

No. 771,558.

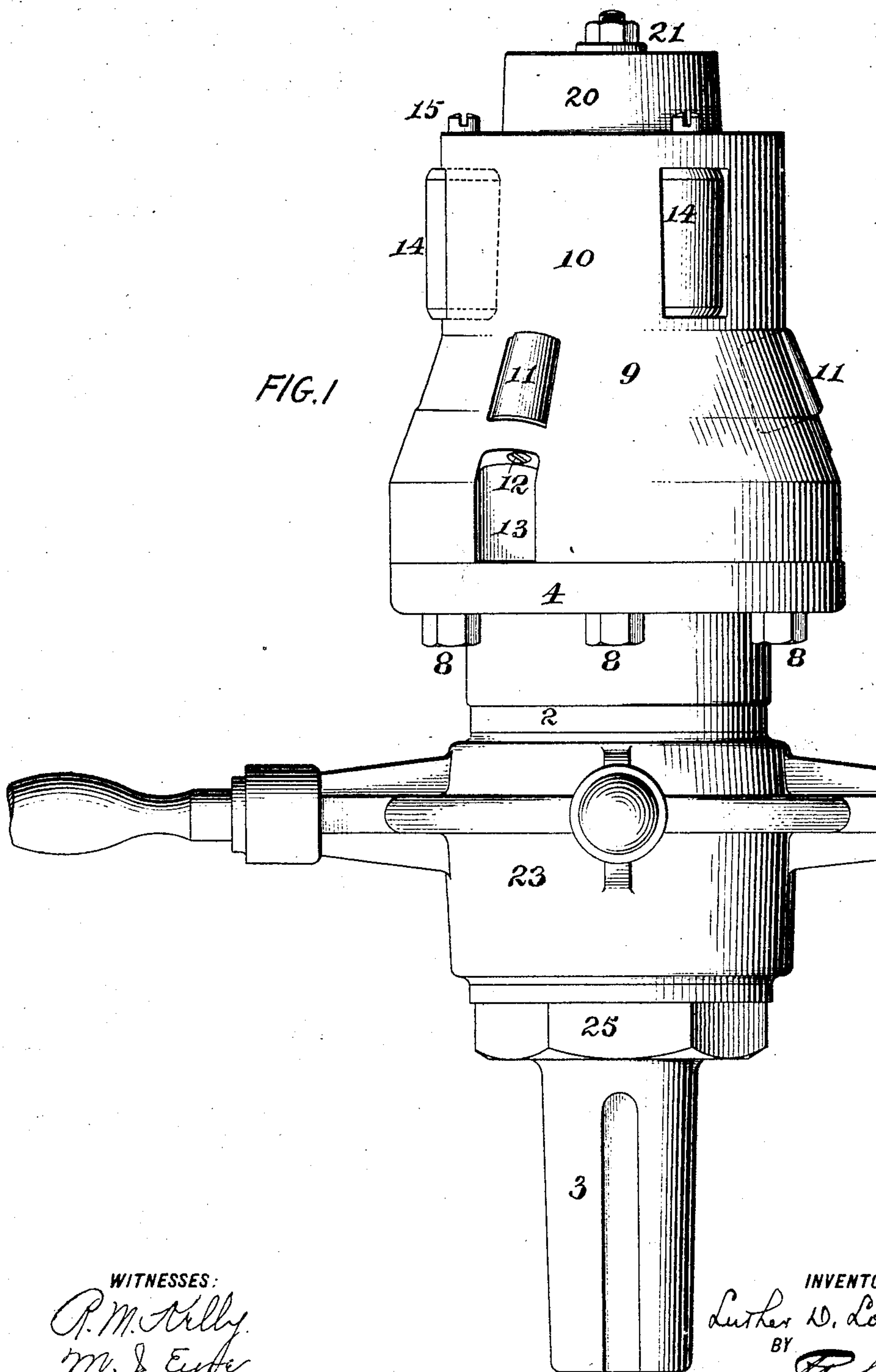
PATENTED OCT. 4, 1904.

L. D. LOVEKIN.
TOOL FOR EXPANDING AND FLANGING PIPE.

APPLICATION FILED FEB. 25, 1904.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

R. M. Kelly
M. J. Eybe

INVENTOR

Luther D. Lovekin

BY

W. H. M. S.
ATTORNEY.

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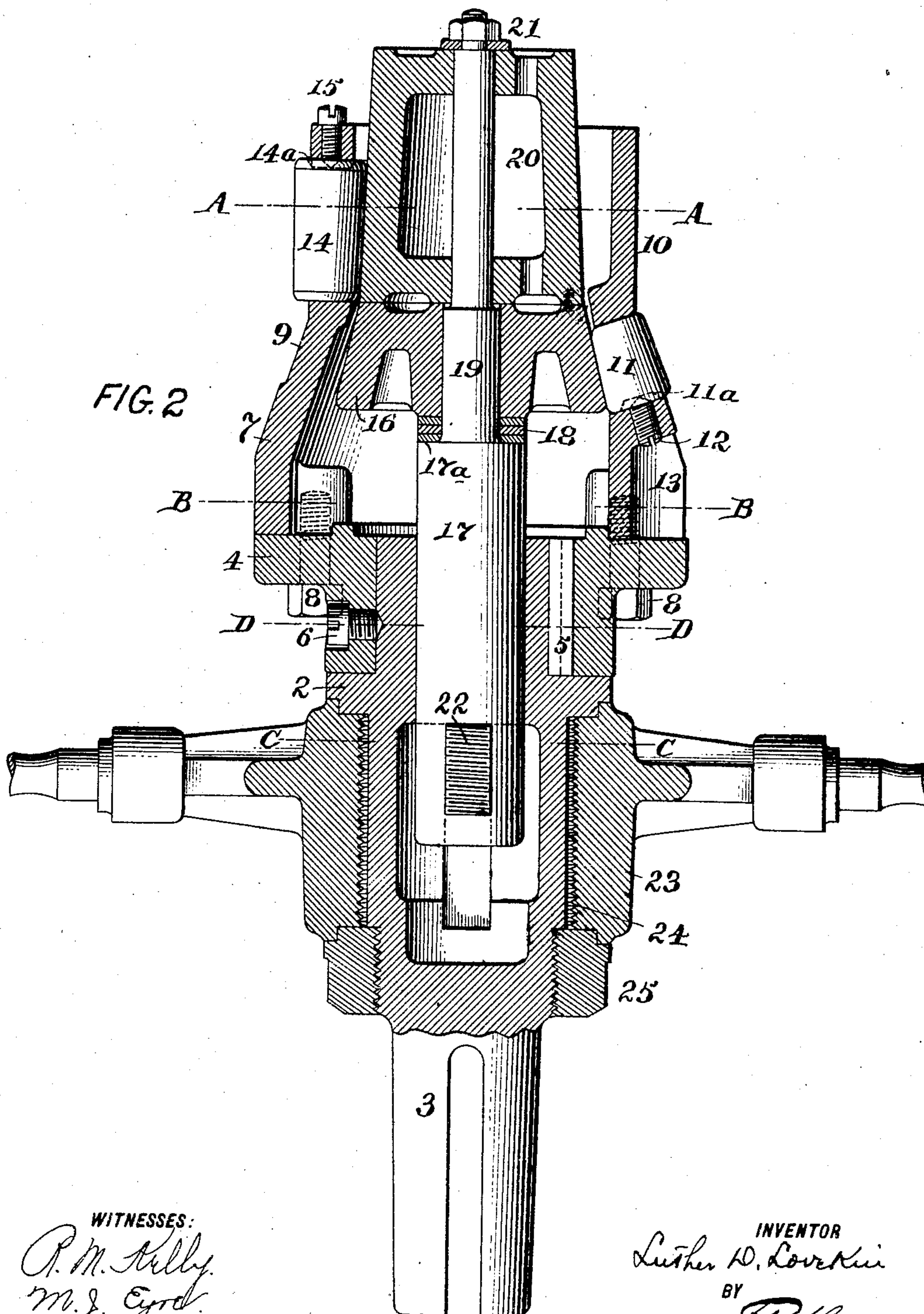
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P. M. Kelly
M. J. Eyre

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Luther D. Lovekin

BY

Wm. H. Lovekin

ATTORNEY.

L. D. LOVEKIN.

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3 SHEETS—SHEET 3.

FIG. 3

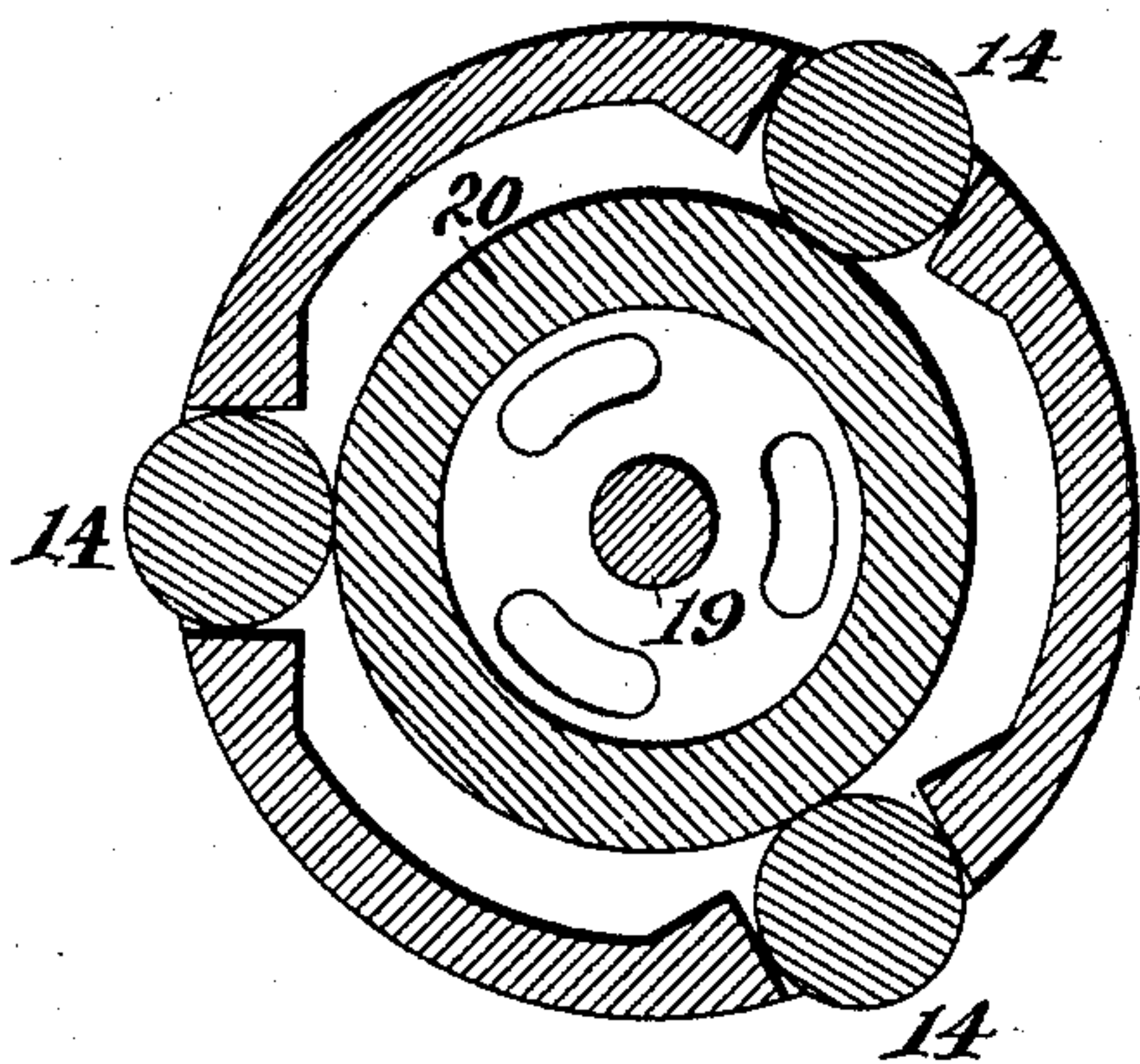


FIG. 4

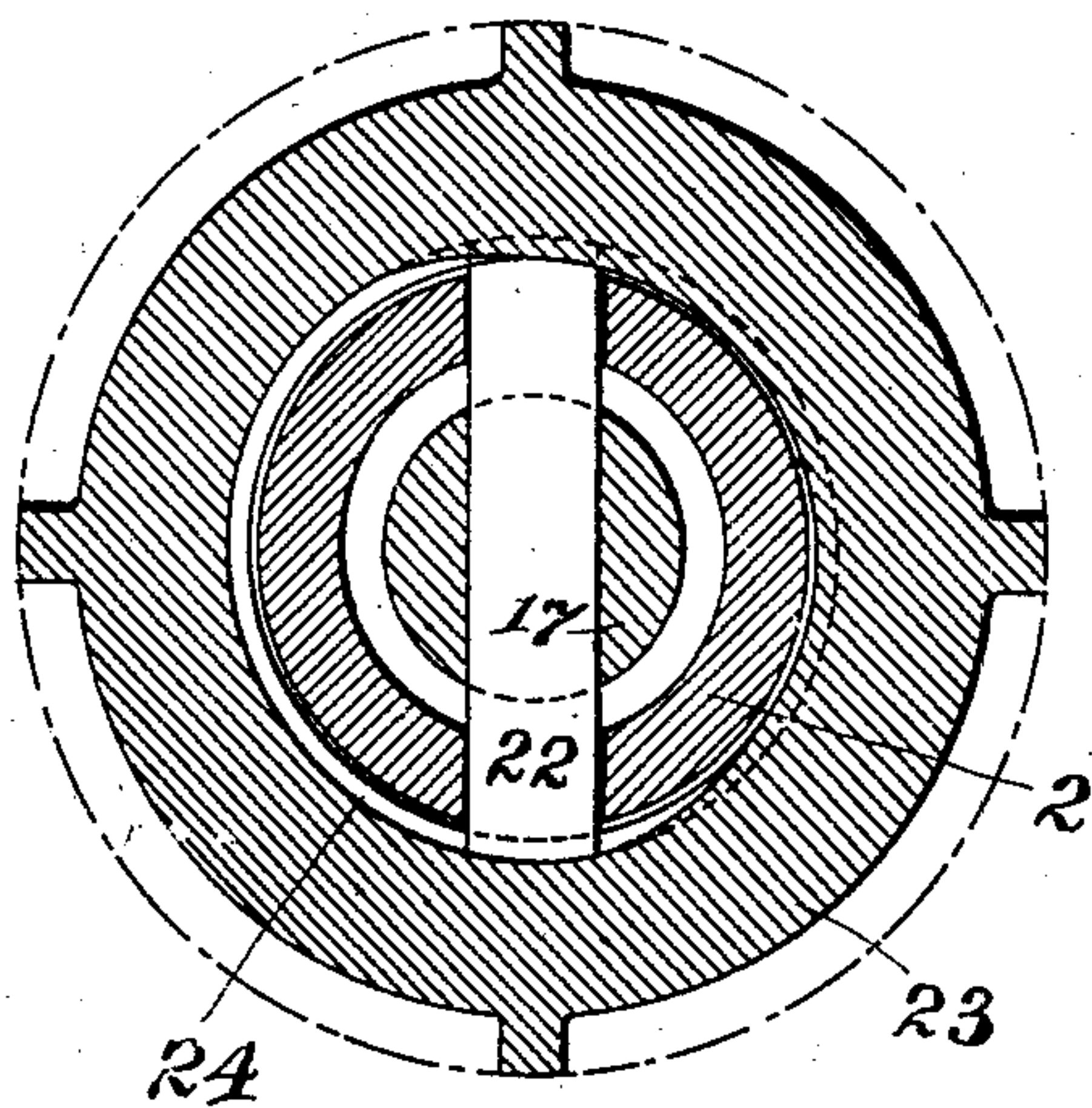
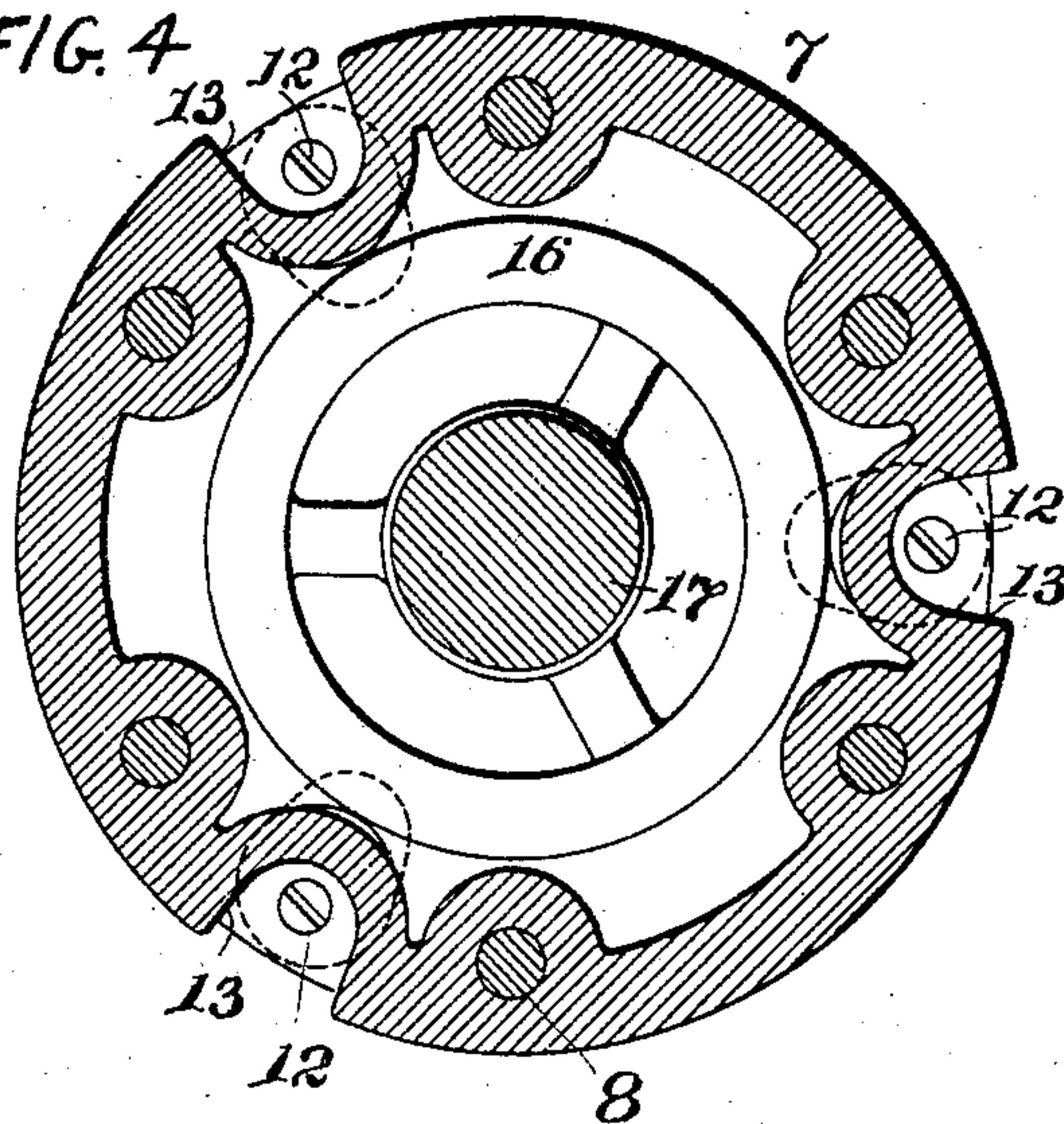


FIG. 5

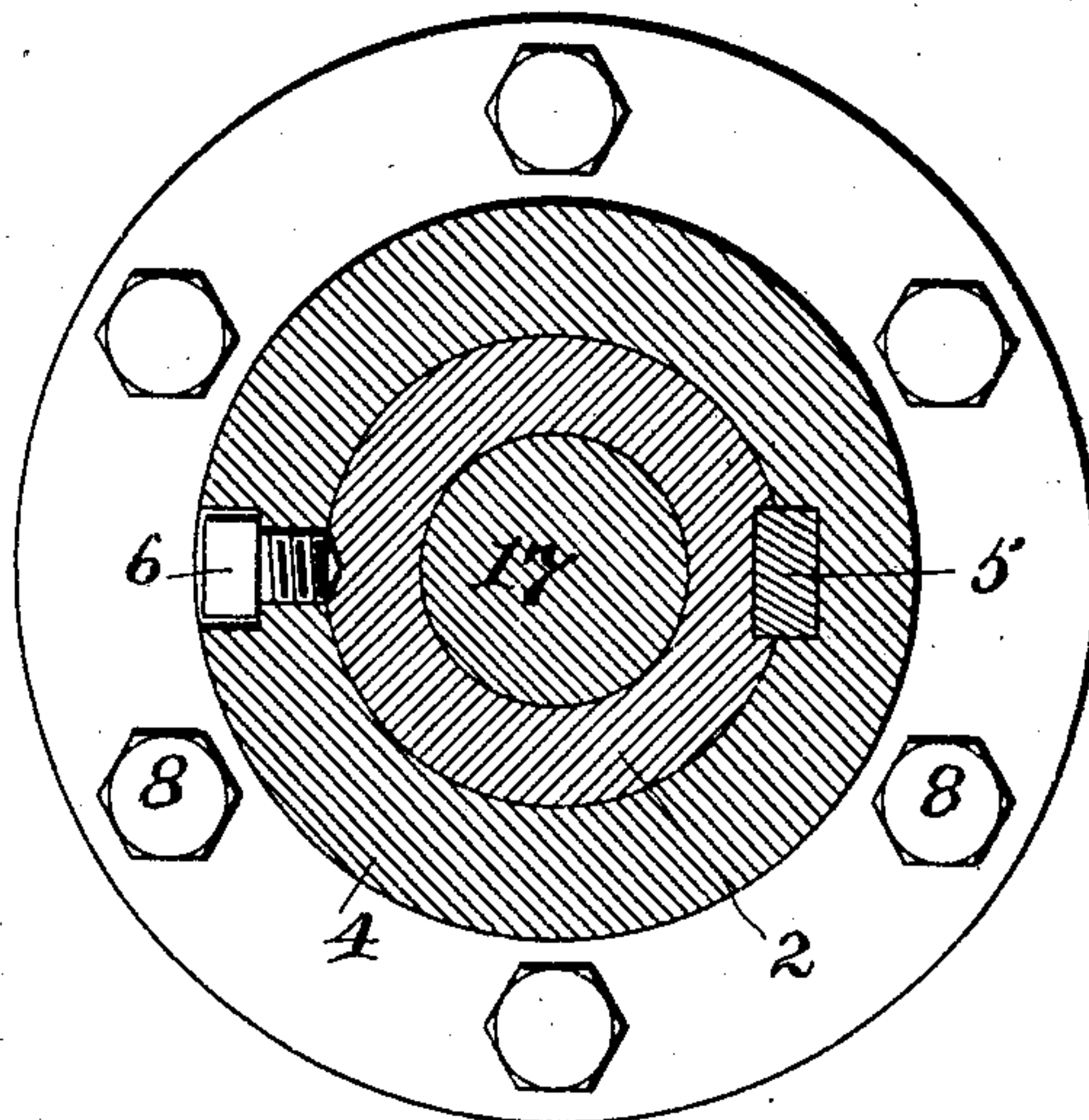


FIG. 6

WITNESSES:

A. M. Kelly
M. J. Egan

INVENTOR

Luther D. Lovekin

BY

Thos. M. M. M.

ATTORNEY.

UNITED STATES PATENT OFFICE.

LUTHER D. LOVEKIN, OF PHILADELPHIA, PENNSYLVANIA.

TOOL FOR EXPANDING AND FLANGING PIPE.

SPECIFICATION forming part of Letters Patent No. 771,558, dated October 4, 1904.

Application filed February 25, 1904. Serial No. 195,232. (No model.)

To all whom it may concern:

Be it known that I, LUTHER D. LOVEKIN, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Tools for Expanding and Flanging Pipe, of which the following is a specification.

My invention has reference to tools for expanding and flanging pipe; and it consists of certain improvements fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is the provision of a simple and efficient tool capable of being easily and expeditiously handled to expand and flange the ends of pipe or tubes of sheet metal, and more especially those of comparatively small diameters.

My invention is more particularly an improvement upon the type of flanging-machine set out in Letters Patent to me No. 682,726, dated September 17, 1901, and is distinguished therefrom principally in flanging-rollers and the manner of supporting and operating them.

In carrying out my invention I provide a suitable mandrel adapted to be operated in any convenient manner, the lower end of which is furnished with expanding-rollers which are preferably made slightly tapered. Within the mandrel I arrange a follower carrying upon its lower end a tapered roller adapted to press upon the expanding-rollers for the purpose of causing them to spread as the work may require and also to reduce their resistance to rotation upon their own axes.

The mandrel is further provided with flanging-rollers located upon its outer surface at a considerable distance from its end for the purpose of flanging the free edges of the expanded tube end, and thereby secure it in position within a pipe-flange.

The follower is provided with a thrust-roller which receives the thrust of the flanging-rollers, and to enable this thrust-roller to be removed when desired and introduced in assembling the tool I make the inclosing portion of the mandrel hollow and detachable, as more fully set out hereinafter.

The follower is arranged to be fed gradually

in a longitudinal direction through the mandrel to shift the position of the follower-shaft relatively to the expanding-rollers, and its movement may be secured and regulated by hand manipulation, as pointed out hereinafter.

The details of construction will be better understood by reference to the drawings, in which—

Figure 1 is an elevation of a flanging-tool embodying my invention. Fig. 2 is a longitudinal section of same. Fig. 3 is a cross-section of the same on line A A, Fig. 2. Fig. 4 is a cross-section of the same on line B B, Fig. 2. Fig. 5 is a cross-section of the same on line C C, Fig. 2, and Fig. 6 is a cross-section of the same on line D D, Fig. 2.

2 is a mandrel and has a shank 3, adapted to be received and held in the tail-stock of a turret-lathe or other tool for the purpose of supporting it.

Fitted to the mandrel-body is a flanged part 4, keyed at 5, to prevent independent turning and having a set-screw 6 for retaining it in place. Bolted to the flange of the part 4 by screws 8 is the hollow body 7, having the contracted or tapered portion 9 and the end cylindrical portion 10.

The cylindrical portion 10 is fitted with the expanding-rollers 14, which extend through its walls, as shown in Fig. 3, and these rollers are made somewhat tapering. To prevent these rollers falling out, they have their ends made with a recess 14^a, into which the ends of screws 15 project, as shown in Fig. 2. Centrally arranged between the rollers 14 is the tapered thrust-roller 20, which is journaled upon the spindle 19 of the follower-shaft 17 and by it given a longitudinal adjustment for expanding the rollers 14 when in the act of expanding the pipe end within a pipe-flange or other support adapted to receive it.

The tapered body 9 is fitted with the flanging-rollers 11, said rollers being preferably tapered and operating through slots in the walls of said part 9, as shown in Fig. 2. These flanging-rollers are held from falling out of place in the same manner as that described with reference to rollers 14. They have recessed ends 11^a, into which the end of screws

12 project, as shown. To enable these screws to be inserted and adjusted, I form the body 7 with recesses 13, through which the screws are inserted and the screw-driver introduced when
 5 adjusting them. This construction also obviates any projecting screw-heads, which are objectionable and liable to be injured.

Arranged within the hollow body 7 and journaled upon the spindle 19 of the follower-shaft
 10 17 is the tapered thrust-roller 16, against which the flanging-rollers 11 rotate, as shown in Fig. 2. This thrust-roller 16 rests upon antifriction-rings 18, interposed between the said roller and the shoulder 17^a of the follower-
 15 shaft. The thrust-roller 20 for the expanding-rollers rests upon the end of the thrust-roller 16, and they rotate together so that the antifriction-rings 18 act to reduce the friction both in using the tool for expanding and
 20 flanging operations. The two rollers are held upon the spindle 19 by the nut 21. By removing this nut the thrust-roller 20 may be removed, but not roller 16. However, by separating the part 7 from flange 4 by remov-
 25 ing the screws 8 the said portion 7 may be withdrawn, leaving the roller 16 upon the follower-shaft.

The longitudinally-adjustable follower-shaft 17 is adapted to slide in the body of the
 30 mandrel and has a transverse key 22, guided in a slotted portion of the mandrel and having its ends screw-threaded and meshing with the internal threaded portion 24 of a ring 23, journaled upon the mandrel and held in place
 35 by nut 25. The ring 23 may have handles or otherwise formed for rotating it relatively to the mandrel to feed the follower-shaft longitudinally when spreading the expanding or flanging rollers.

40 Now while I have described my invention as adapted to be used in the lathe of the turret or other suitable type it is to be understood that the same results can be secured by revolving the tool and holding the pipe or
 45 tube stationary, or both may have rotary motion given to them. My invention is independent of the particular means employed for holding the tool and is not to be restricted thereby.

50 Having now described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. In a tool for flanging pipe, the combination of a mandrel formed of a flanged portion and a detachable tapered hollow body part 7
 55 secured together by screws, outwardly-adjustable flanging-rollers extending through the walls of the body part 7 and presenting oblique outer surfaces, a conical thrust-roller arranged within the body part 7 and adapted to
 60 spread the flanging-rollers and receive their thrust, a follower-shaft for supporting the thrust-roller and moving it longitudinally through the mandrel, and means for adjusting the follower-shaft. 65

2. In a tool for flanging pipe, the combination of a mandrel formed of a cylindrical part 2, a flanged portion 4 keyed thereto and a detachable tapered hollow body part 7 secured
 70 together by screws and said body portion 7 also having recesses 13 extending beneath the flange of the part 4 as shown, outwardly-adjustable flanging-rollers extending through the walls of the body part 7 and presenting
 75 oblique outer surfaces and having recessed ends, screws 12 carried by the body part 7 and extending through the recesses 13 into the recesses on the ends of the flanging-rollers, a conical thrust-roller arranged within
 80 the body part 7 and adapted to spread the flanging-rollers and receive their thrust, a follower-shaft for supporting the thrust-roller and moving it longitudinally through the mandrel, and means for adjusting the follower-shaft. 85

3. A mandrel-body for a flanging and expanding tool consisting of a cylindrical body 2, combined with a flanged portion 4 sleeved upon its end and keyed thereto, and a tapered
 90 hollow body portion 7 having the tapered wall 9 and the cylindrical wall 10 both of said walls having slotted portions through which the flanging and expanding rollers operate.

In testimony of which invention I hereunto set my hand.

LUTHER D LOVEKIN.

Witnesses:

R. M. HUNTER,
 R. M. KELLY.