

A. G. ANDERSON.
METHOD OF MAKING SCREW NUTS.
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900,341.

Patented Oct. 6, 1908.

Fig. 1.

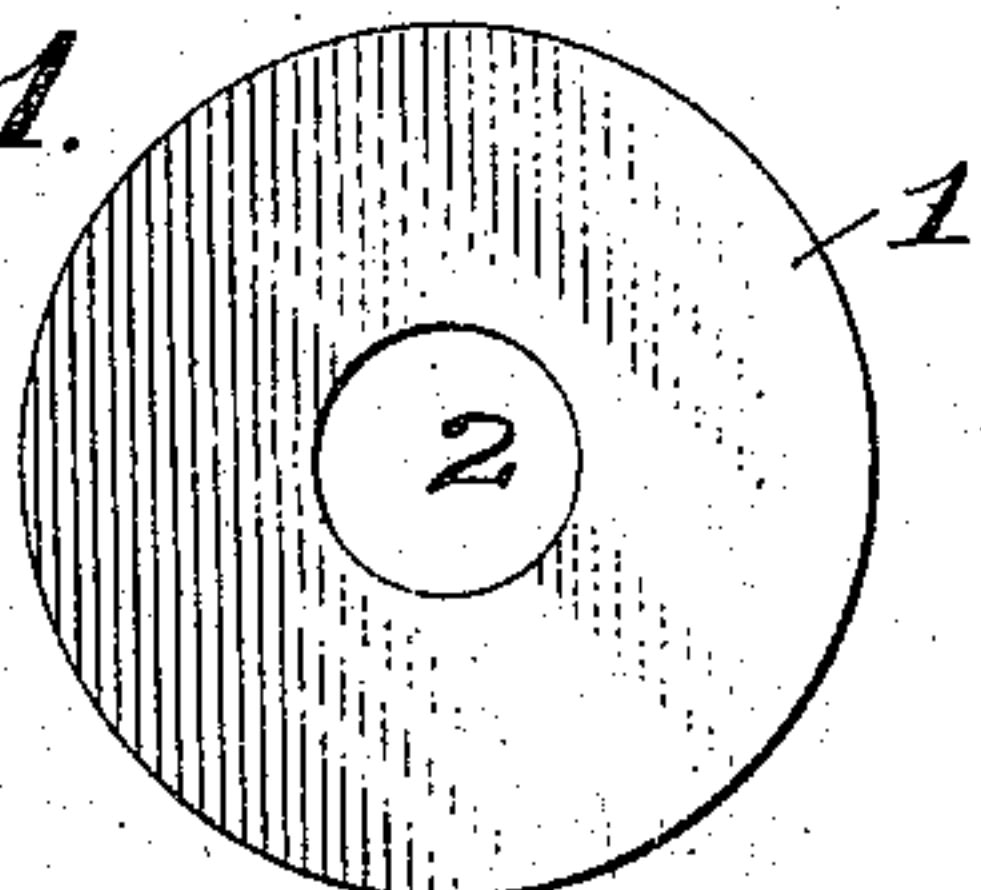


Fig. 2.

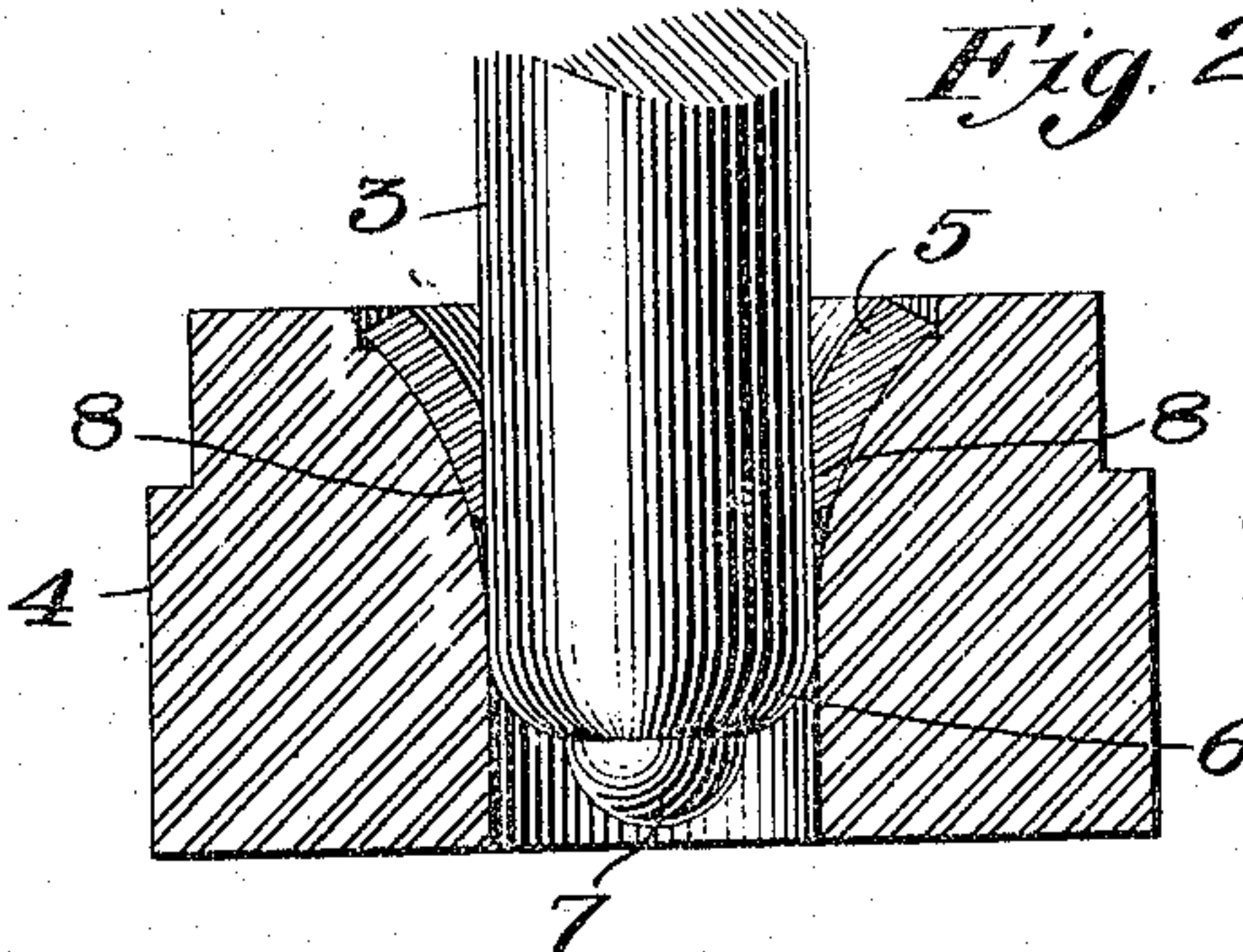


Fig. 3.

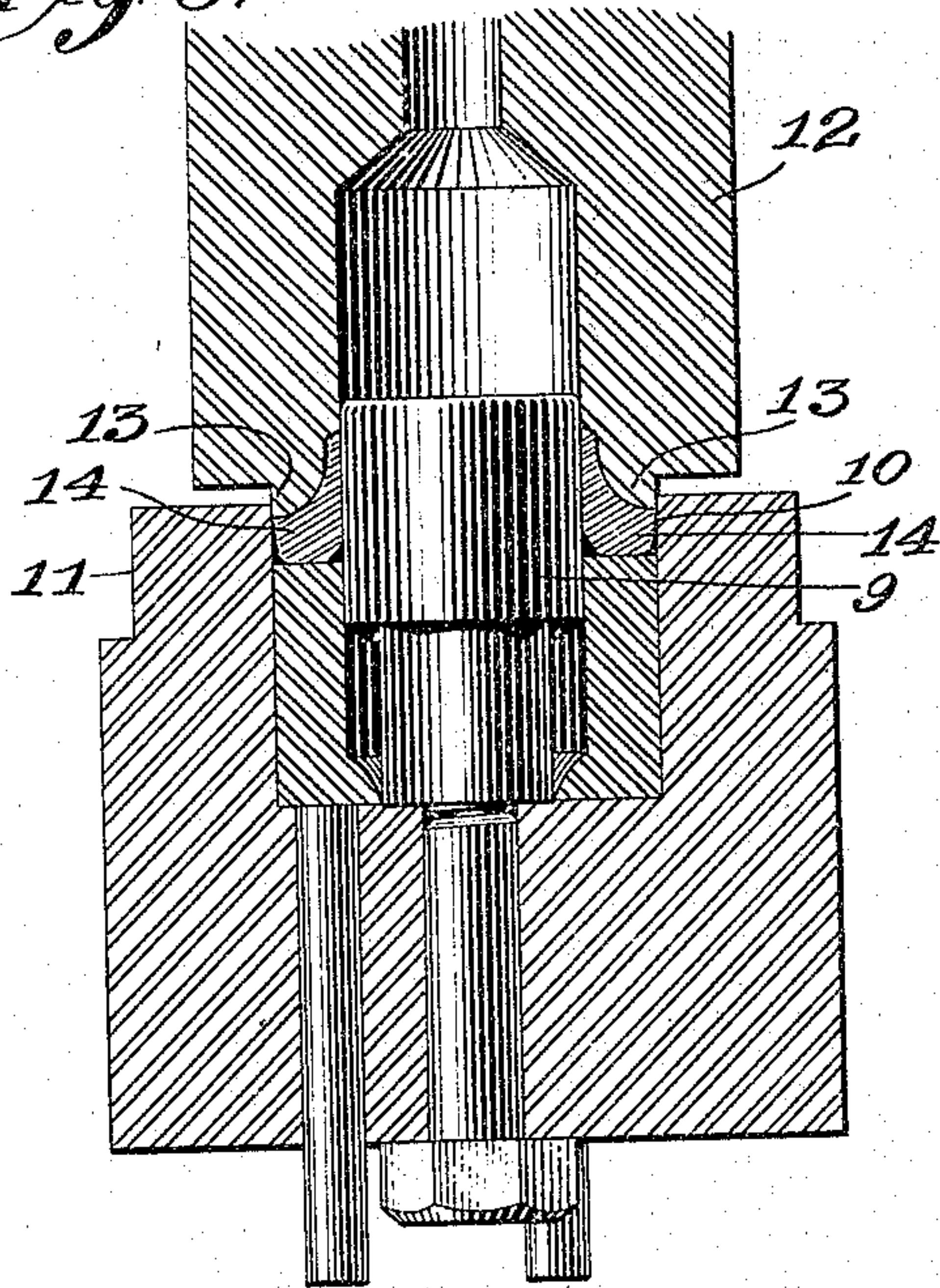


Fig. 4.

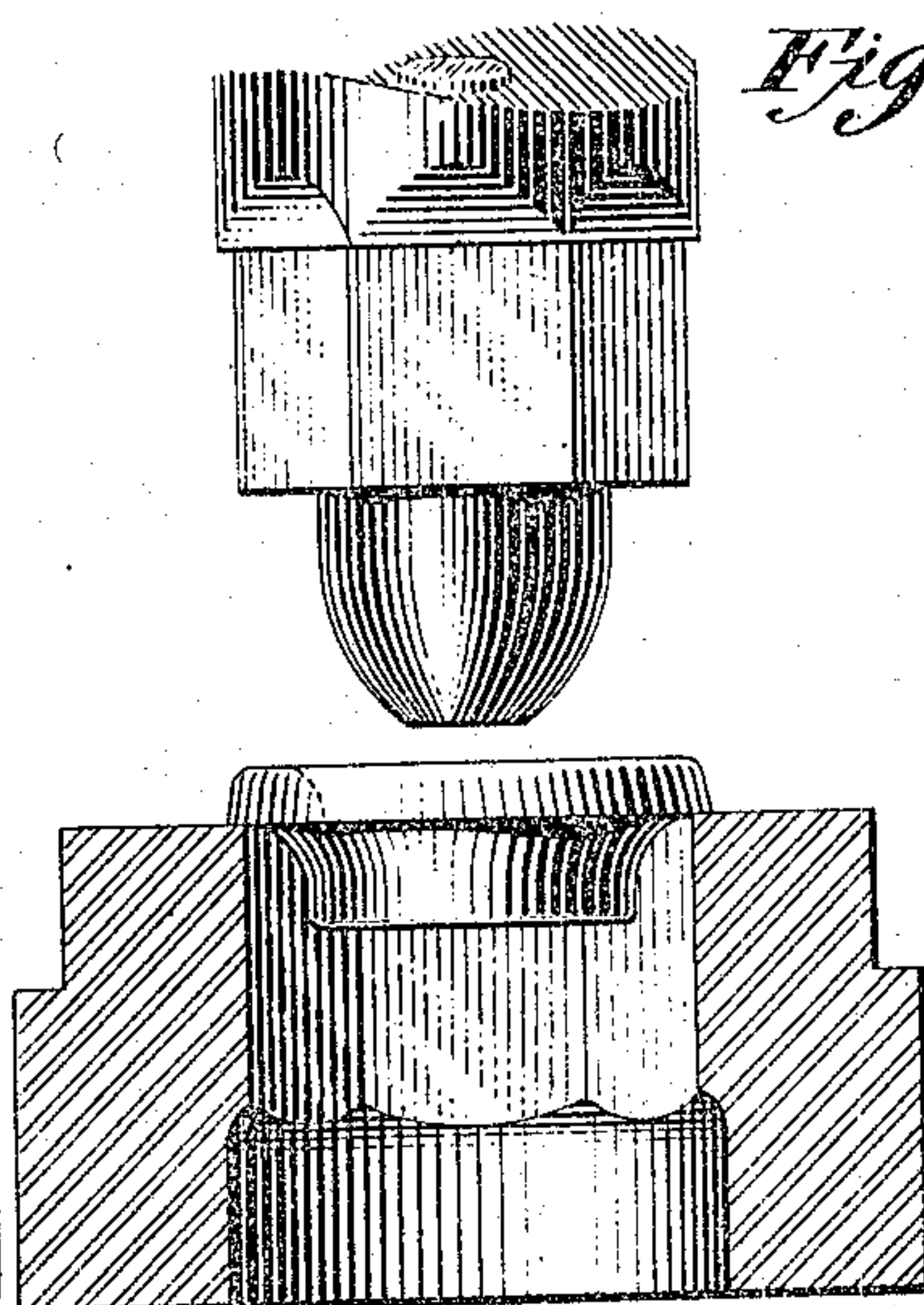


Fig. 7.

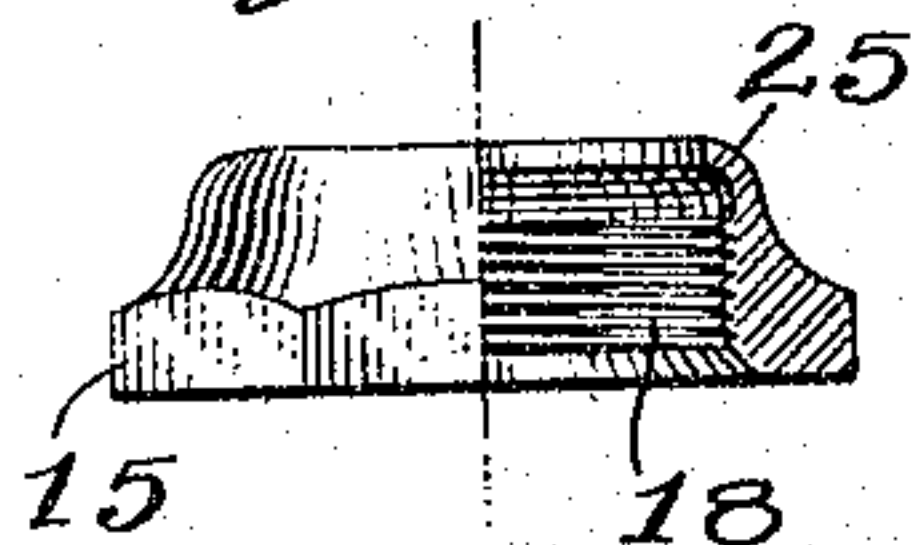


Fig. 6.

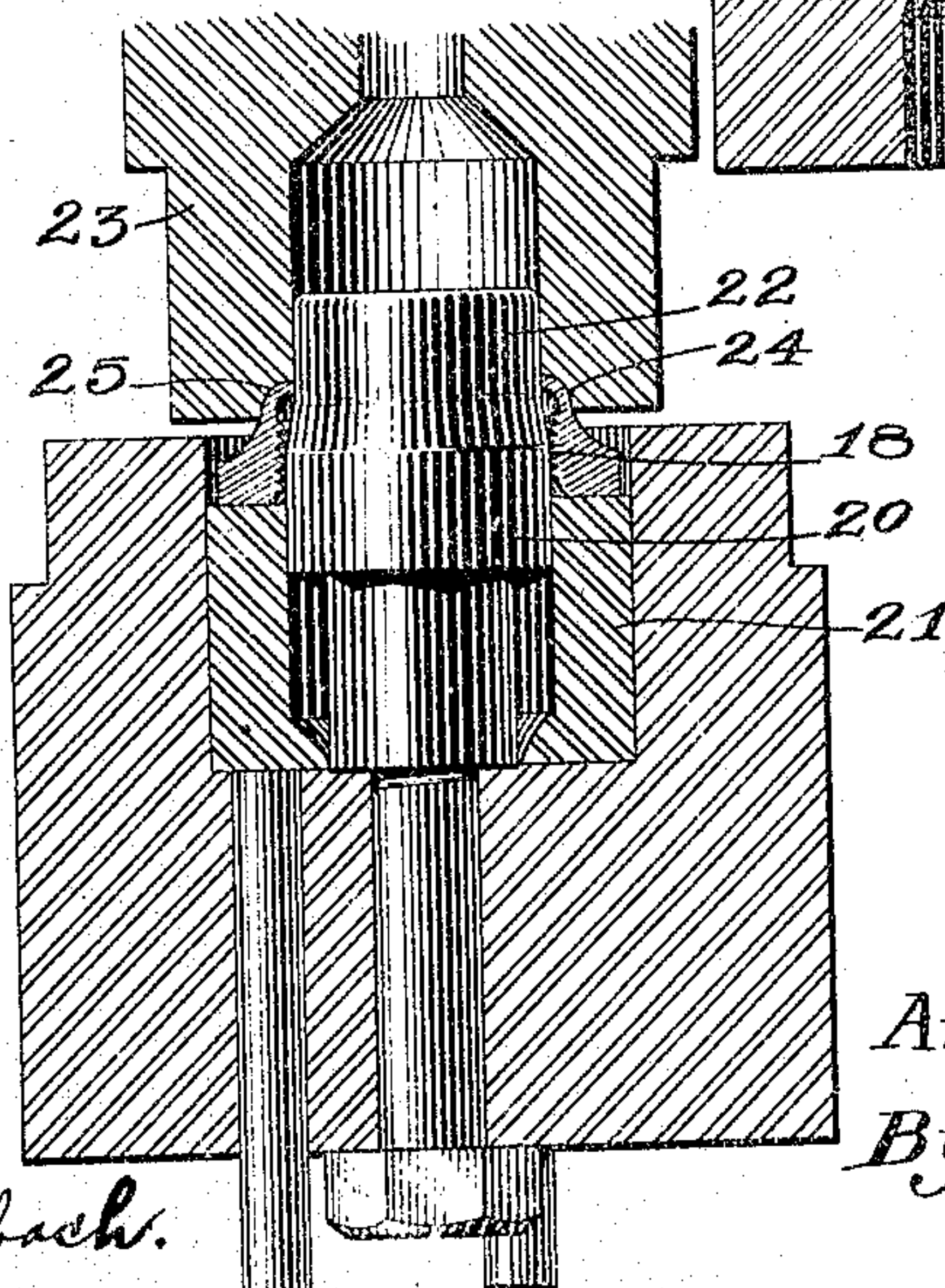
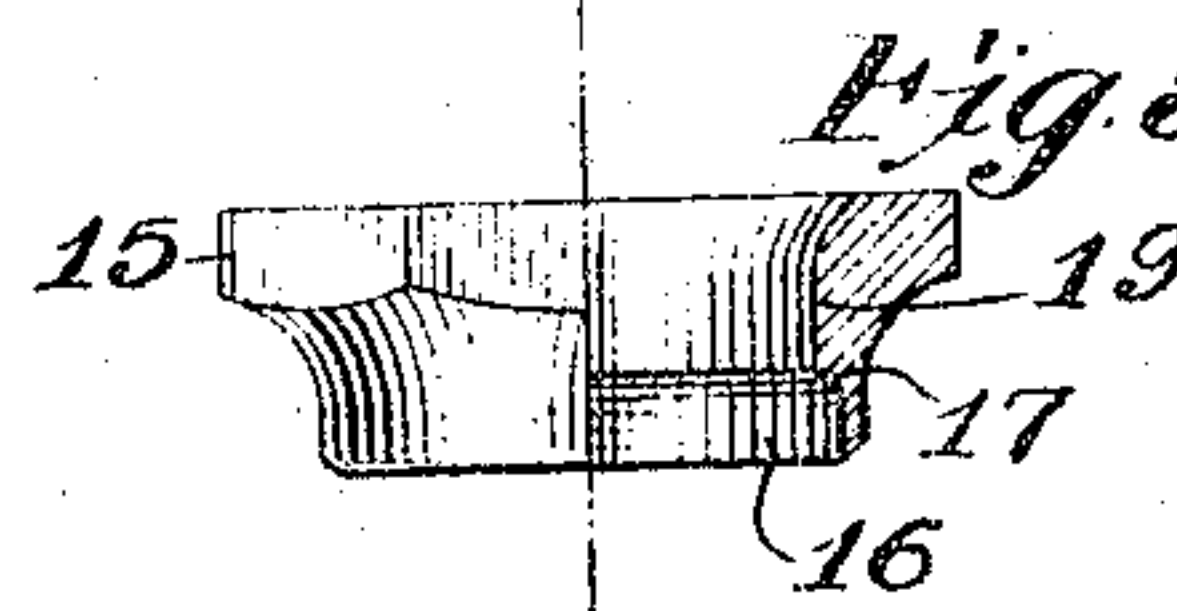


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING SCREW-NUTS.

No. 900,341.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed January 14, 1903. Serial No. 138,950.

To all whom it may concern:

Be it known that I, ANDERS G. ANDERSON, a citizen of the United States residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Methods of Making Screw-Nuts, of which the following is a specification.

This invention relates to that class of nuts known as cap-nut, which have an inwardly turned lip at the crown adapted to project over the screw thread and cover the joint between the nut and the screw threaded piece to which the nut is attached and it has for its objects to improve the quality, simplify the manufacture and reduce the cost of making nuts of this class from sheet metal by the process of upsetting the sheet metal to secure the requisite thickness to cut a screw thread and enable a wrench to be applied to the base of the nut.

In the accompanying drawings forming a part of this specification, Figure 1 represents a sheet metal blank from which my improved nut is made. Fig. 2 represents a pair of dies by which the first operation of stamping or shaping is performed. Fig. 3 represents the dies and illustrates the method of upsetting the blank. Fig. 4 shows the dies for trimming the base of the nut in hexagonal shape. Fig. 5 represents partly in sectional view a nut blank ready to receive a screw thread. Fig. 6 represents the dies for turning the interior flange, and Fig. 7 represents partly in sectional view the completed nut.

I first cut a flat annular blank from sheet metal, such as is shown at 1, Fig. 1, having a central hole 2, less in diameter than the interior diameter of the completed nut. The annular blank 1, is then stamped between a pair of dies 3 and 4 into a tapering or funnel-shaped piece shown in sectional view at 5, Fig. 2. The diameter of the die 3 is the same as the interior diameter of the completed nut, and it has its lower end rounded at 6, and provided with a concentric spur or projection 7, fitting the central hole 2 in the blank and serving to center the blank 2 with the die 3. The rounded end 6 during the downward movement of the die 3 expands the center of the blank and shapes it to the tapering interior of the die 4, and reducing the thickness of the metal at the smaller end of the blank which forms the crown of the

nut, as shown at 8, Fig. 2. The blank, 55 shaped as at 5, Fig. 2, is then placed upon the spindle 9, held concentrically with a circular recess 10, in the die 11, with the smaller or crown end of the die uppermost and compressed beneath a hollow descending die 12, 60 provided with a lip 13, which slides over the outer surface of the crown portion of the blank and stripping the metal downward, upsets the base 14 of the nut blank and shapes the interior to fit the cylindrical spindle 9. The recess 10 of the die 11 is provided with a movable bottom capable of being lifted as the die 12 is raised to remove the blank from the spindle 9. The base 14 is then trimmed in hexagonal or other desired shape 70 by suitable dies as represented in Fig. 4, and adapted to receive a wrench as shown at 15, Fig. 5. The thickness of the metal at the crown end of the blank is then further reduced by turning a portion of the interior as shown at 16, Fig. 5, forming a shoulder 17 as deep as the screw thread 18, Fig. 7, which is then cut on the interior cylindrical surface 19. The screw threaded blank is then applied to a spindle 20 with its base resting on 80 a movable support 21, which is capable of being raised to strip the blank off the spindle.

The blank held on the spindle 20 is centered by its screw thread 18, and the upper portion of the spindle is reduced in diameter as at 22, 85 to enable the edge of the blank to be turned inwardly by a descending hollow die 23, fitting the reduced section 22 of the spindle, having at its lower end a concentric channel 24, in which the flange 25 is shaped and 90 turned inwardly against the reduced section 22, thereby bringing the inner edge of the flange 25 beyond the inner edge of the screw thread 18, the amount of the projection beyond the screw thread being determined by 95 the difference in diameter between the cylindrical spindle 20 and its reduced section 22.

I do not herein claim broadly the formation of a screw nut from sheet metal by the upsetting of the metal to form a base as this 100 has been heretofore proposed. By my improved method I form a small central hole only in the circular blank and enlarge it to the interior diameter of the nut by expansion over the rounded end of a die 3, not only 105 saving in stock, but at the same time reducing the thickness of the metal at 8, to form the crown of the nut. I also upset the base

and secure an interior cylindrical surface by the compression of the blank around and against a cylindrical spindle by the reciprocation of a die, the pressure of which is applied to the outside of the blank, and with a movement from the crown toward the base, thus further reducing the metal at the crown and stripping it toward the base. I also turn the flange 25 by a pressure from the outside inwardly against the reduced section 22 of a centering spindle after the screw thread has been cut, thereby enabling the thread to be cut by a tap passing entirely through the nut and allowing a comparatively wide flange to be formed on the crown of the nut. Each of the operations illustrated in Figs. 2 and 3 can be accomplished by a single movement of the dies, whereas the shaping of the nut from a solid flat blank would require a progressive shaping of the metal by a series of two or more operations in place of each one required by my method.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The within described method of making a screw nut from a funnel shaped blank, consisting in upsetting the larger end of the funnel shaped blank by the pressure of a reciprocating hollow die which compresses the funnel shaped blank around a stationary cylindrical spindle, forming a screw thread in the blank, centering the blank by its screw thread on a spindle having a reduced section and turning over the end of the blank to form an interior flange, substantially as described.

2. The within described method of making a screw nut from a sheet metal blank, con-

sisting in stamping an annular plate, having a concentric hole whose diameter is less than the interior diameter of the nut, forcing said blank into a die having a funnel-shaped recess by a reciprocating die having a rounded end by which the central portion of the blank is expanded and its thickness reduced to form the crown of the nut, centering the funnel-shaped blank on a cylindrical spindle with the larger end of the blank supported and applying pressure to the outside of the blank by a reciprocating hollow die by which the metal is forced from the crown section into the base section of the blank and the blank is compressed around the cylindrical spindle, reducing the thickness of the crown section and forming an interior shoulder in the blank, cutting a screw thread in the base section of the blank and afterward turning over the crown section to form an interior flange, substantially as described.

3. The method of making a screw nut having an interior flange at its crown, consisting in first cutting a screw thread in a nut blank, supporting said blank by its base and centering the same by its screw thread in proper relation to a reciprocating die having a recess adapted to shape the flange and turning over a flange on the crown of the blank by the pressure of said die, whereby said flange is made concentric with said screw thread, substantially as described.

Dated this 9th day of January 1903.

ANDERS G. ANDERSON.

Witnesses:

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