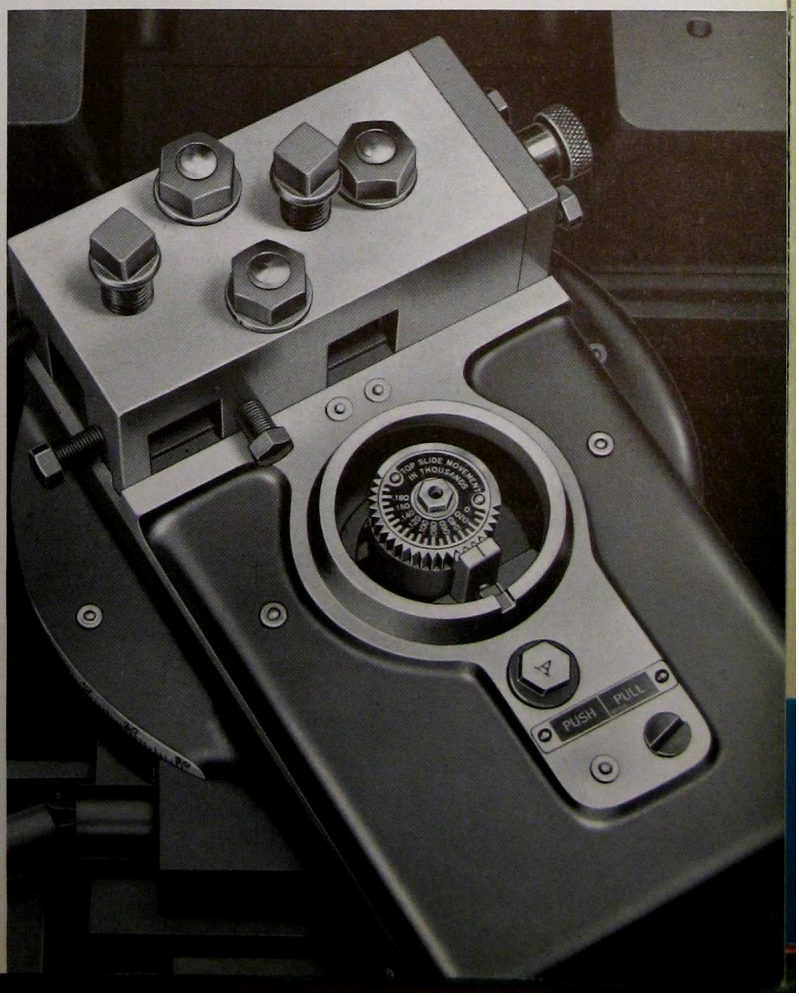
Size of Lathe	Type of Head	Speed Range
14″ and 16″	18-speed	8.5 to 1000 r.p.m.
14″ and 16″	27-speed	7.5 to 1000 r.p.m.
18″ and 20″	18-speed	6.5 to 800 r.p.m.
18″ and 20″	27-speed	6 to 800 r.p.m.

SPECIFICATIONS

Size of Lathe	14″—16″	18″—20″
Largest work relieving attachment will handle	$9\frac{7}{8}$″	13″
Depth of relief—range	0 to $\frac{3}{16}$″	0 to $\frac{3}{16}$″

Number of work flutes relieving attachment will accommodate — 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26.

Relieving Rest with Cover removed to show depth adjusting means



SUB-HEAD (Speed Reducer)

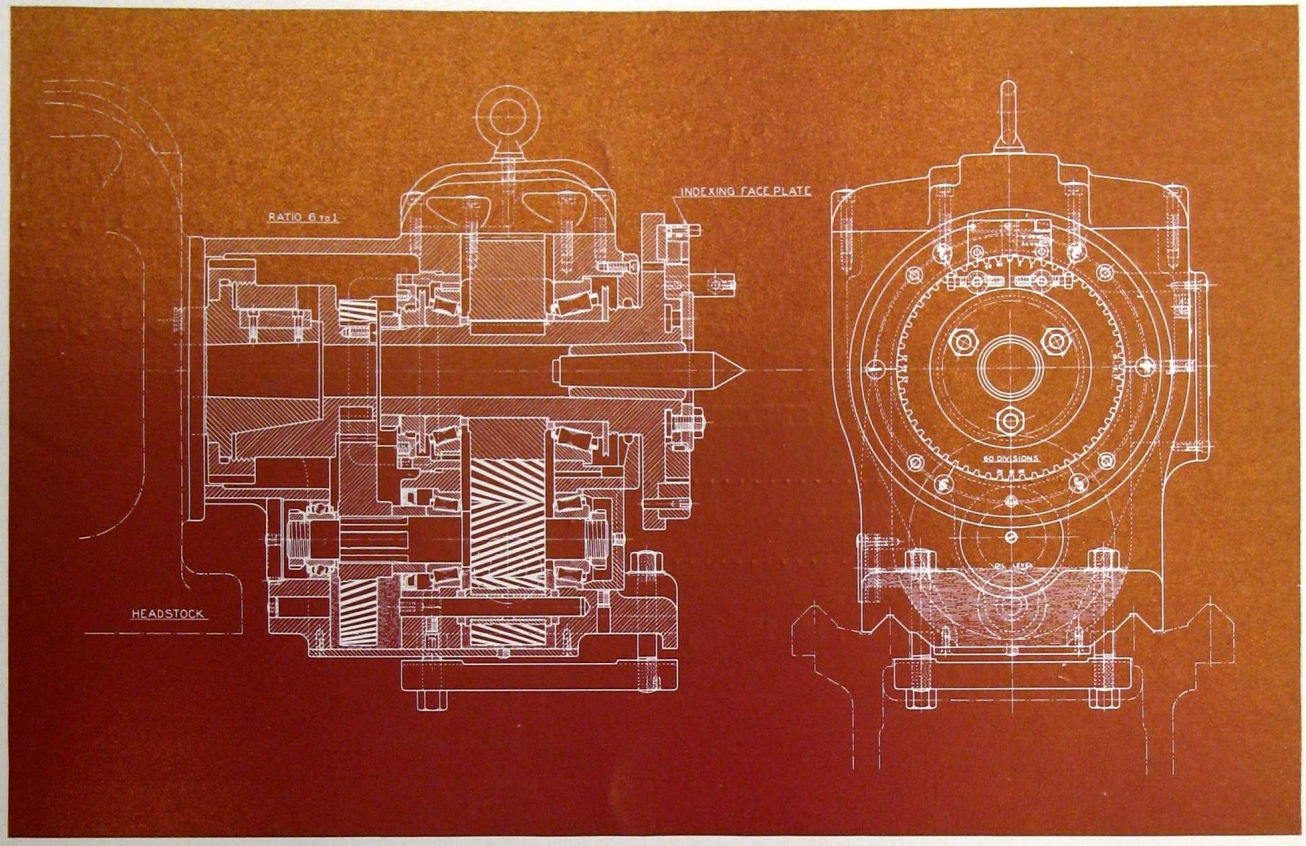


Diagram of Sub-head

The sub-head or speed reducer, as it is sometimes called, is a valuable unit for operations such as relieving wide forming tools, hobs with long leads and cutters with large number of teeth, also for coarse worm cutting and chasing long leads—in fact, any operations requiring very slow work speeds.

This attachment, which is fitted directly to the spindle nose and securely clamped to the bed, provides a speed reduction of 6 to 1, resulting in the very slow work speeds required for such operations.

This unit also functions as an indexing face plate, being suitably marked for the chasing of multiple threads. This entire unit is anti-friction mounted, is provided with accurately hobbed and machine-lapped helical gears, automatic lubrication, and may be quickly applied and removed as desired.

COARSE THREADING ATTACHMENT

Occasionally work requiring coarse leads beyond the range of the standard threading mechanism is encountered, in which event either a sub-head or a coarser thread range is essential. When a sub-head is unavailable, we are prepared to furnish for such

operations a coarse threading attachment consisting of a special quadrant and suitable change gears to modify the regular thread range to cut threads twice as coarse as the standard range. (See page 23.)

This coarse threading attachment either may be furnished with the Lathe or applied after the machine is shipped.

COLLET CHUCKS and COLLETS

Two types of collet chucks may be furnished for either Cam-Lock or Standard Key Drive Taper Spindle Noses: the Key Operated nose type and the Wheel Operated nose type.

The Key Operated chuck takes a maximum size collet of $1\frac{3}{4}''$ on all sizes.

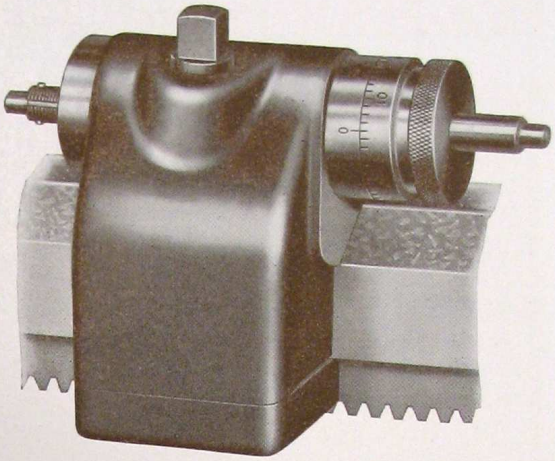
The Wheel Operated chuck accommodates a maximum size collet of $1\frac{3}{8}''$ capacity on the 14″ and 16″ sizes and $1\frac{3}{4}''$ capacity on the 18″ and 20″ sizes.

MICROMETER CARRIAGE STOP

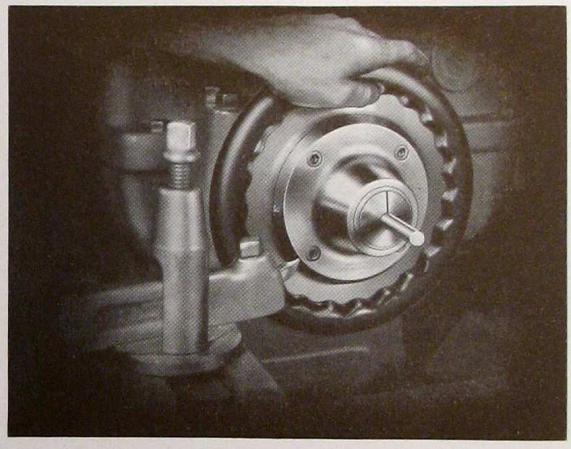
The micrometer carriage stop, furnished as standard equipment on the "AMERICAN" Pacemaker Tool Room Lathe, is provided for accurately locating the carriage or tool with relation to the work. It is a positive stop, which is used in connection with hand feed only, and must not be used in combination with power feed.

This mechanism consists of a body casting carrying an adjusting screw with knurled knob, and a micrometer collar graduated for fine adjustments of the screw. Hardened plugs are provided in the ends of the front carriage wings to contact the adjusting screw.

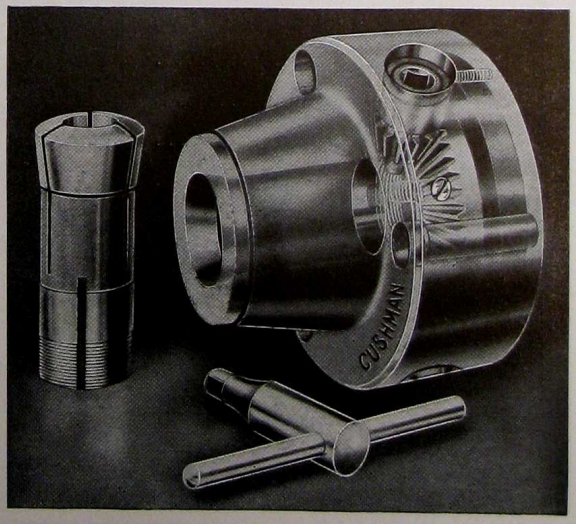
The stop screw can be used at either end, which permits placing the stop at any point on front Vee, and at either end of carriage wings.



Micrometer Carriage Stop. (Fig. No. 1)



Wheel-Type Collet Chuck (Sjogren) (Fig. No. 2)



Nose-type Collet Chuck. (Fig. No. 3)

DIMENSIONS

SIZES	14″	16″	18″	20″
Swing Over Carriage Wings	16½″	18½″	20½″	22½″
Swing Over Compound Rest	9⅞″	11¼″	13½″	15″
Swing Over Taper Attachment	9⅞″	11¼″	13½″	15″
Swing Over Connected Plain Block and Adjustable Rear Rest	6″	6″	8″	8″
Takes Between Centers Tailstock Flush	30″	30″	30″	48″
Inches Lost thru Use of Roller Bearing Tailstock Center	None	None	None	None
Diameter Large Face Plate	15″	17″	19″	21″
Base Length—Net Weight	5200	5400	8125	8850
Extra 2 Feet of Bed—Net Weight	375	375	510	510
Base Length—Domestic Shipping Weight	5400	5600	8425	9150
Extra 2 Feet of Bed—Domestic Shipping Weight	500	500	660	660
Base Length—Boxed Weight	6500	6700	9625	10850
Extra 2 Feet of Bed—Boxed Weight	550	550	710	710
Cubic Feet, Shipped Assembled—Base machine, boxed	170	175	210	260
Each additional 24″ between Centers	50	55	60	65
Maximum size motor recommended	10 H. P.	10 H. P.	20 H. P.	20 H. P.
HEADSTOCK				
Length on Bed	26¼″	26¼″	32⅝″	32⅝″
Front Spindle Bearing	Timken	Timken	Timken	Timken
Intermediate Spindle Bearing	Timken	Timken	Timken	Timken
Rear Spindle Bearing	Ball Bearing	Ball Bearing	Ball Bearing	Ball Bearing
Radial Load Capacity—Front Bearing at 100 R. P. M.	9,230 lbs.	9,230 lbs.	12,320 lbs.	12,320 lbs.
Thrust Load Capacity at 100 R.P.M.	7,400 lbs.	7,400 lbs.	9,310 lbs.	9,310 lbs.
Hole in Spindle	1¾″	1¾″	2¼″	2¼″
Taper of Center	No. 4	No. 4	No. 5	No. 5
Number of Vee Belts	5	5	8	8
Number of Spindle Speeds	9-18-27	9-18-27	9-18-27	9-18-27

For range of spindle speeds See page 15

DIMENSIONS

SIZES	14″	16″	18″	20″
BED				
Depth of Bed	11″	11″	12 7/8″	12 7/8″
Width of Rack and Pitch	7/8″ x 10P.	7/8″ x 10P.	1 1/4″ x 8/10P.	1 1/4″ x 8/10P.
CARRIAGE				
Length of Carriage on Bed	26 3/4″	26 3/4″	32 1/8″	32 1/8″
Width of Carriage Bridge	7″	7″	9″	9″
Square Inches Bearing Surface on Bed	67	67	104	104
QUICK CHANGE BOX				
Number of Threads Can be Cut	48	48	60	60
Range Threads Can be Cut Per Inch	1 1/2″ to 92	1 1/2 to 92	1 to 60	1 to 60
Number of Feeds Can be Cut	48	48	60	60
Range Feeds in Thousandths Per Revolution	.002 to .118	.002 to .118	.003 to .200	.003 to .200
Diameter of Leadscrew	1 3/8″	1 3/8″	1 3/4″	1 3/4″
Pitch of Leadscrew	1/4 Pitch	1/4 Pitch	1/2 Pitch	1/2 Pitch
COMPOUND REST				
Length of Bottom Slide	14″	14″	18 1/2″	18 1/2″
Width of Top Slide	6 3/4″	6 3/4″	8 3/4″	8 3/4″
Travel of Top Slide	4″	4″	6″	6″
Size of Tool	5/8″ x 1 1/4″	5/8″ x 1 1/4″	3/4″ x 1 1/2″	3/4″ x 1 1/2″
TAILSTOCK				
Length on Bed	14″	14″	19″	19″
Diameter of Tailstock Spindle	2 3/8″	3″	3 7/8″	4 5/8″
Length of Tailstock Spindle	13 3/8″	13 3/8″	18 7/8″	18 7/8″
Set Over on Tailstock, on Side	1/8″	1/8″	1/8″	1/8″
Spindle Travel	6 1/2″	6 1/2″	10″	10″
STEADY REST—Plain Jaw Type Standard Capacity	1/2″ to 6″	1/2″ to 6″	3/4″ to 8″	3/4″ to 8″
STEADY REST—Roller Jaw Type Standard Capacity	1/2″ to 4″	1/2″ to 4″	3/4″ to 7″	3/4″ to 7″
FOLLOW REST—Plain Jaw Type Standard Capacity	1/2″ to 4″	1/2″ to 4″	3/4″ to 6″	3/4″ to 6″
FOLLOW REST—Roller Jaw Type Standard Capacity	1/2″ to 4″	1/2″ to 4″	3/4″ to 5″	3/4″ to 5″

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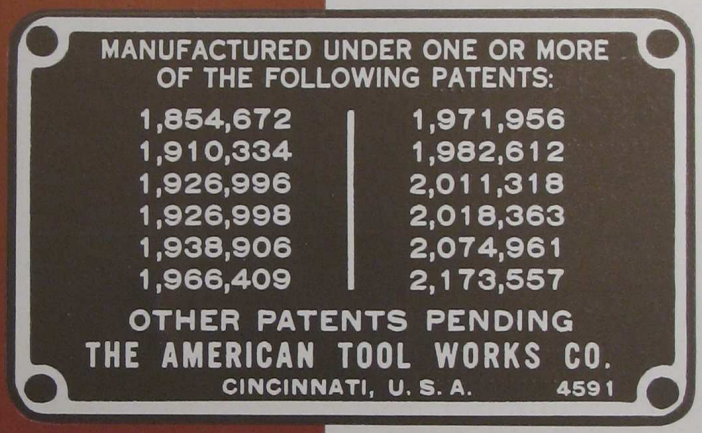
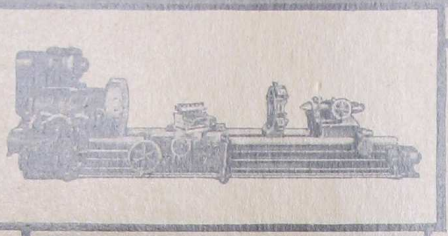
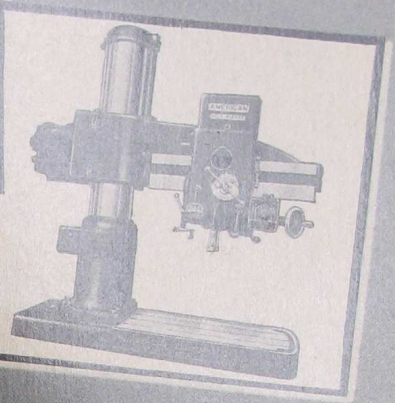
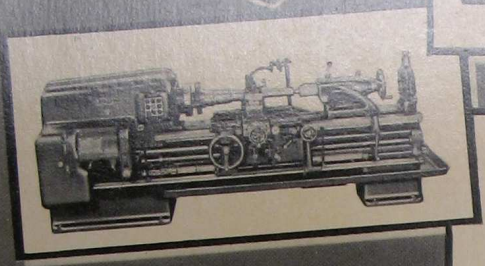


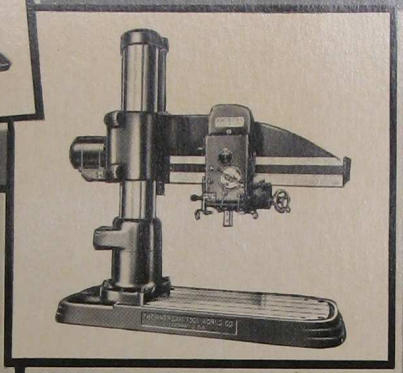
Trade-Mark Reg.

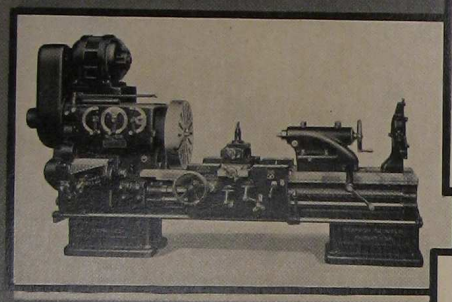
"AMERICAN"

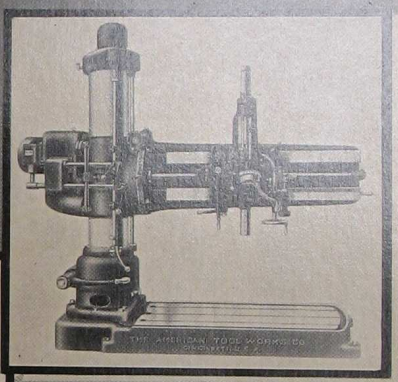


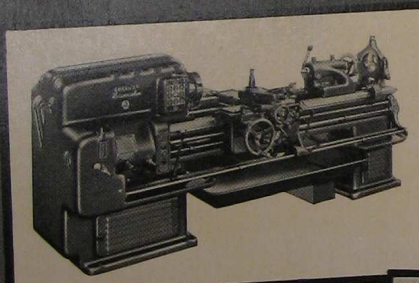


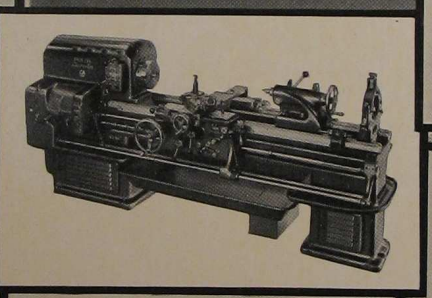


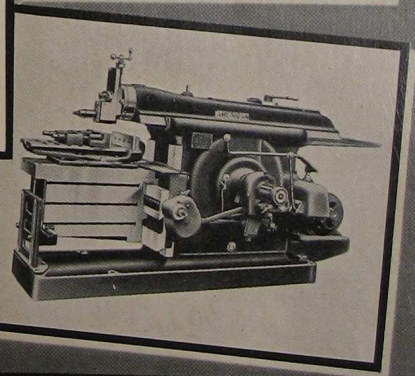


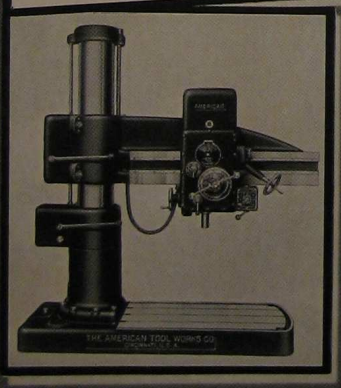


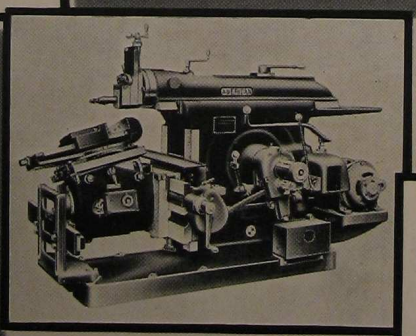


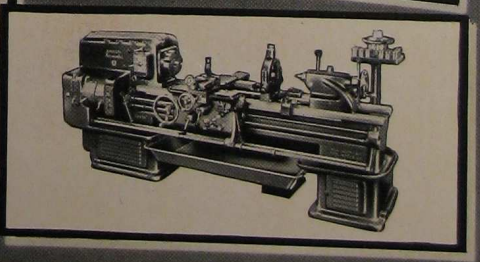












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