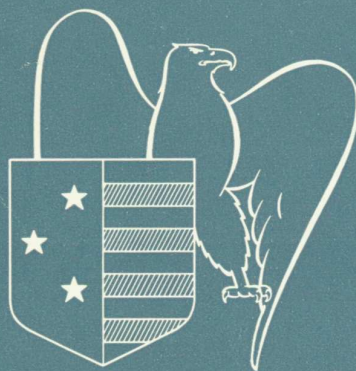


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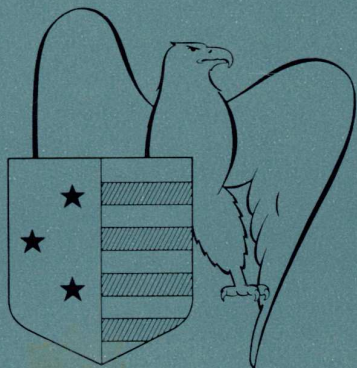
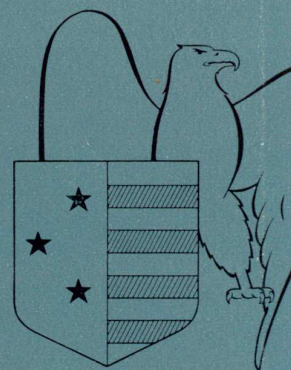
Bulletin No. 140

Production Costs  
cut to the bone...



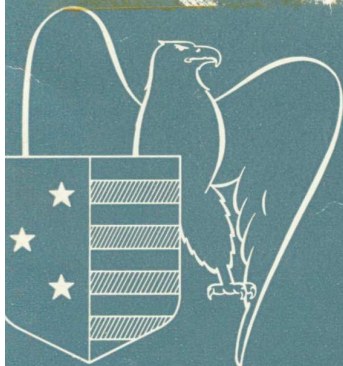
**"AMERICAN"**

**HYDRAULIC DUPLICATING LATHES**



*Offered in several types  
to accommodate every kind  
of Tracing Operation*

45° TOOL SLIDE  
90° TOOL SLIDE  
CROSS CENTER TYPE  
ROLL DUPLICATING



**THE AMERICAN TOOL WORKS CO.**  
**Cincinnati 2, Ohio, U. S. A.**

LATHES AND RADIAL DRILLS



# Standard Equipment

## "AMERICAN" 45° DUPLICATING LATHES

27-Speed, automatically oiled, 100% anti-friction geared head with Triple Spindle Drive and 3-Bearing Spindle.

Hardened tool steel outside bed vees.

Nitrided steel guide-way for angular slide.

Power rapid advance and retraction of tool slide controlled from front.

Quick change Gear Mechanism for feeding only.

Built-in anti-friction Tailstock Center.

Large Micrometer Dial with indicating clips for cross feed screw.

4-Way Tool Block for tool slide.

Micrometer adjustable template support with adjustable centers for holding round templates.

Complete hydraulic duplicating equipment including power unit and motor, all hose fittings and hose, hydraulic tracer head, 45° angle tool slide with actuating hydraulic cylinder.

Drive plate (small face plate).

Chromium plated hand wheels and handles.

Adjustable non-interference stop on bed for carriage.

DEMONSTRATOR SENT TO CUSTOMER'S PLANT TO INSTRUCT OPERATOR.

### Optional Equipment

Easy access chip and coolant pan.

Motor driven coolant pump.

Thread chasing mechanism.

Adjustable blocks for holding flat templates.

Correctly ground cemented carbide, shaft turning tools for roughing and finishing.

Horse power meter.

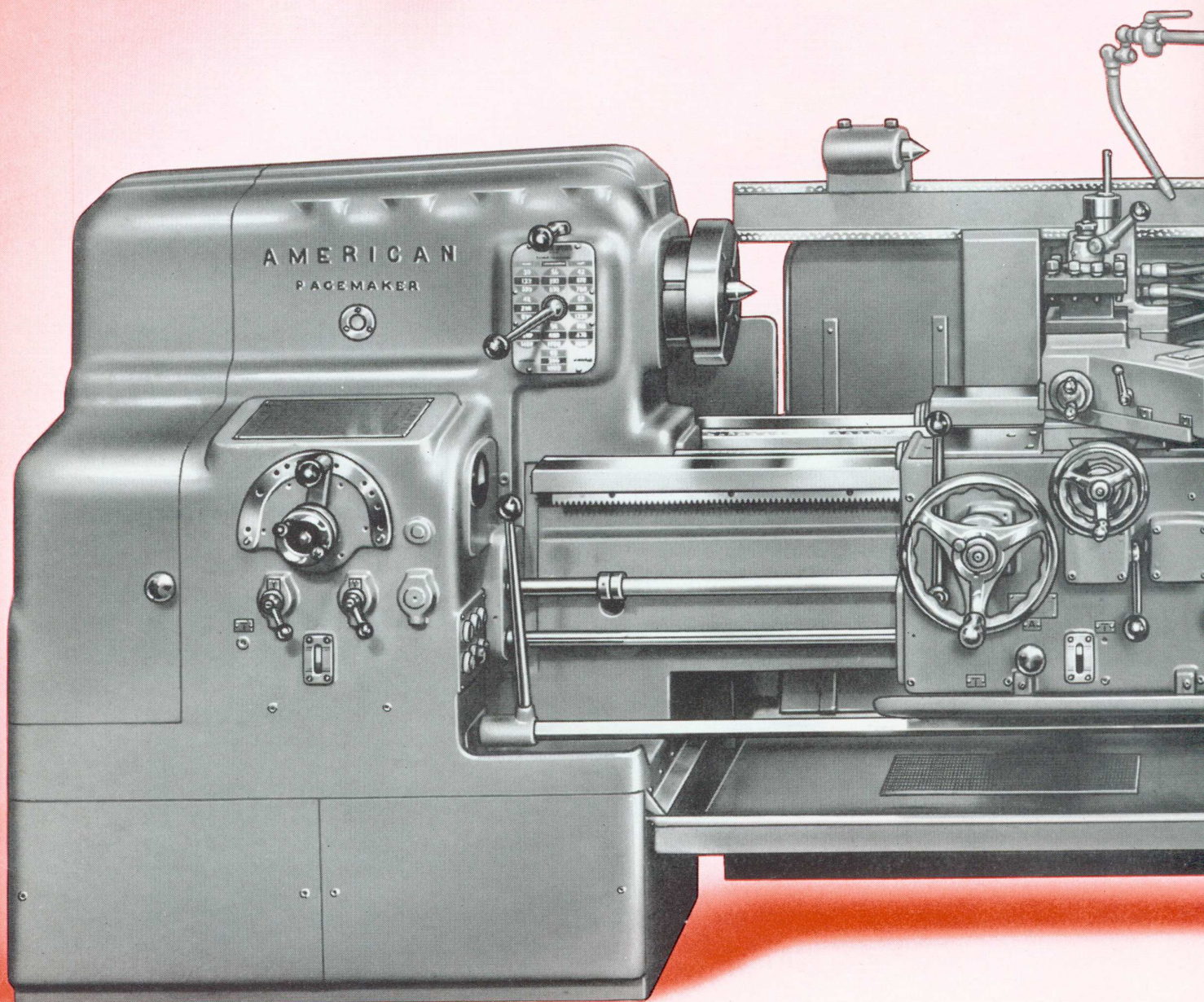
Tool setting gauge.

Power rapid traverse for carriage and cross slide.



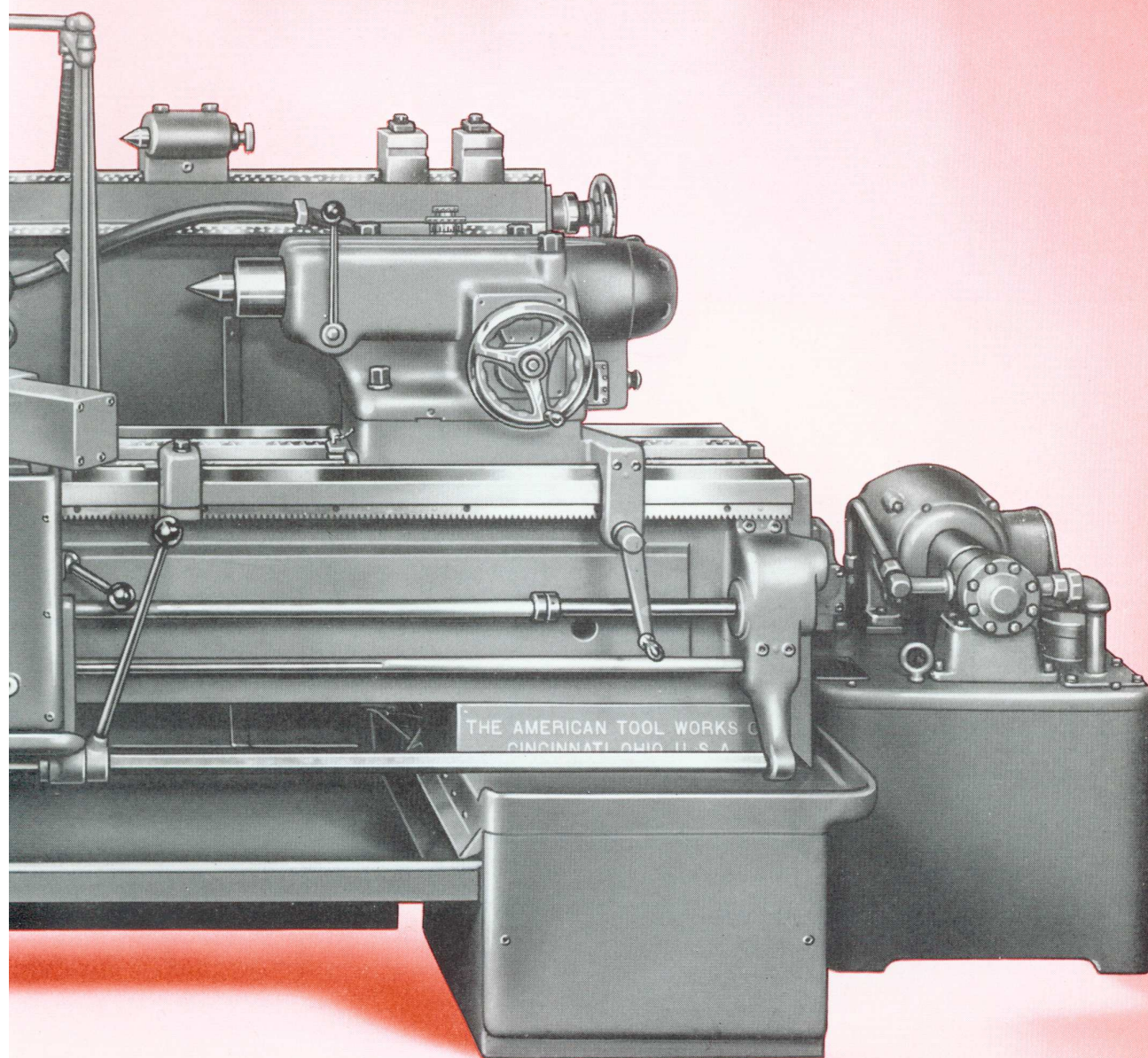


# "AMERICAN" HY

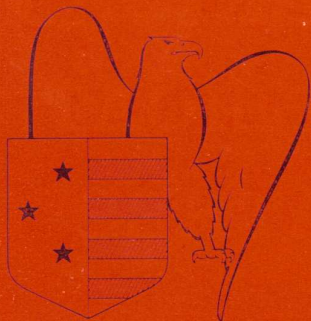




# HYDRAULIC DUPLICATING LATHES



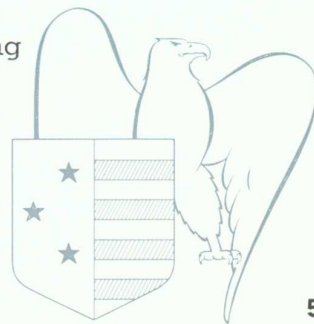




# **"AMERICAN"**

## **45° DUPLICATING LATHES**

1. Reproduce accurately from round or flat templates.
2. Cut production costs by reducing machine time 25 to 75 per cent.
3. Cut set-up time to a fraction required by other methods.
4. Minimize measuring and "miking".
5. Eliminate necessity of form tools.
6. Permit continuous cutting.
7. Controlled by one hydraulic system.
8. Produce a "quality" finish frequently eliminating the necessity of grinding.





Trade  
Cat  
A 502  
1959



# **"AMERICAN"**

## **HYDRAULIC DUPLICATING LATHES**

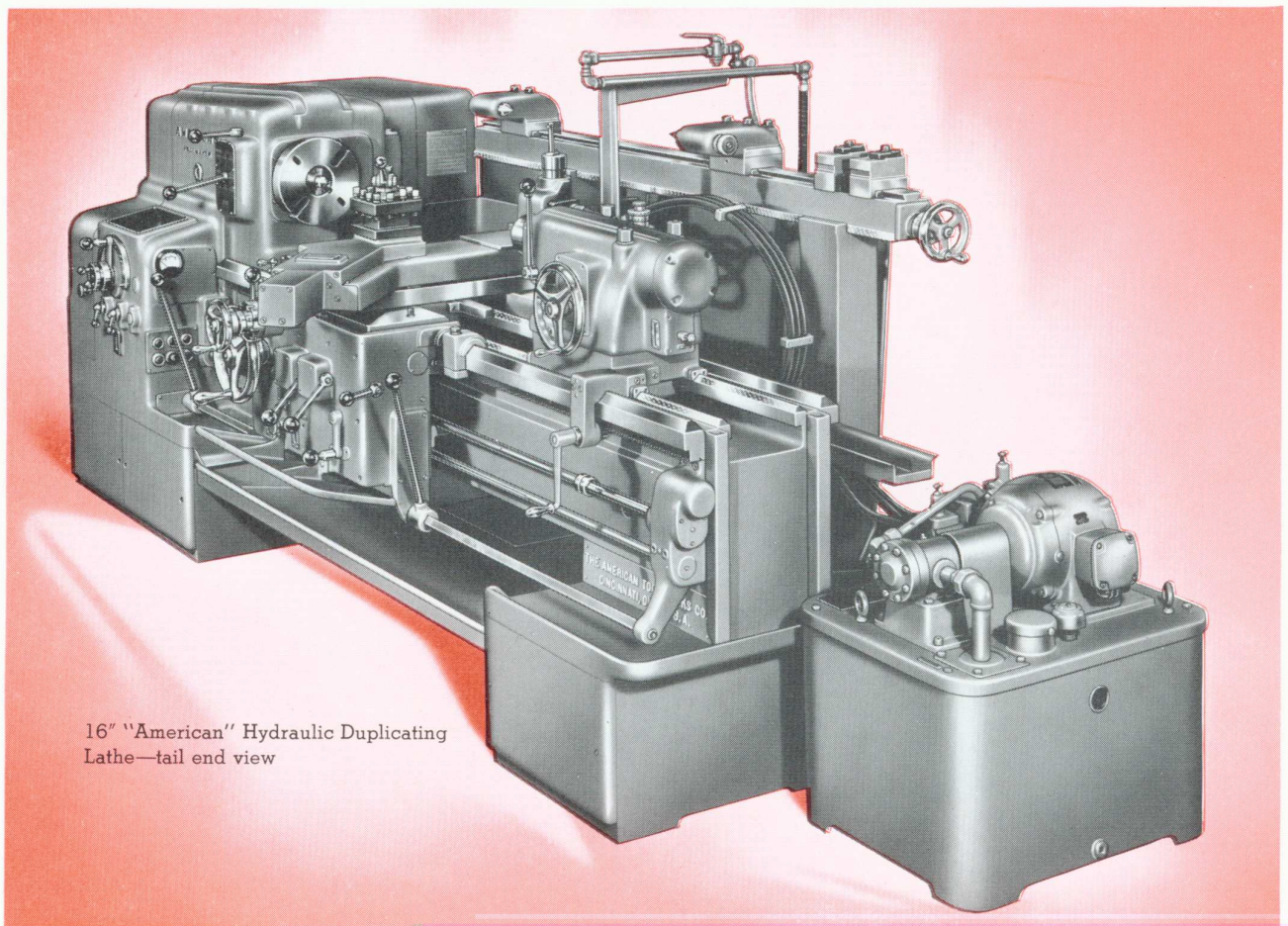
### **45° Tool Slide Type**

#### *Tremendous Savings Possible*

35% to 45% savings are common; 50% to 75% savings are not uncommon with these new "AMERICANS."

There are several hundred of these "AMERICAN" Hydraulic Duplicating Lathes in operation, amply sufficient to give substantiation to these production saving records. Machine tool builders are using them to advantage and a number of large motor manufacturers have reported spectacular savings.

For work that is adapted to it, this new duplicating technique is definitely the outstanding advance of the age in the art of cutting metal. It departs in principle from the conventional methods now in use and injects a new concept into the art.

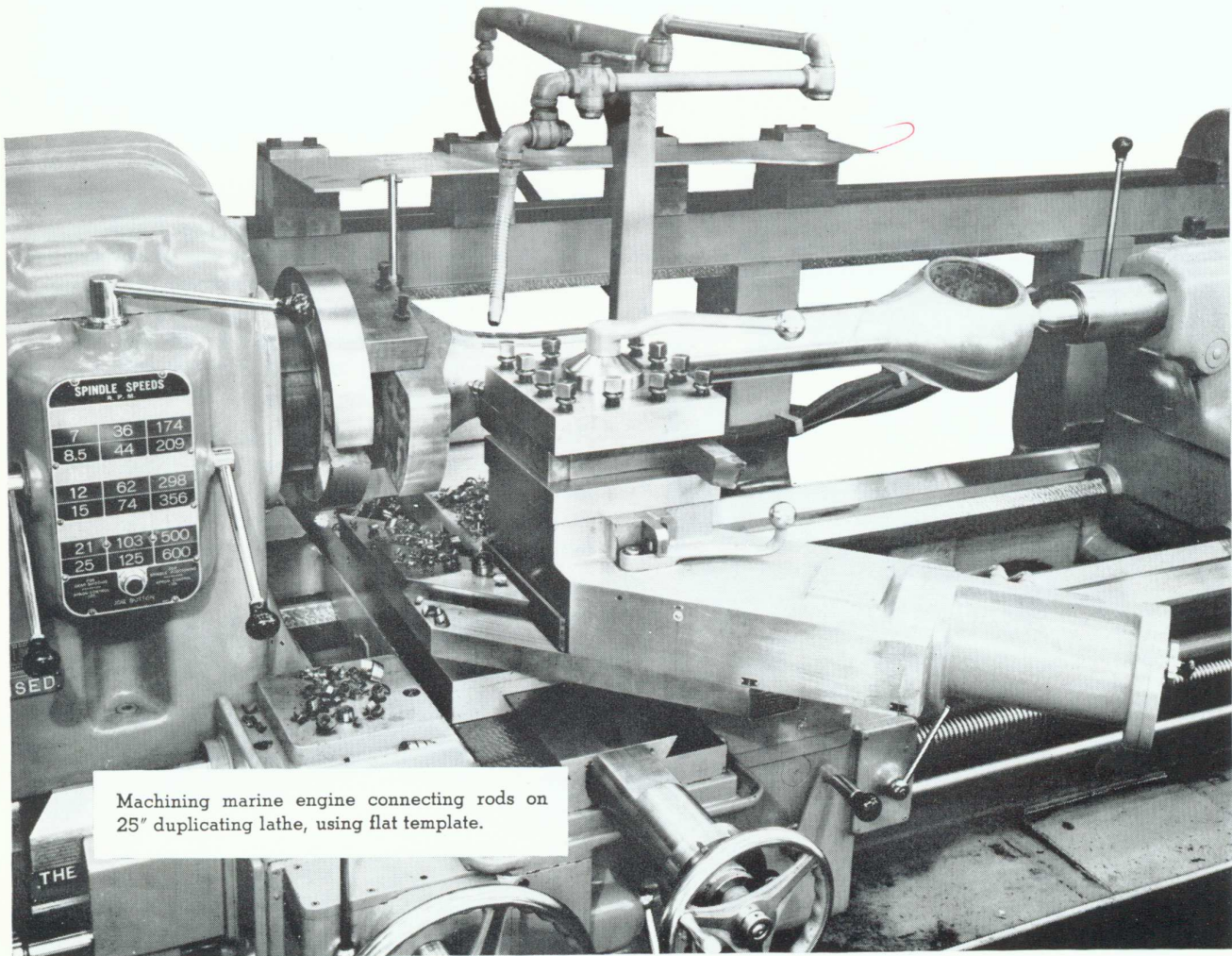


16" "American" Hydraulic Duplicating  
Lathe—tail end view





The Payroll Dollar buys more  
with a "DUPLICATOR"



Machining marine engine connecting rods on  
25" duplicating lathe, using flat template.

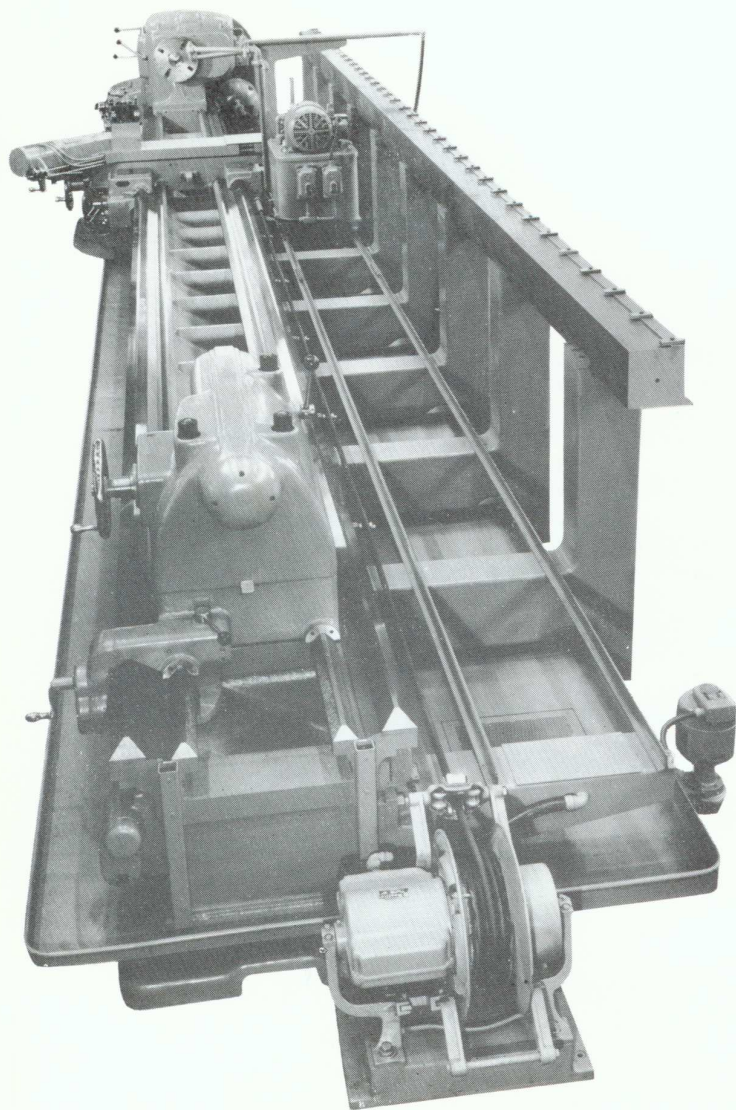
### *Accommodates Great Variety of Work*


This duplicating method of generating work shapes from a template by means of a hydraulically controlled cutting tool has obvious advantages over conventional methods. It permits an uninterrupted cut over the work, during which the exact shape of the template is duplicated on the work, including square or tapered shoulders, radii, grinding necks, thread runout grooves, tapers and contours. Work such as

motor shafts, spindles, valve stems, back shafts, piston rods, car and locomotive axles of certain types, turbine shafts and wheels, compressor wheels, in fact any work of this general nature to be produced in job lots is ideal for it.

Occasionally deep flanges are encountered that must be faced or contoured. This type of work also can be done. Operations of this character are accomplished by generating from the template using the power cross feed.





 Long Bed Duplicator for machining long shafts, gun barrels and the like. Hydraulic unit mounted on tracks and traveling with the carriage.

### *Form Tools Practically Eliminated*

The elimination of form tools by this process is one of its chief virtues. Not only does the generating of shapes by a conventional turning tool produce a better surface finish on the work than can possibly be secured by form tools, but heavy investments in expensive form tool inventories are thus avoided and tool grinding costs reduced to a minimum. It follows also that since only conventional cutting tools are used with the duplicating process, tool-setting time and expense are negligible.

### *Quick and Easy Set-Up*

On this hydraulic duplicating lathe, the most complicated jobs never require over 35 to 40 minutes to set up, whereas on the average multiple tooled lathes 6 to 8 hours are frequently required to tool up for tricky jobs. This extreme simplicity of tooling is one of the indisputable advantages of this type of machine.

It requires no more effort than the normal procedure of positioning and clamping two tools in a standard 4-way tool block. The roughing and finishing tools are set so that when the finishing tool is indexed into position it will remove  $\frac{1}{32}$ " on a side of the diameters and  $\frac{1}{64}$ " on the faces of the work. This is facilitated by a tool-setting gauge which is offered with the machine, and with it tools may be set (or replaced) in the block in 2 to 3 minutes.

After trial cuts with the finishing tool on the first work diameter until it "mikes" the finish size, the machine is then automatically set to reproduce all diameters of the round template or of succeeding templates.

### *Measuring and "Miking" Practically Eliminated*

Another very important time-saving factor is the minimizing of measuring and "miking." Measuring is confined to the first diameter only, after which all other diameters are secured automatically.

### *Fine Finish Cuts Grinding Time and Costs*

As mentioned before, the exceptionally fine surface finish produced by this process is of tremendous importance. Bear in mind that the longitudinal advance of the cutting tool is continuous, the carriage being actuated by the standard quick change gear mechanism. This smooth longitudinal travel of the carriage, coupled with the floating action of the angular tool slide, produces a turned surface on the work of unsurpassed smoothness—so smooth in fact that in some instances the final grinding operation has been eliminated.

But fast machining time, simplicity of set-up and fine work finish are not the only qualifications of this duplicating unit. A very important characteristic is



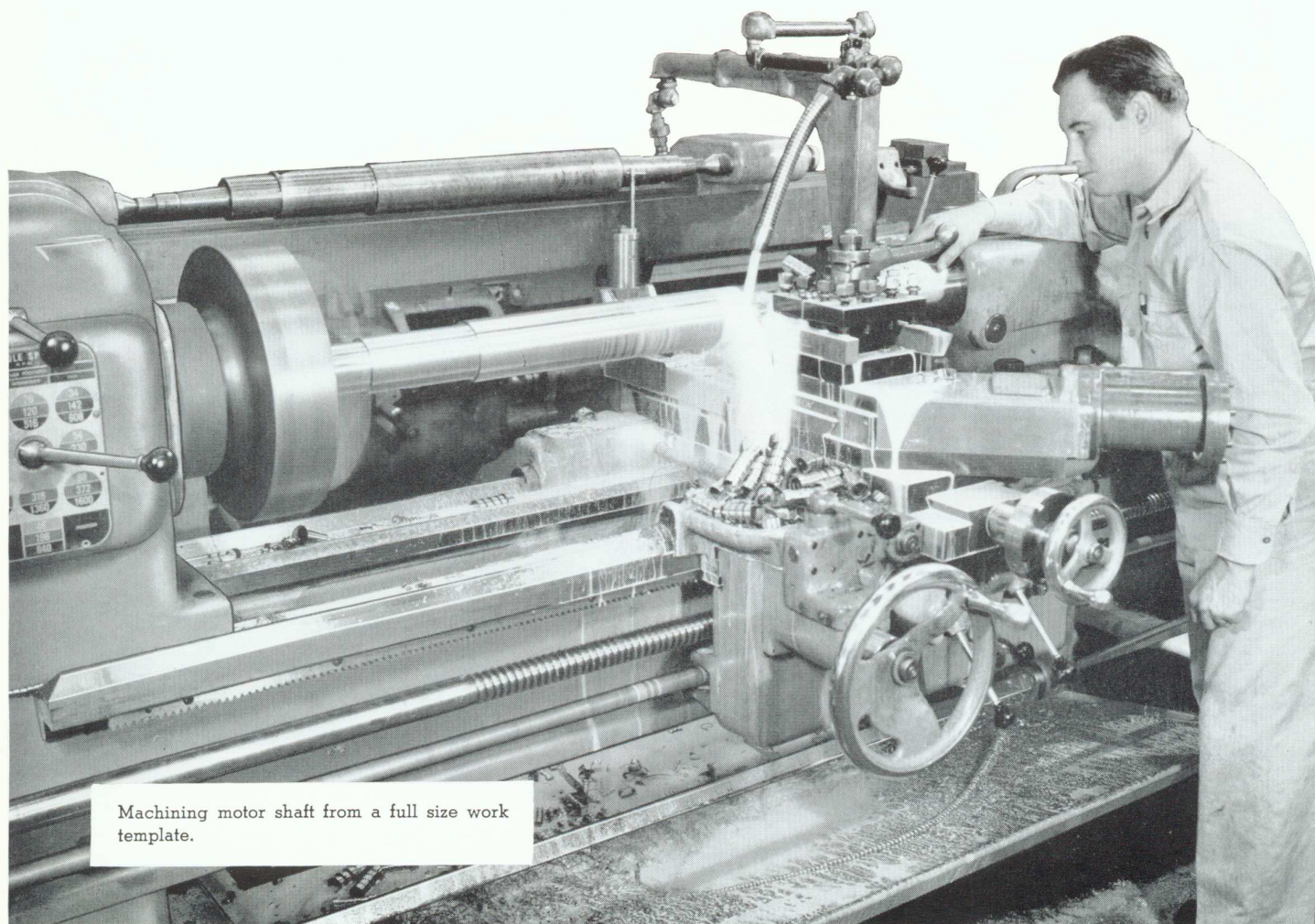


## Duplicating technique cuts costs to the bone

its ability to reproduce the template shapes accurately on the work—within .002" variation. Tapers, regardless of length, and shoulders, regardless of depth, are generated accurately while lengths and diameters are reproduced within this limit. Contributing to this precision duplication is the short flexible connection, never more than 12" in length, between the metering valve and the actuating piston. This insures a more positive displacement of fluid than is possible through longer connections. However, no one individual feature of this machine can claim credit for these amazing results. It's the combination of all these factors in perfect relation and balance operating in conjunction with the inherent power, speed, stamina, convenience and ease of control of the "AMERICAN" Deluxe Model Pacemaker Lathe that provides the scoring punch.

### *Accuracy Maintained . . . Wear Reduced*

Some of the structural features of the hydraulic duplicating equipment are of particular interest. For example, the tool rest which carries the tool holder and cutting tools is made of Meehanite and operates on a Nitralloy slide which is nitrided to approximately 100° scleroscopic surface hardness in order to reduce wear at this point to an absolute minimum. This is extremely important for it is obvious that wear of the tool slide will destroy accuracy of reproduction, therefore must be prevented. The value of this type of lathe depends upon its ability to accurately reproduce work shapes, consequently when this accuracy is destroyed through wear of the tool slide the machine ceases to be a "duplicator."



Machining motor shaft from a full size work template.





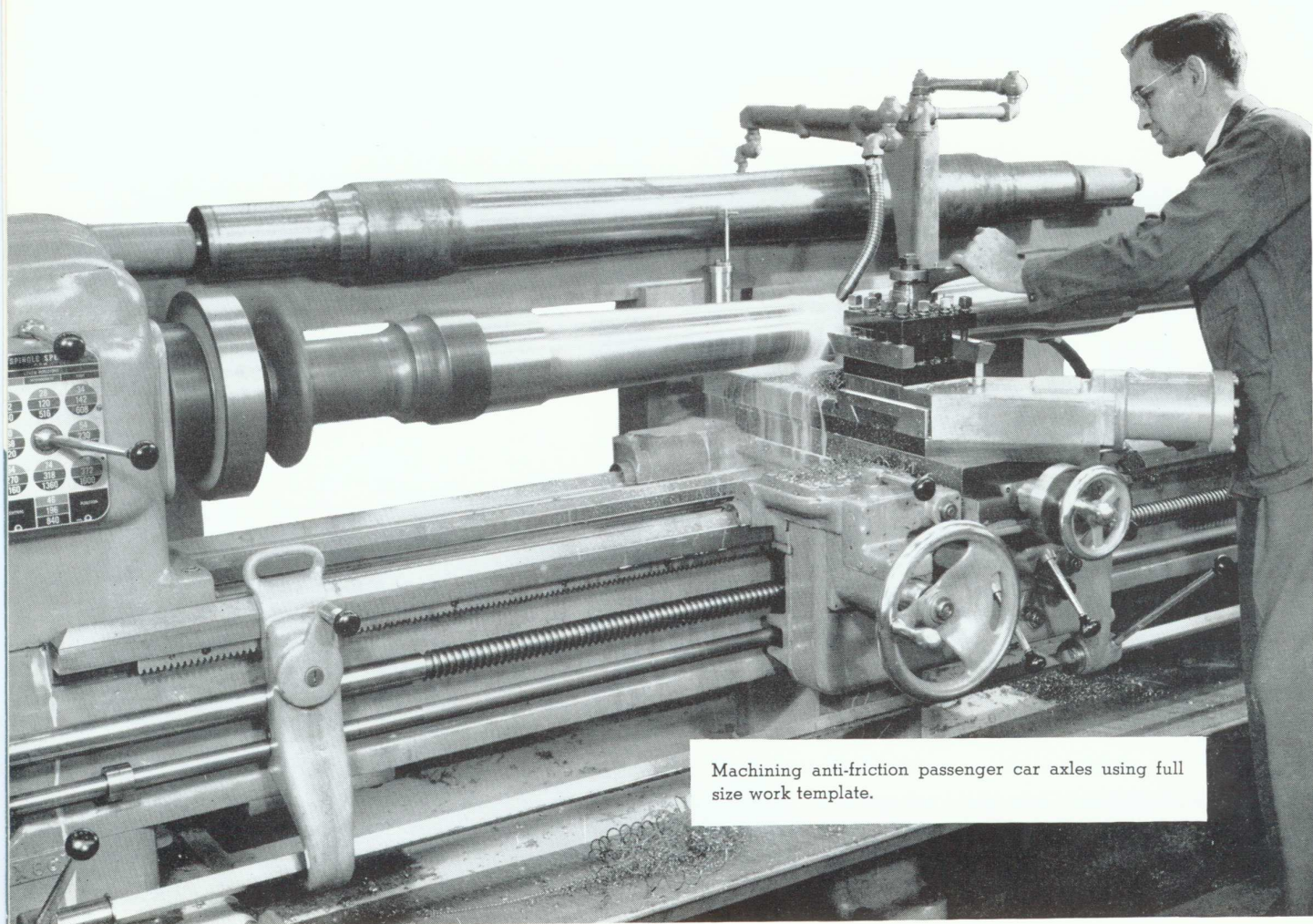
## Machine Tool Builder cuts machining time 50% to 75%

### *Operation*

The tool rest operates at a 45° angle to the work axis, which compensates for the longitudinal movement of the carriage, thus permitting the reproduction of perfectly square shoulders as well as radii and bevels. Without this compensating factor square shoulders could not be reproduced with the single hydraulic control of the tool slide without stopping the longitudinal feed of the carriage and thus

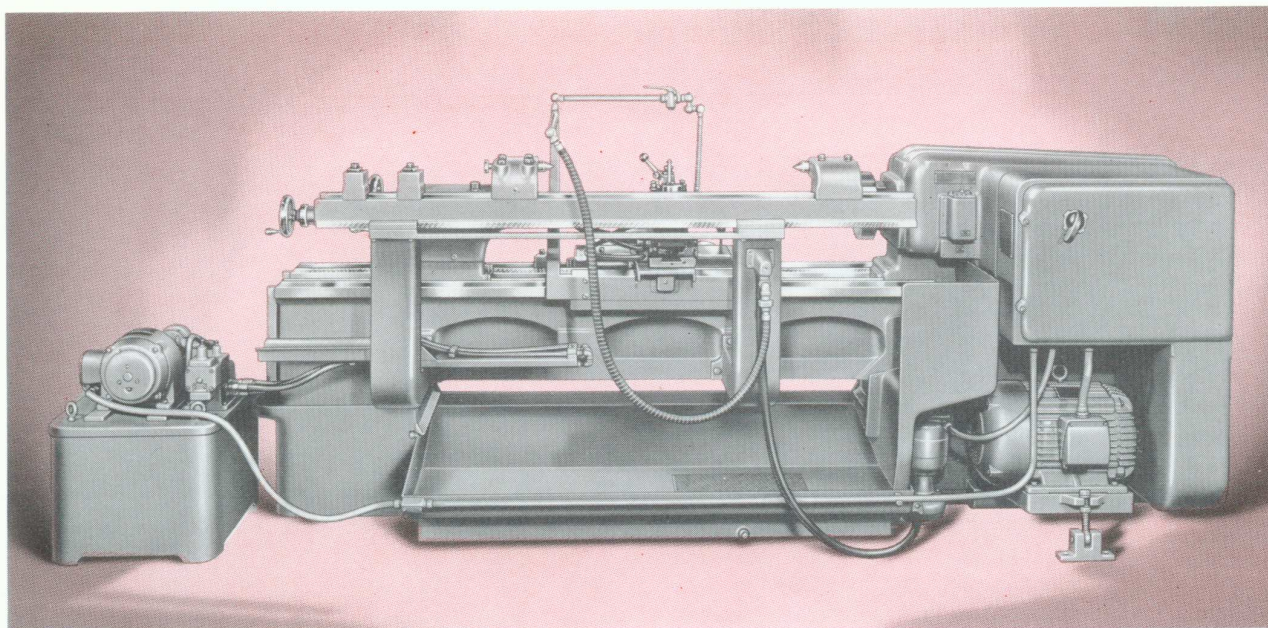
interrupting the cut and causing surface roughness.

On this slide is mounted a 4-way tool block for carrying both a roughing and a finishing tool, or two roughing tools if the finishing tool is not required. It also provides for carrying grooving tools when snap ring grooves occur on the work that cannot be generated. There are no interferences to prevent the use of this 4-way tool block, consequently four tools may be mounted simultaneously and any one of which may be swung into cutting position at will.



Machining anti-friction passenger car axles using full size work template.





16" "American" Hydraulic Duplicator—rear view

### *Hydraulic Equipment Dependable . . . Trouble Free*

This is definitely a valuable time saver as it eliminates the necessity of interchanging the roughing and finishing tools and resetting to a gauge each time. It also reduces the possibility of tool-setting error to a minimum.

The hydraulic equipment employed is simple and compact and will function just as faithfully as the hydraulic brakes on an automobile. It consists of a motor driven hydraulic pump which supplies the hydraulic pressure, a hydraulic tracer valve which meters the oil directly to the piston, which in turn controls the movement of the tool rest which supports the cutting tool. The pump unit is usually located on the floor at the rear of the lathe, and the fluid under 300 lbs. pressure is piped to the small cylinder attached to the tool slide. The tracer valve is mounted on an independent slide, the movement of which is controlled from the front through a screw and nut by the small handwheel at the right of the tool slide. This positioning of the tracer valve is the means by which

the final relation between the tracer point and the finish turning tool is established. A micrometer dial, graduated in thousandths and reading directly on the work diameters, is located on the adjusting handwheel for accurately determining the diameters desired.

A sensitive, manually controlled lever is provided for quick advance and return of the tool rest by power. At the end of a cut or at the discretion of the operator the tool rest may be retracted (moved toward the operator) by this lever, thus quickly withdrawing the tool from the work. The rest is then held in the retracted position by the hydraulic pressure until the operator, by moving the control lever in the opposite direction, advances it until the tracer point again contacts the template or until it reaches its forward travel limit. This power rapid traverse of the tool slide is not only a convenience for the operator but a valuable time saving feature as well.

### *Template Supports Designed for Heavy Templates*

In order to accommodate a wide range of round templates so as to minimize the use of expensive





## Users report "spectacular" savings

templates of the flat type, the template supporting mechanism provided on these lathes has been designed with mass and rigidity capable of supporting heavy templates as indicated by the illustration on page 10 showing a railroad car axle being used as a template. Two or more (depending upon bed length) large L support brackets are firmly attached to the lathe bed which in turn support a heavy adjustable bar with a wide dovetail on which is adjustably mounted the center holders with centers for supporting round templates and also the clamping blocks for holding flat templates. This bar is adjustable endwise by means of a precision screw with handwheel control and micrometer dial for minute adjustments to facilitate accurate positioning of the template in relation to the work and to compensate for variations in center hole depth.

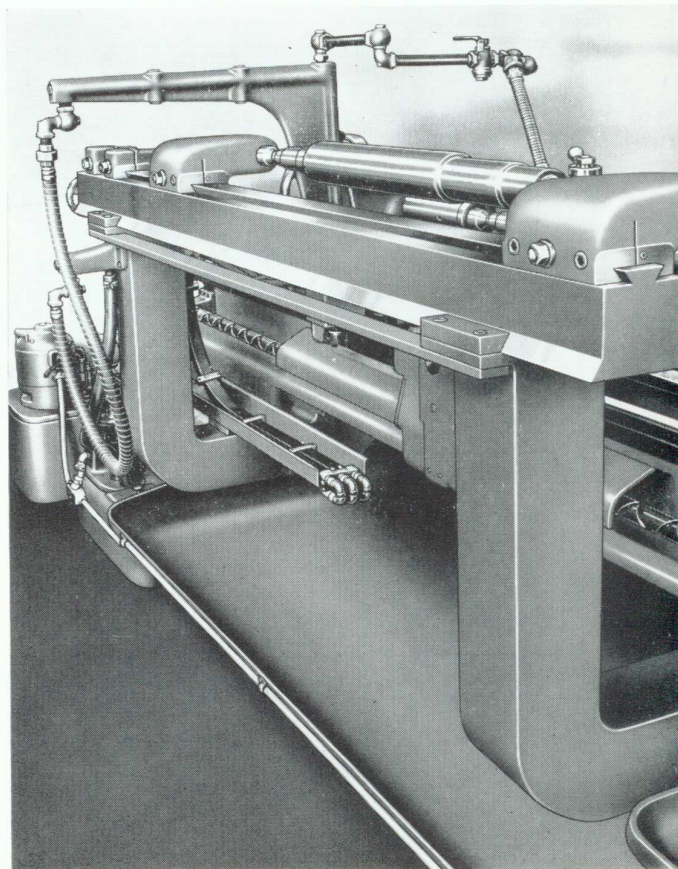
In addition to the two center holders, two adjustable clamping blocks may be provided for holding flat templates when such templates are used. One of these blocks is provided with a jack screw for use as a center support for long, slender, round templates to eliminate template sag when it occurs, thus permitting perfect parallelism of the template with the work.

### *Hardened and Ground Tool Steel Bed Vees*

"AMERICAN" Hydraulic Duplicating Lathes are regularly equipped with Hardened and Ground Tool Steel Bed Vees. These vees are made of solid tool steel and, being ground to gauge tolerances, are replaceable in case of accident. They have a surface hardness of 60 to 62 Rockwell C and are impervious to wear. On this type of lathe the longitudinal movement of the carriage back and forth along the bed is practically continuous. This service places great emphasis upon the need for non-wearing bed ways in order to insure the maintenance of original alignment and accuracy of duplication.

### *Built-in Anti-friction Tailstock Center*

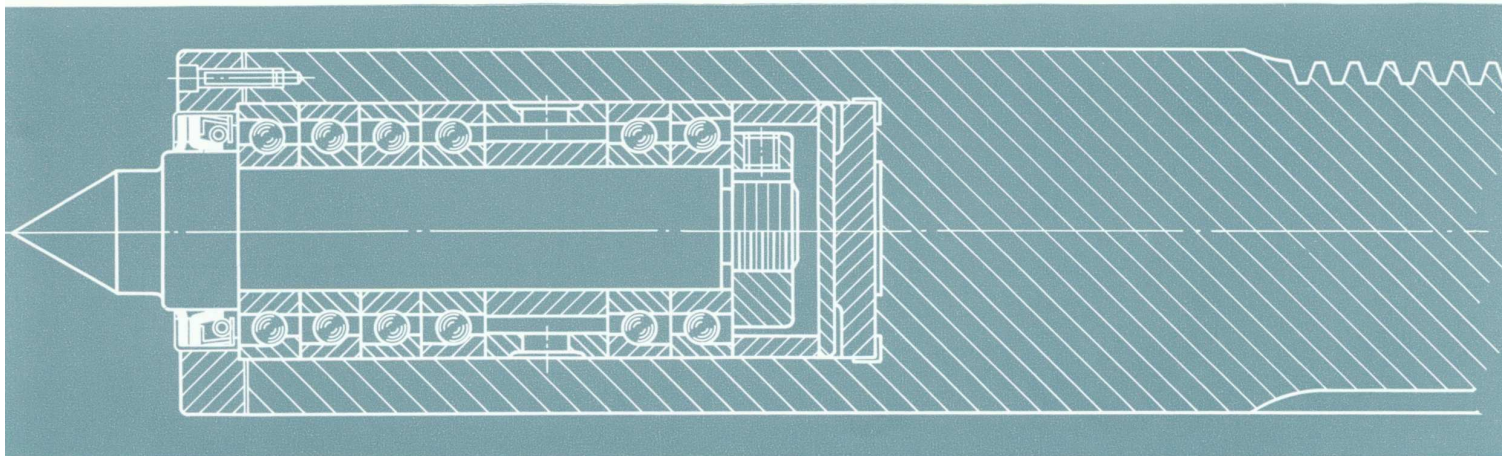
This indispensable unit is furnished as standard equipment on all "AMERICAN" Duplicators.



Showing massive template supports for accommodating heavy templates.

When using cemented carbide cutting tools at suitable speeds it is essential that a revolving (live) tailstock center be used. For this purpose a substantial and thoroughly dependable built-in ball bearing center has been developed. This center is built directly into the tailstock spindle and mounted on precision matched ball bearings, providing a factor of safety far beyond the heaviest service likely to be encountered. A valuable and exclusive feature of this new design is the provision that has been made between the center and tailstock spindle to allow for linear expansion of the work.





Built-in anti-friction tailstock center.



### *Turning*

The practical turning capacities of "AMERICAN" 45° Hydraulic Duplicating Lathes for work held between centers are as follows:

#### **TURNING CAPACITIES**

of 45° Slide and Cross Center Duplicators

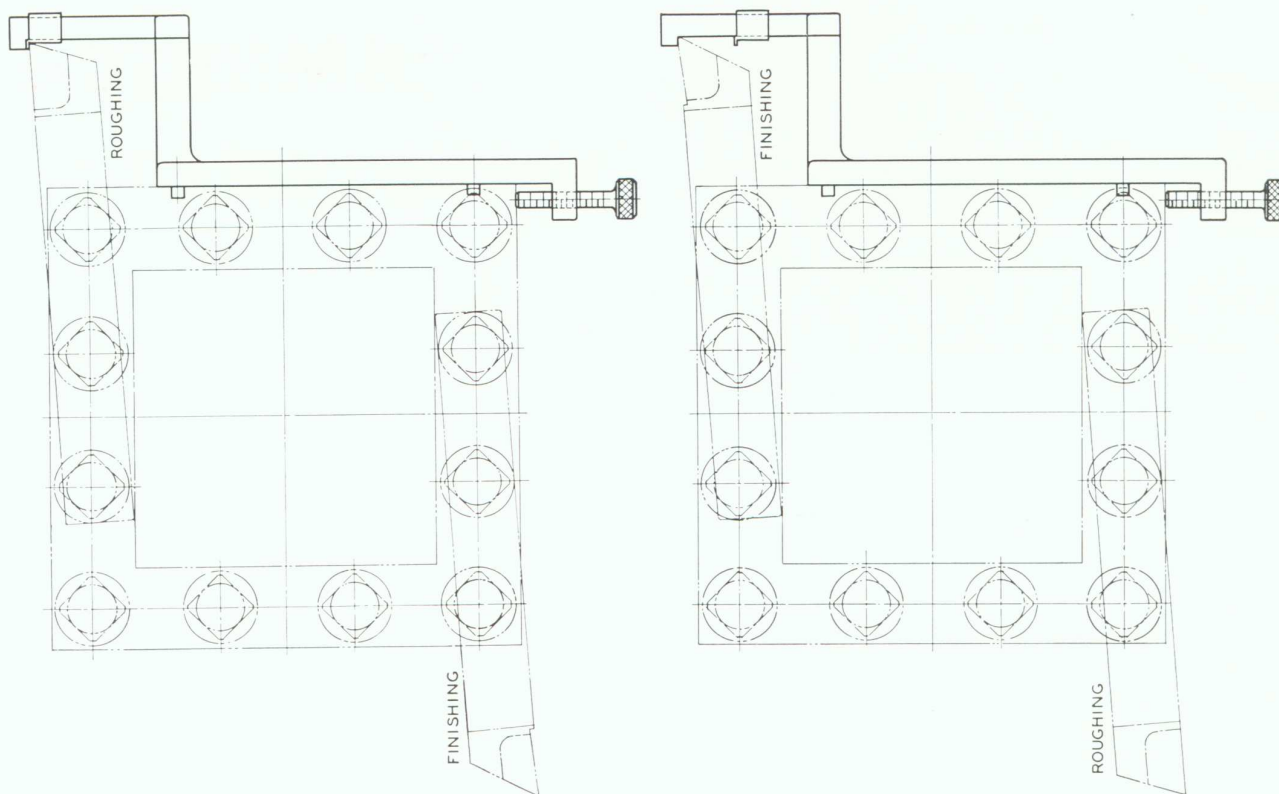
#### SWING OVER TOOL REST

16" Style C . . . . .	7½"	32" Style H . . . . .	19½"
20" Style D . . . . .	10¾"	32" Style H-3 . . . . .	23"
20" Style D-2 . . . . .	12"	32" Style I . . . . .	16"
20" Style E . . . . .	9¼"	32" Style I-3 . . . . .	19½"
25" Style F . . . . .	13"	40" Style J . . . . .	23"
25" Style F-3 . . . . .	16¾"	40" Style J-3 . . . . .	25½"
25" Style G . . . . .	16"	40" Style J-6 . . . . .	29"
		40" Style J-9 . . . . .	32½"





## Tool Setting Gauge saves time and money



### TOOL SETTING GAUGE

#### *For Shaft Duplicating Tools*

To simplify and facilitate tool settings when replacements are required, a convenient tool setting gauge is offered as optional equipment and strongly recommended as a means of materially reducing the "down time" of the lathe due to tool replacements.

This gauge is important for fast and accurate tool setting. It provides not only for resetting the roughing or the finishing tool in relation with the stylus, but

also for the positioning of the roughing and finishing tools in relation with one another.

The accompanying illustrations show how these tool settings are accomplished. They also show the slideable mask which is moved into position when setting the roughing tool. The setting of this tool is such that  $\frac{1}{16}$ " of stock is left on all diameters and  $\frac{1}{64}$ " on all faces for the finishing tool to remove. By timing the tools in this manner it is then necessary only to index the 4-way block to bring the finishing tool into position for the finishing cut.



# Standard Equipment

## **"AMERICAN"** CROSS CENTER DUPLICATING LATHES

27-Speed, automatically oiled, 100% anti-friction geared head with Triple Spindle Drive and 3-Bearing Spindle.

Hardened tool steel outside bed vees.

Hardened steel guide-way for angular slide.

Power rapid advance and retraction of tool slide controlled from front.

Quick change Gear Mechanism for feeding only.

Built-in anti-friction Tailstock Center.

Large Micrometer Dial with indicating clips for cross feed screw.

4-Way Tool Block for tool slide.

Micrometer adjustable template support with adjustable centers for holding round templates.

Complete hydraulic duplicating equipment including power unit and motor, all hose fittings and hose, hydraulic tracer head, 45° angle tool slide with actuating hydraulic cylinder.

Drive Plate (small face plate).

Chromium plated hand wheels and handles.

Adjustable non-interference stop on bed for carriage.

DEMONSTRATOR SENT TO CUSTOMER'S PLANT TO INSTRUCT OPERATOR.

### Optional Equipment

Easy access chip and coolant pan.

Motor driven coolant pump.

Thread chasing mechanism.

Adjustable blocks for holding flat templates.

Correctly ground cemented carbide, shaft turning tools for roughing and finishing.

Horse power meter.

Tool setting gauge.

Power rapid traverse for carriage and cross slide.



## CROSS CENTER DUPLICATION

Although the turning of step shafts and irregular shapes constitutes the majority of duplicating or tracing operations, the importance of irregular shape boring and facing must not be ignored.

In this character of work the variation in bore and face diameters determines whether the technique employed should be of the extension tool or the cross center type.

---

### Extension Tool Type

The extension tool type, shown by the accompanying illustrations, consists merely of a conventional duplicating lathe with the tool holder carrying an extension tool to reach beyond the lathe center line to the far side of the work bore. During the boring operation

the work is rotated in the reverse direction with the cutting edge of the tool in the conventional vertical position, which in reality is nothing more or less than internal turning. A very definite additional advantage in boring with the cutting tool in back of center and in the vertical position is the increased visibility it affords the operator for watching the tool and the work to see that they are functioning properly.

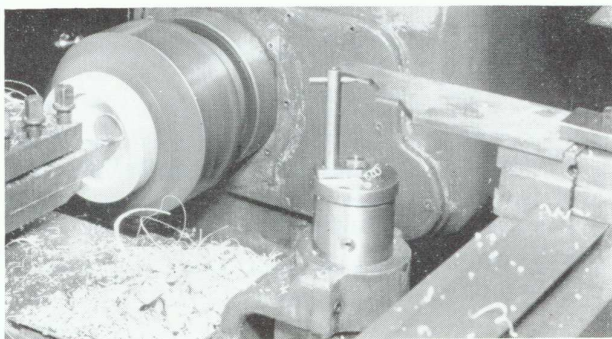


Fig. No. 1 illustrates the boring of an aluminum cover cap. The operation consists of completely boring and facing the unit at 2000 R.P.M. This is a recurring production job which lends itself admirably to contour boring and facing. The time formerly required to machine this part on a standard engine lathe was 45 minutes floor to floor. The current production time is 1.8 minutes floor to floor.





## CROSS CENTER DUPLICATION EXTENSION TOOL TYPE

Fig. No. 2 shows a really tough job. Here alloy tool steel dies are being bored in 64 minutes floor to floor compared with 142 minutes formerly required on a standard engine lathe.

On this operation flat templates and extension cutter bars are used.

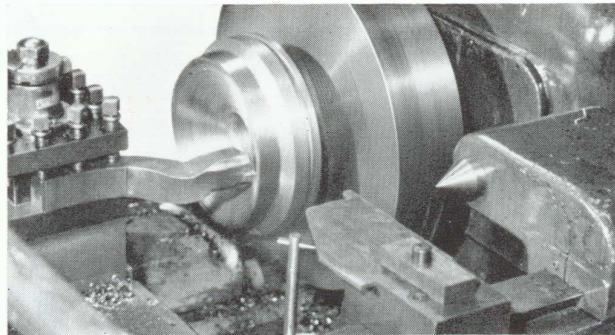


Fig. No. 3 shows the finish boring of Diesel Traction Motor Suspension Bearings using extension boring bars held in the 4-way tool block and flat template. The five operations which include the turning, facing and boring of the bronze and of the babbitt lining are completed in 52 minutes floor to floor.

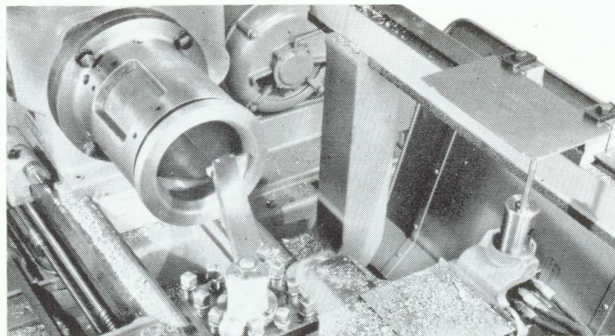
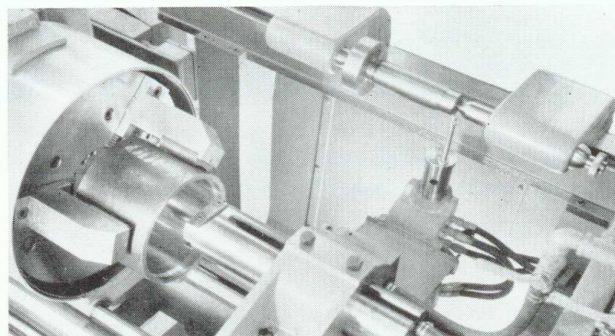


Fig. No. 4 illustrates the contour boring of steel-pipe couplings using a boring bar rest in place of the standard 4-way tool block and a large diameter boring bar with provision for coolant to the cutting tool. For this operation a round template is employed. The rough and finish boring operations are completed in a total floor to floor time of 3 minutes.







## CROSS CENTER DUPLICATION CROSS CENTER TYPE

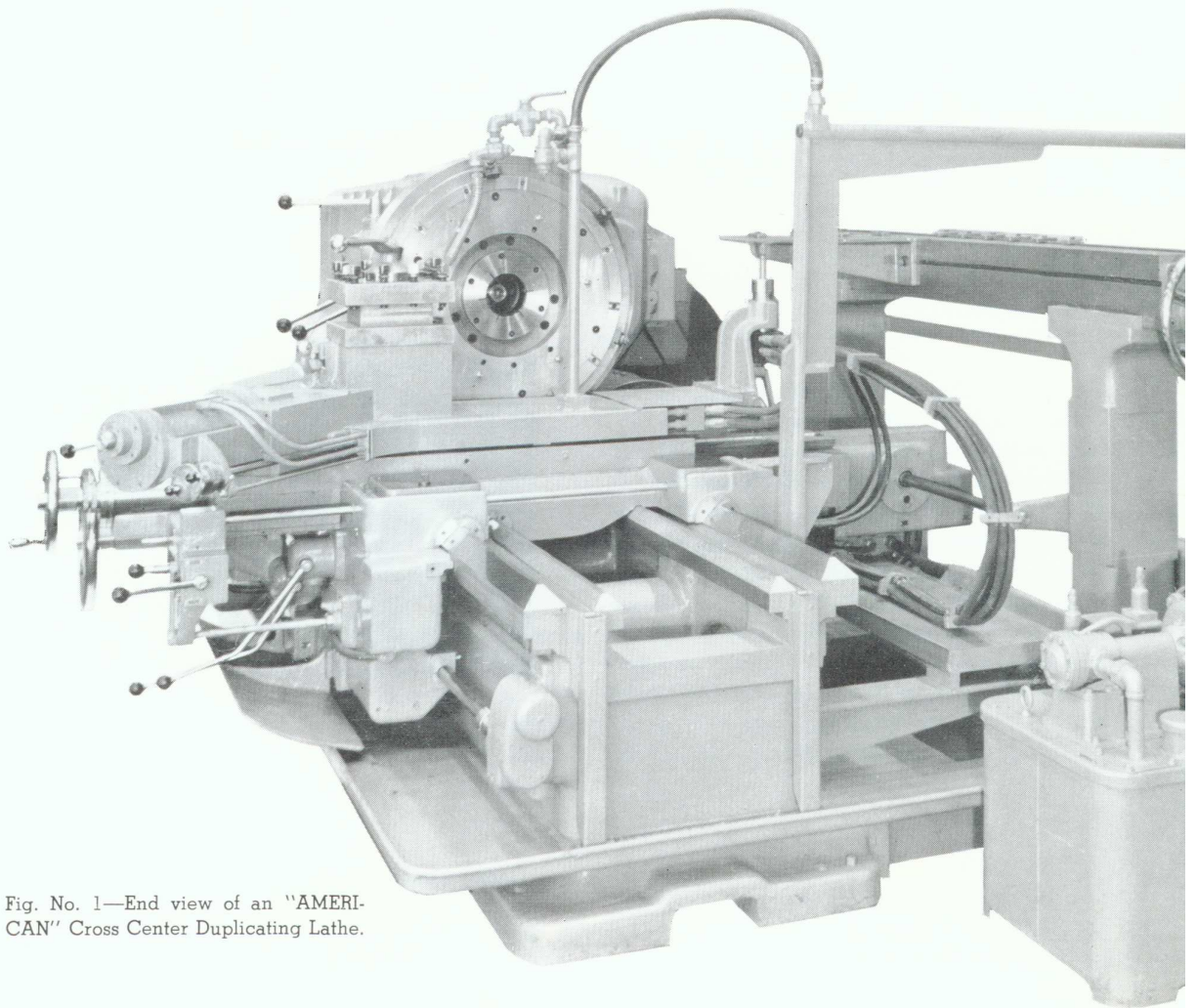


Fig. No. 1—End view of an "AMERICAN" Cross Center Duplicating Lathe.



## Cross Center Type

The cross center duplicating technique differs from the extension tool method primarily in the elimination of extension tools resulting from the lengthening of the carriage bridge to permit the tool rest to travel to the rear of the lathe center line. This technique is employed when the diameter of the work to be machined is too large to permit the use of an extension tool. To accommodate work of this character an extension tool could not be made sufficiently rigid to produce

satisfactory results. On cross center duplicating lathes, due to the long travel of the tool slide, a built-in power rapid traverse to the cross slide is provided and on some such lathes to be used for facing large diameter discs such as Jet Engine Compressor Wheels an automatic speed control is furnished to maintain a constant cutting speed over the entire surface of the disc.

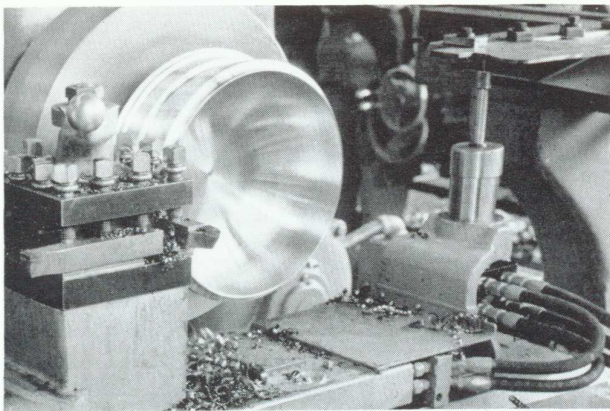


Fig. No. 2 illustrates a comparatively simple combination job of contour turning, boring and facing of guided missile components in the Downey, California plant of Rheem Manufacturing Company.

These parts are machined inside and out from rough forgings, removing 23 pounds of metal per piece in a floor to floor time of 68 minutes and at the same time holding the high degree of accuracy and fine finish required.

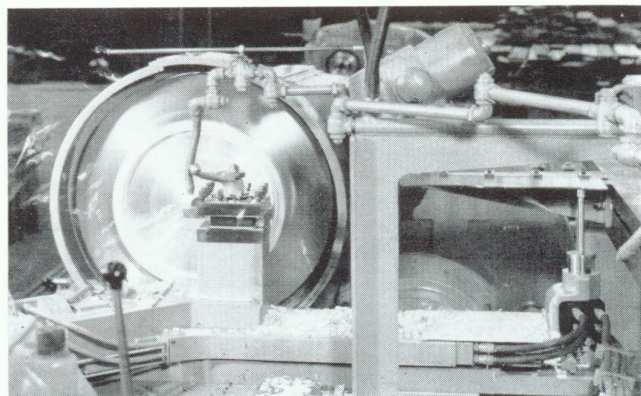


Fig. No. 3 Cross center facing of Jet Engine Aluminum Compressor Wheels. Flat templates are used for these operations.





# "AMERICAN" 90° HYDRAULIC DUPLICATING LATHES

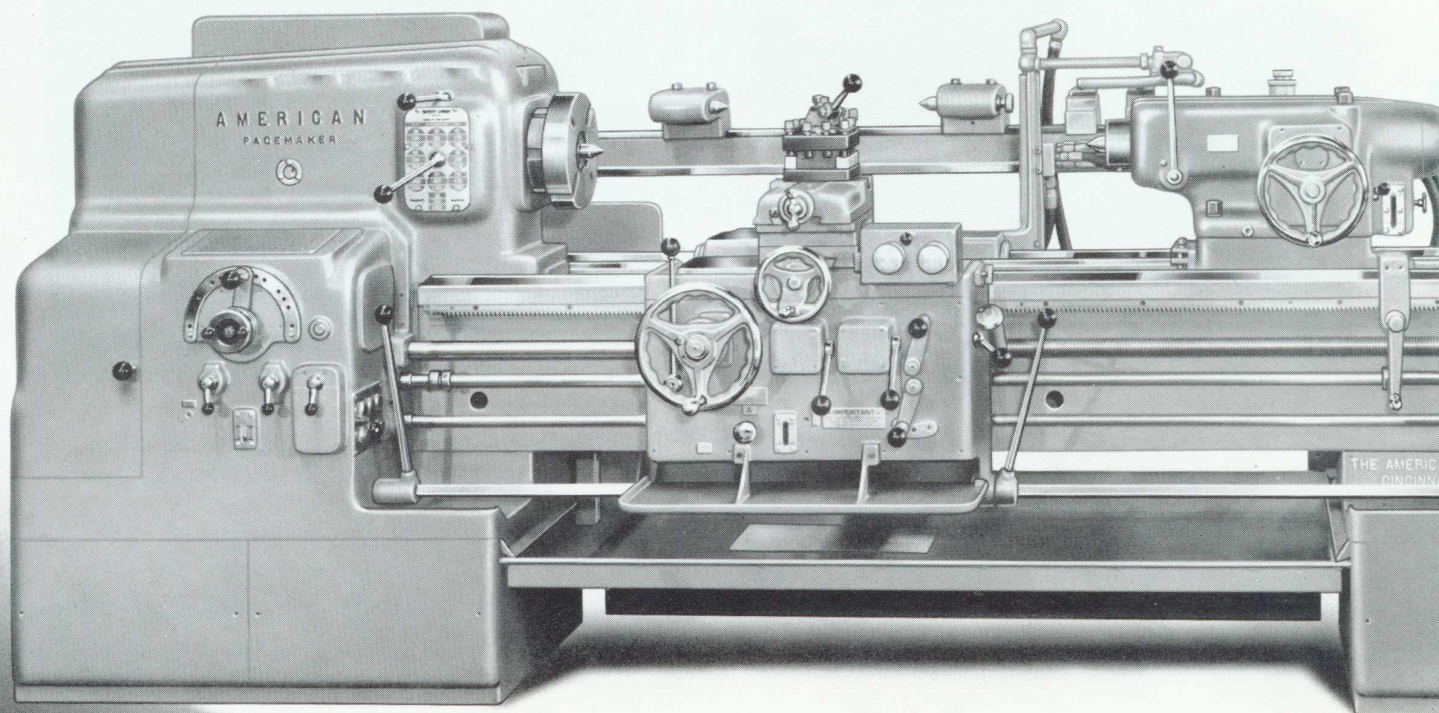
with Automatic Feed Modulation

Built in sizes from 14 inches  
to 40 inches inclusive.

In addition to the various "AMERICAN" angular slide types of hydraulic duplicator (tracer) lathes available, a new 90° slide duplicating lathe now is being offered. This new lathe has a 90° tool slide which may be swiveled to different angles for accommodating various types of work.

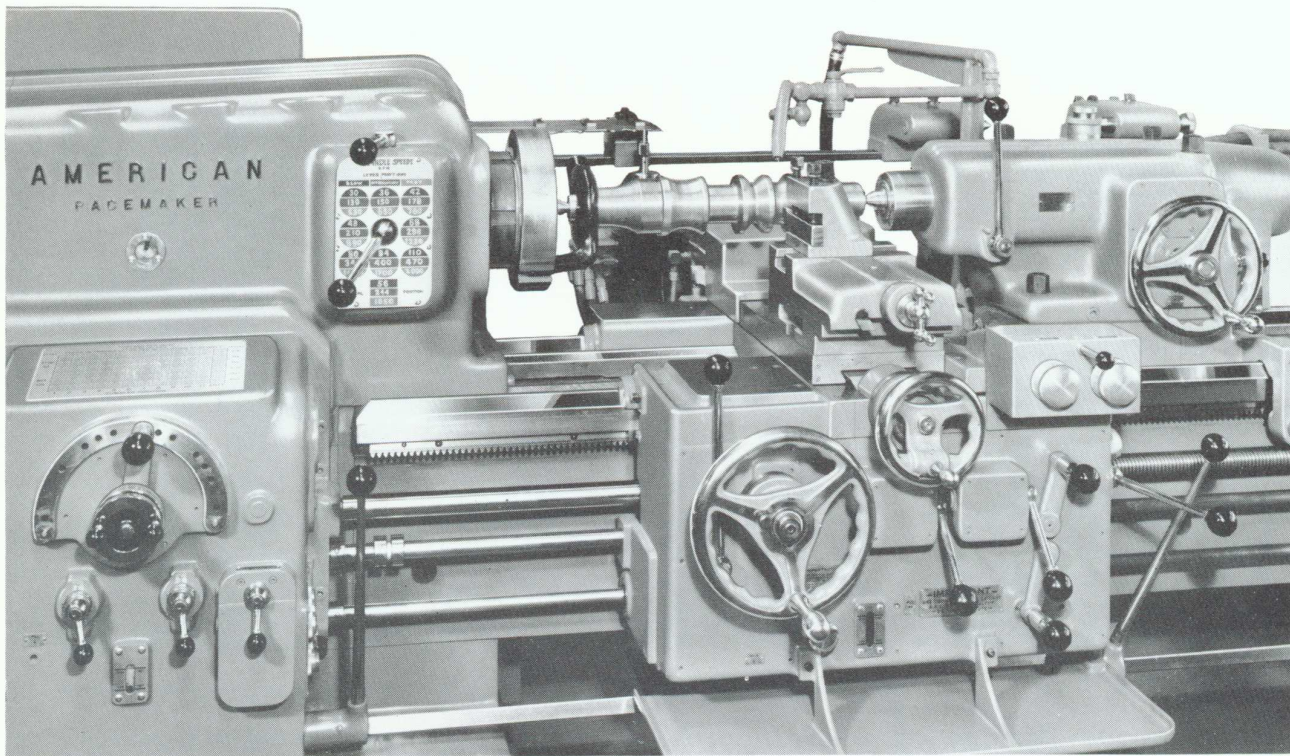
## *Types of Work Accommodated*

This lathe will reproduce conventional step shafts of various types from either flat or round templates rapidly, economically and with a degree of accuracy and surface finish second to none. In addition, it is





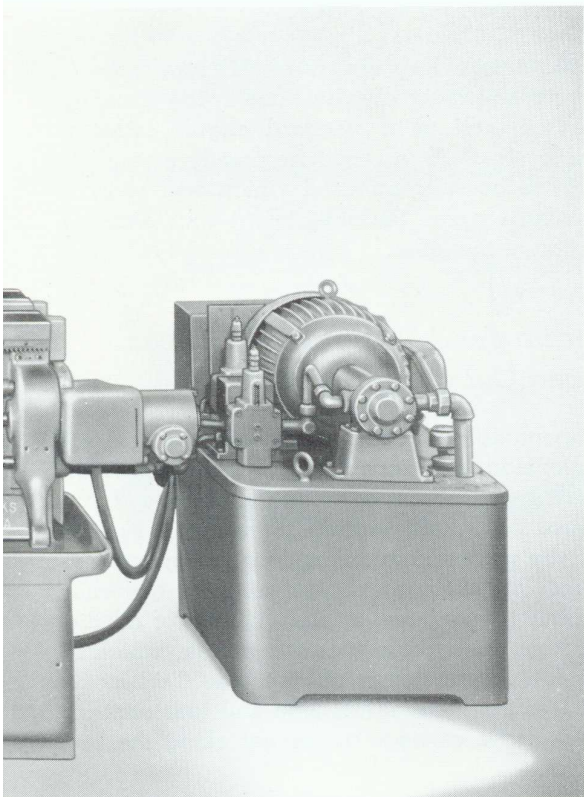
## Machining Contours



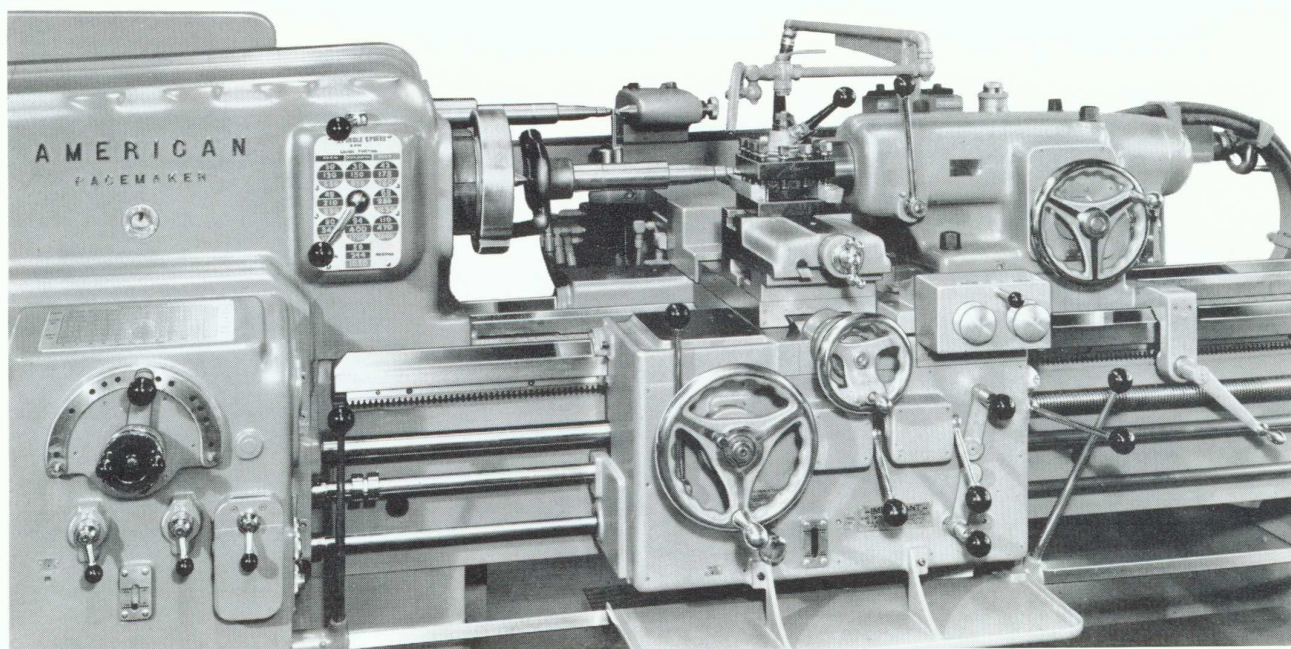
ideally adapted to producing work of various contours and is especially efficient in reproducing work with steep contours requiring a high degree of accuracy and finish.

Basically the steeper the contour of the work the faster the cutting tool, which is actuated by the cross feed hydraulic cylinder, travels. The faster the action of the piston in the cylinder the more oil enters and is discharged. The varying volume of this discharged oil is fed through the governor valve to the fluid motor which drives the longitudinal feed. The greater the volume of oil that is fed to the governor valve the *less* the amount of oil that reaches the fluid motor, the excess being by-passed to the hydraulic fluid tank. This automatic slowing of the longitudinal feed rate as the cross feed rate increases balances the cut and causes a uniform chip to be removed from the work, which in turn insures a fine, uniform surface finish.

This is clearly demonstrated when machining a 90° shoulder on a shaft. When the cutting tool begins the right angle cut the volume of oil that is discharged from the cylinder for this steep incline surges into the governor valve and shuts off completely the flow of oil to the fluid motor. As a consequence the longitudinal feed of the carriage is completely stopped which permits the cutting tool to produce an accurate right angle shoulder without taper.







### *Instantaneous Conversion to Standard Engine Lathe and vice versa*

Another feature to which a great deal of importance is attached by some users is the ease of conversion from a tracer to a standard engine lathe. This may be accomplished practically instantly by simply changing the lever at the head from one position to another. This is an exclusive and very desirable feature of this new "AMERICAN".

### *Long Life and Minimum Maintenance Expense Assured*

It is quite obvious that a duplicator lathe as a true work duplicator diminishes in productive value in direct relation to its loss of duplicating accuracy. Realizing this fact this new "AMERICAN" has been thoroughly protected in every conceivable way to insure maintenance of original accuracy. For example, the cross slide which supports the tool rest and cutting tool, slides in and out along the carriage bridge on *renewable hardened and ground* tool steel ways. If, therefore, wear of these ways should occur they may be replaced inexpensively and without difficulty. In addition, the center area of the cross slide upon which chips fall is covered by a hardened and ground tool steel plate and further protected by a compression type neoprene wiper which wipes

this surface clean. Nothing has been overlooked to insure long life and freedom from maintenance expense.

### *Increased Swing Capacity*

One of the outstanding virtues of this new lathe is that it provides practically the same swing capacity over the tool rest as a standard engine lathe of comparable size. As a result frequently a smaller, less costly lathe may be used which will show a greater return upon the investment and a faster amortization of the lathe.

### *Automatic Feed Variation Produces Balanced Cut and Fine Finish*

A correspondingly advantageous feature is the patented automatic feed variation or modulation which produces a balanced cut between the cross feed and longitudinal feed, thus resulting in a very fine surface finish on the work and an exceptionally high degree of accuracy. This is accomplished by a governor valve which is regulated by the quantity of oil discharged from the hydraulic cross cylinder, which in turn regulates the quantity of oil to the fluid motor which drives the longitudinal feed and thus controls the speed of the carriage movement along the bed of the lathe.



# Standard Equipment

## **"AMERICAN"** 90° DUPLICATING LATHES

27-Speed, automatically oiled, 100% anti-friction geared head.

Replaceable, hardened tool steel outside bed vees.

Replaceable, hardened steel ways for cross slide.

Power rapid advance and retraction of tool slide.

Built-in anti-friction tailstock center.

Compound rest with 4-way tool block.

Template support for holding flat templates.

Complete hydraulic duplicating equipment including power unit and electric motor; all hose fittings and hose; hydraulic tracer head; actuating hydraulic cylinder for 90° tool slide and hydraulic motor for automatically modulated carriage feed.

Quick change gear mechanism for feeding only.

Drive plate (small face plate)

DEMONSTRATOR SENT TO CUSTOMER'S PLANT TO INSTRUCT OPERATOR.

### Optional Equipment

Easy access chip and coolant pan.

Motor driven coolant pump.

Thread chasing mechanism.

Adjustable template supports with adjustable centers for holding round templates.

Correctly ground cemented carbide, shaft turning tools for roughing and finishing.

Horse power meter.

Tool setting gauge.

Power rapid traverse for carriage and cross slide.





## **"AMERICAN" HYDRAULIC ROLL DUPLICATING LATHE**

... with Automatically Modulated Carriage Feed

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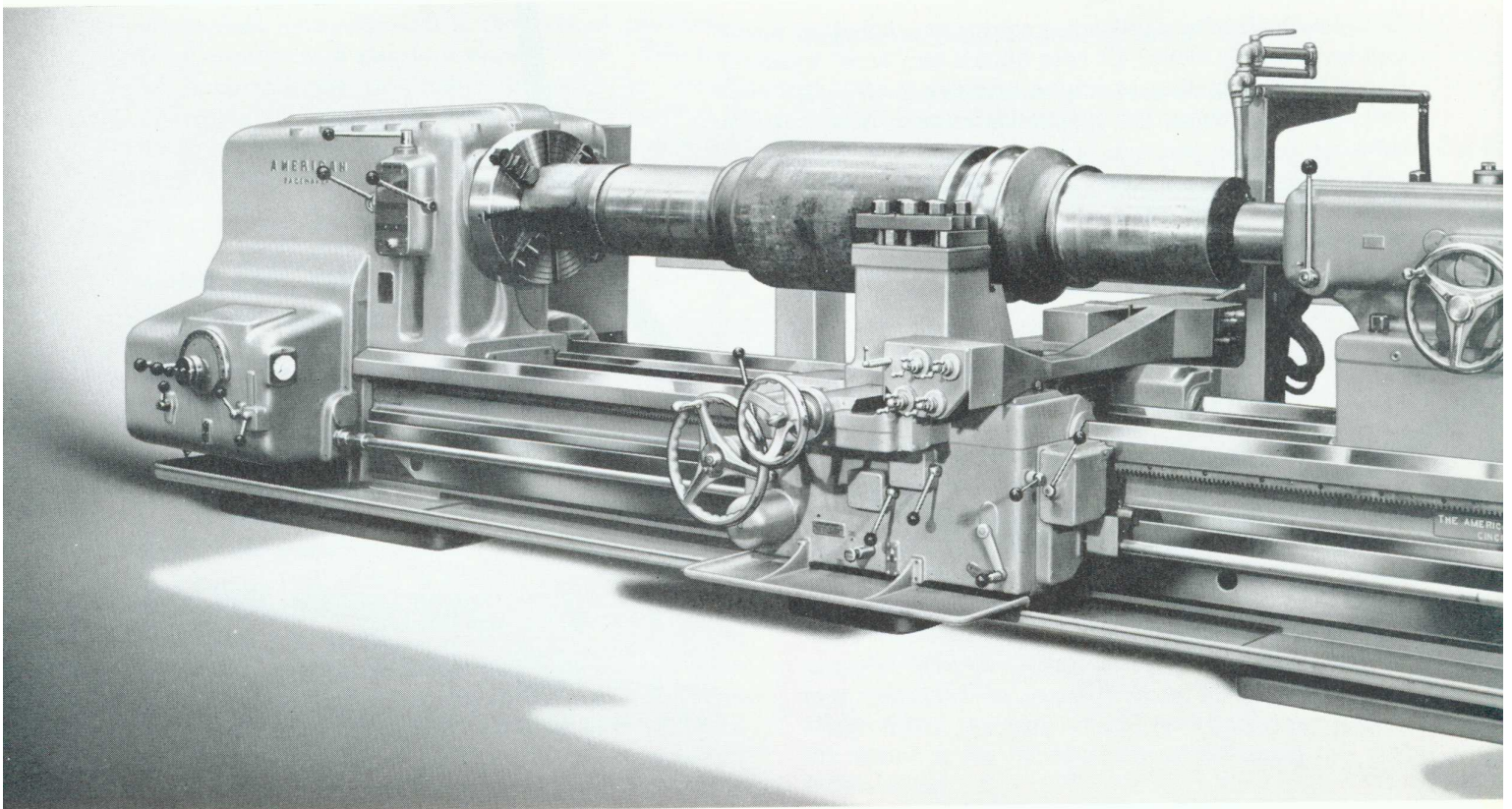
This new Roll Lathe represents the latest and most modern conception of what the ultimate in a roll lathe should be.

This new lathe has features far in advance of previous designs and as a consequence will machine steel mill rolls of various shapes and sizes in phenomenal times and at costs heretofore undreamed of.

One of these outstanding features that will particu-

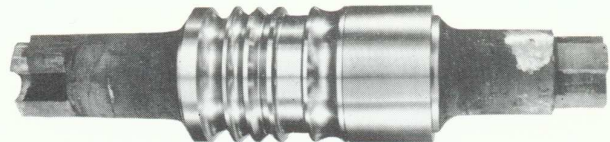
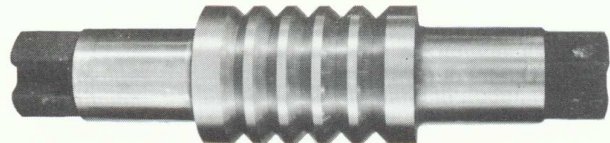
larly appeal to the roll shop is the ability to machine larger rolls on a smaller basic lathe than ever before possible. That means that the investment in this machine per roll size is at a minimum.

A new all-hydraulic tracing or duplicating mechanism in combination with a 90° tool slide is employed, which in a large measure accounts for this additional roll turning capacity.

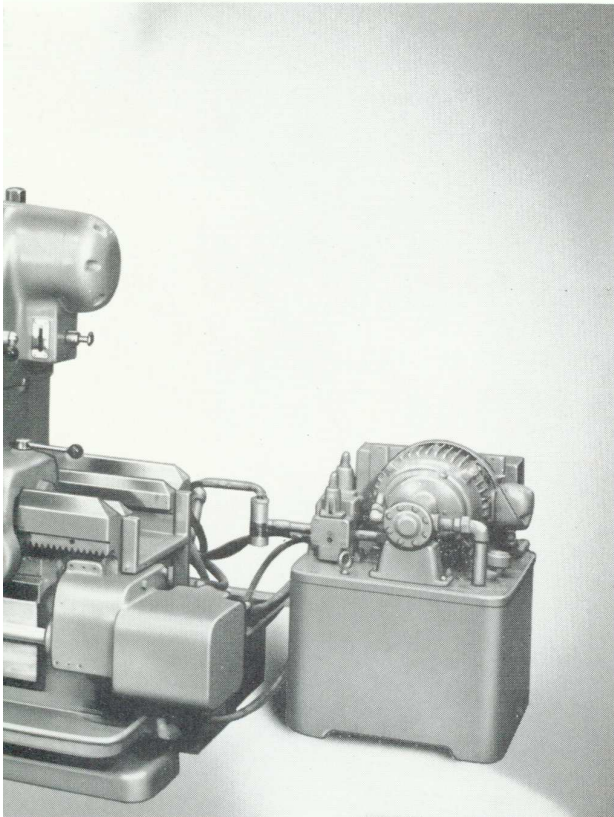




Rolls processed on "AMERICAN"  
Roll Lathes.



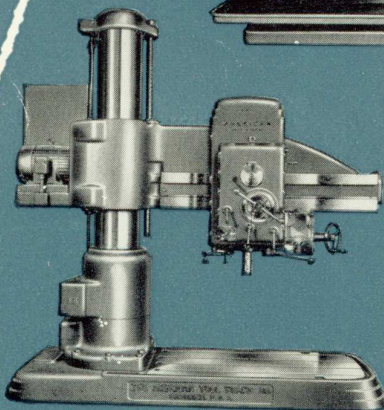
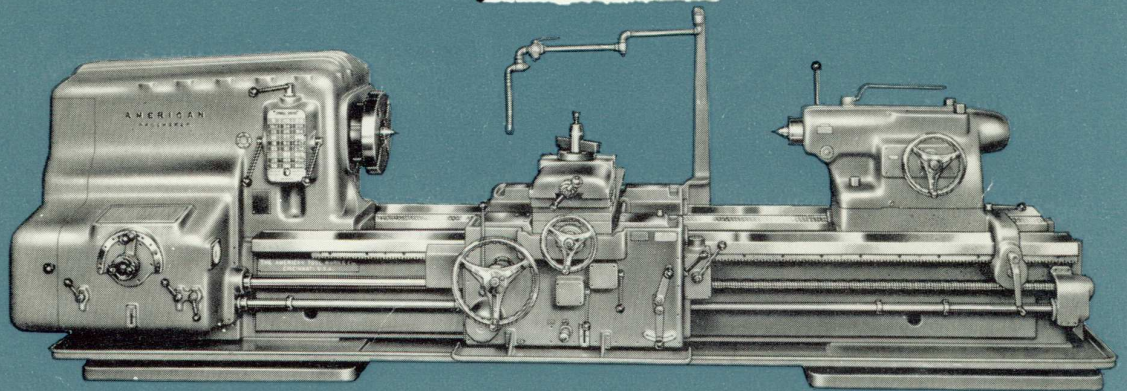
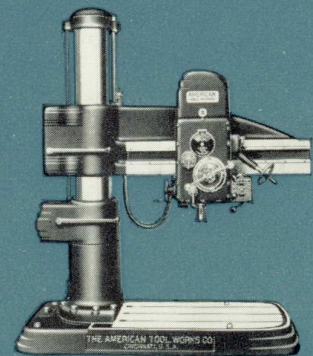
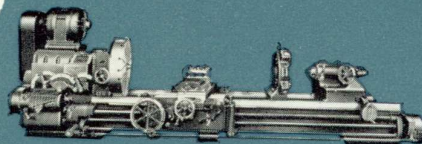
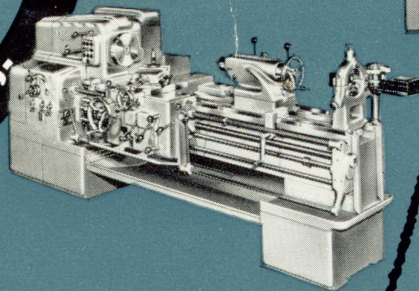
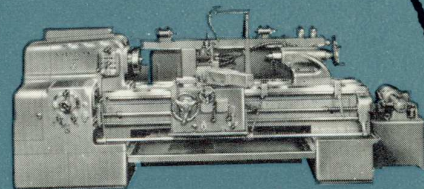
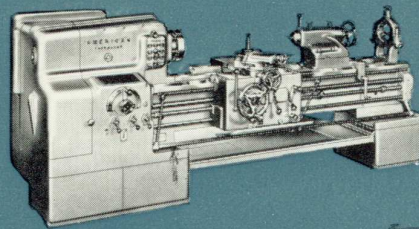
33" Capacity Hydraulic Roll Duplicating Lathe.



In combination with this new duplicating equipment is an exclusive mechanism for automatically varying or modulating the longitudinal travel of the carriage along the bed for balancing the speed of the carriage travel with the steepness of the contour or pass being machined. This automatic balance results in a surface finish so smooth, so accurate and so superior that final finishing or touching-up operations are no longer necessary. This results in an outstanding reduction in roll turning costs.

"AMERICAN" Hydraulic Roll Duplicating Lathes are available in several sizes to accommodate various sizes of rolls up to 33" diameter. This is a decided advantage to the user as it eliminates the necessity and expense of installing equipment of far greater capacity than the sizes of his rolls require.





**THE AMERICAN TOOL WORKS CO.**  
Cincinnati 2, Ohio, U. S. A.