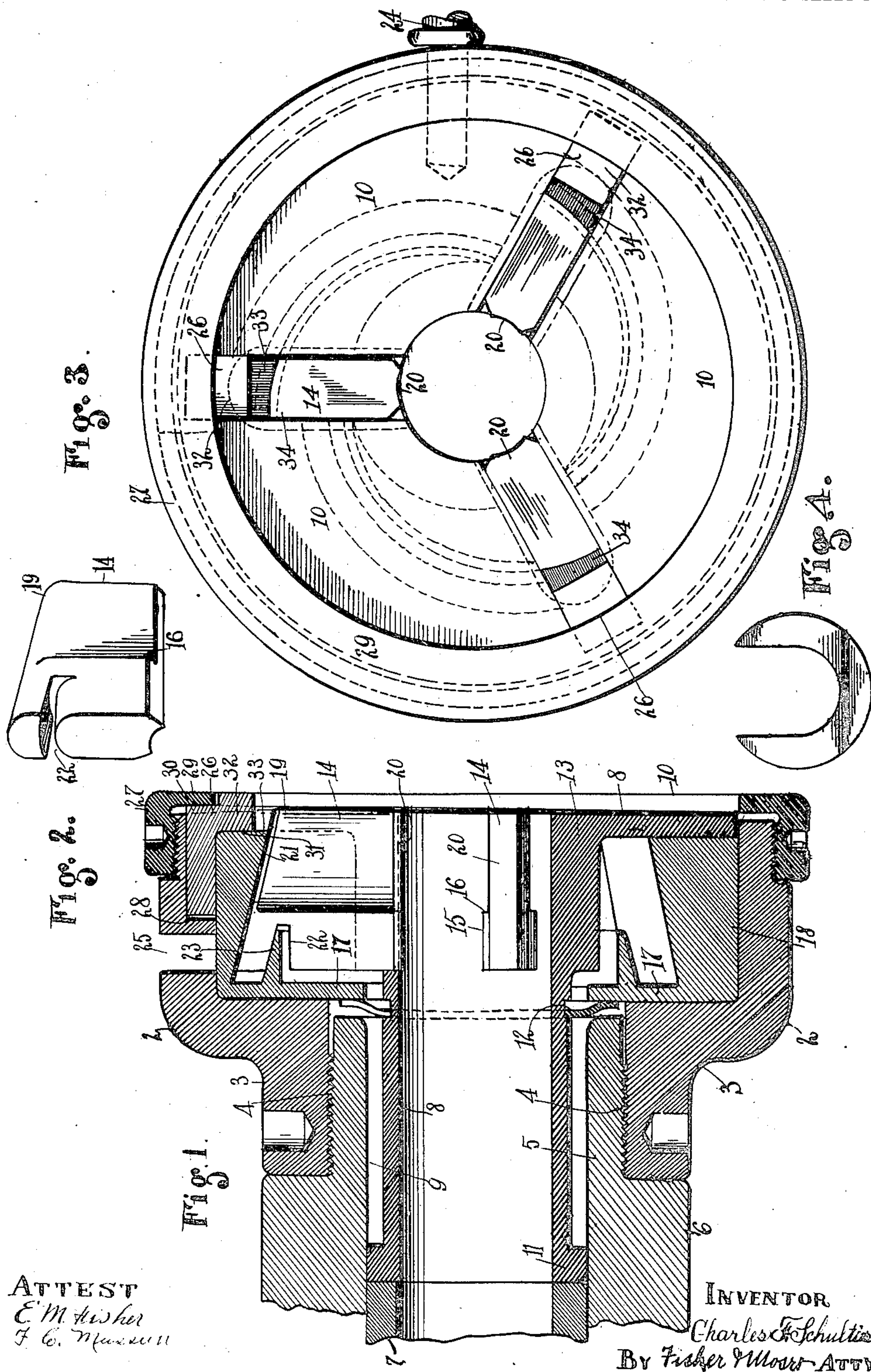


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 APPLICATION FILED NOV. 9, 1908.

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2 SHEETS—SHEET 1.



ATTEST  
 E. M. Fisher  
 F. C. Maxwell

INVENTOR  
 Charles F. Schultis  
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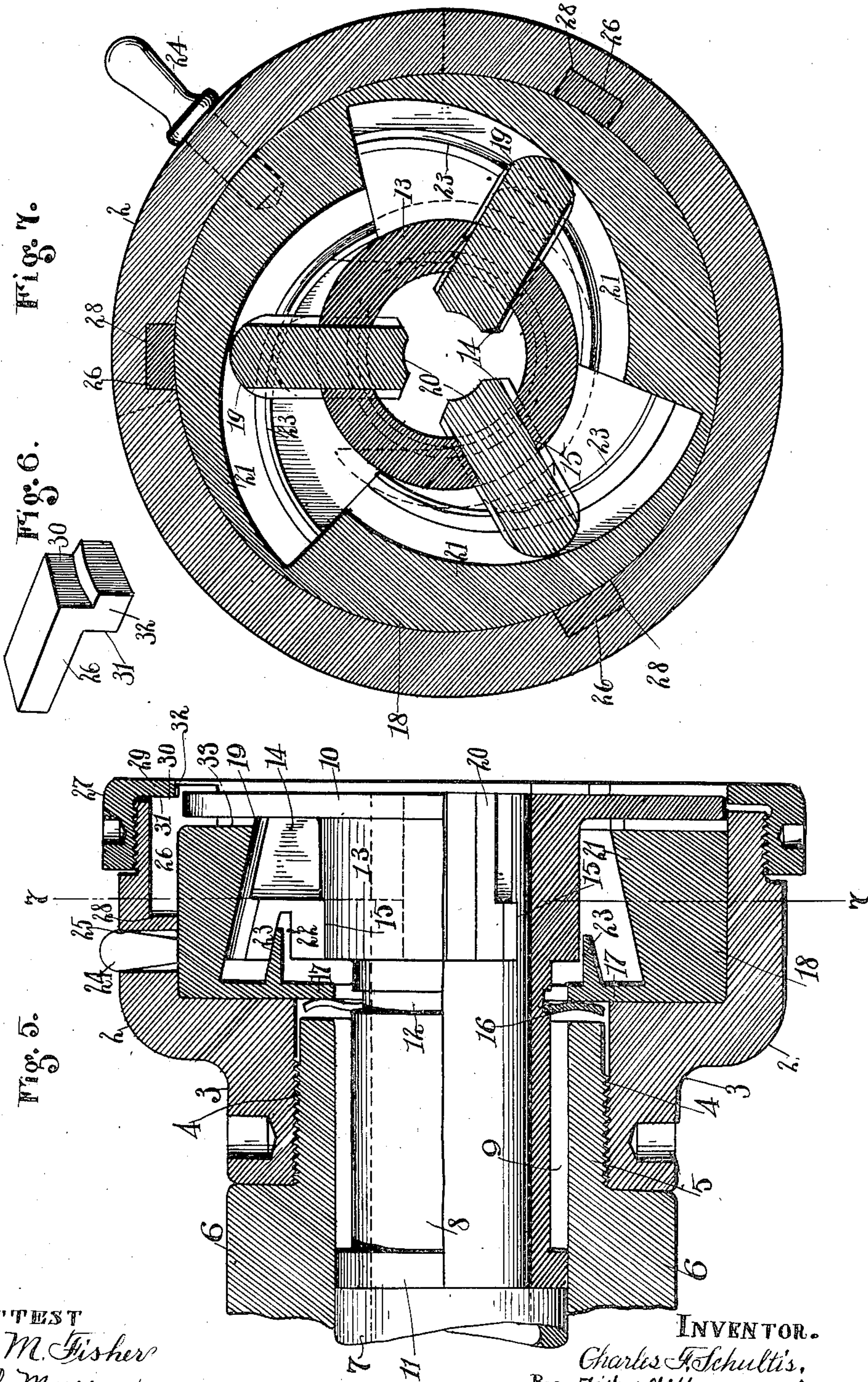


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ATTEST  
E. M. Fisher  
J. C. Muscum.

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Charles F. Schultis,  
By Fisher & Muscum ATTYS.



# UNITED STATES PATENT OFFICE.

CHARLES F. SCHULTIS, OF LAKEWOOD, OHIO, ASSIGNOR TO THE CLEVELAND COLLET AND MACHINE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## ADJUSTABLE COLLET FOR LATHES AND LIKE MACHINES.

952,364.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed November 9, 1908. Serial No. 461,710.

To all whom it may concern:

Be it known that I, CHARLES F. SCHULTIS, a citizen of the United States, residing at Lakewood, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Adjustable Collets for Lathes and Like Machines, and do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to adjustable collets for lathes and like machines, and is an improvement embodying the construction and arrangement of parts, substantially as herein shown and described and more particularly pointed out in the claims.

The primary object of my improved collet is to provide adjustable jaws adapted to be set for different sizes of stock and further adapted to be forcibly actuated to firmly grip the stock without disturbing set adjustments.

Other objects are embodied in the details of the construction, all as hereinafter more particularly set forth.

Figure 1 is a sectional view longitudinally of the collet showing a portion of the machine upon which it is mounted. Fig. 2 is a perspective view of one of the workholding jaws. Fig. 3 is a front elevation of the collet, as seen in Fig. 1. Fig. 4 is a reduced face view of the spring washer employed to retire the jaw holder. Fig. 5 is a sectional view similar to Fig. 1, except that the jaws are set for gripping a smaller sized stock and further showing the jaws and jaw holder carried forward for gripping purposes. Fig. 6 is a perspective view of one of the locking keys for the cam ring. Fig. 7 is a cross section taken on line 7-7, Fig. 5.

In detail, the collet comprises a hood 2 having a reduced neck —3— with a threaded bore —4— which is adapted to screw upon threaded neck —5— of head —6— of the machine, and which head may be rotatable or fixed, dependent upon the kind of a machine to which the collet may be applied.

The method and means employed for mounting the collet upon the machine may be variously modified to suit the various types of machines in use. Again, it will be understood that in one type of the machine, it is customary to operate the collet from

the rear of the machine by suitable lever mechanism which is operatively connected to sliding tube or plunger 7, a portion of which is shown in the present instance. Plunger 7 is adapted to bear against jaw holder 8 which is slidably mounted for axial movement within longitudinal opening 9 of head 6. Jaw holder 8 is a cylindrical member having a radially slotted flange 10 of circular outline at its front. Said holder is further characterized in that it has a bearing flange 11 at its rear end, also an annular groove 12 located substantially midway between its ends, and a slightly enlarged annular body portion 13 to give the requisite strength to hold a set of rigidly disposed jaws 14. To this latter end, portion 13 and front flange 10 are also slotted upon radial lines to slidably house the jaws. The rear portion of said slots are enlarged as at 15, see Fig. 5, as compared with the front end thereof, and jaws 14 are also correspondingly enlarged to provide shoulders 16 and whereby the jaws are held from longitudinal movement and displacement in respect to holder 8. In other words, jaws 14 are slidably mounted for radial movement in the holder, but are compelled to move forward and backward with the holder when the said holder is operated with this end in view.

As hereinbefore stated, part 7 is employed to carry the holder forward, but this is done against back pressure of a U shaped spring washer or plate 16 which encircles the holder within groove 12. This plate is further adapted to bear against wall 17 of cam ring 18 within hood 2. This flat form of spring to retire holder 8 is preferred, but it is obvious that a coiled spring might be used instead and for the same purpose. In this event, said coiled spring would encircle the holder and bear against flange 11 at the rear and against wall 17 at the front. Now it will be noted that jaws 14 have a rounded end edge 19 which is formed at an inclination to its gripping face 20. In fact, jaws 14 may be regarded as wedges with their widest ends located adjacent to wall 17. They might be reversed however, which would necessitate a reversal in the other parts and a reversal of operations. Cam ring 18 is also formed with inclined faces 21 which correspond axially thereof to the inclined edges 19 of the jaw and have riding engage-



ment therewith at all times. Each jaw is also provided with a cross cut 22 at its rear wherein integral flange 23 on wall 17 of ring 18 is adapted to have working play to positively withdraw the jaws and move them radially outward when ring 18 is rotated for this purpose. Both flanges 23 and inclined faces 21 of the ring are eccentrically formed in ring 18 and in respect to the axis of the jaw holder. Thus, when ring 18 is rotated by means of handle 24, which is adapted to travel within the end limits of slot 25 in hood 2, the said jaws are positively moved in either direction dependent upon the direction of the rotation of the ring. This is done when a preliminary setting of the jaws is desired for the various sizes to be held. Then ring 18 is locked against further rotation by means of keys 26 and a screw locking ring 27 on hood B. Keys 26 fit snugly in suitable recesses 28 in the hood about cam ring 18. Flange 29 of locking ring 27 bears against end face 30 of the key, and when screw ring 27 is rotated, key 26 is forced inward and inner face 31 on the depending portion 32 of the key bears against the outward face 33 of cam ring 18, thereby firmly locking said cam ring in any set position within holder 8. Key 26 is of still further utility in that its projection 32 is adapted to enter and snugly fit within the sides of radial slots 34 in flange 10 of holder 8, thereby preventing rotation of said holder and the jaws within hood 2, but not preventing axial movement in respect thereto. In brief, said keys lock holder 8 and hood 2 together, so that if head 6 and hood 2 are designed to rotate the stock held by the jaws, a positive drive between the parts is assured by reason of keys 26.

In operation, and assuming that the jaws are open as in Figs. 1 and 3, the work is inserted within the holder, and cam ring 18 is rotated to bring the jaws to the work. Of course, locking ring 27 must first of all be slightly rotated to release the cam ring 18 to permit this preliminary setting of the parts. Then locking ring 27 is screwed back with locking effect, and the operator may then throw the usual levers to thrust workholder 8 forward from the position seen in Fig. 1 to the position shown in Fig. 5. In this forward movement of the holder, the jaws are forced inward upon the work by reason of their longitudinal or axial movement within cam ring 18, and the parts sustain these locked relations until the operator releases the same which is done by permitting holder 8 to retire under back pressure of spring 16.

The construction of the collet as a whole is very simple and very effective. Moreover, the range of adjustment for holding stock of different sizes is very great, all of which

works to the advantage of this collet as compared with others known to me.

The jaws shown are plain in that they have a straight gripping face, but it will be understood that other forms of jaws may be used. For instance, a stepped jaw may take their place, this form of jaw being commonly used because of its extra chucking capacity. And in this connection I wish to point out that my construction of eccentric ribs 23 is of material advantage in maintaining proper alinement of the respective jaws so that absolute gripping is assured, especially in a stepped jaw where the work is held at the immediate face of the collet and is not introduced fully therein. When the grip is thus at the extreme front the tendency of each jaw is to tilt, but flanges 23 prevent this and hold them true to their work, and relieves the strain and wear on the ribbed and slotted portions of the jaws and collet, respectively.

What I claim is:—

1. An adjustable collet comprising a hood, a cam ring mounted in said hood having inclined working faces for the jaws of the collet, and keys and a screw ring to lock the cam in adjusted positions within said hood, in combination with jaws operatively engaged with said cam ring and mounted to slide both axially and radially therein, a holder for the jaws to move the same axially, and a spring device to retire the holder axially.

2. An adjustable collet comprising a hood, a rotatable ring having inclined faces axially thereof and eccentrically formed therein, keys mounted within said holder engaged with said ring, and a screw locking ring adapted to bear against said keys, in combination with a set of wedge shaped jaws and a holder therefor adapted to carry the same back and forth within said cam ring, and a spring device to retire said holder and jaws axially in respect to said ring, said holder having locking engagement with said keys.

3. In adjustable collets, a set of jaws and a rotary device having inclined eccentric portions to adjust said jaws radially to hold stock of different sizes, and a slidable support for said jaws centrally of said device and collet to augment the radial movement of said jaws by a movement thereof in a direction axially of the collet, and a spring between said device and slidable jaw support to retire the latter to release the jaws from the stock.

4. An adjustable collet consisting of a hood, a rotatable cam ring within said hood, means to lock said ring in various set positions, a centrally arranged axially movable jaw holder and workholder jaws slidably supported therein adapted to have working engagement with said cam ring for both set-



ting and gripping operations, and a spring interposed between said jaw holder and said cam ring, in combination with a tubular operating member engaged with the inner end  
5 of said jaw holder to slide the same axially.

5. An adjustable collet comprising a hood and a rotatable cam ring mounted therein having inclined working faces axially there-  
10 through, means to lock said cam ring adjustably within said hood, wedge shaped jaws adapted to engage said ring working faces, a jaw holder slidably mounted cen-

trally of said collet to move said jaws axially in respect to said cam ring, and means to move said holder axially in opposite di- 15  
rections comprising a spring and a slidable tube engaged with said holder.

In testimony whereof I sign this specification in the presence of two witnesses.

CHARLES F. SCHULTIS.

Witnesses:

E. M. FISHER,  
R. B. MOSER.