

BULLETIN 100-B

"IF IT'S *Rivett* IT'S RIGHT"

DRAW-IN COLLETS AND CHUCKS



Spring Tempered

**RIVETT LATHE
& GRINDER INC.**
BRIGHTON, BOSTON, MASS., U.S.A.

Dear Sir:-

Collets were first developed for use on watch-makers' lathes to meet the requirements for precision which one of mankind's most wonderful creations, - I mean the watch, - imposed. In the course of a few years, bench lathes for larger work came into use, and collets (spring chucks) and wheel or step chucks of greater and greater capacity have progressively been developed, at first for bench lathes only, but more recently for engine lathes, milling machines and other heavier tools.

It is easy to see why. A set of collets, or draw-in chucks, and a draw-in attachment make possible quick and accurate chucking of bar stock, small round, square or hex. parts and special shapes with a degree of truth and speed unapproached by any other method.

In a set of collets a mechanic has exactly the right chucking means for each part which he needs to hold. He does not have to spend time in adjusting jaws, making special sleeves or whatnot to fit his job. His work is self-centered and powerfully held. For production jobs specially formed collets or step chucks will handle irregular pieces with surprising rapidity.

I believe if their real ability in high production were fully appreciated that countless jobs, at half their present cost, would be produced on bench lathes with collets instead of on more cumbersome and more costly machines. This is particularly true of second operation work.

And further I think that if the value of collets on larger tools were known, many thousands of engine lathes in shops throughout the country would be equipped with draw-in collet attachments.

Frederick C. Blanchard.
(Chief Engineer)

RIVETT DRAW-IN COLLETS AND CHUCKS

RIVETT MARK COLLETS

FORTY YEARS of collet manufacturing have taught us to use an alloy steel, selected and annealed for our purposes. Scientifically heat treated to a true spring temper, our collets resist wear and hold their spring longer than collets of any other make. This is attested by the fact that "Rivett Mark" collets are sold with their products by a score of the country's best known machine tool builders, who purchase their entire collet requirements from us, and by the fact that thousands of manufacturers order direct from our stocks their new and replacement collets. We can usually ship on the same day that order is received.

Rivett Collets, fitting many makes of machine tools, are identified by the Rivett mark, stamped on the shank of each collet, thus: 5 N.S. RIVETT (Rivett No. 5 New Style); 3 C RIVETT (Cataract or Hardinge No. 3); 6 H RIVETT (Hendey No. 6), etc.

"Rivett Mark" collets are accurately threaded by a chasing operation on engine lathes—not die-cut on screw machines. This assures concentricity of threads and perfect alignment with draw bars. The holes are ground on precision machines and are guaranteed to run dead true at the mouth. Gauges for every operation are maintained in perfect condition at all times and rigid inspection at every step is enforced. "Rivett Mark" collets are uniform, true and long-lived. They are rust-proofed and packed in individual labelled boxes.

The hole size of a collet should closely approximate the diameter of the work to be held. To avoid distortion a collet should never be closed without a piece of stock or a suitable plug in the hole. To guard against inaccurate work and costly spoilage, the use of old, worn out or damaged collets should be avoided. Just as "Sparkplugs should be changed every ten thousand miles," so collets throughout the shop should be regularly inspected and the unfit and untrue replaced. A bad collet is capable of spoiling many times its replacement value each day that it is used.

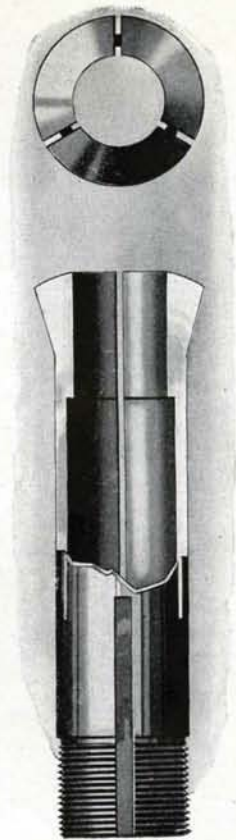


Fig. 1
Cross-section of Collet

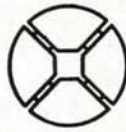


Fig. 2
Taper Hole Collet

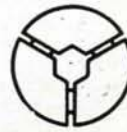
Taper hole collets are used for holding centers, drill chucks and other taper-shank tools, as well as taper work. Collets with tapered holes are not split. Obviously the size of hole cannot exceed the body diameter of the collet (dimension A, Fig. 7) less a liberal allowance for wall thickness.



Round



Square



Hexagon



Fig. 3
Round Hole Collet



Fig. 4
Square Hole Collet



Fig. 5
Hexagon Hole Collet



Fig. 6
Collet Blank

Collet blanks which have not been drilled, hardened or sawed are supplied to those who wish quickly to make up special collets to suit their work. Blanks are adaptable to a variety of other uses, such as mounting small face plates, special fixtures, etc.

RIVETT DRAW-IN COLLETS AND CHUCKS

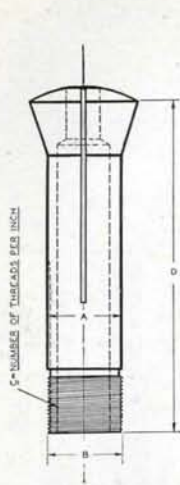


Fig. 7. Collet

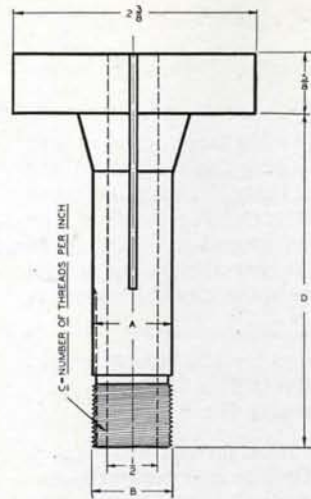


Fig. 8. 2" Step Chuck

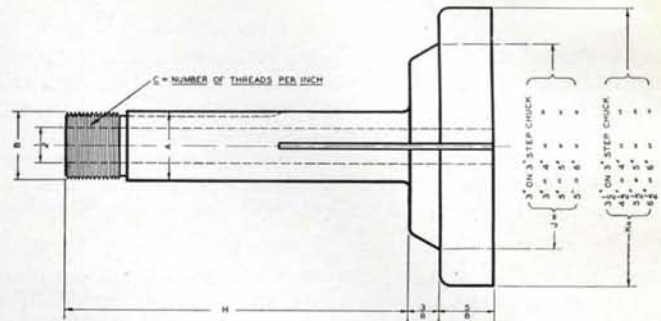


Fig. 9. 3"-4"-5"-6" Step Chucks

DIMENSIONS IN INCHES OF COLLETS OR DRAW-IN CHUCKS AND STEP CHUCKS

STYLE OF COLLET	RIVETT COLLET	MAXIMUM CAPACITY			A	B	C	D	H
		ROUND HOLES	SQUARE HOLES	HEXAGON HOLES					
Rivett No. 3 O.S.	3 O.S. RIVETT	3/8	17/64	21/64	.590	.525	26	2 3/32	2 5/32
Rivett No. 3 N.S.	3 N.S. RIVETT	1/2	11/32	7/16	.6875	.650	20	2 7/8	2 19/16
Rivett No. 4 O.S.	4 O.S. RIVETT	1/2	11/32	7/16	.750	.670	20	2 25/32	2 27/32
Rivett No. 4 N.S.	4 N.S. RIVETT	5/8	7/16	17/32	.826	.812	20	3 1/2	3 9/16
Rivett No. 5 O.S.	5 O.S. RIVETT	3/4	17/32	21/32	1.062	.950	18	3 13/32	3 15/32
Rivett No. 5 N.S.	5 N.S. RIVETT	7/8	5/8	3/4	1.062	1.050	20	4 7/32	4 9/32
Rivett No. 6 N.S.	6 N.S. RIVETT	1	23/32	7/8	1.3125	1.250	14	5 29/32	5 31/32
Rivett No. 7	7 RIVETT	3/4	17/32	21/32	.998	.950	20	3 3/4	3 5/16
Hendey No. 2	2 H RIVETT	5/8	7/16	17/32	.826	.812	20	4 1/4	4 9/16
Hendey No. 3	3 H RIVETT	7/8	5/8	3/4	1.125	1.062	20	4 1/2	4 9/16
Hendey No. 6	6 H RIVETT	1 1/8	51/64	31/32	1.375	1.3125	20	4 3/4	4 13/16
Hendey No. 8	8 H RIVETT	1 1/4	7/8	1 1/16	1.500	1.4375	20	4 3/4	4 13/16
Cataract No. 3	3 C RIVETT	1 1/2	11/32	7/16	.650	.645	26	2 11/16	2 3/4
Cataract No. 4	4 C RIVETT	3/4	17/32	21/32	.950	.945	20	3	3 1/16
Cataract No. 5	5 C RIVETT	1	23/32	7/8	1.250	1.245	20	3 9/32	3 11/32
Cataract No. 6	6 C RIVETT	1 3/8	31/32	1 3/16	1.625	1.620	18	4 9/16	4 3/8
Le Blond No. 2	2 L RIVETT	3/4	17/32	21/32	.950	.945	20	3	3 1/16
Le Blond No. 6	6 L RIVETT	1	1 1/16	7/8	1.250	1.1875	20	4 7/16	4 1/2
Le Blond No. 10	10 L RIVETT	1 1/4	7/8	1 1/16	1.5625	1.50	18	5 1/2	5 9/16
Seneca No. 2	2 S RIVETT	1 7/32	3/8	31/64	.7495	.745	18	3 15/64	2 19/64
Seneca No. 3	3 S RIVETT	3/4	17/32	21/32	.9995	.995	20	4 19/32	4 21/32
South Bend No. 9-W	3 S.B. RIVETT	1 1/2	11/32	7/16	.650	.645	26	2 11/16	2 3/4
Becker No. 1	1 B RIVETT	9/16	7/32	17/64	.4372	5/16 (Int.)	30	1 3/4	—
Becker No. 2	2 B RIVETT	7/16	5/16	3/8	.5897	7/16 (Int.)	26	2 1/32	—
Becker No. 2-A	2 A.B. RIVETT	9/16	25/64	31/64	.7497	1/2 (Int.)	20	2 9/16	—
Becker No. 3	3 B RIVETT	3/4	17/32	21/32	.8747	9/8 (Int.)	16	3 7/16	—

INSTRUCTIONS FOR ORDERING

Determine on opposite page the style of Rivett collet or step chuck used on your machine,—if a sample is available check with dimensions listed in table above. If the style is unknown, give all dimensions indicated by letters in Fig. 7, 8 or 9 above. State whether round, square or hex-hole collets are required and specify the hole sizes. Specify if step chuck blanks or stepped chucks are desired and give step diameters if other than standard,—see price list: Page 20, note 1. Round hole collets are carried in stock in sizes 1/64" to capacity by 64ths. Hexagon, square, and all metric and odd hole collets and all sizes of step chucks can be made up and shipped in a day or two from receipt of order.

RIVETT DRAW-IN COLLETS AND CHUCKS

STYLES OF COLLETS AND STEP CHUCKS USED ON STANDARD MACHINE TOOLS

MAKE OF MACHINE	RIVETT COLLET USED	MAKE OF MACHINE	RIVETT COLLET USED
American 12", 14" and 16" Lathes	3H RIVETT	Potter No. 3 Bench Lathe	3C RIVETT
American 18", 20" and 24" Lathes	6H RIVETT	Potter No. 4 Bench Lathe	4C RIVETT
Becker No. 1 Vertical Miller	1B RIVETT	Rahn-Larmon 16" and 18" Lathes-Series "LN"	3H RIVETT
Becker No. 2 Vertical Miller	2B RIVETT	Rahn-Larmon 18" and 20" Lathes-Series "AA"	8H RIVETT
Becker No. 2A Vertical Miller	2AB RIVETT	Rahn-Larmon 20" and 24" Lathes-Series "B" and "D"	8H RIVETT
Becker No. 3 Vertical Miller	3B RIVETT	Reed Prentice 18" and 20" Lathes	6L RIVETT
Blount 11"	4NS RIVETT	Rivett No. 3 Bench Lathe	30S RIVETT
Boye & Emmes 14", 16" and 18" Lathes	6H RIVETT	Rivett No. 3 N.S. Bench Lathe	3NS RIVETT
Boye & Emmes 20" and 24" Lathes	6C RIVETT	Rivett No. 4 Bench Lathe	40S RIVETT
Burke No. 0, 1, 2, 3, 4, and 5 Milling Machines	3C RIVETT	Rivett No. 4 N.S. Bench Lathe	4NS RIVETT
Carroll & Jamieson 13", 14" and 16" Lathes	3H RIVETT	Rivett No. 608-4 N.S. Bench Lathe	4NS RIVETT
Carter & Hakes Milling Machine	40S RIVETT	Rivett No. 608-5 C Bench Lathe	5C RIVETT
Cataract No. 3 Bench Lathe (1/2" Capacity)	3C RIVETT	Rivett No. 5 Bench Lathe	50S RIVETT
Cataract No. 4 Bench Lathe (3/4" Capacity)	4C RIVETT	Rivett No. 505-606-705-5 N.S. Bench Lathes	5NS RIVETT
Cataract No. 5 Bench Lathe (1" Capacity)	5C RIVETT	Rivett No. 507 Bench Lathe	7 RIVETT
Cataract No. 3 Bench Miller	3C RIVETT	Rivett No. 3 Grinder	40S RIVETT
Cataract No. 4 Bench Miller	4C RIVETT	Rivett No. 103 Grinder	4NS RIVETT
Cataract No. 5 Bench Miller	5C RIVETT	Rivett No. 104 Grinder	5NS RIVETT
Cataract No. 3 Vertical Bench Miller	3C RIVETT	Rivett No. 6 Grinder	5NS RIVETT
Cataract 9" Quick Change Back-Geared Lathe	5C RIVETT	Rivett No. 106 Grinder	6NS RIVETT
Chard 16", 18" and 20" Lathes	6H RIVETT	Rivett No. 112 Grinder	6NS RIVETT
Chard 24" and 28" Lathes	8H RIVETT	Rivett No. 205 Grinder	4NS RIVETT
Cincinnati 14" and 16" Lathes	3H RIVETT	Rockford (Sundstrand) 9", 15" and 16" Lathes	3H RIVETT
Cincinnati 18" and 20" Lathes	6H RIVETT	Rockford (Economy) 12" Lathe	2H RIVETT
Cisco 14" Lathe	3H RIVETT	Rockford (Economy) 14" and 16" Lathes	3H RIVETT
Cisco 16", 18" and 20" Lathes	8H RIVETT	Rockford (Economy) 22" Lathe	8H RIVETT
Dalton B-4 Lathe	3C RIVETT	Schaffner 11" Lathe (Model "A")	2H RIVETT
Dalton B-6 Lathe	3C or 4C RIVETT	Sebastian 11" Lathe (Old Model)	2S RIVETT
Davis 12" and 14" Lathes	2H RIVETT	Sebastian (Viking) 12", 14", 16" and 18" Lathes	3H RIVETT
Davis 16" Lathe	3H RIVETT	Sebastian (Viking) 20" Lathe	6H RIVETT
Davis 18" and 20" Lathes	6H RIVETT	Sebastian (Gold Seal) 12", 14", 16" Lathes	3H RIVETT
Elgin 3/4" Capacity Bench Lathe	4C RIVETT	Sebastian (Gold Seal) 18" and 20" Lathes	6-11 2S RIVETT
Fay & Scott 14", 16", 18" and 20" Lathes	5NS RIVETT	Seneca or Star 10" and 12" Lathes	2S RIVETT
Flather FMC-7" Lathe	3C RIVETT	Seneca or Star 14" Lathe	3S RIVETT
Flather 13"	40S RIVETT	Shepard Lathe	4NS RIVETT
Flather 14" and 16" Cone Head Lathes	4NS RIVETT	Shepard Lathe	2H RIVETT
Flather 18" and 20" Cone Head Lathes	5NS RIVETT	Shepard Lathe	3H RIVETT
Flather 14", 16" and 20" Geared Head Lathes	5NS RIVETT	Sidney Standard Pattern Lathes:	
Greaves-Klusman 16" and 18" Lathes	3H RIVETT	12" Cone or Geared	2H RIVETT
Hamilton 14", 16" and 18"	5C RIVETT	14" and 16" Cone or Geared	3H RIVETT
Hardinge Bench Lathes and Millers (See Cataract)		18" and 20"	6H RIVETT
Hendey 12" Cone Lathe	2H RIVETT	Sidney Monotrol and Tritrol Lathes:	
Hendey 12" Geared Lathe	2H or 3H RIVETT	12", 14", 16" and 18"	6H RIVETT
Hendey 14" Cone or Geared Lathes	2H or 3H RIVETT	18" and 20" (Heavy Pattern)	8H RIVETT
Hendey 16" Cone or Geared Lathes	3H or 6H RIVETT	South Bend Lathes prior to 1936:	
Hendey 18", 20" and 24" Cone or Geared Lathes	6H or 8H RIVETT	All 9"	3C RIVETT
Hendey Centering Machine	2H RIVETT	11"	2S RIVETT
Johnson 9 1/2" Lathe	3C RIVETT	13"	4NS RIVETT
LeBlond (Regal) 10" Lathe	3C RIVETT	15"	4C RIVETT
LeBlond (Regal) 12" and 14" Lathes	4NS RIVETT	16"	5NS RIVETT
LeBlond (Regal) 16" and 18" Lathes	6L RIVETT	18"	5C RIVETT
LeBlond 12", 14", 16" and 17" Lathes	2L RIVETT	24"	6C RIVETT
LeBlond No. 3-14", 16", 17" and 18" Lathes	3H RIVETT	South Bend Lathes, 1926 Models:	
LeBlond No. 6-16", 17", 18" 19" and 20" Lathes	6L RIVETT	9W	3SB RIVETT
Lehmann 16" and 18" Lathes	5NS RIVETT	9" Regular	4NS RIVETT
Monarch 9", 10", 11" and 12" O.S. Lathes	2H RIVETT	9" Special	4C RIVETT
Monarch 14" and 16" Lathes	5C RIVETT	11" Regular	4C RIVETT
Monarch 18" and 20" Lathes	3H RIVETT	11" Special	5C RIVETT
Mueller 18" Lathe	6H RIVETT	13"	5NS RIVETT
Norton Auto Part—Valve Facing Attachment— 3/8" Capacity	5NS RIVETT	16"	5C RIVETT
Norton Auto Part—Large Spindle Attachment— 1" Capacity	6NS RIVETT	Springfield 14" Lathe	2H or 6H RIVETT
Porter-Cable 9" Production Lathe	2H RIVETT	Springfield 16" Lathe	3H or 6H RIVETT
Porter-Cable 12" Carbo-Lathe	5C RIVETT	Springfield 18" and 20" Lathes	6H RIVETT
Porter-Cable (Mulliner) 12" and 14" Lathes	2H RIVETT	Springfield 24" and 26" Lathes	8H RIVETT
		Stark No. 4 Bench Lathe	7 RIVETT
		Walcott 14" Lathe	2H RIVETT
		Walcott 16", 18" and 20" Lathes	6H RIVETT
		Whitcomb Blaisdell 14" Lathe	4C RIVETT
		Whitcomb Blaisdell 16" and 18" Lathes	3H RIVETT
		Whitcomb Blaisdell 20" Lathe	6H RIVETT
		Willard 13" Lathe	3H RIVETT
		Worcester 12" Lathe	2H RIVETT
		Worcester 14" Lathe	3H RIVETT

9" & 12" New 1938 1" Collet Cap. Lathe --- 5-C Rivett.

RIVETT DRAW-IN COLLETS AND CHUCKS

STEP CHUCKS operate on the same principle of radial compression as draw-in collets and are suitable for the rapid and accurate chucking of circular pieces such as discs, wheels, tubing and other parts requiring only a short grip. Second operation work on screw machine product, stampings, steel and brass forgings, die castings and other accurate castings are automatically "trued-up" and firmly gripped by step chucks in minimum time.

By suitable recessing of the step chuck body irregular forms may be handled as well as circular pieces. The group illustration on rear cover shows some typical jobs.

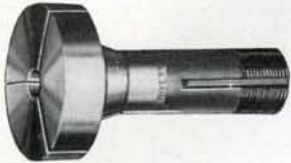


Fig. 10. Two-inch Step Chuck Blank

STEP CHUCKS of 2" diameter are closed by the conical formation of the spindle mouth and the corresponding taper back of the chuck head, see Fig. 8. On all larger sizes the tapered closing surface is of correspondingly greater diameter and a closing ring mounted on the lathe spindle presents a seat into which the chuck is drawn, firmly gripping the work, see Figs. 9 and 12.

RIVETT STEP CHUCKS are furnished in sizes 2", 3", 4", 5", 6", maximum diameter capacity in either blank form, Fig. 10, or with steps cut to specifications, Fig. 13. They are longitudinally sawed, and drilled $\frac{1}{2}$ " entire length. Step chucks fit lathe spindles and draw bars interchangeably with collets of same style ("Rivett Mark"). Blank chucks may be recessed by users to meet their needs. This is easily and accurately done in place on the lathe, the chuck being compressed onto shims fitting in the saw slots.

When ordering give the style ("Rivett Mark") as shown on collets and, when blank step chucks are wanted, the maximum step diameter. For stepped chucks, Fig. 13, give step diameters and depths of gripping surfaces, the sum of these depths not to exceed $\frac{3}{8}$ ".

RIVETT STEP COLLETS, Fig. 11, are used for holding round pieces of greater diameter than the capacity of the standard collet, or where a back shoulder is required for locating the work. The diameter of the gripping surface does not pass clear through the collet. Step collets are made to specifications and are hardened and ground in the seat. In ordering, give style as shown by marking on collets ("Rivett Mark") or dimensions with letters as per Fig. 7, together with diameter and length of chucking surface.



Fig. 12. Step Chuck Closing Ring

RIVETT SPECIAL DRAW-IN COLLETS AND CHUCKS are furnished to hold innumerable forms and sizes of parts, in a great variety of materials on lathes, milling machines and production machinery. Special collets, holding by expansion, are also available. Designers, makers, and users of special machines are adopting the draw-in chuck method of holding work as rapid, accurate and simple.

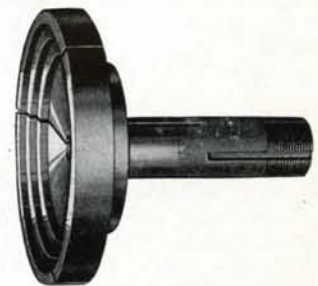


Fig. 13. Four-inch Step Chuck-Stepped



Fig. 11. Step Collet

RIVETT DRAW-IN COLLETS AND CHUCKS



Fig. 14—Lever Chuck Closer for Plain Bearing Lathes

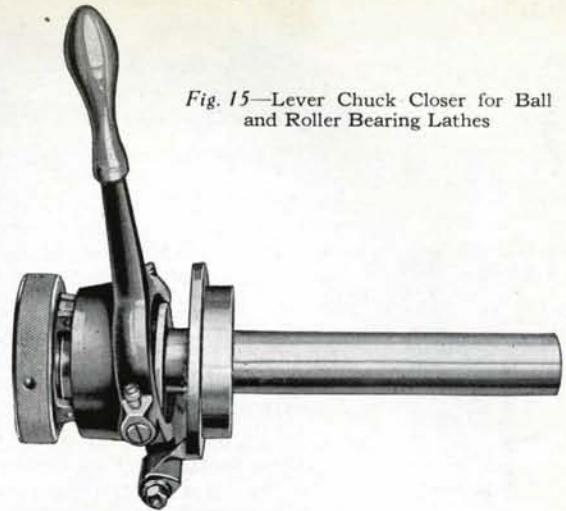


Fig. 15—Lever Chuck Closer for Ball and Roller Bearing Lathes

LEVER CHUCK CLOSER is of distinct advantage on every lathe and is particularly recommended where many pieces of the same size are to be chucked in collets or step chucks or where bar stock is fed through the spindle for production of duplicate parts. Besides being faster, it provides positive and uniform draw-in and reduces materially the wear on collet and draw-in spindle threads. Lever Chuck Closers are furnished to fit all sizes of Rivett Plain, Ball and Roller Bearing Bench Lathes and Rivett Grinders.



Fig. 16—Six-inch—Four-Jaw Independent Chuck



Fig. 17—Six-inch—Four-Jaw Geared Scroll Combination Chuck



Fig. 18—Four-inch—Three-Jaw Geared Scroll Chuck

JAW CHUCKS are furnished in three types all accurately mounted on plates to fit the headstock spindle nose. **FOUR-INCH THREE-JAW GEARED SCROLL CHUCKS**, capacity up to $4\frac{1}{4}$ " diameter. Key operated, the jaws move in unison for concentrically chucking pieces of cylindrical form. Two sets of jaws are furnished; one set for gripping the outside of work and one set gripping work from the inside of a hole.

SIX-INCH FOUR-JAW INDEPENDENT CHUCKS, capacity up to $7\frac{1}{4}$ " diameter. Key operated, each jaw is moved separately for holding odd shaped work and for round parts where the self-centering feature of the universal chuck is not desired. The jaws are reversible for gripping the outside or inside of work.

SIX-INCH FOUR-JAW GEARED SCROLL COMBINATION CHUCKS, capacity up to $7\frac{5}{8}$ " diameter. Key operated, the jaws may be moved independently or universally whereby duplicate work of cylindrical or odd shape may be rapidly chucked after a true setting is made on the first piece.



Fig. 19—Internal Grinding Wheel Chuck



Fig. 20—Drill Chuck on Taper Shank

GRINDING WHEEL CHUCK for holding internal grinding wheels mounted on $\frac{1}{8}$ " and $\frac{1}{4}$ " shanks. The shank of the chuck fits into a tapered hole in the grinding spindle rotor threaded at the bottom.

DRILL CHUCKS are furnished on straight or taper shanks in $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " capacity. The tapered shank fits in all Rivett headstock center chucks and directly in tailstock spindle.

RIVETT DRAW-IN COLLETS AND CHUCKS



Fig. 21—Rivett Fractional Collets are Graduated by 64ths to Capacity



Fig. 22—Collet Adaptor

COLLET ATTACHMENTS, adapting engine lathes, milling machines and other tools for the use of draw-in collets and step chucks are extensively furnished. These attachments greatly increase the speed and convenience of machines on tool room and production work. A collet adaptor and draw-in spindle are the only additional parts needed to permit the use of draw-in collets.

COLLET ADAPTOR is shown in Fig. 22. It fits the taper in the end of the machine spindle, in place of the live center, and has a hole and tapered seat for the draw-in collets and chucks. Rivett Adaptors are made of tool steel, heat treated and accurately ground all over.

SCREW DRAW-IN SPINDLE is shown in diagram Fig. 23 with adaptor. The spindle consists of a hand wheel on a tube which enters the headstock spindle from the rear and is threaded on its front end to engage draw-in collets and chucks. By rotation of hand wheel the chucks are opened and closed.

WHEN ORDERING collet attachments refer to dimension diagram, Fig. 23, and give all measurements and information per letters thereon. If a set of draw-in collets is already available and it is desired to extend their use to the machine in question, advise style of collets as stamped on same, thus 5 N.S.-RIVETT, 3 C-RIVETT, 6 H-RIVETT, etc.

In absence of specification, we will furnish equipment to take style of collet having the largest possible capacity (hole size).



Fig. 23. Dimension Diagram

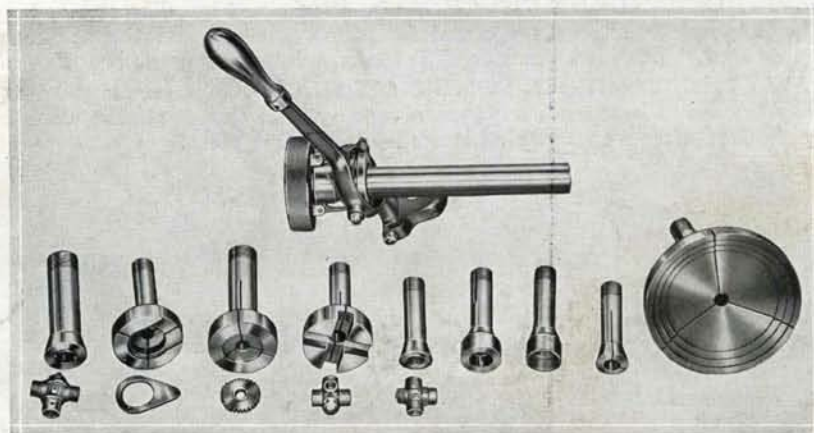


Fig. 24—Lever Chuck Closer with Special Collets and Step Chucks

For production work specially formed collets and step chucks will firmly hold and locate irregular pieces for rapid machining. And with the use of Lever Chuck

Closer many jobs can be produced on bench lathes at half the cost and time required on large, slow and more costly machines.