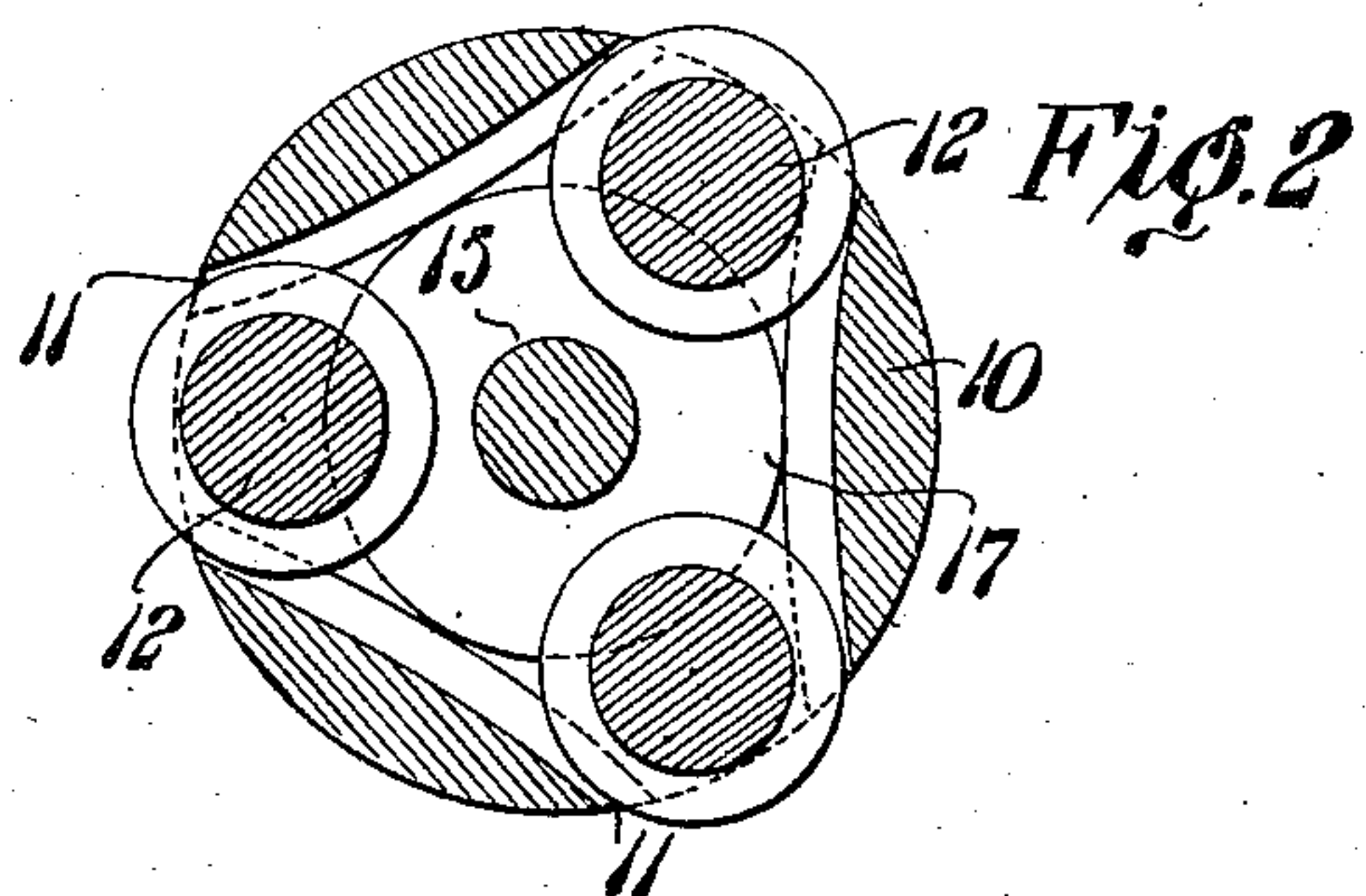
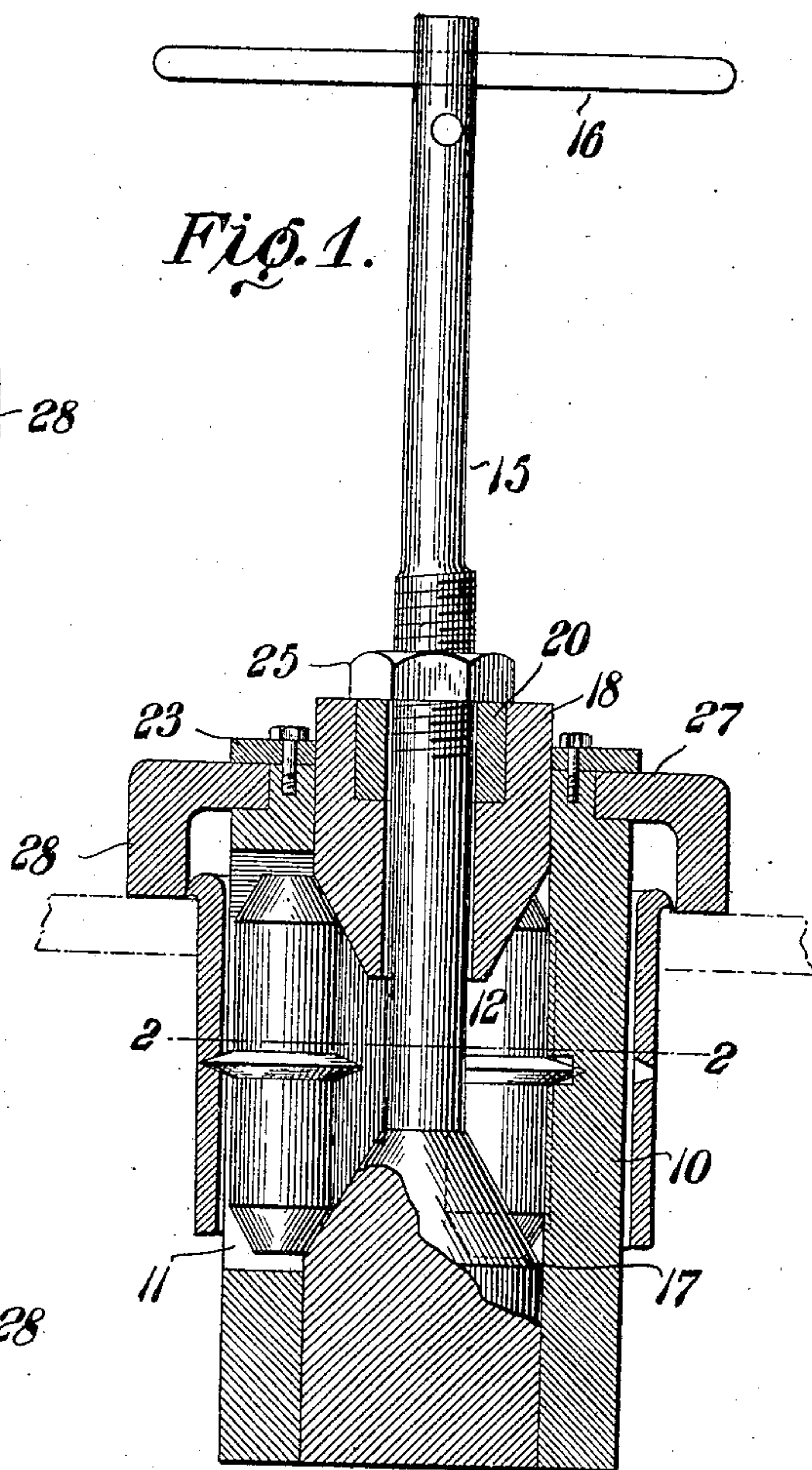
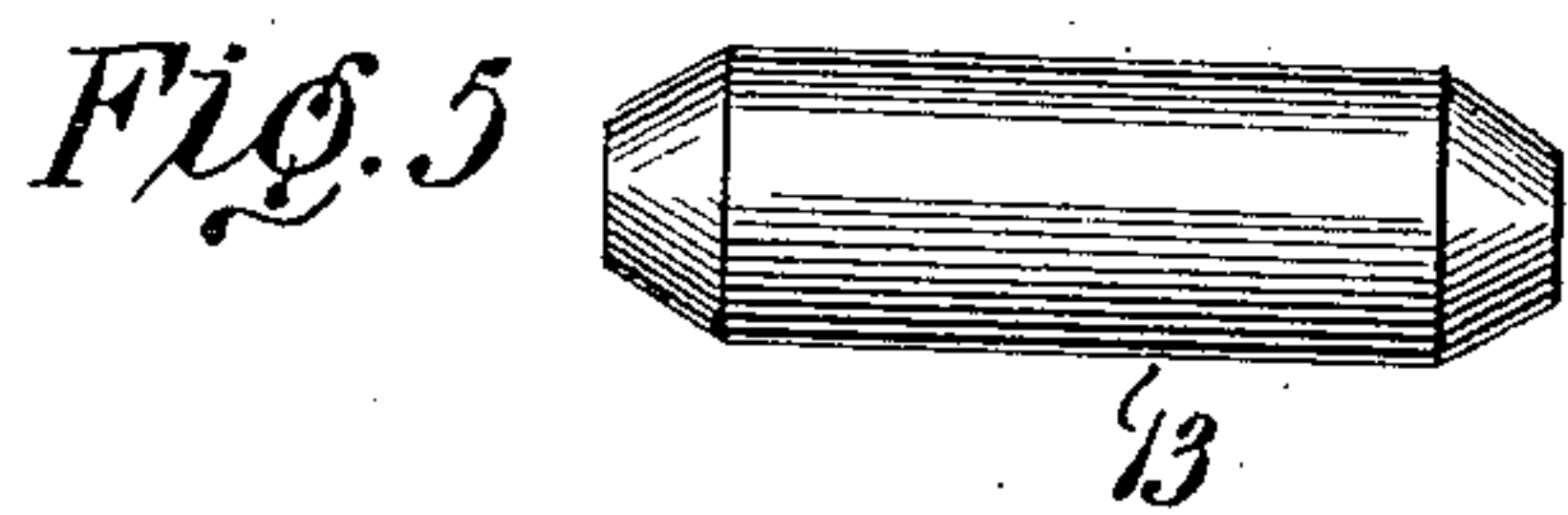
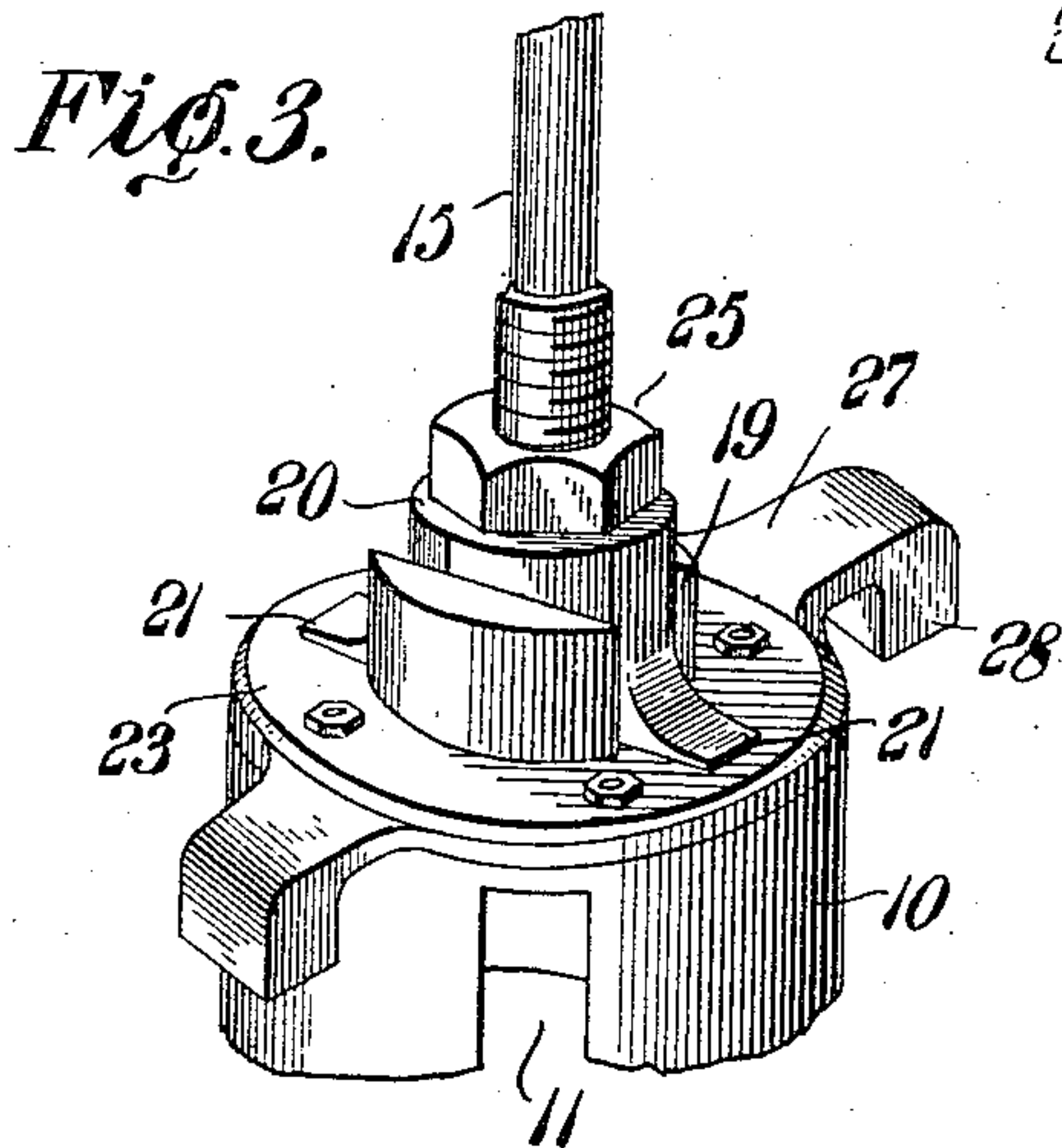
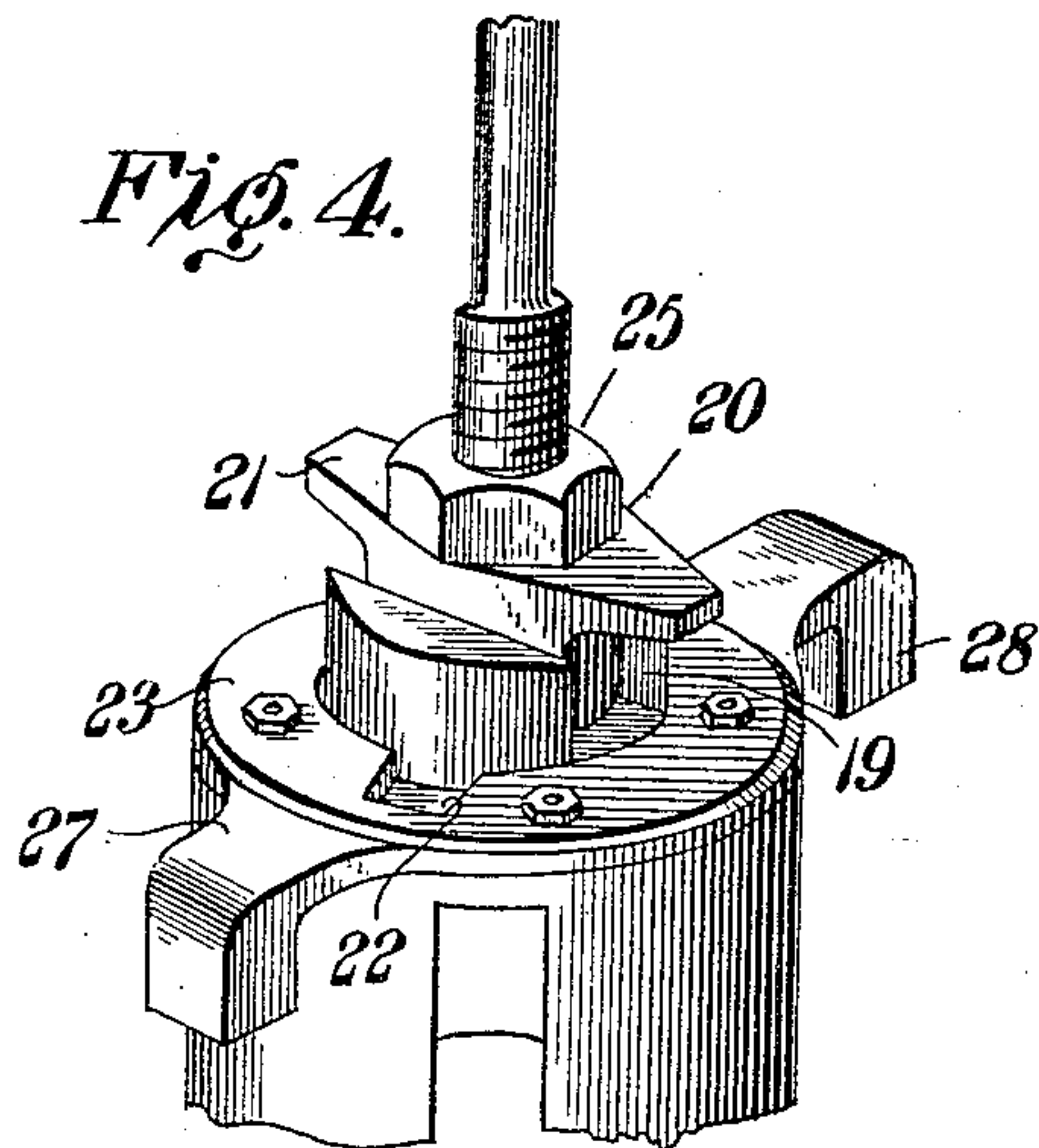


No. 870,332.

PATENTED NOV. 5, 1907.

W. C. WOOD.
TUBE CUTTER AND EXPANDER.
APPLICATION FILED MAY 1, 1907.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM CHARLES WOOD, OF SACO, ALABAMA.

TUBE CUTTER AND EXPANDER.

No. 870,332.

Specification of Letters Patent.

Patented Nov. 5, 1907.

Application filed May 1, 1907. Serial No. 371,247.

To all whom it may concern:

Be it known that I, WILLIAM CHARLES WOOD, a citizen of the United States, residing at Saco, in the county of Pike and State of Alabama, have invented a new and useful Tube Cutter and Expander, of which the following is a specification.

This invention relates to tools of that class employed for the cutting or expanding of tubes and flues.

One of the principal objects of the invention, is to provide a tool of simple construction, in which the cutting and expanding rollers may be readily interchanged in accordance with the character of the work to be performed.

A further object of the invention is to provide a device of this class which will permit change in the speed at which the tools are revolved.

A still further object of the invention is to provide a tool of very simple construction which may be readily adjusted during the progress of the work, in order to move the roller tools outward.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of a tube cutting and expanding tool constructed in accordance with the invention. Fig. 2 is a plan view of the same on the line 2—2 of Fig. 1. Fig. 3 is a detail perspective view of the upper portion of the tool, showing the parts adjusted to permit rapid rotation of the tool carrier. Fig. 4 is a view similar to Fig. 3, showing the adjustment of the parts for slower rotation of the tools. Fig. 5 is a detail view of one of the expanding tools detached.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The casing 10 is tubular in form and is provided with a number of vertically disposed recesses 11 extending through the side wall to permit radial adjustment of the tools, these, in the present instance, being in the form of cutter rollers 12, or expanding rollers 13.

Extending centrally through the casing, is an operating rod 15 which may be provided at its outer end with a handle bar 16 of any desired construction. At the inner end of the rod is a cone 17 which forms the lower bearing for the frusto-conical ends of the tools 12, and

the similarly shaped upper ends of these tools bearing against a second cone 18 that is loosely mounted on the rod 15, said second cone having at its outer end a diametrically extending slot 19. This slot serves for the reception of a locking collar 20 that fits loosely over the rod, and is provided with flattened parallel sides adapted to bear against the side walls of the slot 19 and projecting from one end of the collar are two lugs 21 arranged diametrically opposite each other and adapted when adjusted to one position to enter a pair of recesses 22 that are formed in a cap plate or disk 23 that is rigidly secured to the reduced upper end of the casing 10.

Bearing against the upper or outer end of the collar 20 is a nut 25 that screws on a threaded portion of the rod 15, and when turned is adapted to force the cone 18 in the direction of the cone 17, and thus exerts outward pressure on the roller tools 12, this nut being turned from time to time during the progress of the work, in order to accomplish the cutting or expanding operation.

The reduced upper portion of the casing 10 forms a seat for a gage collar 27 having projecting fingers 28 that are arranged to rest against the outer face of the tube or flue sheet when the device is employed for the cutting of tubes, this being for the purpose of limiting the inward movement of the tool, so that the tube or flue may be cut at a point adjacent to the inner face of the sheet. The connection between the gage collar and the casing 10 is such that the latter may turn freely, while the collar remains stationary.

In operation the nut 25 is loosened in order to move the cone 18 outward, and allow the roller tools to move wholly within the periphery of the casing, after which the tool is introduced within the tube or flue, and if the device is to be used for cutting the tool is forced inward until the fingers 28 engage against the outer face of the sheet. The rod 15 is then rotated and from time to time the nut 25 is turned in order to force the cones toward each other and move the roller tools outward as the work progresses.

If the collar 20 is adjusted to the position shown in Fig. 3 with the lugs 21 entered in the notches 22, the casing as a whole will be rotated at the same speed as the rod 15, and the operation progresses rapidly. If, on the other hand, the collar is reversed to the position shown in Fig. 4, it will engage only with the upper or outer cone 18 and the casing will be free. In this case the upper cone will be turned, together with the lower cone, while movement will be transmitted to the rollers by frictional engagement with the cones, and to the casing through the travel of the roller tools on the work, so that the operation will progress less rapidly than with the former adjustment.

The tools may be readily interchanged, so that either cutting or expanding operations may be carried on.

I claim:—

1. In a tool of the class described, a casing, roller tools
5 therein, a pair of adjustable cone bearings for said tools, an operating rod, and means for locking the cones to the casing.
2. In a tool of the class described, a casing, roller tools
10 therein, a pair of cone bearings for the tools, an operating rod, and a locking member adjustable to interlock the casing and one of the cones, or to permit independent rotation thereof.
3. In a tool of the class described, a casing, roller tools
15 therein, an operating rod, a cone carried thereby, a second cone mounted on the rod and adjustable toward and from the first cone, the adjusting cone having a diametrically arranged slot at one end, and the casing being provided
20 with a pair of diametrically opposed notches, and a reversible collar carried by the rod and arranged to fit within the slots and lock the cone to the casing.
4. In a tool of the class described, a casing, roller tools
25 therein, an operating rod having a threaded portion, a cone carried by the rod, a second cone loosely mounted on the rod and provided at one end with diametrically arranged slots, a disk secured to the outer end of the casing

and provided with diametrically opposed notches, a reversible collar having flanged side walls fitting within the slot and provided with projecting lugs or fingers arranged to enter said notches, and a nut carried by the threaded portion of the rod for forcing the cones toward each other. 30

5. In a tool of the class described, a casing having a reduced upper end, a disk secured to said reduced upper end and provided with diametrically opposed notches, a gage collar fitting within the reduced portion of the casing and having projecting fingers for engagement with the
35 tube, a flue sheet, a rod extending through the casing, a cone secured to the rod, a second cone adjusted on the rod and provided with a diametrically extending slot, roller tools having bearings on the cones, a reversible collar arranged to fit within the slot and having projecting lugs
40 adapted to enter the notches, and a nut carried by the threaded portion of said rod and bearing against the collar.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two
45 witnesses.

WILLIAM CHARLES WOOD.

Witnesses:

F. M. PENNINGTON,
JNO. G. KEY.