

J. ARMSTRONG.
 NURLING TOOL.
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960,769.

Patented June 7, 1910.

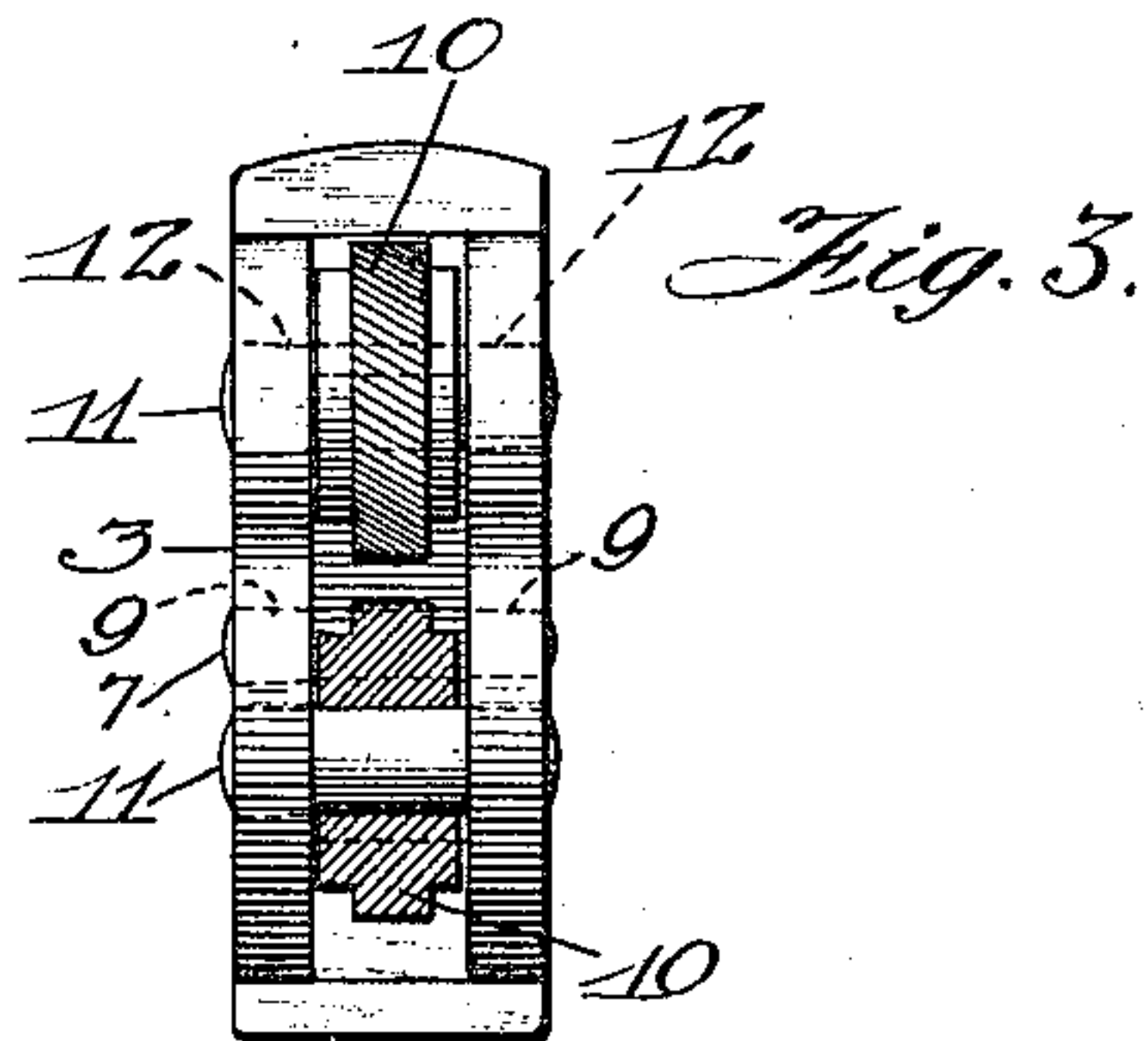
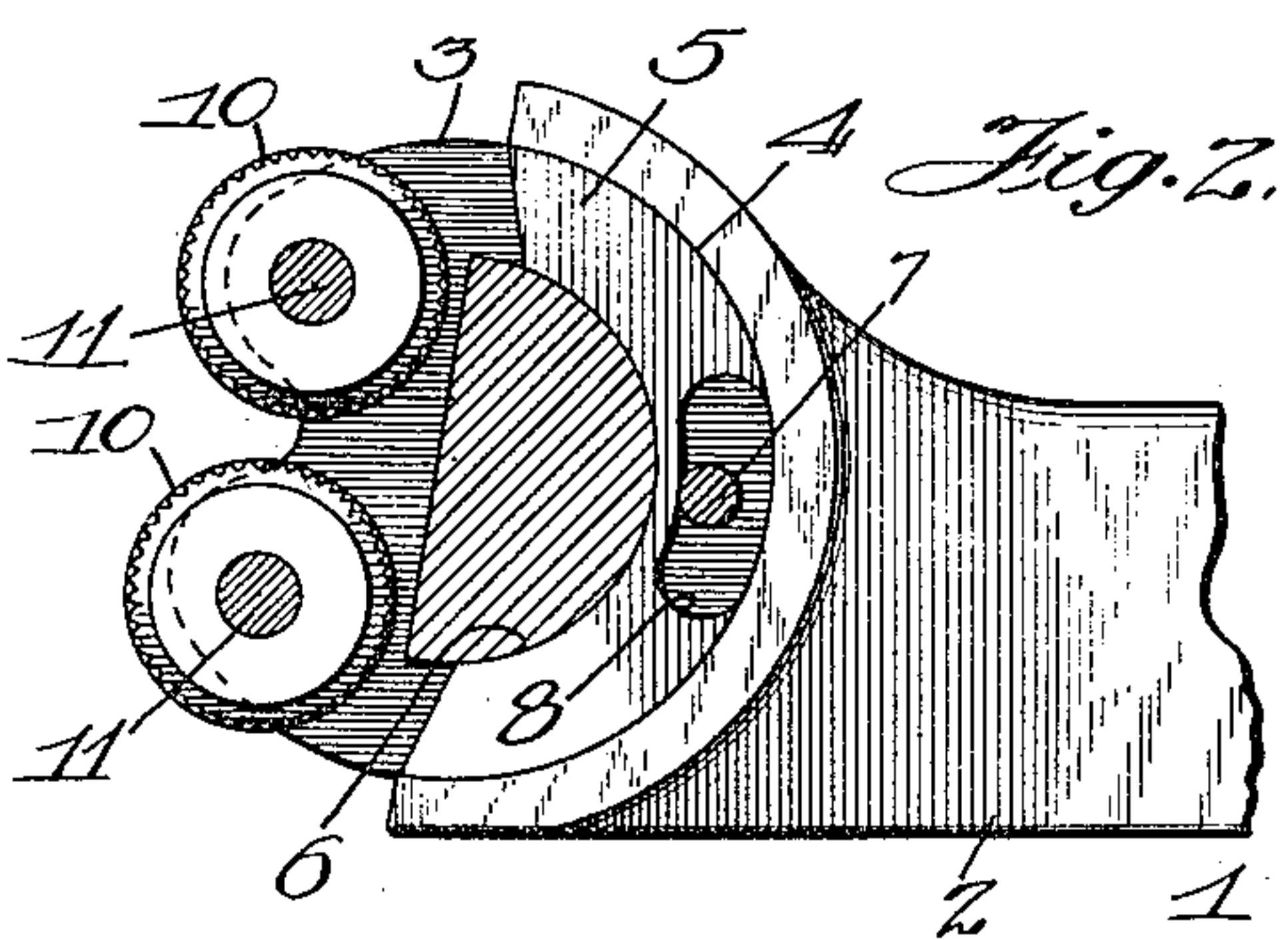
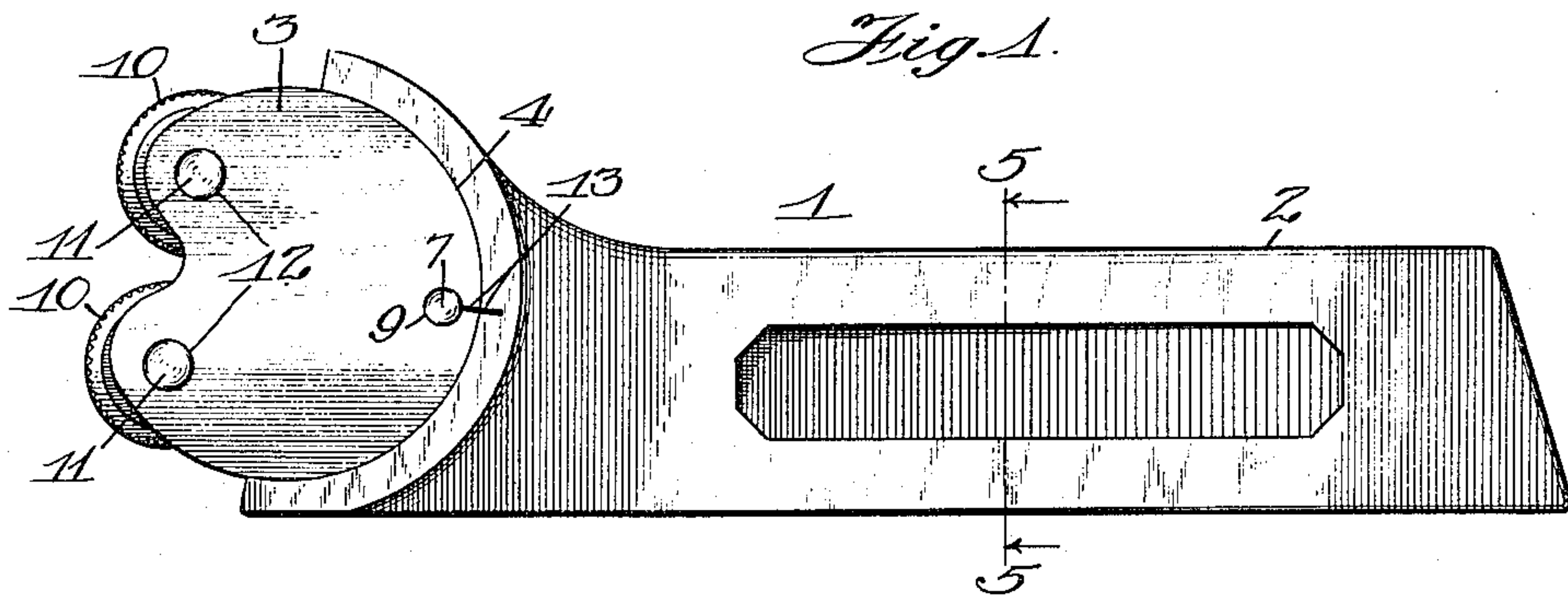


Fig. 4.

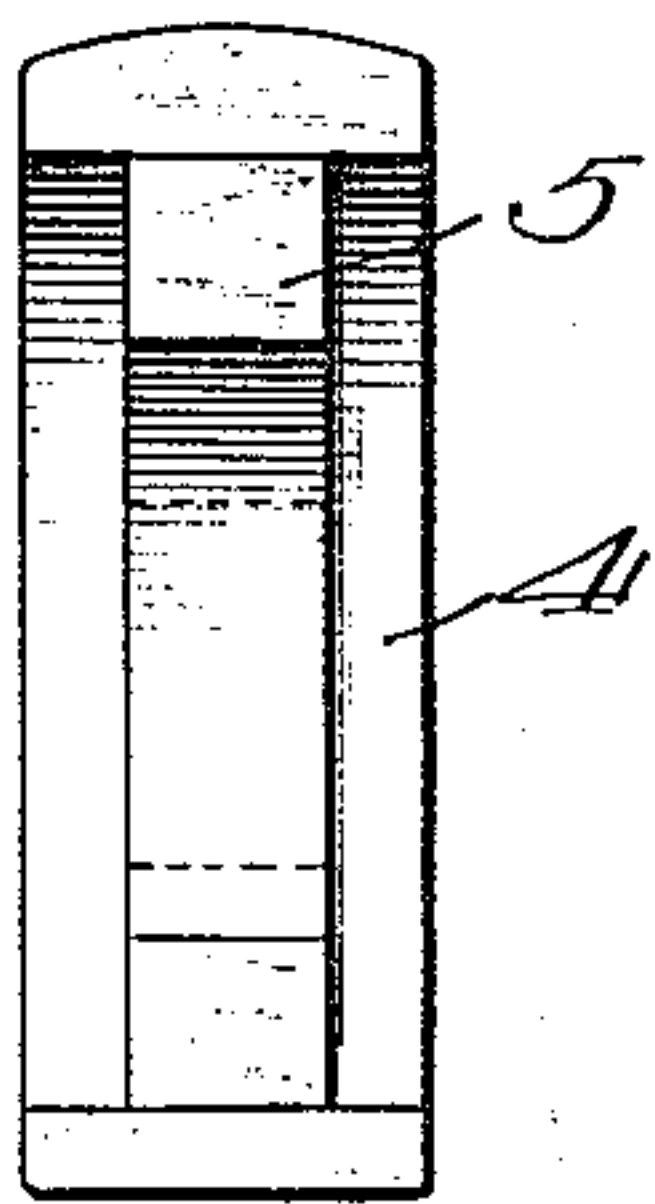
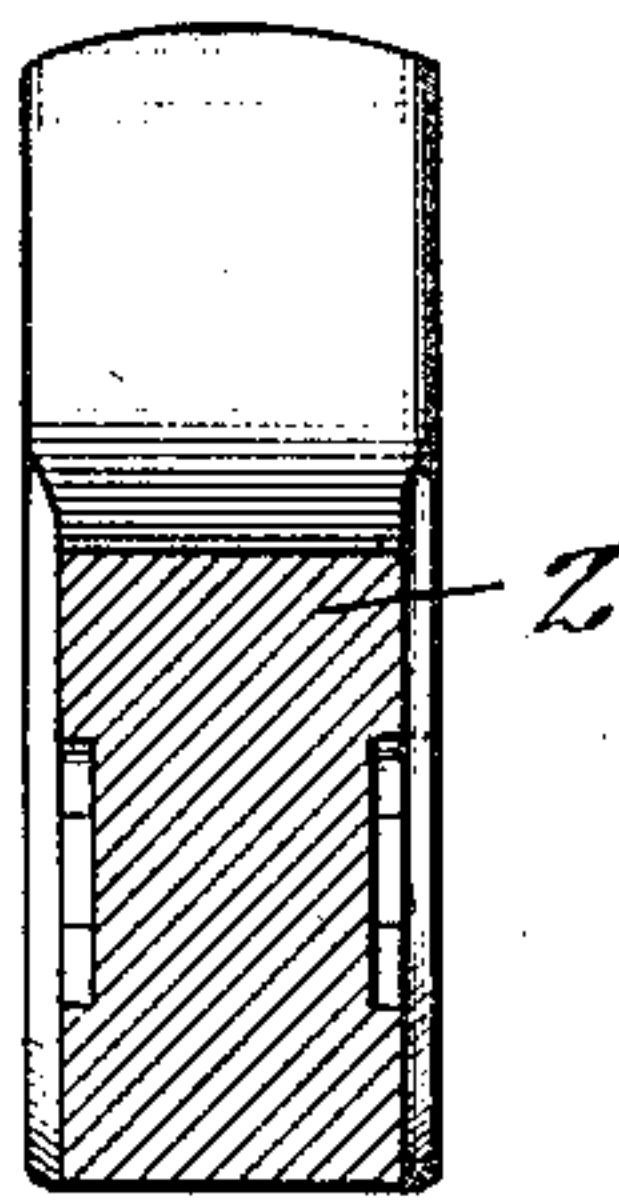


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES ARMSTRONG, OF MAYWOOD, ILLINOIS, ASSIGNOR TO THE ARMSTRONG BROTHERS TOOL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

NURLING-TOOL.

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To all whom it may concern:

Be it known that I, JAMES ARMSTRONG, a citizen of the United States, residing at Maywood, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Nurling-Tools, of which the following is a specification.

The object of this invention is to produce a self-centering nurling tool or other similar device which shall be simple in construction, strong, and inexpensive to manufacture.

In the accompanying drawings, Figure 1 is a side elevation of a nurling tool embodying the features of my invention. Fig. 2 is a side elevation of the forward end of said tool with one side of the rotatable die-carrying member sectioned away. Fig. 3 is a front end elevation with one of the dies in section. Fig. 4 is a front end view of the tool with the die-carrying member removed. Fig. 5 is a sectional view on dotted line 5 5 of Fig. 1.

The embodiment selected for illustration comprises a holder 1 consisting of the shank or securing portion 2 and means at the forward end of said shank for rotatably supporting a die-carrying head 3. In this instance said supporting means comprises a socket 4 having a curved web or rib 5 arranged centrally thereof. The die-carrying head 3 is generally circular in outline to fit within the bearing socket 4 and has a groove 6 therein to receive the curved rib 5, the bottom wall of said groove and the forward edge of said rib sliding in contact with each other and being curved on the arc of a circle. The head 3 is secured to the body of the tool by means of a pin 7 extending through said head and through a curved elongated opening 8 in the rib 5, which opening is concentric with the pivotal center of the head 3. The oscillatory movements of the die-carrying head 3 are limited by the engagement of said pin with the end walls of the elongated opening 8. For convenience in removing the head 3 the pin 7 is preferably made readily removable, said pin, as herein shown, having a driving taper fit within the openings 9 of the head 3; those portions of the pin which lie within said openings are tapered, the central portion of the pin, namely that which lies within the elongated opening 8, being preferably cylin-

drical. When it is desirable to remove the head 3 the pin 7 may be readily driven from its place.

The die-carrying head 3 is herein illustrated as equipped with nurling dies or "knurls" 10, although it will be understood that other tools may be substituted therefor. The dies 10 are rotatably supported within the recessed forward end of the head by pins 11 passing through openings 12 in said head. For ease in replacing worn dies the pins 11 preferably have a driving taper fit within the openings 12, as in the case of the pin 7; the portions of the pins 11 which lie within the openings 12 being tapered and those portions which constitute pivots or shafts for the dies 10 being cylindrical.

As an aid to the workman in properly securing the tool in the lathe or other machine, gage marks 13 may be formed upon the head 3 and its socket.

In order to lighten the tool, the shank 2 is preferably made somewhat thinner or more slender than the socket head, and the sides of said shank may be recessed to give the shank a cross-sectional I-form, thus considerably reducing its weight without materially impairing its strength.

In use, the shank of the tool is secured in the tool post of the lathe or other machine, and the tool placed in operative position with the dies 10 pressed against the work. As the work is rotated, its surface is knurled by the action of the dies 10. The head 3, being rotatably mounted, is free to center or adjust itself to the work. The bearing socket 4 affords a large and firm bearing for the head. The long rib and groove connection between the head 3 and the body of the device effectively withstands any side strains imposed on the tool in practice. The socket 4 with its curved central rib 5 may be conveniently and accurately formed by milling.

I claim as my invention:

1. A nurling or similar tool comprising a socket having a curved central rib, a die-carrying head mounted in said socket and grooved to receive said rib, said rib having an elongated opening therein, and a pin fixed in said head and extending into said elongated opening.

2. A nurling or similar tool comprising two parts, one of said parts being a member

having a socket therein, and the other part being a die-carrying head fitting rotatably in said socket; and means for securing said parts together comprising a pin fixed in one
 5 part and extending through an elongated opening in the other part, said elongated opening permitting limited rotation of said head in said socket.

3. A nurling or similar tool comprising a
 10 supporting shank having one end curved on the arc of a circle; a die-carrying head having one side curved on the arc of a circle to fit against the curved end of said supporting shank, one of said parts having a semi-circular
 15 groove therein and the other part having a semi-circular rib having an elongated opening therein; and a pin fixed in the part

having the groove and extending into said elongated opening.

4. A nurling or similar tool comprising a
 20 socket, a central rib in said socket, the forward edge of said rib being curved on the arc of a circle concentric with the circle upon which said socket is formed, said rib having an elongated opening therein, a die-carrying
 25 head rotatably fitting in said socket and having a curved surface contacting the forward edge of said rib, and a pin fixed in said head and extending into said elongated opening.

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Witnesses:

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