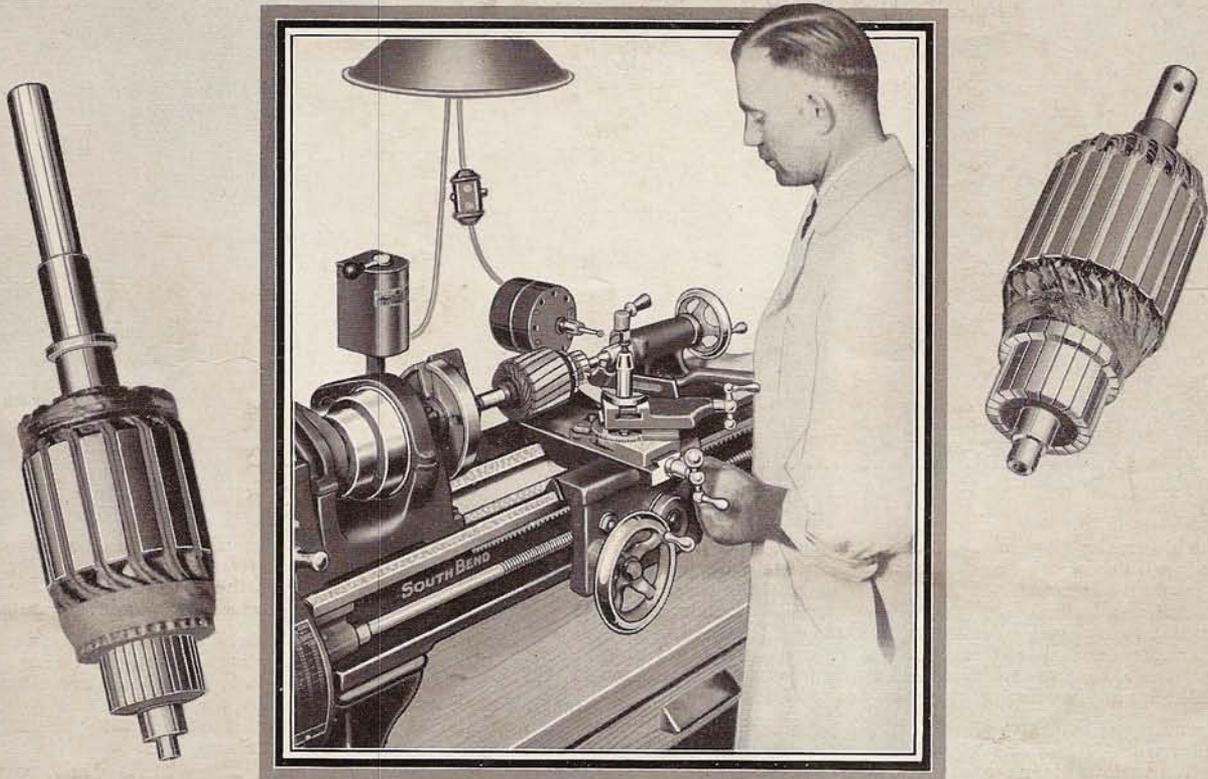


Bulletin No. 2

How to Machine Armatures

IN THE

Auto Repair Shop



Truing an Armature Commutator in the Lathe

Armature Service and General Purpose Lathe

For truing commutators of generators and motors, undercutting insulation, and other electrical jobs on the automobile, bus, truck, tractor and airplane engine.

In addition to outlining the latest shop practice and methods used in service shops for machining armatures, this bulletin also shows the application of the lathe for servicing valves, bushings, pistons, connecting rods, making handy shop tools, and for general machine work.

Price 10 Cents

South Bend Lathe Works

402 East Madison St., - - - South Bend, Indiana, U. S. A.

Lathe Builders for 26 Years . . . Over 55,000 Users

Lathe and
Rotary Electric
Undercutter
Operate from
Electric Lamp
Socket

*This undercutter 2500
cannot supply the motor*

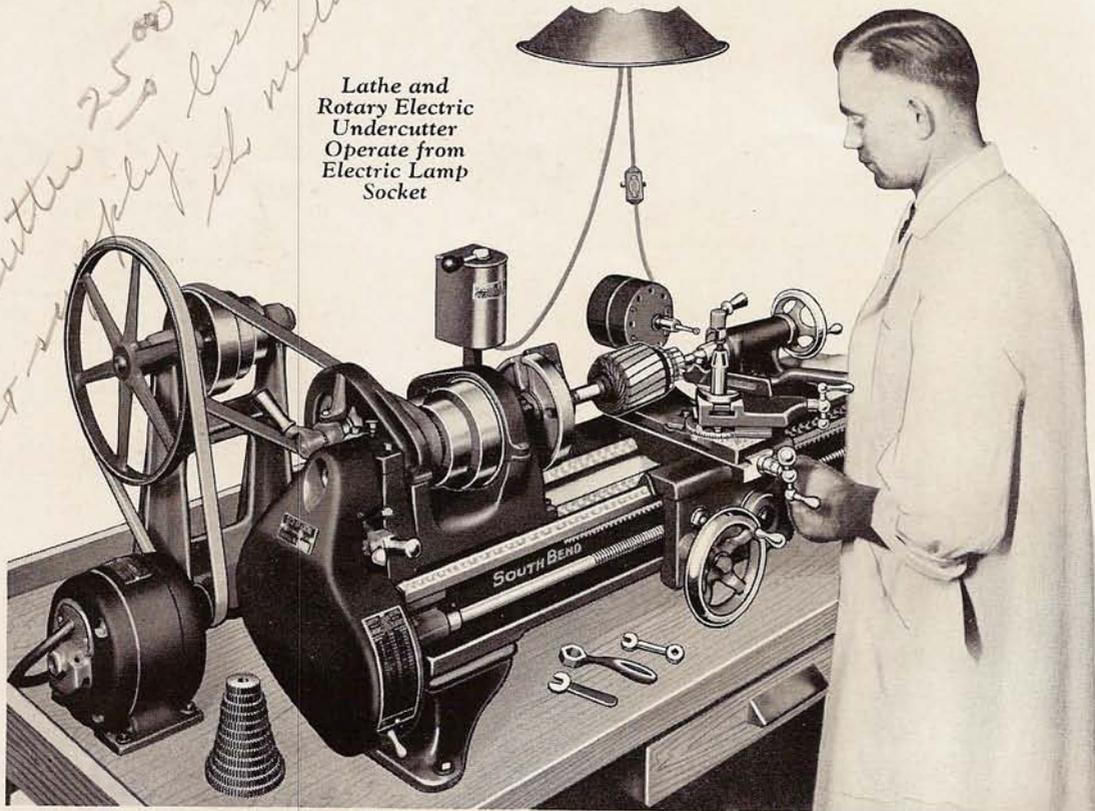


Fig. 1. Truing an Armature Commutator in the New 9-inch Junior South Bend Armature Lathe.

How To Machine Armatures In The Auto Repair Shop On the New 9-inch Junior South Bend Armature Lathe

The illustration above shows the New 9-inch Junior South Bend Armature Lathe set up and in operation truing a commutator of a generator armature. This lathe is practical for truing and undercutting all sizes and types of generator and starting motor commutators of automobiles, buses, trucks and tractors. In addition, armatures of all small motors used on electric fans, refrigerators, pumps, heaters and household appliances can be placed in the lathe for any machining operation desired.

Armatures with center holes are held between centers of the lathe for truing the commutator, undercutting insulation and for doing the various other servicing jobs. Centerless armatures are mounted with one end in a chuck and the other end in an adjustable bushing as described and illustrated on the following page.

These methods of mounting permit the armature to rotate in the lathe in the same manner as when in actual operation in the generator or motor, so that any machining done on the commutator or the armature core will be concentric to the bearing surfaces and the axis of the armature shaft.

The illustration at the left below shows a close-up of a commutator being trued in the South Bend Armature Lathe. The turning tool is advanced across the commutator by the power longitudinal feed of the lathe, producing a smooth, accurate finish.

The New South Bend Rotary Electric Undercutter shown in Fig. 3, is conveniently attached to the carriage of the lathe for undercutting the insulation on the commutator. The small rotary cutter mounted on the shaft of the motor will undercut all sizes and types of commutators with wide or narrow insulating segments of mica or bakelite.

The undercutting attachment remains attached to lathe and does not interfere with operation of turning commutator, as the undercutter can be elevated so it is out of the way during the commutator truing operation. A vertical adjustment controls height of rotary cutter. When undercutting, the armature floats between centers and the undercutter is fed across the commutator using the hand-wheel of the carriage. An armature can be trued and undercut complete in from five to ten minutes.

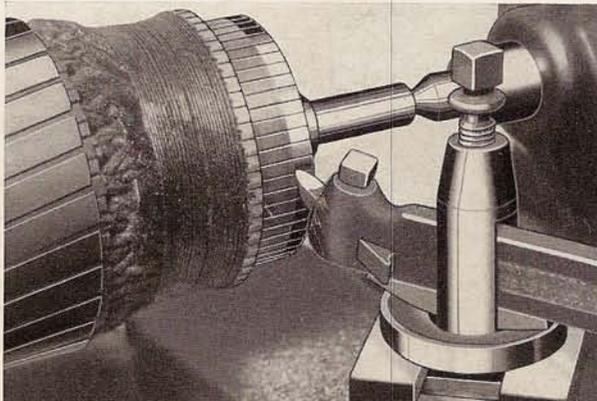


Fig. 2. Close-up Showing the Lathe Tool Taking a Smooth Finishing Cut Across the Armature Commutator.

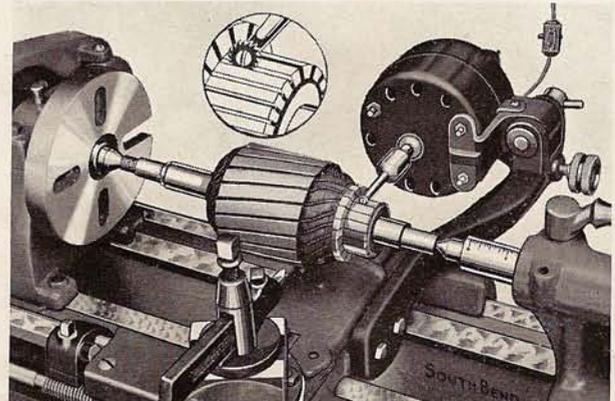


Fig. 3. Undercutting an Armature Commutator with the New South Bend Rotary Electric Undercutter.

Lathe and
Rotary Electric
Undercutter
Operate from
Electric Lamp
Socket

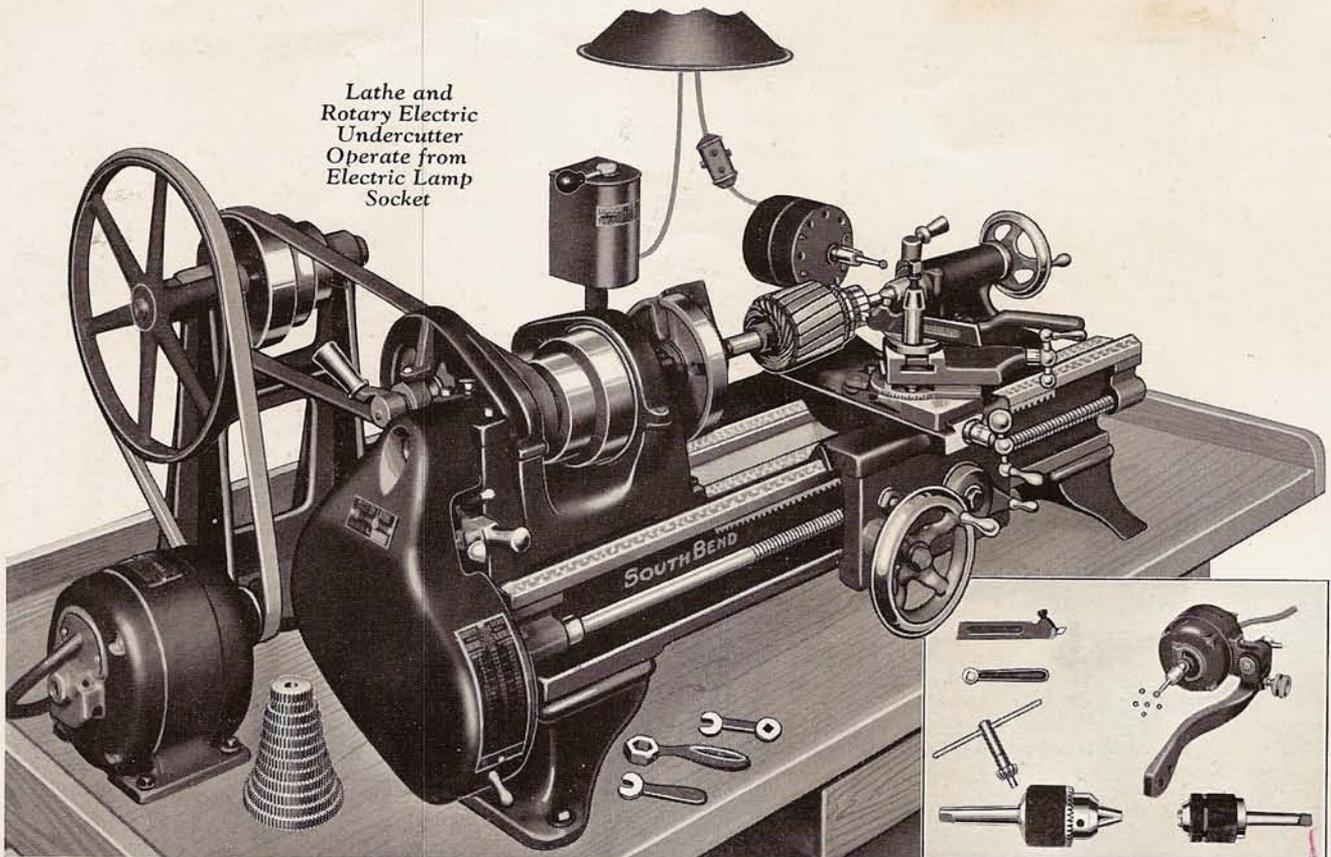


Fig. 12. The New 9-in. x 3-ft. Junior South Bend Armature Lathe in operation Truing an Armature. Small Illustration Shows the Armature Servicing Equipment for Lathe as Listed and Priced Below.

The New 9-inch Junior South Bend Armature Lathe

A Universal Tool for the Automotive Repair and Electrical Shop

The New 9-inch Junior South Bend Armature Lathe illustrated above will true the commutators and undercut the insulation of the commutators of all motor vehicle armatures, quickly and accurately. This is the same lathe that is illustrated and described on page 2 and is used in handling all of the jobs shown throughout this bulletin. This lathe has the power to reduce the diameter of a steel shaft $\frac{1}{4}$ -inch in one cut.

Regular Lathe Equipment included in the price of the New 9-inch Junior South Bend Armature Lathe consists of: V-belt countershaft as shown above (for use on bench, wall or ceiling); graduated compound rest; face plate; tool post, ring and wedge; two 60° lathe centers; spindle sleeve; change gears for screw thread cutting and automatic longitudinal screw feed to carriage; wrenches; lag screws; washers; installation plan; book, "How to Run a Lathe;" and Manual No. 2, "How to Machine Armatures." Bench for lathe is extra.

Armature Servicing Equipment priced in the tabulation at right includes the attachments and accessories required for doing the armature servicing operations shown in this bulletin, such as truing commutators, undercutting insulation, etc. Prices are itemized so that the equipment wanted can be selected and the accessories and tools not wanted may be eliminated.

Screw Thread Cutting. The 9-inch Junior Lathe is supplied with a set of independent change gears which provide for cutting standard screw threads from 4 to 40 per inch, right or left-hand, including $1\frac{1}{2}$ pipe thread. A metal index chart as illustrated at right is attached to the lathe and shows the screw threads obtainable.

SCREW THREAD CUTTING CHART			
GEARED SCREW FEED LATHE			
THREADS PER INCH	STUB GEAR	SCREW GEAR	
4	64	32	
5	64	40	
6	64	48	
7	64	56	
8	64	64	
9	64	72	
10	32	40	
11	32	44	
11 1/2	32	46	
12	32	48	
13	32	52	
14	32	56	
16	32	64	
18	32	72	
20	32	80	
22	16	44	
24	16	48	
26	16	52	
28	16	56	
30	16	60	
32	16	64	
36	16	72	
40	16	80	

Metal Index Chart on 9-inch Lathe.

Mechanical Features and Specifications of the New 9-inch Junior Armature Lathe are described and listed at the bottom of the following page.

Price of 9-inch Lathe and Motor Drive Equipment

1—9-in. x 3-ft. Junior South Bend, Screw Cutting Armature Bench Lathe complete with graduated compound rest, V-belt countershaft (for bench, wall or ceiling) and other regular lathe equipment as listed at left. No. 422-Y. Distance between centers, $16\frac{3}{8}$ ". Shipping weight crated, 375 lbs. Price f.o.b. factory... **\$166.00***

Motor Drive Equipment for 9-inch Lathe

1— $\frac{1}{4}$ H.P. Motor, Start-and-Stop split phase reversing type, 1725 R.P.M. (1-phase, 60-cycle, A.C. 110-volt)... **\$11.50**
 1—V-Groove Pulley for $\frac{1}{2}$ -inch motor shaft... **.50**
 1—V-Belt, motor to drive unit... **1.00**
 1—Reversing Switch (drum type)... **5.00**
 1—Switch Bracket and Wiring... **1.75**
 1—Flat Leather Belt ($1\frac{1}{4}$ " x 64") countershaft to lathe... **1.25** **21.00**
Total Price of 9-inch Lathe and Motor Drive Equipment... \$187.00

Price, Armature Service Equipment for 9" Lathe

1—Headstock Driving Chuck, with Arbor and Key, for centerless armature shafts up to $\frac{3}{4}$ " diam. No. 327... **\$ 7.35**
 1—Tailstock Adjustable Bushing for centerless armature shafts from $\frac{3}{8}$ " to $\frac{3}{4}$ " diam., fitted with No. 2 Morse Taper Arbor. No. 361-A... **8.10** **900**
 1—Straight Turning Tool with high speed steel cutter. No. 849-S... **2.20**
 1—Electric Rotary Undercutter for 110-volt, 1-phase, A.C. current, complete with five cutters, assorted widths. No. 544-B... **27.50** **\$45.15**

*Prices of the 9-inch Armature Lathe with Longer Bed Lengths.

For price of 9-inch lathe with $3\frac{1}{2}$ ' bed add \$10.00 to above price of lathe; for lathe with 4' bed add \$20.00; for lathe with $4\frac{1}{2}$ ' bed add \$30.00. Distance Between Centers: 9" x $3\frac{1}{2}$ ' Lathe, $21\frac{3}{8}$ "; 9" x 4' lathe, $27\frac{3}{8}$ "; 9" x $4\frac{1}{2}$ ' lathe, $34\frac{3}{8}$ ". Shipping Weight of Lathe Crated: 9" x $3\frac{1}{2}$ ' lathe, 400 lbs.; 9" x 4' lathe, 425 lbs.; 9" x $4\frac{1}{2}$ ' lathe, 450 lbs.

For lathe with floor legs instead of bench legs, add \$10.00 to above price of lathe.

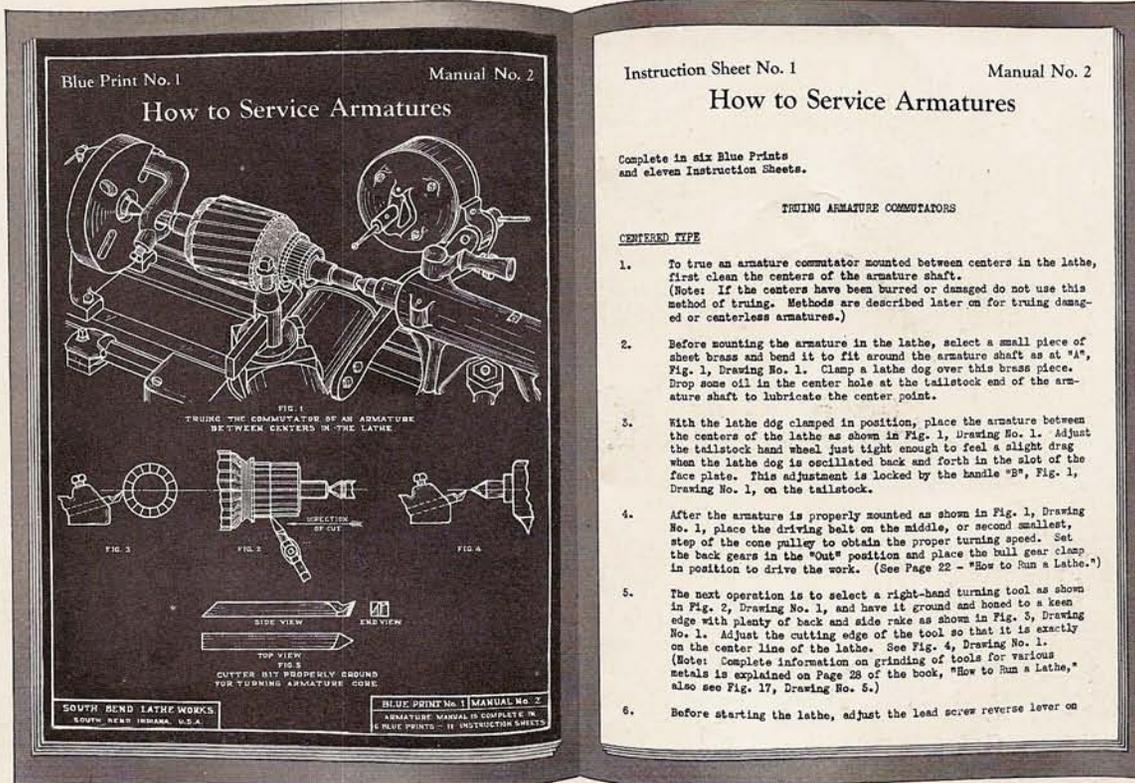


Fig. 13. The Illustration Shows Manual No. 2, "How to Service Armatures." This Manual contains 6 Blue Prints, 8½" x 11", and 11 Instruction Sheets, 8½" x 11".

Armature Service Manual Shows How to Do the Work Supplied Free with the 9-inch Junior South Bend Armature Lathe

Job Instruction Manual No. 2, "How to Service Armatures," as illustrated above, consists of 6 blue prints and 11 type-written job instruction sheets, 8½" x 11". The blue prints illustrate the various operations described in the job instruction sheets and show how to set up the lathe for doing all the various armature service jobs described in this bulletin.

In addition to this manual on armature service, we publish ten additional manuals on other automotive service jobs which can be handled in the lathe. Write for list of manuals.

Instruction Manual No. 2, "How to Service Armatures," bound in a heavy serviceable cover, is included free of charge with every South Bend Armature Lathe. To non-users of these lathes, the price is \$1.00 per copy, mailed postpaid, to any address.

Reference Book, "How to Run a Lathe," as illustrated and described on page 8, and an instruction manual on "Grinding Lathe Tools" are also supplied free with the Armature Lathe.

Armature Service Manual No. 2 Shows How to Do All the Following Jobs:

- How to True Armature Commutators of Motors and Generators.
- How to Grind the Cutter Bit for Commutator Truing.
- How to Set the Cutter Bit for Commutator Truing.
- How to Mount Centerless Armatures in the Lathes.
- How to True Ford Armatures Without Removing End Plate.
- How to Undercut Insulation with Rotary Electric Undercutter.
- How to Polish Armature Commutators.
- How to True Damaged Center Holes in Armature Shafts.
- How to Test and Straighten Bent Armature Shafts.
- How to Mount and True Ford Power House Type Armatures.
- How to Bore Field Poles of Generators.
- How to Grind the Diameter of an Armature Core.
- How to Cut Old Wire from Armatures.
- How to Make Replacement Bushings for Armature Shafts.

Features and Specifications of the 9-inch Junior Armature Lathe A Back-Geared, Screw Cutting Precision Lathe for the Auto Repair Shop

Back-Geared Headstock is hand-scraped to bed, has three-step cone and takes ¼-inch belt. Six changes of spindle speeds are provided, three direct and three back-geared, ranging from 39 to 596 R.P.M. Headstock has quick acting wrenchless bull gear lock and spring latch reverse for feeds and threads.

Headstock Spindle is made of special alloy steel, finish ground, has ¾" hole its entire length. Collet capacity 1/64" to ½". Size of spindle nose 1½" diam., 8 threads. Lathe centers are No. 2 Morse Taper.

Headstock Bearings are phosphor bronze, line bored and lapped to a perfect bearing and are adjustable for wear. An improved oiling system lubricates bearings.

Saddle of carriage is strong and has a wide bridge. The carriage has long hand-scraped bearing surfaces on front and rear V-ways of bed and is provided with an adjustable gib. A locking device is provided for facing and cutting-off work. The cross feed screw has a micrometer collar graduated in thousandths of an inch.

Compound Rest is graduated to 180 degrees, swivels to any angle and has an angular travel of 1%. The compound rest screw is fitted with a micrometer collar graduated in thousandths of an inch. The slide is hand-scraped and has an adjustable gib. A forged steel tool post is provided and takes tool holder shank 11/32" x 13/16" for cutters ¼" x ¼".

Tailstock is hand-scraped to bed; has set-over for taper turning; graduated spindle; improved spindle lock; self-ejecting center.

Precision Lead Screw, ¾" diameter, eight Acme threads per inch, for cutting accurate screw threads and for automatic longitudinal geared screw feed to carriage.

Lathe Bed is 50% steel, heavily constructed and reinforced by box braces. Three V-ways and one flat way accurately planed and hand-scraped, align and support headstock, carriage and tailstock.

Automatic Feed. The 9-inch lathe has automatic longitudinal geared screw feed to carriage and provides a wide range of feeds from fine to coarse. Automatic feeds are obtained by clamping the half-nuts on the lead screw.

V-Belt Countershaft furnished with lathe can be supplied for mounting on bench, wall or ceiling. Bench mounting type is furnished unless otherwise specified.

Motors for the lathe and undercutter are suitable for 1-phase, 60-cycle, A.C. If direct current motors are wanted, add \$21.50 to price of lathe and \$7.00 to price of undercutter as quoted on page 4.

When Ordering specify current, voltage, phase, cycle and number of wires. Do not specify 110-220-volt motor, as we cannot furnish motors with double voltage rating.

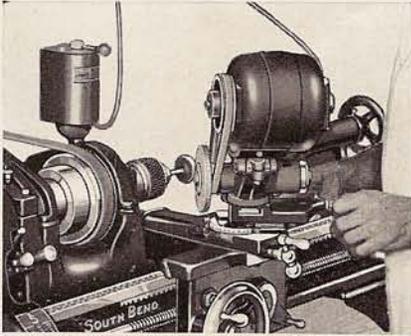


Fig. 14. Grinding a Valve Face in the Auto Shop Lathe, using Electric Valve Grinder.

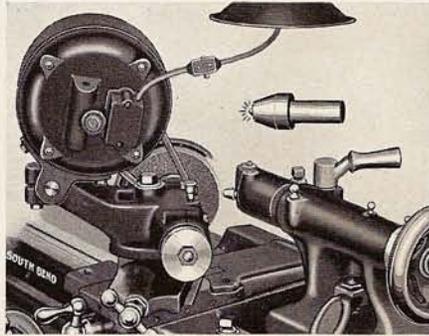


Fig. 15. Truing a Grinding Wheel using Tailstock Diamond Holding Fixture.

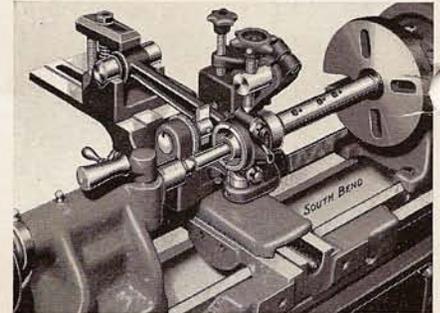


Fig. 16. Boring, Facing and rounding a Rebabbitted Connecting Rod in the Lathe.

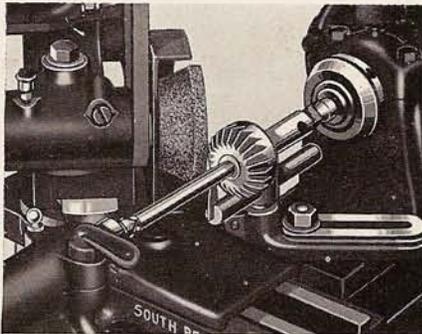


Fig. 20. Sharpening a Valve Seat Reamer using Holding Fixture with Spring Stop.

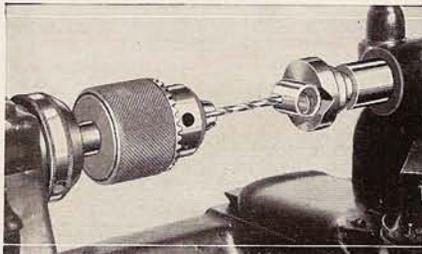


Fig. 22. Drilling Oil Hole in a Bushing using Crotch Center in Tailstock of Lathe.

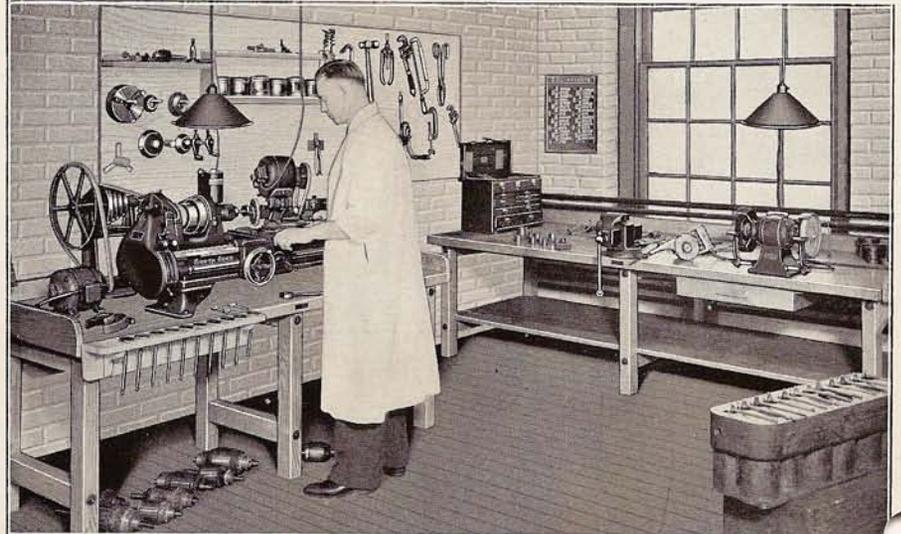


Fig. 32. The No. 9 Auto Service Shop Equipped with Lathe and Equipment for Servicing Armatures, Valves, Pistons, Bushings, Connecting Rods, etc.

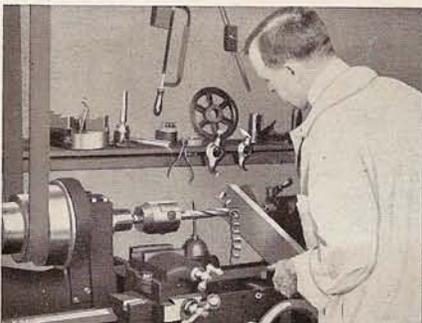


Fig. 24. Lathe used as Drill Press for Drilling Hole in Flat Piece of Work.

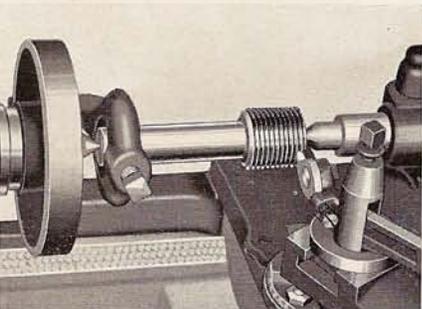


Fig. 26. Cutting a Screw Thread on a Tap. Screw Thread Range of Lathe, 4 to 40 per inch.

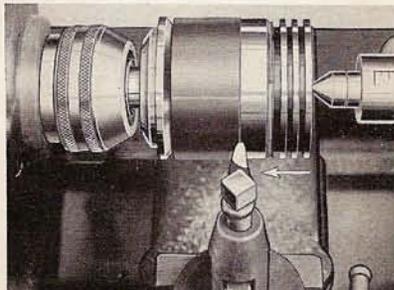


Fig. 27. Finishing a Semi-Machined Cast Iron Piston Mounted on the Piston Adapter.

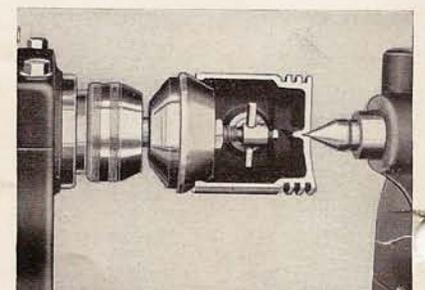


Fig. 28. Cross Section View showing Application of the Piston Adapter.

The No. 9 Automotive Service Shop

For Small Service and Repair Jobs on the Automobile, Truck and Bus

The Completely Equipped Shop. The auto service shop illustrated above is completely equipped for small service and repair jobs on the automobile, truck and bus. The lathe shown is the 9-in. x 3-ft. Junior South Bend Lathe, as illustrated and described on pages 2 to 5 of this bulletin. In addition to the lathe, the above shop has the equipment for servicing armatures as itemized on page 4, also the equipments for servicing valves, bushings, pistons and connecting rods, as itemized and priced on page 7.

Shop Handles All These Jobs. All the jobs shown throughout this bulletin were handled on the 9-inch Junior Lathe as shown in the above shop. This lathe, in addition to truing armature commutators and undercutting insulation, is practical for grinding and servicing valves, finishing pistons, making bushings, cutting screw threads, drilling, boring, tapping, sharpening reamers of all kinds, making tools and hundreds of other auto service jobs.

Attachments May Be Added Later. The shop that intends to install the 9-inch Lathe need not buy all of the attachments and equipments at the time of its purchase. At any time later, after the lathe has been installed, attachments, tools and accessories for handling various classes of work may be added, when required.

Over 5,000 Auto Service Shops Equipped. The 9-inch Junior South Bend Back-Gear, Screw Cutting Lathe, illustrated in this bulletin, is the lathe that has become so popular in auto repair shops, garages, electrical shops and truck service shops. More than 5,000 automotive shops in the United States are using this lathe on auto service work.

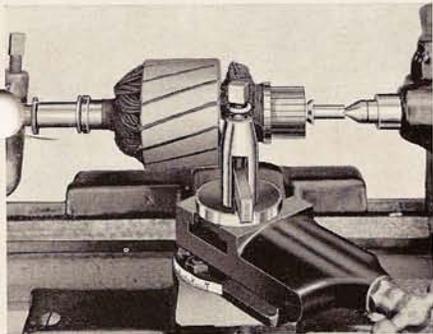


Fig. 17. Cutting Wires to Facilitate Removing Preparatory to Rewinding Armature.

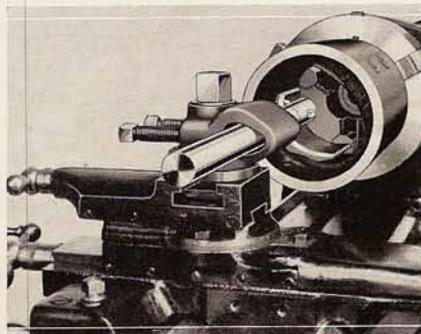


Fig. 18. Boring the Field Poles of a Generator True to provide Clearance for Armature.

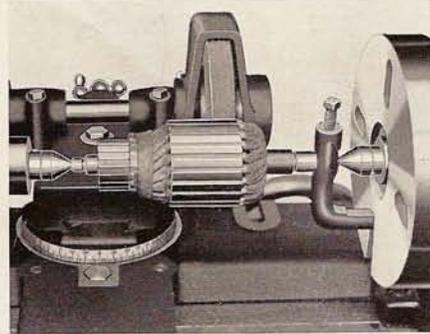


Fig. 19. Truing the Outside Diameter of an Armature to Prevent it Striking the Field Poles.

Equipments for Servicing Bushings, Valves, Pistons, and Connecting Rods in the 9-inch Lathe

Equipments for 9-inch Lathe. Below we list and price individual equipments consisting of chucks, tools and fixtures for servicing bushings, valves, pistons and connecting rods. These equipments may be fitted to the 9-inch Junior South Bend Lathe as illustrated and priced on page 4, and as shown in the No. 9 Automotive Service Shop on page 6.

Omit Items Not Wanted. All the equipments, attachments and accessories, or any combination of them may be ordered with the 9-inch Junior South Bend Lathe, also any item in the equipments can be eliminated if the shop has no use for them. The shop wishing to specialize in any one job can select the attachments and tools suitable for that work and eliminate the others.

Bushing Equipment for the 9" Lathe

1—3-Jaw Universal Lathe Chuck, 5" cap., fitted to lathe. No. 3605...	\$32.85	
1—3-Jaw Drill Chuck, 1/2" cap., with arbor fitted to lathe. No. 326...	5.85	
1—Right-Hand Cutting-Off Tool with H. S. steel cutter. No. 881-R...	2.35	
1—Straight Shank Turning Tool with H. S. steel cutter. No. 849-S...	2.20*	
1—Boring Tool, Style "D," with 1/4" bar. No. 505-A.....	2.50	
2—Malleable Lathe Dogs, 1/2" cap. No. 2-MJ and 1" cap. No. 6-MJ....	1.20	
2—Comb. Center Drills and Countersinks, @ \$0.30 each. No. 898-B...	.60	\$47.55

Valve Service Equipment for the 9" Lathe

1—Electric Grinder with 1/4 H.P. Motor, 110-volt, A.C. 1725 R.P.M., switch, extension cord, Grinding Wheel 4" x 1/2", and V-belt. No. 14-B.	\$50.00	
1—Precision Valve Chuck, 5/8" cap., fitted to lathe. No. 907-A.....	9.00	
1—Diamond for truing grinding wheel, No. 406.....	4.50	
1—Diamond Holding Fixture. No. 91-B.....	2.25	
1—Holding Fixture and Spring Stop for reamer and cutter grinding. No. 19	8.00	
1—V-Block for holding valves when grinding end of stem. No. 545....	3.00	
1—Rocker Arm Grinding Fixture. No. 703.....	3.00	\$79.75

Piston Finishing Equipment for the 9" Lathe

1—Piston Adapter with driving Dog and No. 1-D Cone Ring for pistons 2 1/2" to 3 1/8" diam. No. 44-A.....	\$ 9.00	
1—Cone Ring for pistons 3 1/8" to 3 3/4" diam. No. 2-D.....	1.75	
1—Piston Skirt Reamer for pistons 2 1/2" to 3 1/8" diam. No. 1-R.....	6.00	
1—Piston Skirt Reamer for pistons 3 1/8" to 3 3/4" diam. No. 2-R.....	6.50	
1—Straight Shank Turning Tool with H.S. steel cutter. No. 849-S....	2.20*	\$25.45

Connecting Rod Boring Equipment for the 9" Lathe

1—Connecting Rod Boring Attachment consisting of holding jig, V-block and adjustable clamping device for connecting rods up to 1 1/4" between centers and 4 1/8" across bolt lugs. No. 1229.....	\$45.00	
1—Boring Bar with cutter bits for boring, facing, rounding, and turning outside of bearings from 1 1/4" to 2 1/2" diameter. No. 461B; also Centering Cone and Driver for boring bar. No. 908.....	20.50	\$65.50

*These items appear in two or more equipment lists and need not be duplicated when ordering.

Fig. 7. Bull. No. 2. 3-8-34.

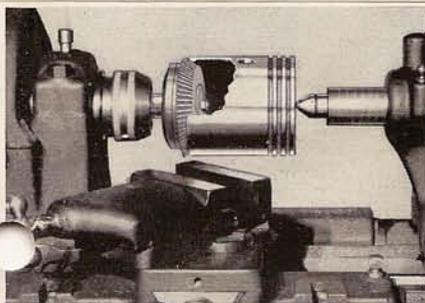


Fig. 29. Reaming the Skirt of a Piston. Reamer is Held on Piston Adapter Shank.

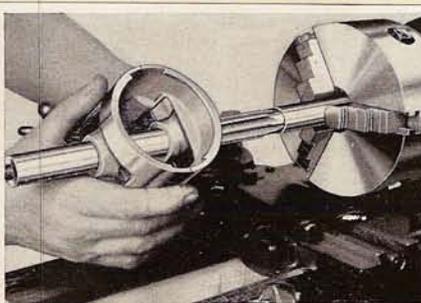


Fig. 30. Lathe may be Used at Variable Speeds for Reaming, Lapping and Honing.

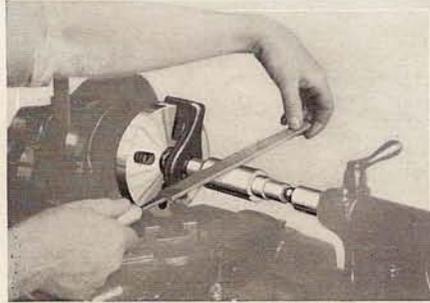


Fig. 31. Lathe is Practical for Filing, and Polishing Bushings, Shafts, Parts, etc.



Fig. 21. Truing up a Piece of Brass in Chuck, Preparatory to Making a Bushing.

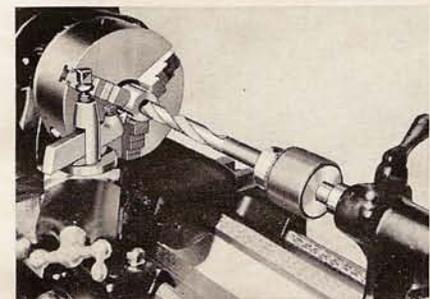


Fig. 23. Drilling Hole in Bushing. Drilling of All Kinds can be Done in the Lathe.

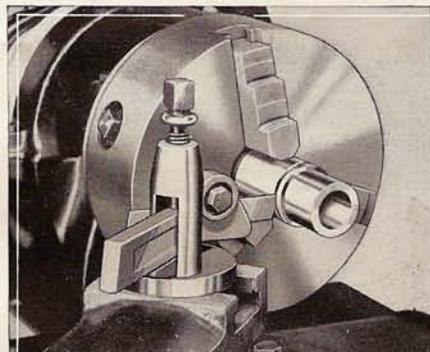


Fig. 25. Cutting-off a Bushing, made complete, in one set-up, in Chuck.

Bulletins on Auto Service Work

To Assist the Mechanic
in the Motor Service Shop

About ten years ago, we devoted a room in our factory to be used as a laboratory for research on improved methods and equipment for automotive service and maintenance of all makes of automobiles, buses and trucks.

Our experience in this work has enabled us to publish a series of automotive service bulletins of which this Bulletin "How to Service Armatures", is a sample. Each Bulletin contains about eight pages, 8½" x 11", and 40 illustrations on the latest shop practice and equipment for doing the work quickly and accurately.

Copies of these Bulletins will be mailed for 10 cents each, postpaid, to any address.

"How to Grind Valves," Bulletin No. 1 illustrates and describes the modern methods and equipment for grinding valves of all sizes and types, squaring ends of valve stems, grinding rocker arm face, squaring end of tappet, grinding reamers, etc.

"How to Replace Flywheel Starter Gears," Bulletin No. 3 contains many valuable suggestions on turning down flywheels and fitting new starter gears.

"How to True Brake Drums," Bulletin No. 4 describes in detail how brake drums of all kinds are turned true. Also explains the South Bend Method of mounting wheels and hubs.

"How to Replace Differential Ring Gears," Bulletin No. 5 describes methods for removing the old differential ring gear, truing the ring gear seat and fitting the new steel ring gear accurately and quickly.

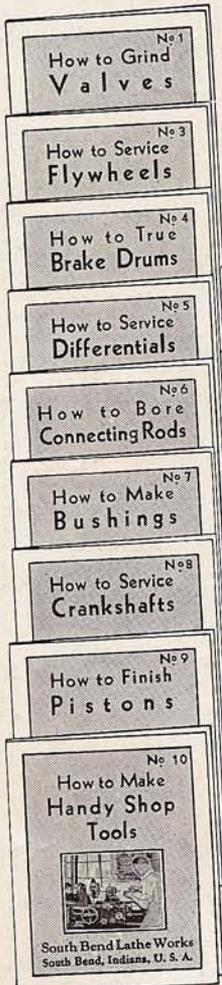
"How to Bore Rebabbed Connecting Rods," Bulletin No. 6 illustrates the latest methods and equipment for boring rebabbed connecting rods.

"How to Make Replacement Bushings," Bulletin No. 7 explains methods and equipment for making replacement bushings of brass, bronze, steel, cast iron, etc.

"How to True Crankshaft Bearings," Bulletin No. 8 describes methods for testing and truing throw bearings and main bearings of crankshafts, etc.

"How to Finish Semi-Machined Pistons," Bulletin No. 9 describes methods for finishing semi-machined pistons, also reaming and honing wrist pin hole, etc.

"How to Make Handy Shop Tools," Bulletin No. 10 This bulletin illustrates and describes how to make arbors, mandrels and other handy tools from salvaged material in the lathe; it also shows how to fit chucks, etc.



Illustrated Automotive Service
Bulletins, Size 8½" x 11",
8 Pages, 40 Illustrations

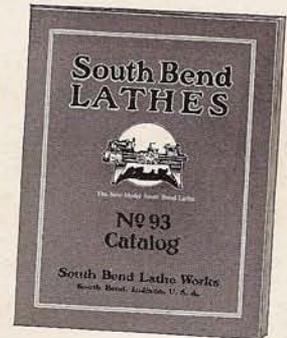
General Catalog No. 93

On South Bend Lathes, Attachments,
Chucks, Tools and Accessories

The new 72-page General Catalog No. 93, size 8½" x 10¾", illustrates, describes and prices the 1933 line of New Model South Bend Back-Geared, Screw Cutting Lathes, from 8-inch swing to 36-inch swing and in bed lengths 2-ft. to 12-ft.

A valuable reference book for any machinist who is interested in modern industrial methods and latest shop practice in the machining of metals of all kinds.

A complete line of attachments, chucks, tools and accessories for each size South Bend Lathe is shown in this catalog.



A copy of this catalog will be mailed on request, anywhere in the world, postpaid, no charge.

Easy Payment Terms

For Use Only in the United States of America,
Alaska and Canada

For the convenience of our customers, we have an Easy Payment Plan that can be used when buying any size South Bend Lathe with attachments, chucks or tools. This plan gives you an opportunity to pay for the lathe while using it. To determine the down payment and monthly payment on your order, see tabulation below.

Schedule of Easy Payment Terms

If Total Price of Your Order Amounts to	Amount to Add for Financing	Amount of Down Payment	Payment Each Month	Approx. No. of Payments
\$100.01 to \$110.00	\$ 7.00	\$30.00	\$ 7.00	12
110.01 to 120.00	7.00	32.00	7.50	12
120.01 to 130.00	7.50	33.00	8.50	12
130.01 to 140.00	8.00	34.00	9.00	12
140.01 to 150.00	9.00	35.00	10.00	12
150.01 to 175.00	10.00	36.00	11.50	12
175.01 to 200.00	11.50	40.00	13.00	12
200.01 to 225.00	13.00	45.00	15.00	12
225.01 to 250.00	14.50	50.00	17.00	12
250.01 to 275.00	16.00	55.00	18.50	12
275.01 to 300.00	17.50	60.00	19.50	12
300.01 to 325.00	19.00	65.00	22.00	12
325.01 to 350.00	20.50	70.00	24.00	12
350.01 to 375.00	22.00	75.00	26.00	12

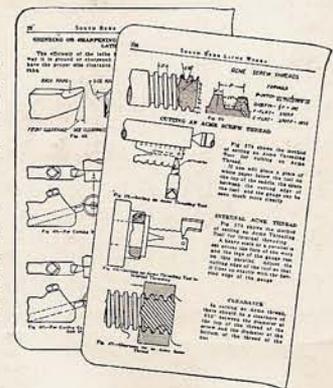
"How to Run a Lathe"—30th Edition

For the Mechanic and Apprentice

"How to Run a Lathe" is an authoritative manual covering the fundamental operations of the modern back-geared, screw cutting engine lathe. It contains 160 pages, 5¼" x 8", and more than 300 illustrations showing the most modern and practical methods for handling over 400 machine operations on the lathe.

More than one million two hundred and fifty thousand copies of this book are in use throughout the world. Used as a text book in the shops of vocational schools, trade and industrial schools, also by apprentices and mechanics in machine shops of all kinds. A copy of this book is included with the equipment of each South Bend Lathe.

Mailed anywhere in the world, postpaid, price 25 cents.
Coin or stamps of any country accepted.



Two Sample Pages

PARTIAL LIST OF CONTENTS

How to Set Up the Lathe
Care of the Lathe
How to Lay Out a Shop
How to Level a Lathe
How to Hang a Countershaft
Calculating Size and Speed of Pulleys
How to Lace a Belt
Grinding and Setting Lathe Tools

Cutting Screw Threads
Turning and Boring Tapers
Grinding and Milling Work
Chucks and Face Plates
Cutting Speeds and Feeds on
All Kinds of Metals
Operating Automatic Feeds
Reading Micrometer Callipers

Using Outside and Inside Calipers
Locating Center Holes
Aligning Lathe Centers
Drilling, Boring, Reaming, Tapping
Use of Compound Rest
Table of Decimal Equivalents
Table of Metric Measures
300 Other Shop Kinks

South Bend Lathe Works

402 East Madison Street,
South Bend, Indiana, U. S. A.

(Established 1906 - - - Lathe Builders for 26 Years)