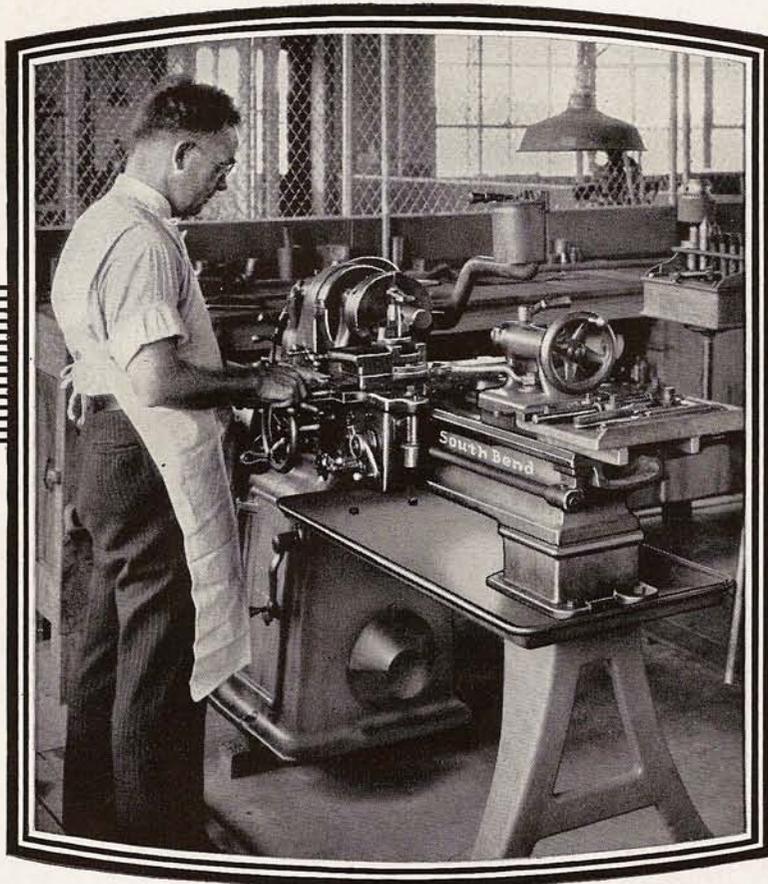


Bulletin No. 13-C

August 2, 1937

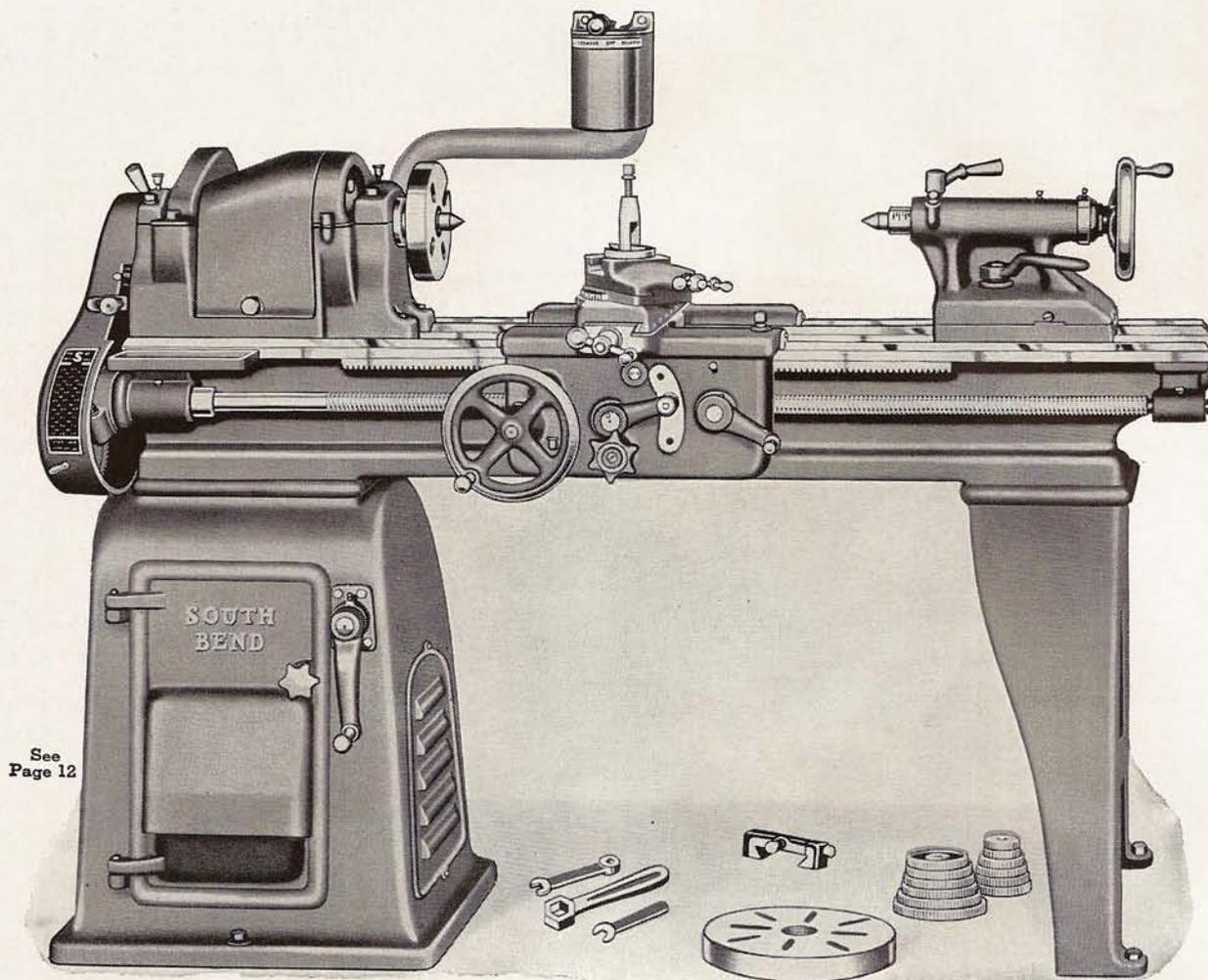


The New Model South Bend
13-inch Series "R"
Precision LATHES



SOUTH BEND LATHE WORKS

478 Niles Avenue South Bend, Indiana, U. S. A.



See Page 12

(Patented)

Fig. 1. Cat. No. 112-B, 13" x 5' Series "R" Standard Change Gear Underneath Belt Motor Drive Lathe complete as shown. ... \$668.00

13-inch Standard Change Gear Precision Lathe—Series "R" Double Wall Apron—Hardened Headstock Spindle—Underneath Belt Motor Drive

The Series "R" 13-inch standard change gear lathe is recommended for production operations and for use in shops where few changes for threads and feeds are required. Loose change gears are furnished for cutting screw threads and for feeds. See page 9.

Improved Carriage is equipped with double wall apron which provides a wide range of automatic power longitudinal feeds and power cross feeds. An automatic safety interlock prevents engaging half-nuts with lead screw when power feeds are in use.

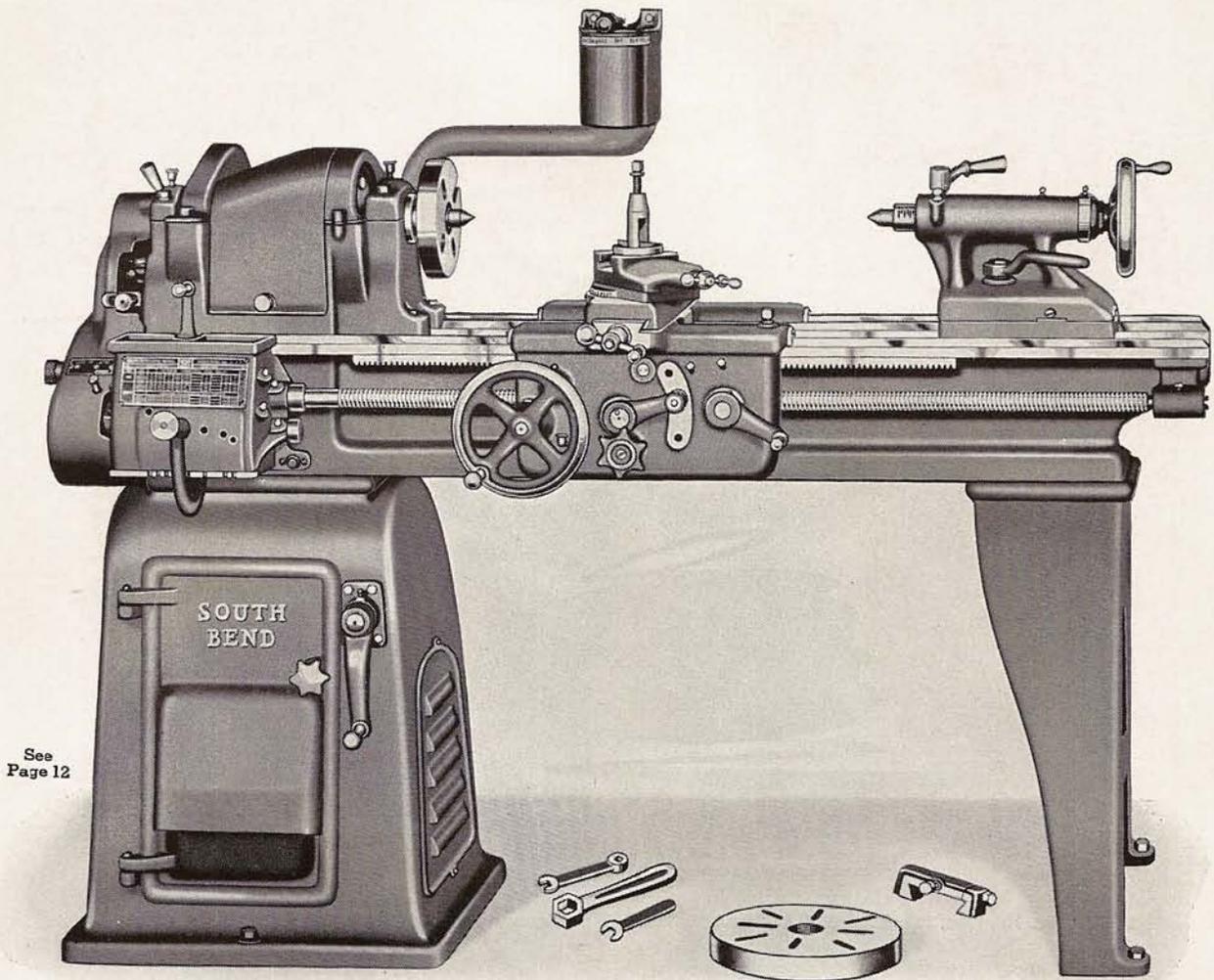
Underneath Belt Motor Drive and other new features including double wall apron, multiple disc friction feed clutch, hardened headstock spindle and adjustable taper gibs on dovetail bearings of compound rest and cross slide are shown on pages 9 to 12.

Equipment included in price of lathe consists of: $\frac{3}{4}$ H.P. instant reversing motor, reversing switch, wiring, belting, large and small face plates, tool post, thread cutting stop, centers, spindle sleeve, change gears, wrenches, and "How to Run a Lathe."

Net Factory Prices of 13-inch Series "R" Standard Change Gear Underneath Belt Motor Drive Floor Leg Lathes

Prices Include Equipment as Listed Above and on Page 10

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Hole Through Spindle Inches	Swing Over Carriage Inches	Size Motor Used H.P.	Approx. Weight Crated Pounds	Catalog Number	Code Word	3-Phase 60-Cycle A.C. Motor	1-Phase 60-Cycle A.C. Motor	Direct Current Motor
13 $\frac{1}{4}$	4	16	1	9 $\frac{1}{4}$	$\frac{3}{4}$	1440	112-A	Betat	\$653.00	\$665.00	\$664.00
13 $\frac{1}{4}$	5	28	1	9 $\frac{1}{4}$	$\frac{3}{4}$	1490	112-B	Bacik	668.00	680.00	679.00
13 $\frac{1}{4}$	6	40	1	9 $\frac{1}{4}$	$\frac{3}{4}$	1540	112-C	Bacmo	685.00	697.00	696.00
13 $\frac{1}{4}$	7	52	1	9 $\frac{1}{4}$	$\frac{3}{4}$	1595	112-D	Badap	704.00	716.00	715.00



See
Page 12

(Patented)
Fig. 2. Cat. No. 113-B, 13" x 5' Series "R" Quick Change Gear Underneath Belt Motor Drive Lathe complete as shown...\$728.00

13-inch Quick Change Gear Precision Lathe—Series "R"

Double Wall Apron—Hardened Headstock Spindle—Underneath Belt Motor Drive

The Series "R" 13-inch quick change gear lathe is recommended for tool room and maintenance work and for shops where frequent changes for threads and feeds are required. Full quick change gear equipment is furnished for cutting screw threads and for automatic power carriage feeds. See page 9.

Improved Carriage provides a wide range of automatic power longitudinal feeds and power cross feeds. An automatic safety interlock prevents engaging half-nuts with lead screw when power feeds are in use.

New Features include underneath belt motor drive, double wall apron, multiple disc friction feed clutch, hardened headstock spindle, and adjustable taper gibbs on dovetail bearings of compound rest and cross slide. See pages 9 to 12.

Equipment included in the price of this lathe consists of: $\frac{3}{4}$ H.P. instant reversing motor, reversing switch, wiring, belting, large and small face plates, tool post, thread cutting stop, centers, spindle sleeve, gear box, wrenches, and "How to Run a Lathe."

Net Factory Prices of 13-inch Series "R" Quick Change Gear Underneath Belt Motor Drive Lathes

Prices Include Equipment as Listed Above and on Page 10

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Hole Through Spindle Inches	Swing Over Carriage Inches	Size Motor Used H.P.	Approx. Weight Crated Pounds	Catalog Number	Code Word	3-Phase 60-Cycle A.C. Motor	1-Phase 60-Cycle A.C. Motor	Direct Current Motor
13 $\frac{1}{4}$	4	16	1	9 $\frac{1}{4}$	$\frac{3}{4}$	1460	113-A	Becka	\$713.00	\$725.00	\$724.00
13 $\frac{1}{4}$	5	28	1	9 $\frac{1}{4}$	$\frac{3}{4}$	1510	113-B	Becco	728.00	740.00	739.00
13 $\frac{1}{4}$	6	40	1	9 $\frac{1}{4}$	$\frac{3}{4}$	1560	113-C	Bedme	745.00	757.00	756.00
13 $\frac{1}{4}$	7	52	1	9 $\frac{1}{4}$	$\frac{3}{4}$	1615	113-D	Besec	764.00	776.00	775.00

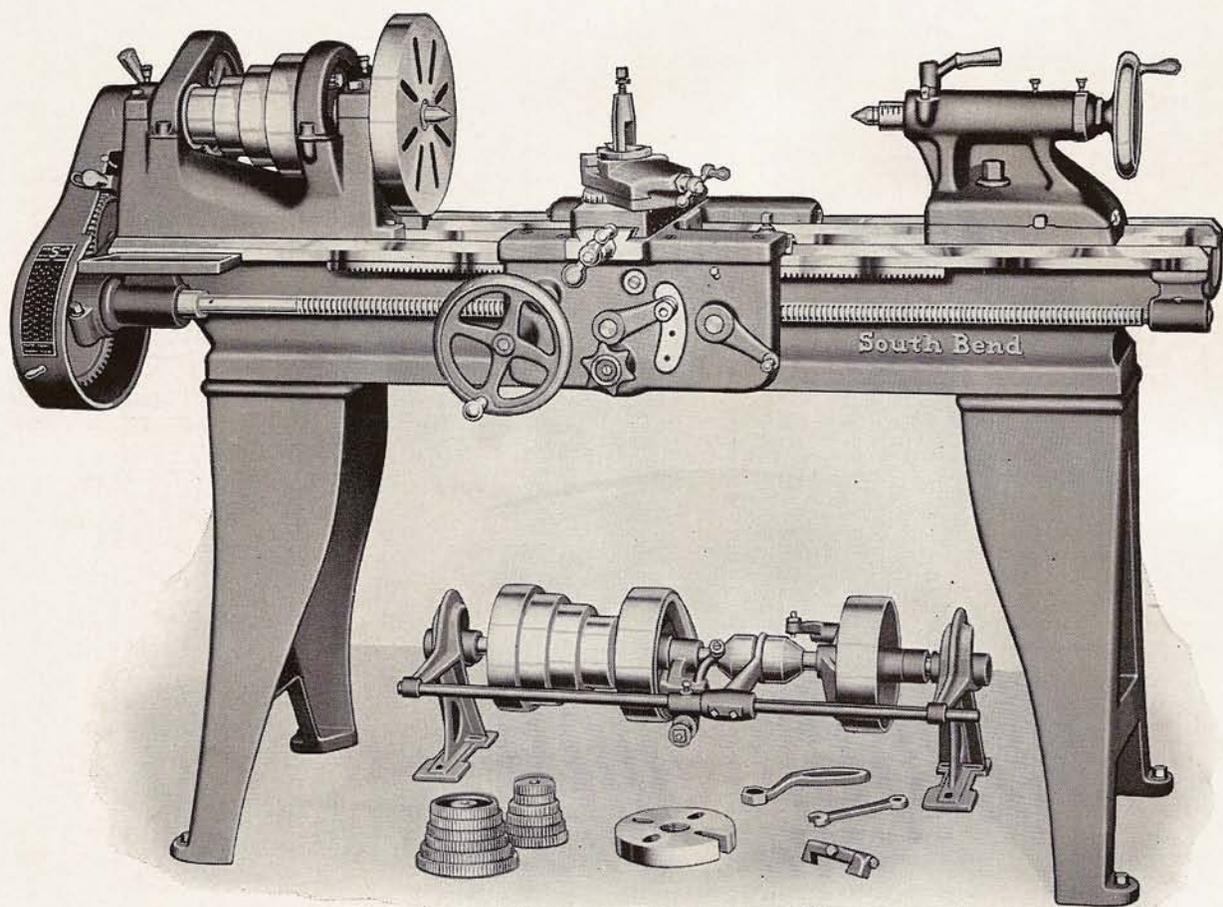


Fig. 3. Cat. No. 12-B, 13" x 5' Series "R" Standard Change Gear Countershaft Drive Lathe complete as shown....\$463.00

13-inch Standard Change Gear Precision Lathe—Series "R"

Double Wall Apron—Hardened Headstock Spindle—Countershaft Drive

The Series "R" 13-inch countershaft driven standard change gear lathe is recommended for use in shops that are equipped with a lineshaft for power. Loose change gears are furnished for cutting screw threads and for automatic power carriage feeds. For further details see page 9.

Improved Carriage provides a wide range of automatic power longitudinal feeds and power cross feeds. An automatic safety interlock prevents engaging half-nuts with lead screw when power feeds are in use.

New Double Wall Apron provides support for both ends of the gear shafts and has an improved plunger gear shift with neutral position.

New Features include double wall apron, multiple disc friction feed clutch, hardened headstock spindle, and adjustable taper gibs on dovetail bearings of compound rest and cross slide. See pages 9 to 11.

Workmanship and Material entering into the construction of Series "R" 13-inch South Bend Lathes are the finest it is possible to obtain and all parts are manufactured to the most exacting specifications.

Equipment included in the price of this lathe consists of: countershaft with two friction clutch pulleys, large and small face plates, tool post, thread cutting stop, centers, spindle sleeve, wrenches, change gears, and instruction book "How to Run a Lathe."

Net Factory Prices of 13-inch Series "R" Standard Change Gear Back-Geared Screw Cutting Lathes

Prices Include Countershaft and Equipment as Listed Above and on Page 10

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Hole Through Spindle Inches	Swing Over Carriage Inches	Cone Pulley Belt Inches	Countershaft Speed R.P.M.	Power Required H.P.	Approx. Weight Crated Pounds	Catalog Number	Code Word	Net Factory Price
13¼	4	16	1	9¼	1¾	250	¾	1040	12-A	Anvid	\$448.00
13¼	5	28	1	9¼	1¾	250	¾	1090	12-B	Anwif	463.00
13¼	6	40	1	9¼	1¾	250	¾	1140	12-C	Anwog	480.00
13¼	7	52	1	9¼	1¾	250	¾	1195	12-D	Apcog	499.00

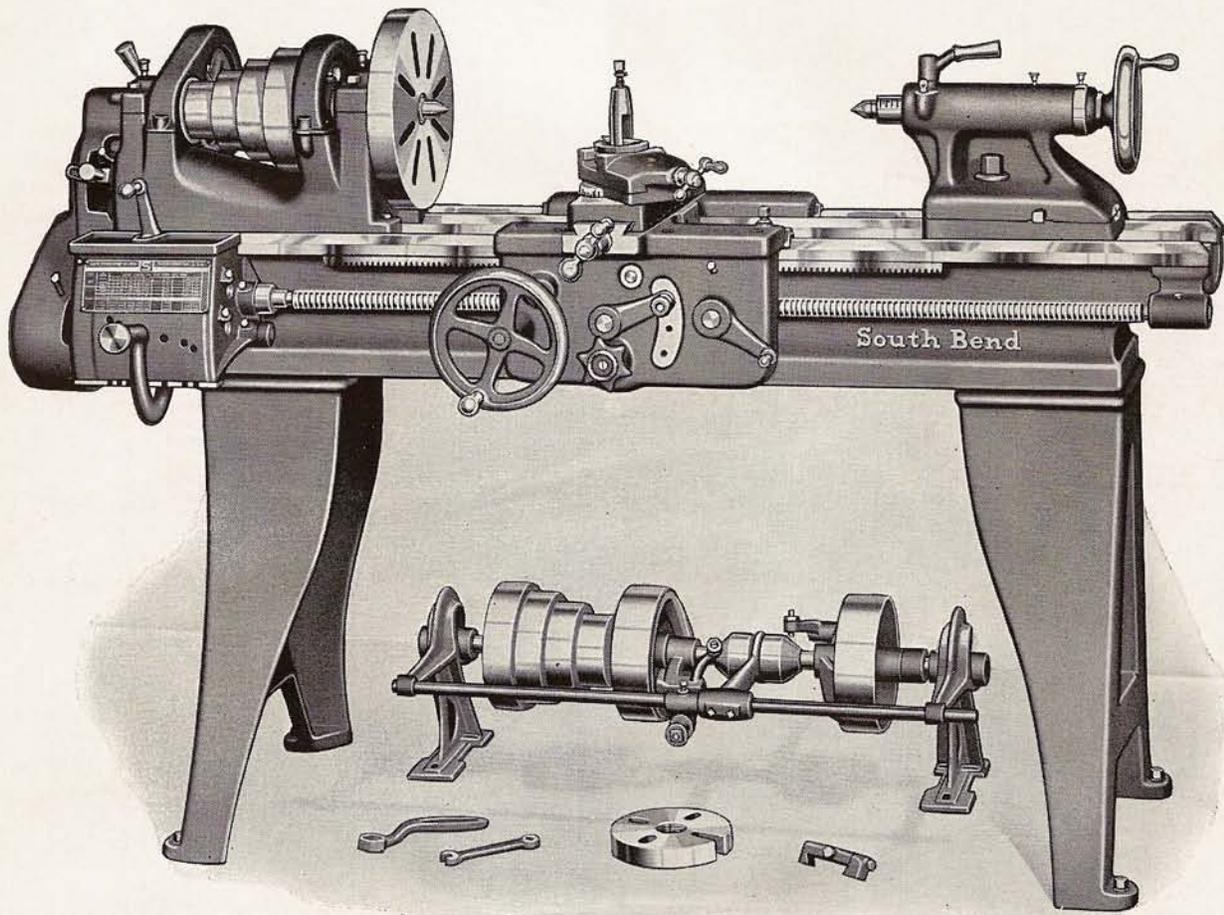


Fig. 4. Cat. No. 13-B, 13" x 5' Series "R" Quick Change Gear Countershaft Drive Lathe complete as shown...\$523.00

13-inch Quick Change Gear Precision Lathe—Series "R"

Double Wall Apron—Hardened Headstock Spindle—Countershaft Drive

The Series "R" 13-inch countershaft driven quick change gear lathe is recommended for use in shops that are equipped with a lineshaft for power. Full quick change gear equipment is furnished for cutting screw threads and for automatic power carriage feeds. For further detail see page 9.

Improved Carriage provides a wide range of automatic power longitudinal feeds and power cross feeds. An automatic safety interlock prevents engaging half-nuts with lead screw when power feeds are in use.

New Double Wall Apron provides support for both ends of the gear shafts and has an improved plunger gear shift with neutral position.

New Features include double wall apron, multiple disc friction feed clutch, hardened headstock spindle, and adjustable taper gibs on dovetail bearings of compound rest and cross slide. See pages 9 to 11.

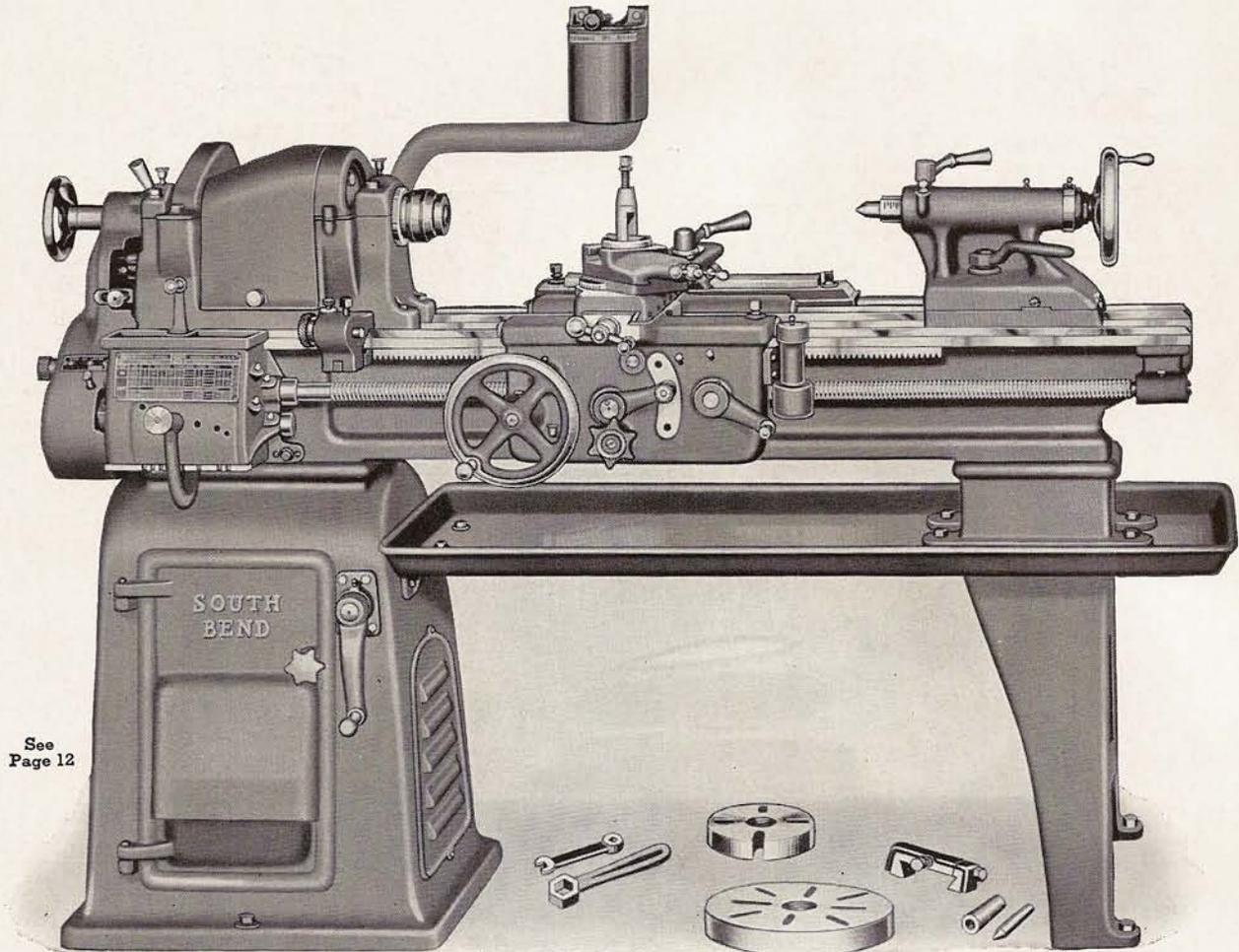
Equipment included in the price of this lathe consists of: countershaft with two friction clutch pulleys, large and small face plates, tool post, thread cutting stop, centers, spindle sleeve, wrenches, gear box, installation plan and book "How to Run a Lathe."

Attachments, Chucks and Tools including draw-in collet chuck, taper attachment, etc. can be supplied for all Series "R" 13-inch Lathes. For illustrations, descriptions and prices write for Bulletin No. 77.

Net Factory Prices of 13-inch Series "R" Quick Change Gear Back-Geared Screw Cutting Lathes

Prices Include Countershaft and Regular Equipment as Listed Above and on Page 10

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Hole Through Spindle Inches	Swing Over Carriage Inches	Cone Pulley Belt Inches	Counter-shaft Speed R.P.M.	Power Required H.P.	Approx. Weight Crated Pounds	Catalog Number	Code Word	Net Factory Price
13 $\frac{1}{4}$	4	16	1	9 $\frac{1}{4}$	1 $\frac{3}{4}$	250	$\frac{3}{4}$	1060	13-A	Altek	\$508.00
13 $\frac{1}{4}$	5	28	1	9 $\frac{1}{4}$	1 $\frac{3}{4}$	250	$\frac{3}{4}$	1110	13-B	Altil	523.00
13 $\frac{1}{4}$	6	40	1	9 $\frac{1}{4}$	1 $\frac{3}{4}$	250	$\frac{3}{4}$	1160	13-C	Altom	540.00
13 $\frac{1}{4}$	7	52	1	9 $\frac{1}{4}$	1 $\frac{3}{4}$	250	$\frac{3}{4}$	1215	13-D	Alvak	559.00



See Page 12

(Patented)
 Fig. 5. Cat. No. 8113-B, 13" x 5' Series "R" Tool Room Quick Change Gear Underneath Belt Motor Drive Lathe complete as shown...\$963.00

13-inch Tool Room Quick Change Gear Precision Lathe—Series "R"

Double Wall Apron—Hardened Headstock Spindle—Underneath Belt Motor Drive

The Series "R" 13-inch Tool Room Lathe has the precision accuracy required for the most exacting tool and gauge work and will retain its accuracy through years of service. It is a powerful, rigid tool designed for convenience and ease of operation.

The convenience and ease of operation of South Bend Tool Room Lathes have made them popular in shops where exacting tool work is handled.

New Features include double wall apron, hardened spindle, and adjustable taper gibs on compound rest and cross slide. See pages 9 to 12.

Equipment included in price of the above lathe consists of: $\frac{3}{4}$ H.P. instant reversing motor, reversing switch, wiring, belting, large and small face plates, tool post, thread cutting stop, centers, spindle sleeve, gear box, wrenches, and book "How to Run a Lathe."

Tool Room Attachments included in price of each 13-inch Tool Room Underneath Belt Motor Drive Lathe listed below consist of: Draw-in collet chuck (hand wheel type) with one collet, any size from $\frac{1}{16}$ " up to $\frac{5}{8}$ " capacity by 64ths; graduated taper attachment; thread dial indicator; chip pan; and micrometer carriage stop.

Net Factory Prices of 13-inch Series "R" South Bend Tool Room Precision Lathes—Underneath Belt Motor Drive

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Swing Over Carriage Inches	Hole Through Spindle Inches	Collet Capacity Inches $\frac{1}{16}$ " up by 64ths to	Size Motor Used H.P.	Quick Change Gear Tool Room Lathes					
							Catalog No.	Approx. Weight Crated Pounds	Code Word for Lathe	Instant Reversing Motors		
										3-Phase 60-Cycle A.C.	1-Phase 60-Cycle A.C.	Direct Current
13 $\frac{1}{4}$	4	16	9 $\frac{1}{4}$	1	$\frac{5}{8}$	$\frac{3}{4}$	8113-A	1615	Baloh	\$945.00	\$957.00	\$956.00
13 $\frac{1}{4}$	5	28	9 $\frac{1}{4}$	1	$\frac{5}{8}$	$\frac{3}{4}$	8113-B	1665	Balbu	963.00	975.00	974.00
13 $\frac{1}{4}$	6	40	9 $\frac{1}{4}$	1	$\frac{5}{8}$	$\frac{3}{4}$	8113-C	1715	Balex	983.00	995.00	994.00
13 $\frac{1}{4}$	7	52	9 $\frac{1}{4}$	1	$\frac{5}{8}$	$\frac{3}{4}$	8113-D	1770	Bapid	1005.00	1017.00	1016.00

Extra for No. 341 center rest, \$11.00; for No. 376 follower rest, \$7.00.

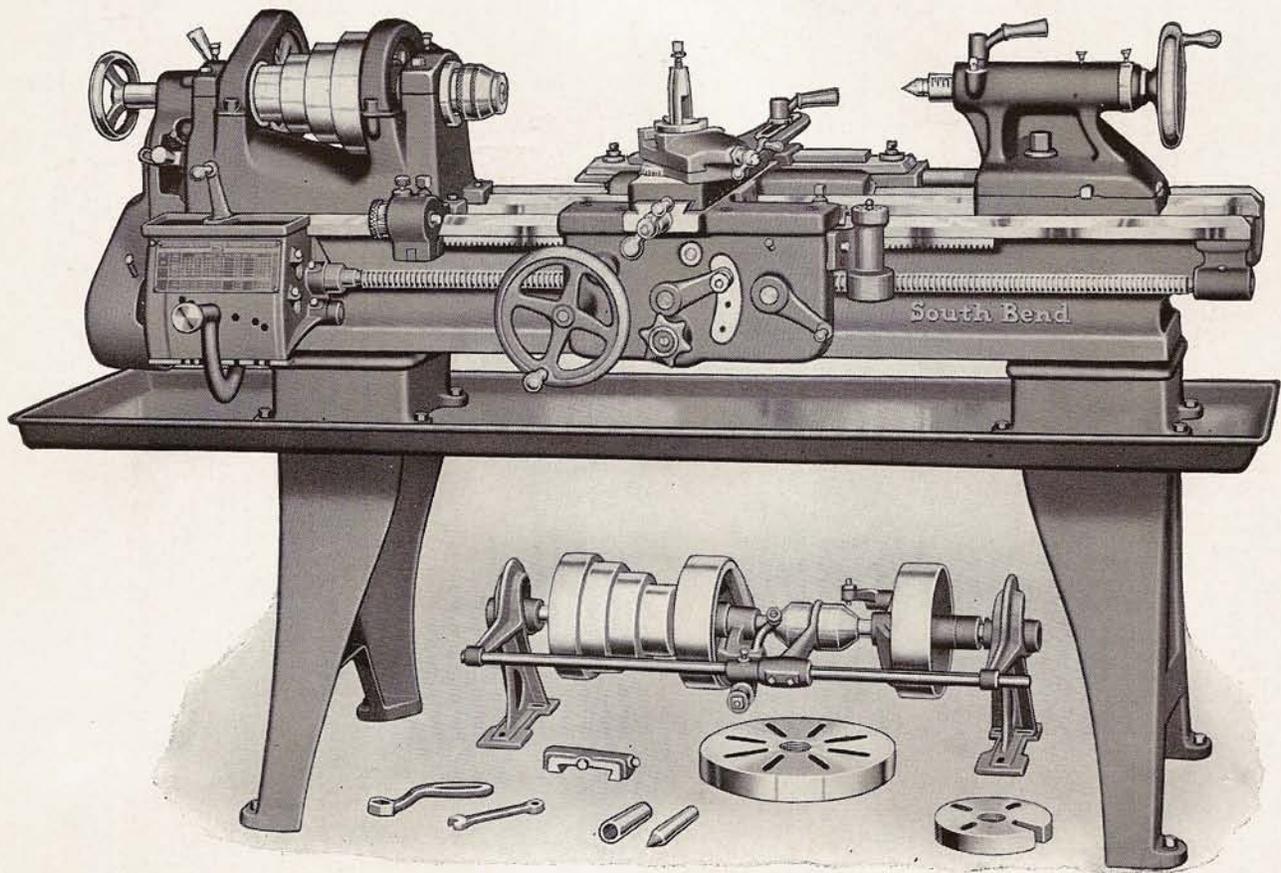


Fig. 6. Cat. No. 8013-B, 13" x 5' Series "R" Tool Room Quick Change Gear Countershaft Drive Lathe complete as shown...\$765.00

13-inch Tool Room Quick Change Gear Precision Lathe—Series "R" Double Wall Apron—Hardened Headstock Spindle—Countershaft Drive

The Series "R" 13-inch Tool Room Lathe has the precision accuracy for the most exacting tool and gauge work and will retain its accuracy through years of service. It is a powerful, rigid tool and is well designed for convenience and ease of operation.

The convenience and ease of operation of South Bend Tool Room Lathes have made them especially popular with tool makers in shops where the most exacting classes of tool work are handled.

New Features include double wall apron, multiple disc friction feed clutch, hardened headstock spindle, and adjustable taper gibs on compound rest and cross slide. See pages 9 to 11.

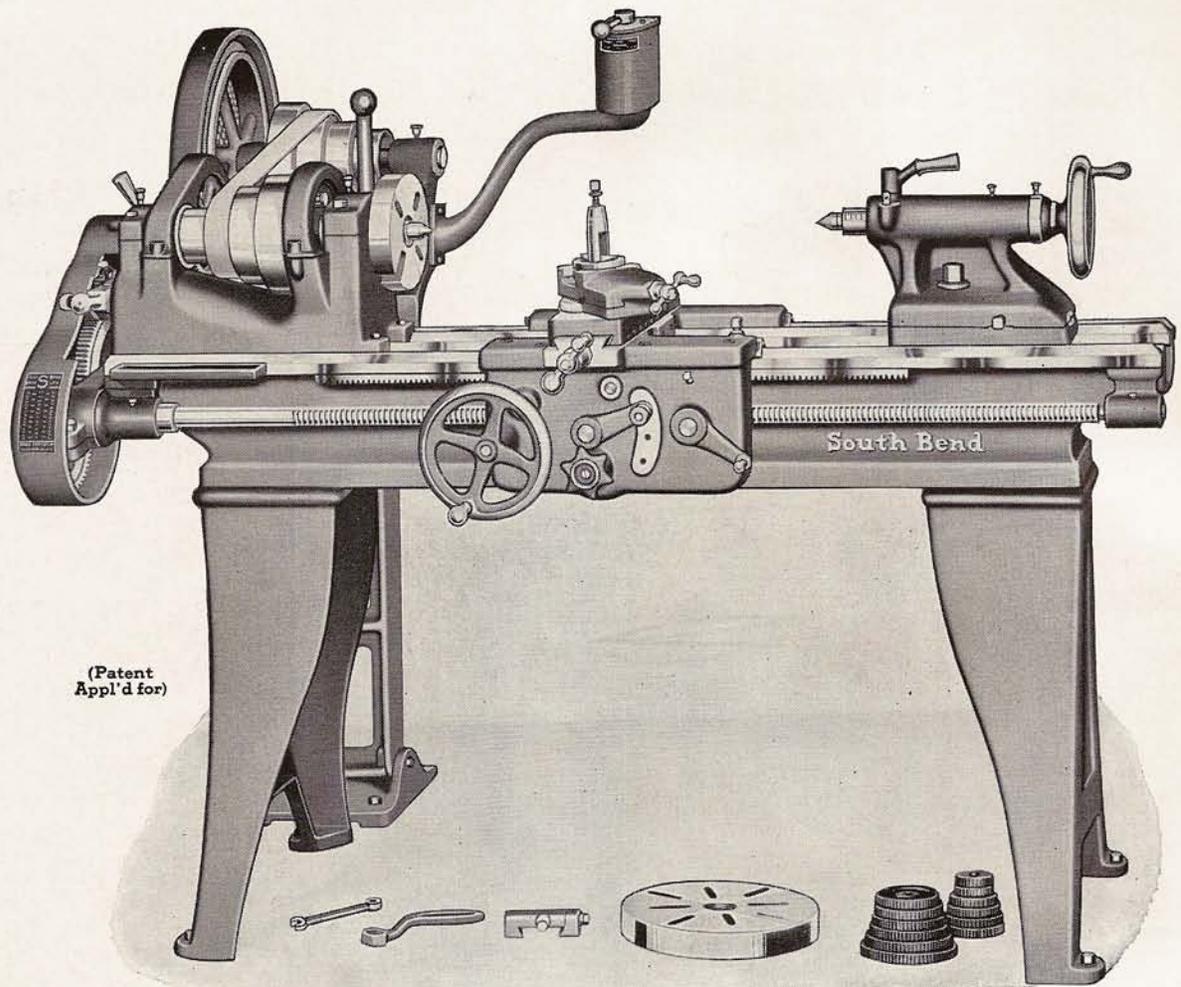
Equipment included in the price of this lathe consists of: countershaft with two friction clutch pulleys, large and small face plates, tool post, thread cutting stop, centers, spindle sleeve, gear box, wrenches, installation plan, and book "How to Run a Lathe."

Tool Room Attachments included in price of each 13-inch Tool Room Countershaft Drive Lathe listed below consists of: Draw-in collet chuck (hand wheel type) with one collet, any size from $\frac{1}{16}$ " up to $\frac{5}{8}$ " capacity by 64ths; graduated taper attachment; thread dial indicator; oil pan; and micrometer carriage stop.

Net Factory Prices of 13-inch Series "R" South Bend Tool Room Precision Lathes—Countershaft Drive

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Swing Over Carriage Inches	Hole Through Spindle Inches	Collet Capacity Inches $\frac{1}{16}$ " up by 64ths to	Cone Pulley Belt Inches	Counter-shaft Speed R.P.M.	Power Required H.P.	Quick Change Gear Tool Room Lathes			
									Catalog No.	Approx. Weight Crated Pounds	Code Word for Lathe	Net Factory Price
13 $\frac{1}{4}$	4	16	9 $\frac{1}{4}$	1	$\frac{5}{8}$	1 $\frac{3}{4}$	250	$\frac{3}{4}$	8013-A	1240	Amloy	\$747.00
13 $\frac{1}{4}$	5	28	9 $\frac{1}{4}$	1	$\frac{5}{8}$	1 $\frac{3}{4}$	250	$\frac{3}{4}$	8013-B	1290	Arnun	765.00
13 $\frac{1}{4}$	6	40	9 $\frac{1}{4}$	1	$\frac{5}{8}$	1 $\frac{3}{4}$	250	$\frac{3}{4}$	8013-C	1340	Artut	785.00
13 $\frac{1}{4}$	7	52	9 $\frac{1}{4}$	1	$\frac{5}{8}$	1 $\frac{3}{4}$	250	$\frac{3}{4}$	8013-D	1395	Asynh	807.00

Extra for No. 341 center rest, \$11.00; for No. 376 follower rest, \$7.00.



(Patent Appl'd for)

Fig. 7. Cat. No. 912-B, 13" x 5' Series "R" Standard Change Gear Pedestal Adjustable Motor Drive Lathe complete as shown....\$587.00

13-inch Standard Change Gear Precision Lathe—Series "R"

Double Wall Apron—Hardened Headstock Spindle—Pedestal Adjustable Motor Drive

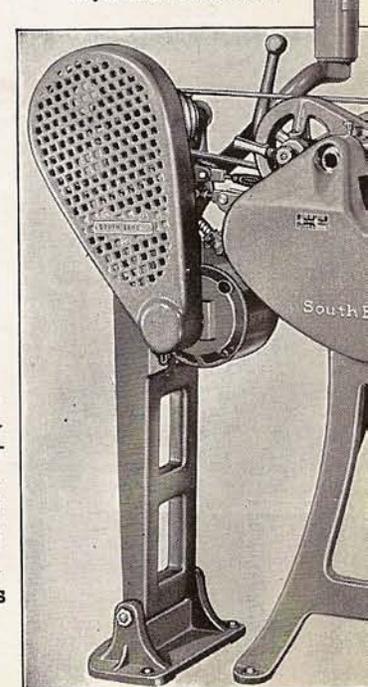
The Series "R" 13-inch standard and quick change gear lathes with pedestal adjustable motor drive are recommended for shops requiring an efficient motor driven lathe at a moderate price. Details of new features may be found on pages 9 to 11, inclusive.

The Pedestal Motor Drive is very practical as it permits placing the lathe in any position in the shop. The lathe is relieved of all strain as the weight of the motor is supported by the pedestal, and an adjustable tension brace between the countershaft and the lathe headstock counteracts the pull of the belt. Two V-

belts, enclosed in a guard, transmit power from the motor to the countershaft. Adjustment is provided for taking up belt stretch. A belt tension release lever permits easy shifting of the cone pulley belt.

Equipment included in price of lathe consists of: large and small face plates, tool post, thread cutting stop, centers, spindle sleeve, wrenches, gear box or loose change gears, installation plan and instruction book "How to Run a Lathe".

Fig. 8. (Below) End View of Pedestal Adjustable Motor Drive.



Electrical Equipment included in the price of each pedestal adjustable motor drive South Bend precision lathe consists of: Reversing motor; drum type reversing switch; wiring between motor and switch; flat leather belt for cone pulleys; V-belts for motor and countershaft; and diagram showing wiring between motor and switch.

Net Factory Prices of 13-inch Series "R" Lathes with Pedestal Adjustable Motor Drive

SPECIFICATIONS					STANDARD CHANGE GEAR LATHES					QUICK CHANGE GEAR LATHES				
Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Size Motor Used H.P.	Approx. Weight Crated Pounds	Catalog No.	Code Word for Lathe	Instant Reversing Motors			Catalog No.	Code Word for Lathe	Instant Reversing Motors		
							3-Phase 60-Cycle A.C.	1-Phase 60-Cycle A.C.	Direct Current			3-Phase 60-Cycle A.C.	1-Phase 60-Cycle A.C.	Direct Current
13 1/4	4	16	3/4	1205	912-A	Raxib	\$572.00	\$584.00	\$583.00	913-A	Repoe	\$632.00	\$644.00	\$643.00
13 1/4	5	28	3/4	1255	912-B	Rolex	587.00	599.00	598.00	913-B	Ravel	647.00	659.00	658.00
13 1/4	6	40	3/4	1305	912-C	Rezob	604.00	616.00	615.00	913-C	Roser	664.00	676.00	675.00
13 1/4	7	52	3/4	1360	912-D	Rimoy	623.00	635.00	634.00	913-D	Robog	683.00	695.00	694.00

Detailed Description of Series "R" South Bend Lathes

Applying to all Sizes and Types of Lathes Shown in this Bulletin

The Series "R" 13-inch South Bend Back-Geared, Screw Cutting Lathes described in this bulletin have the power and rigidity for taking heavy cuts and the precision accuracy for the most exacting tool work. The workmanship and materials used are the best that can be obtained, and the substantial design assures permanent alignment of the headstock, tailstock and other major units.

Back-Geared Headstock is hand-scraped to lathe bed; has four-step cone for $1\frac{3}{4}$ " belt; eight changes of spindle speeds from 23 to 605 R.P.M., four direct and four back-geared; wrenchless bull gear lock; and spring latch reverse for threads and feeds.

Headstock Spindle is made of high carbon steel, heat treated and hardened, finish ground, and has a 1" hole its entire length. Collet capacity $\frac{1}{64}$ " to $\frac{5}{8}$ ". Spindle nose $1\frac{1}{8}$ " diameter, 8 threads.

Phosphor Bronze Bearings for headstock spindle are line bored and lapped to a perfect bearing, and are adjustable for wear. An improved felt wick oiling system lubricates the bearings.

Tailstock is hand-scraped to bed; has set-over for taper turning; graduated spindle; double plug spindle lock; No. 3 Morse taper spindle center, hardened, ground and self-ejecting; spindle travel $4\frac{1}{4}$ ".

Carriage has wide deep bridge; is hand-scraped to bed; has carriage lock for facing and cutting off; and felt wipers for "V" ways.

Double Wall Apron has worm drive and multiple disc friction clutch for both the automatic cross feeds and automatic longitudinal feeds. Half-nuts and lead screw thread are used only for screw thread cutting. An automatic safety device prevents engaging half-nuts and automatic feeds at the same time.

Precision Lead Screw, 1" diameter, 6 Acme standard threads per inch; guaranteed to meet the most exacting requirements for cutting screw threads.

Compound Rest is graduated 180° ; swivels to any angle, and has angular travel of $3\frac{1}{4}$ ". Dovetail bearings of compound rest and cross slide are hand-scraped and fitted with adjustable taper gibbs. Compound rest screw and cross feed screw have micrometer collars graduated in thousandths. Tool holder shank $\frac{1}{2}$ " x $1\frac{1}{8}$ " for cutter bits $\frac{5}{16}$ " square.

Lathe Bed is 50% steel, heavily constructed and reinforced by box braces its entire length. 3 V-ways and 1 flat way accurately planed and hand-scraped, align and support headstock, carriage and tailstock.

Attachments, Chucks, and Tools for 13-inch Lathes are illustrated, described and priced in Bulletin No. 77. Copy mailed postpaid on request.

Quick Change Gear Lathe Equipment for Cutting Screw Threads and for Power Feeds

All quick change gear Series "R" 13-inch South Bend Lathes are equipped with full quick change mechanism for cutting a series of 48 right and left hand standard screw threads ranging from 2 to 112 per inch, including $1\frac{1}{2}$ pipe thread, as listed on the index chart shown in Fig. 9. The screw thread chart is attached to the gear box, as shown in Fig. 10, and is direct reading.

All changes for various pitches of screw threads are made by shifting levers on the gear box and no pick-off gears are used. A spring latch reverse permits changing instantly from right hand to left hand threads.

Automatic longitudinal turning feeds and automatic cross feeds are also provided by the quick change gear mechanism. The automatic feed chart on the index plate is read directly in thousandths of an inch per revolution of the lathe spindle for the automatic longitudinal feed. Any feed can be selected without making calculations.

SLIDING GEARS		TOP LEVER		SCREW THREADS PER INCH		LONGITUDINAL FEED IN INCHES PER SPINDLE REVOLUTION	
IN	LEFT	2	21 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	3
	CENTER	4	41 $\frac{1}{2}$	5	51 $\frac{1}{2}$	51 $\frac{1}{2}$	6
	RIGHT	8	9	10	11	11 $\frac{1}{2}$	12
OUT	LEFT	15	18	20	22	23	24
	CENTER	32	36	40	44	46	48
	RIGHT	64	72	80	88	92	96
						LONGITUDINAL FEED IN INCHES PER SPINDLE REVOLUTION	
IN	LEFT	0.208	0.185	0.166	0.151	0.144	0.138
	CENTER	0.104	0.093	0.083	0.075	0.072	0.069
OUT	LEFT	0.052	0.046	0.041	0.037	0.036	0.034
	CENTER						0.032 0.030

Fig. 9. Direct Reading Metric Index Chart Attached to Quick Change Gear Lathes.

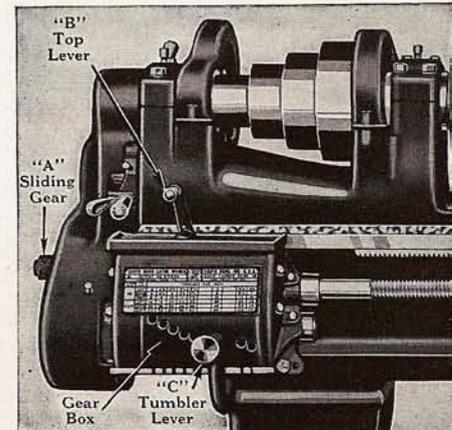


Fig. 10. Quick Change Gear Mechanism Used on Quick Change Gear Lathes.

Standard Change Gear Lathe Equipment for Cutting Screw Threads and for Power Feeds

All Series "R" 13-inch standard change gear lathes are equipped with a set of loose change gears for cutting right and left hand screw threads from 2 to 40 per inch, including $1\frac{1}{2}$ pipe thread, as listed on the index plate illustrated at right. The index plate clearly shows the arrangement of the change gears for the various pitches of screw threads. For example, to cut 24 threads per inch on a standard change gear lathe, a 24-tooth stud gear and a 48-tooth screw gear are used. These two gears are connected by idler gears, see Fig. 12. The change gears also provide for obtaining a wide range of automatic longitudinal feeds and automatic cross feeds.

Special Change Gear Equipment for Fine Threads

Special change gear equipment for cutting fine pitches of screw threads and for cutting odd threads not shown on the index plate can be supplied for both the standard change gear and the quick change gear Series "R" South Bend Lathes. Prices will be quoted on request.

SCREW THREAD CUTTING CHART		
STANDARD CHANGE GEAR LATHE		
THREADS PER INCH	STUD GEAR	SCREW GEAR
2	72	24
3	48	24
4	48	12
5	48	40
6	48	48
7	48	56
8	48	64
9	48	72
10	48	80
11	24	48
11 $\frac{1}{2}$	24	46
12	24	48
13	24	52
14	24	56
16	24	64
18	24	72
20	24	80
22	24-1-2	44
24	24-1-2	48
26	24-1-2	52
28	24-1-2	56
30	24-1-2	60
32	24-1-2	64
36	24-1-2	72
40	24-1-2	80

Fig. 11. Chart for Threads.

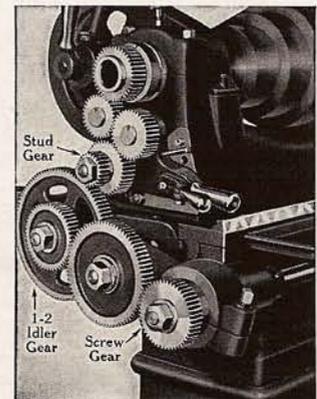


Fig. 12. Change Gear Equipment Used on Standard Change Gear Lathes.

Features, Specifications and Equipment

of Series "R" 13-inch South Bend Precision Lathes

The features and specifications listed below apply to all types of Series "R" 13-inch quick change gear and standard change gear South Bend precision lathes shown throughout this bulletin. Each lathe is built up of standard units, such as the headstock, tailstock, apron, carriage, bed, etc., which are carried in stock at all times, ready for assembling any type of 13-inch lathe.

Features of Series "R" 13-inch Lathes

Back-gear headstock with 4-step cone pulley provides eight spindle speeds.
 Hardened and ground steel headstock spindle with ground taper hole in spindle nose.
 Phosphor bronze headstock spindle bearings adjustable for wear.
 Patent oil cups and felt wick oiling system for spindle bearings.
 Wrenchless bull gear lock, back-gears enclosed in close fitting guards.
 Set-over tailstock for taper turning, and self-ejecting center.
 Graduated tailstock spindle with double plug binder.
 Semi-steel seasoned lathe bed with three hand scraped V-ways and one flat way.
 Adjustable taper gibs on dovetail bearings of compound rest and cross slide.
 Lathe saddle is fitted with felt wipers to oil and keep the V-ways of the bed clean.
 Automatic power longitudinal and cross feeds to tool rest.—Multiple disc friction clutch.
 Double wall apron with gear shafts supported on both ends.
 Quick-acting spring latch reverse on headstock for power feeds and threads.
 Precision lead screw and half-nuts for screw thread cutting.
 Safety device in apron prevents engaging half-nuts and automatic feeds at same time.
 Compound rest graduated 180°, swivels to any angle; improved lock and swivel.
 Large micrometer collars on compound rest and cross feed screw, adjustable.
 Carriage lock provided for accurate facing and cutting off.

Specifications of All Series "R" 13-inch Lathes

Swing over bed.....	13 $\frac{1}{4}$ in.	Tailstock spindle travel.....	4 $\frac{1}{4}$ in.
Swing over cross slide, chip guard removed.....	9 $\frac{1}{4}$ in.	Tailstock top set-over for taper turning.....	1 $\frac{5}{16}$ in.
Size of spindle nose.....	1 $\frac{7}{8}$ " diam., 8 threads	Countershaft friction pulley.....	8" diam., 2 $\frac{3}{8}$ " wide
Hole through spindle.....	1 in.	Recommended countershaft speed.....	250 R.P.M.
Collet capacity.....	$\frac{1}{64}$ in. up to $\frac{5}{8}$ in.	Spindle speeds, countershaft drive....	23, 36, 55, 86, 162, 253, 385, 605 R.P.M.
Head and tail spindle centers.....	No. 3 Morse Taper	Spindle Speeds, motor drive....	24, 38, 58, 92, 173, 270, 410, 646, R.P.M.
Width of cone pulley belt.....	1 $\frac{3}{4}$ in.	Tool rest cross slide travel.....	9 in.
Thread cutting range, quick change.....	2 to 112 per in.	Compound rest top angular travel.....	3 $\frac{1}{4}$ in.
Thread cutting range, standard change.....	2 to 40 per in.	Tool post opening for tool shank.....	$\frac{1}{2}$ " x 1 $\frac{1}{8}$ "
Automatic longitudinal feeds, quick change.....	.003" to .020"	Tool holder takes cutter bits.....	$\frac{3}{16}$ " x $\frac{5}{16}$ "
Automatic longitudinal feeds, standard change.....	.004" to .022"		
Acme thread precision lead screw.....	1" diam., 6 threads		

Equipment Included in Price of 13-inch Series "R" South Bend Lathes

Countershaft Driven Lathes

Equipment included in the price of each countershaft driven Series "R" South Bend Lathe listed in this bulletin consists of: double friction countershaft; large and small face plates; forged steel heat treated tool post; thread cutting stop with screw adjustment; tool steel centers for headstock and tailstock spindle; headstock spindle sleeve; wrenches; gear box or change gears; installation plan; and one copy each of books "How to Run a Lathe," "How to Cut Screw Threads," and "How to Grind Lathe Tool Cutter Bits."

Countershaft has two friction clutch pulleys, one of which may be driven with an open belt and the other with a crossed belt, which permits the lathe to be operated forward and reverse. If a wide range of spindle speeds is desired, the crossed belt may be eliminated and two forward speeds for the countershaft obtained by using a large and a small pulley on the lineshaft.

Motor Driven Lathes

Equipment included in the price of each motor driven Series "R" 13-inch South Bend Lathe listed in this bulletin consists of: large and small face plates; forged steel heat treated tool post; thread cutting stop with screw adjustment; tool steel centers for headstock and tailstock spindle; headstock spindle sleeve; wrenches; gear box or change gears; installation plan; and one copy each of instruction books "How to Run a Lathe," "How to Cut Screw Threads," and "How to Grind Lathe Tool Cutter Bits."

Electrical Equipment included in the price of each motor driven Series "R" 13-inch South Bend Lathe consists of: $\frac{3}{4}$ H.P. instant reversing motor; drum reversing switch; wiring between motor and switch enclosed in flexible metal conduit; flat leather belt for cone pulleys; V-belts for motor and countershaft; and diagram showing wiring between motor and switch.

New Double Wall Apron Used on All Series "R" Lathes

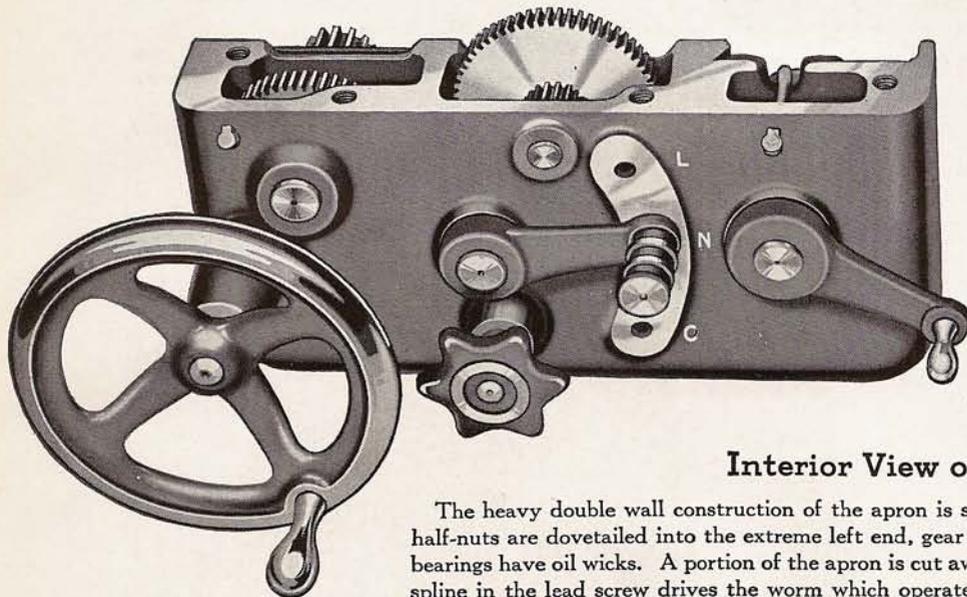


Fig. 13. Front view of double wall apron.

The new double wall apron used on all Series "R" Lathes is shown at left. All gears in the apron are made of steel and are self oiling.

The lever and plunger on the front of the apron has three positions: "L" for automatic longitudinal feed; neutral position "N", at which point the automatic feeds are locked out; and position "C" for automatic cross feed. The star knob at the bottom operates the multiple disc clutch for engaging both the automatic longitudinal feed and the automatic cross feed. An automatic safety device prevents engaging the half-nuts and automatic feeds simultaneously.

Interior View of Apron

The heavy double wall construction of the apron is shown in Fig. 14 below. The close coupled half-nuts are dovetailed into the extreme left end, gear shafts are supported on both ends, and all bearings have oil wicks. A portion of the apron is cut away to show the location of the clutch. The spline in the lead screw drives the worm which operates the automatic feeds. The half-nuts and threads of the lead screw are used only when cutting screw threads.

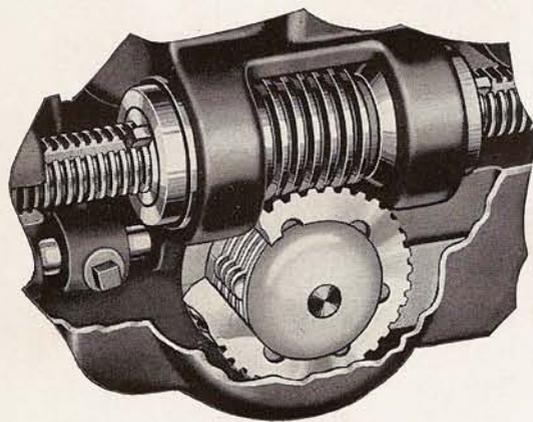


Fig. 15. Sectional view showing the multiple disc friction clutch.

Fig. 14. Interior view of apron. Note the double wall construction.

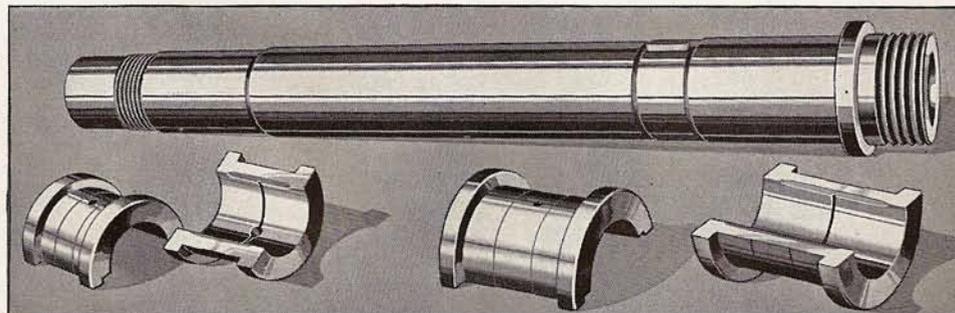
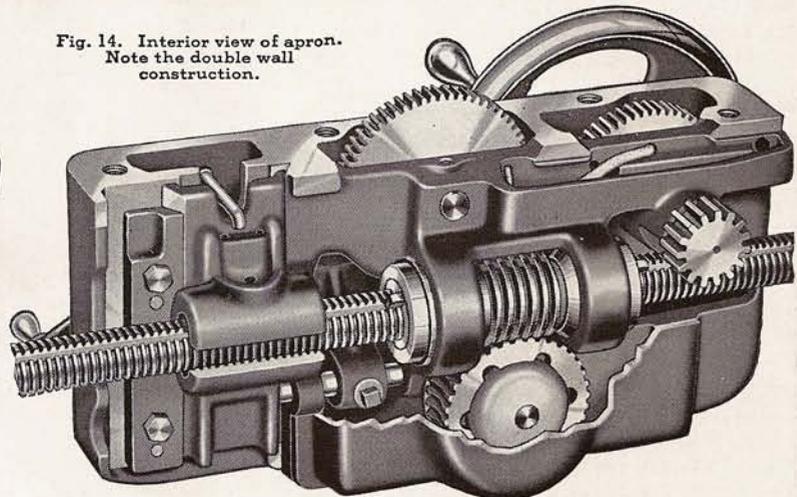


Fig. 16. Hardened and ground headstock spindle with phosphor bronze bearings used on all Series "R" 13-inch South Bend Lathes.

Headstock Spindle—Hardened and Ground

All Series "R" 13-inch South Bend Lathes are equipped with heat treated headstock spindle made of special alloy steel. All bearing surfaces including the taper inside of the spindle are hardened and ground.

The spindle has a 1" hole its entire length and takes collets $\frac{1}{4}$ " to $\frac{5}{8}$ " capacity. The spindle nose is $1\frac{7}{8}$ " in diameter, 8 SOUTH BEND, INDIANA, U.S.A.

threads. Taper hole in spindle is fitted with taper sleeve for No. 3 Morse taper center.

Bearings for the headstock spindle are made of best quality phosphor bronze, line bored and lapped to a perfect bearing. The bearings are adjustable for wear and are equipped with an improved felt wick oiling system.

Underneath Belt Motor Drive

For Series "R" 13-inch South Bend Lathes

Silent — Powerful — Efficient

The South Bend patented underneath belt motor drive is the most efficient and practical direct drive equipment ever designed for a back-geared screw cutting lathe. This drive is unusually compact and is silent, powerful and economical in operation.

The motor and driving mechanism are fully enclosed in the cabinet leg underneath the lathe headstock. There are no exposed pulleys, belts or gears and no overhead belts or pulleys to obstruct vision or cast shadows upon the work.

The belt drive is the outstanding feature, as it is silent in operation and provides a smooth steady pull free from vibration and chatter. Power is transmitted from the motor to the countershaft by V-belt and from the countershaft up through the lathe bed to the headstock cone pulley by a flat leather belt.

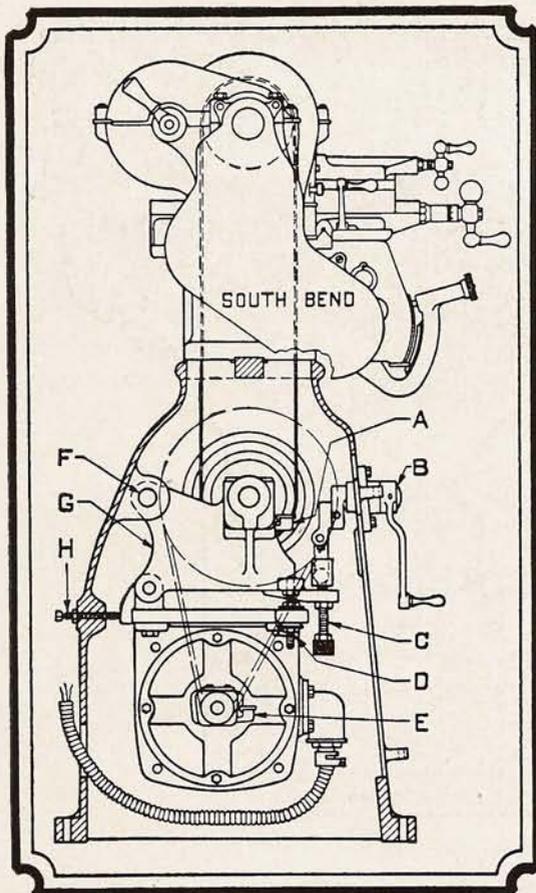
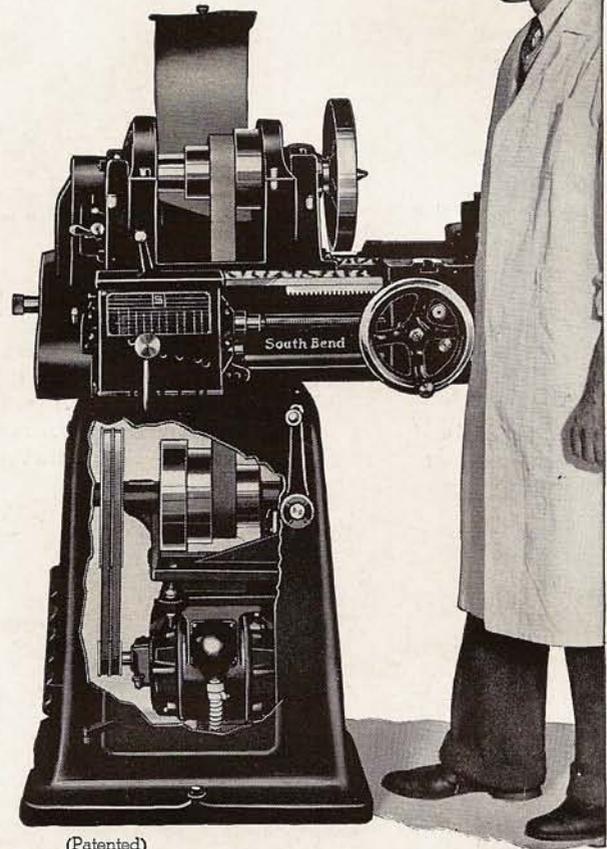


Fig. 18. Cross Section End View of the Underneath Belt Motor Drive Precision Lathe Showing Principal Parts of Drive.



(Patented)
Fig. 17. Front View of Underneath Belt Motor Drive Lathe with Door Cut Away to Show Driving Mechanism.

Belt Tension is Adjustable

Adjustment is provided for taking up belt stretch and for obtaining any desired tension on both the motor belt and cone pulley belt. A belt tension release lever conveniently located on the front of the cabinet leg permits the easy shifting of the cone pulley belt.

The down drive for the spindle will be appreciated by the engineer and mechanic as the pull of the belt is down against the solid portion of the headstock. The reversing motor and reversing switch permit starting, stopping and reversing the lathe spindle from an easy working position in front of the lathe. The lathe spindle may be instantly reversed when cutting screw threads by throwing the switch directly from "forward" to "reverse" position.

Features of this new drive include (A) Down drive to the spindle, (B) Eccentric lever for quick release of belt tension to permit easy shifting of cone pulley belt, (C) Cone Pulley belt tension adjustment, (D) Motor belt tension adjustment.

Illustrations and descriptions on this page apply to the Underneath Belt Motor Drive Lathes shown on pages 2, 3, and 6 of this bulletin.

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