

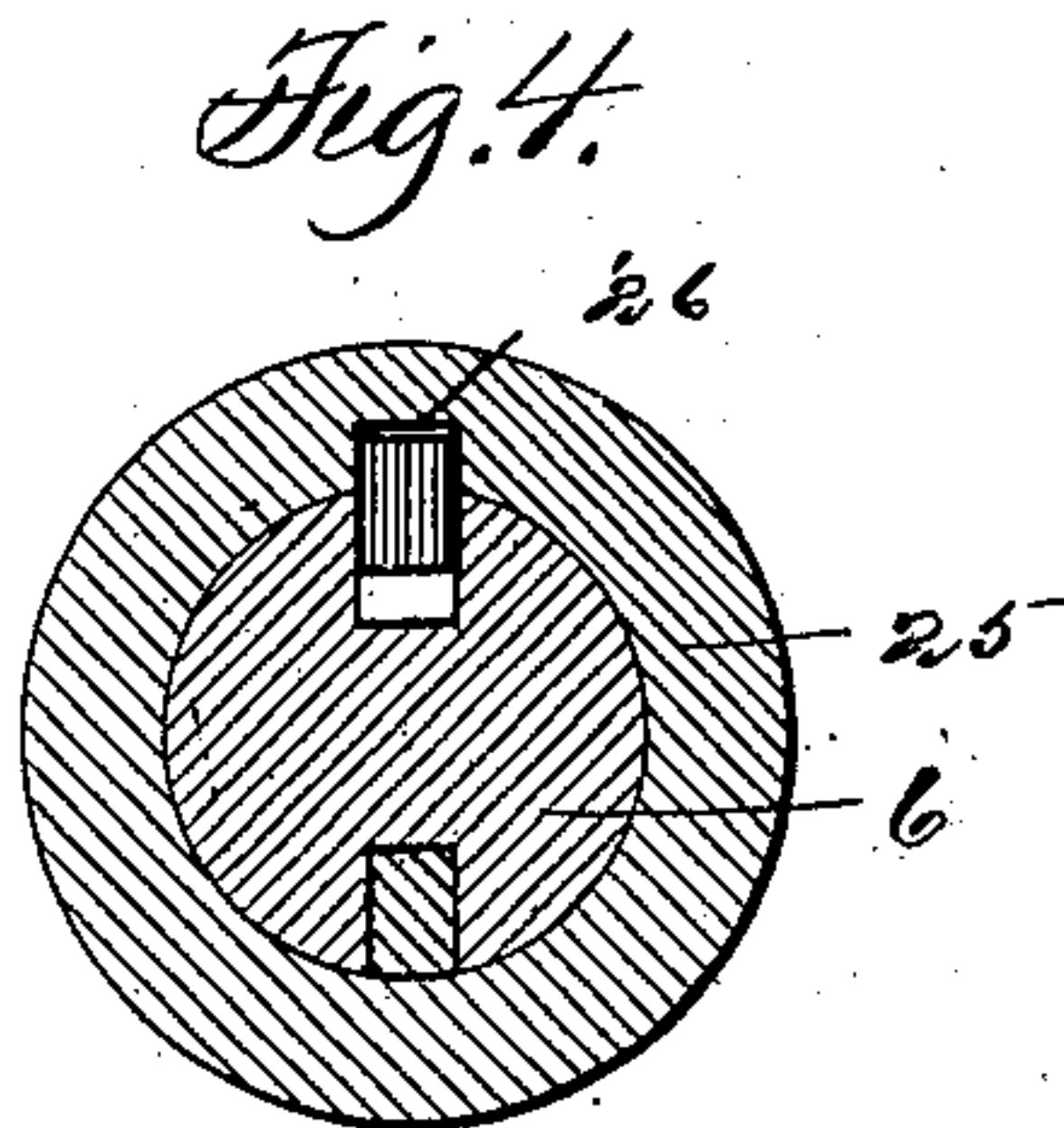
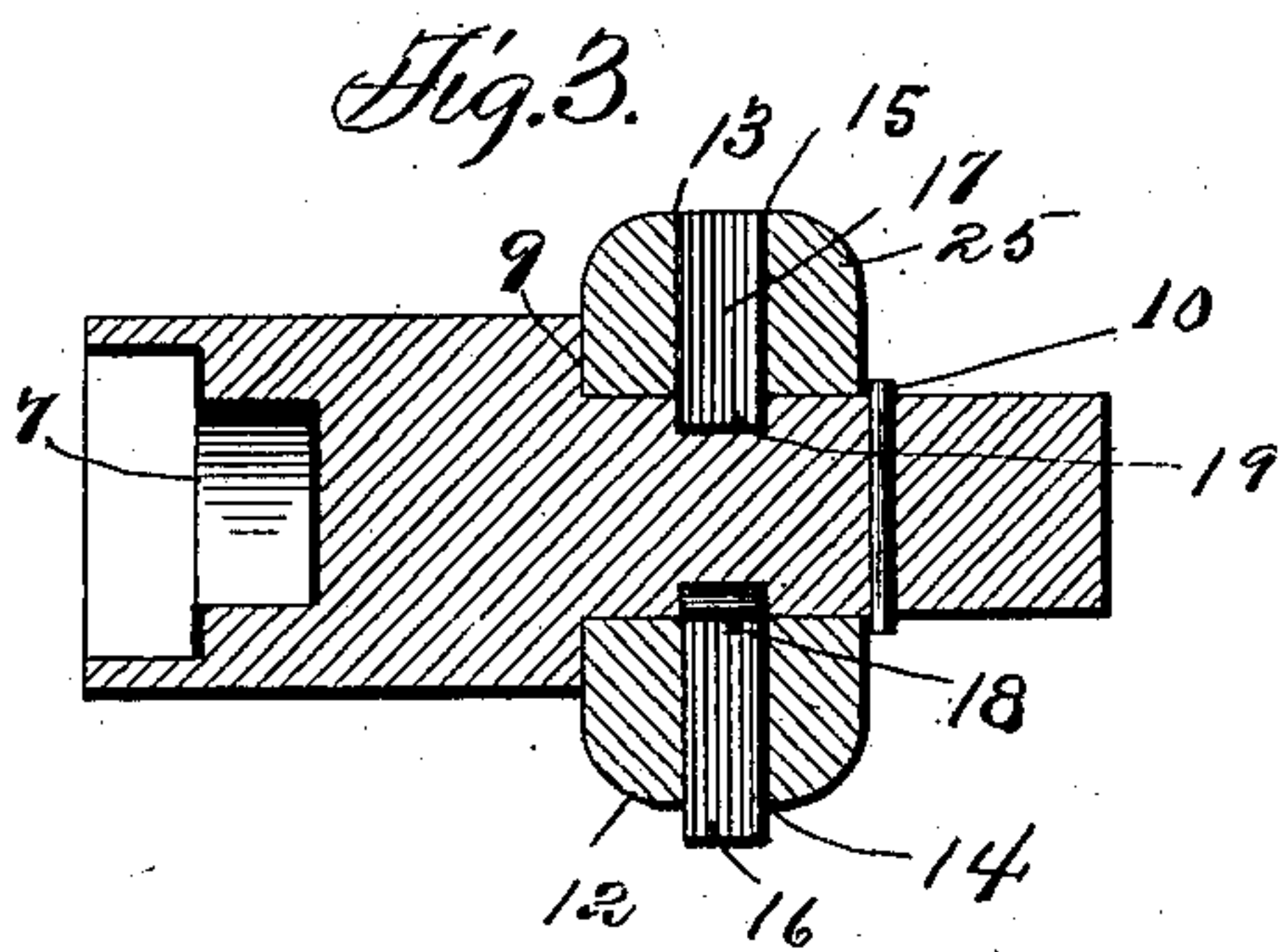
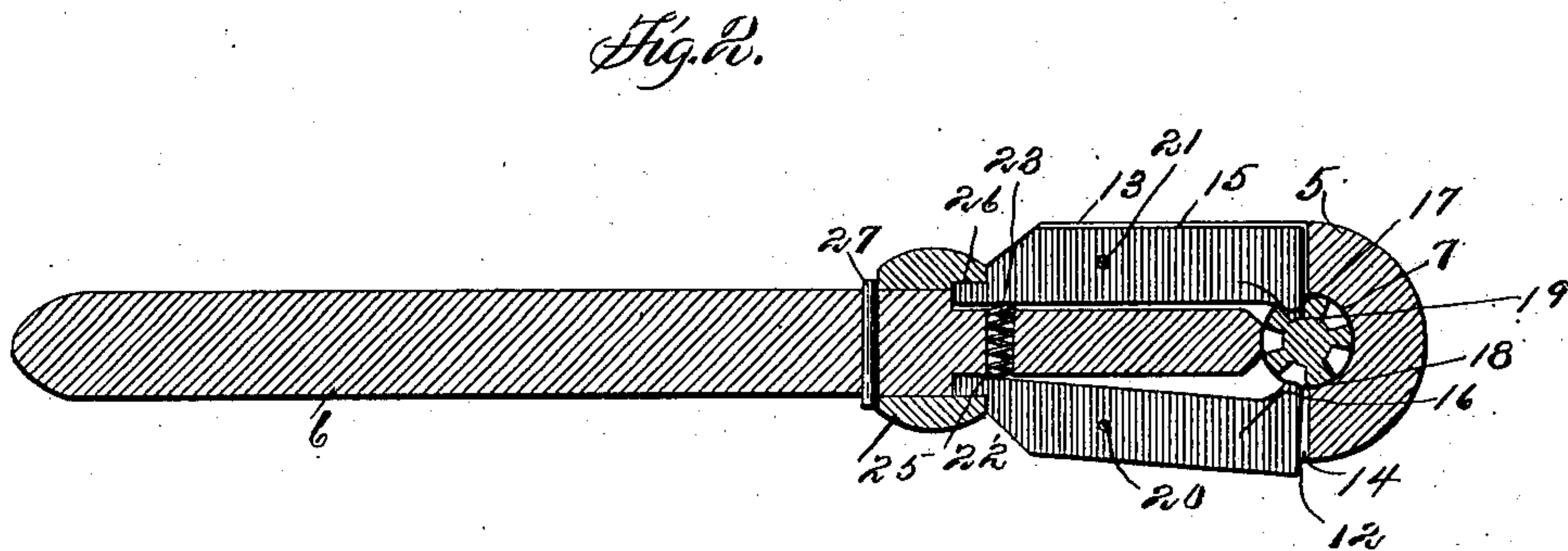
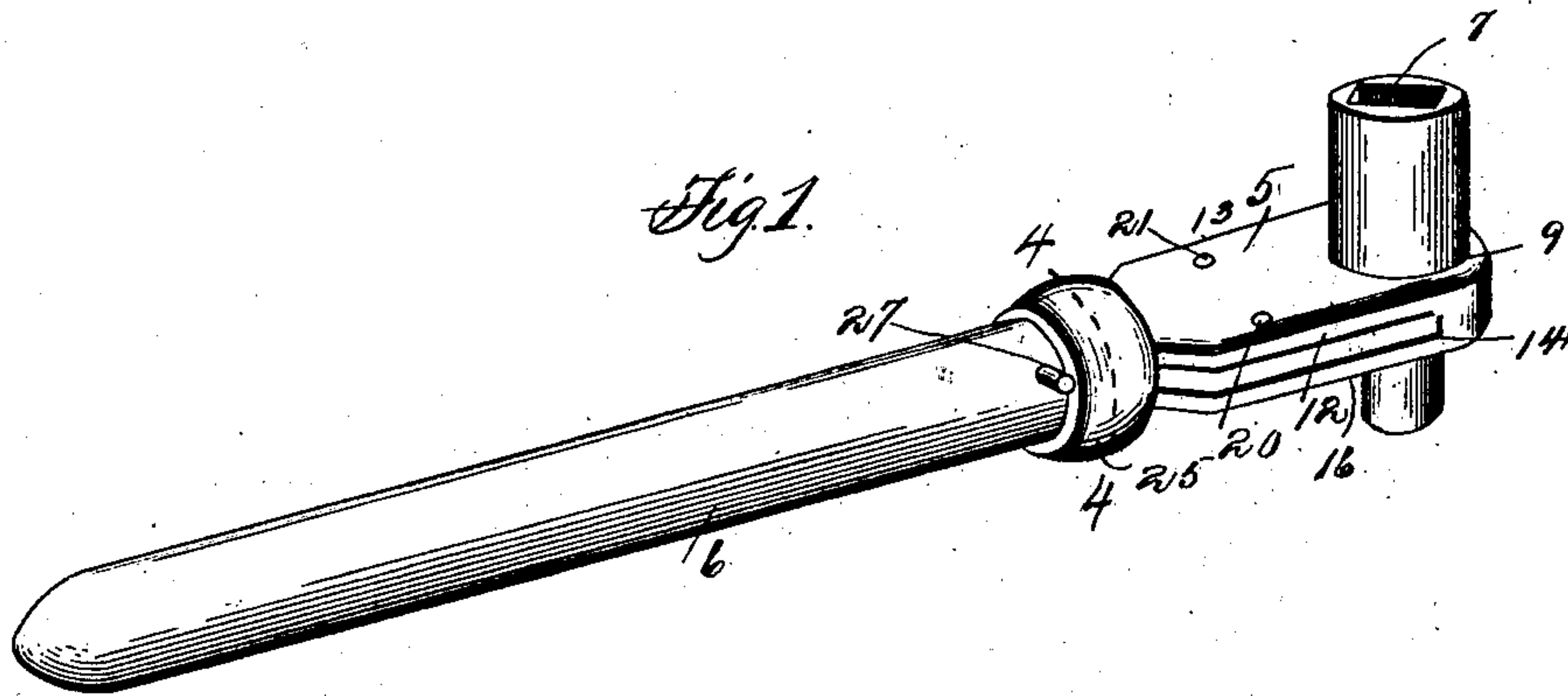
No. 753,703.

PATENTED MAR. 1, 1904.

F. D. HARRIS.  
WRENCH.

APPLICATION FILED JAN. 4, 1901.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANK D. HARRIS, OF KEO, ARKANSAS.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 753,703, dated March 1, 1904.

Application filed January 4, 1901. Serial No. 42,042. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK D. HARRIS, a citizen of the United States, residing at Keo, in the county of Lonoke, State of Arkansas, have  
 5 invented certain new and useful Improvements in Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable  
 10 others skilled in the art to which it appertains to make and use the same.

This invention relates to ratchet-wrenches; and it has for its object to provide an article of manufacture which will permit of the parts being cast and then assembled, the finishing of the parts prior to assembling them  
 15 being reduced to a minimum because of the specific forms and arrangement of the parts.

In the drawings forming a portion of this specification and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a perspective view showing the complete wrench. Fig. 2 is a section taken longitudinally of the wrench in a plane parallel to and at one side of the pawls. Fig. 3 is a  
 25 transverse section taken through the head of the wrench. Fig. 4 is a section on line 4 4 of Fig. 1 through the pawl-shifting ring.

Referring now to the drawings, the present wrench consists of a head 5 and a handle 6, extending longitudinally from one end thereof, and which head and handle are preferably cast integral, the handle being turned to shape in its entirety or only at the extreme portion, as preferred.

35 The head 5 is of flattened shape, the end portions thereof having their corners rounded off, as shown. Formed through the head from one flat face to the other thereof is an annular opening 7, and in this opening is disposed  
 40 a ratchet-drum, the toothed portion thereof lying within the inclosure of the head. In one end of this drum which projects from the head there is formed a cross-sectionally angular seat or recess adapted to receive a nut, and in the rear of this recessed end there is  
 45 formed an annular flange 9, which bears against the head and prevents displacement of the ratchet-drum in one direction. On the opposite end of the drum, projecting from the  
 50 opposite face of the head, there is engaged a

retaining-pin 10, and this second end of the drum may also have an angular recess to receive a nut of a different size.

In the side edges 12 and 13 of the head 5 there are formed longitudinally-extending  
 55 slots 14 and 15, which open into the opening 7, and in these two slots there are disposed pawls 16 and 17, having engaging teeth 18 and 19, disposed for rocking movement on pivot-pins 20 and 21, passed therethrough and  
 60 through the material of the head to engage and disengage these teeth with respect to the ratchet-drum. A perforation 22 is formed transversely through the head and opening  
 65 into the slots thereof near their rear ends, and in this perforation there is disposed a helical spring 23, which bears at its ends against the inner faces of the rear ends of the pawls and acts to hold the teeth of the pawls yieldably in  
 70 engagement with the ratchet-drum.

The handle 6 is formed round, as shown, and in order to move the pawls alternately from operative relation to the ratchet-drum and hold them in such positions a ring 25 is disposed upon the handle adjacent to the head  
 75 and encircling the rear ends of the pawls, it being understood that the longitudinal slots of the head are extending a short distance into the handle to permit this action of the ring. In the inner face of the ring there is formed  
 80 a recess 26, and when the ring is properly adjusted by rotation to receive the rear end of a pawl in this recess the forward end or toothed end of the pawl is permitted to move under the influence of the spring to engage its tooth  
 85 with the ratchet. As the teeth of the pawls are oppositely disposed, they of course prevent rotation of the ratchet-drum in opposite directions, and by adjusting the ring to hold one pawl inoperative the drum is permitted  
 90 to rotate in one direction and held from rotation in the opposite direction by reason of the engagement of the other pawl with the drum. Thus by shifting the ring the drum may be urged either in one direction or the other by  
 95 oscillation of the handle. To prevent rearward displacement of the ring 25 from operative relation to the pawls, a pin 27 is engaged through the handle in position to bear against the rear edge of the ring.



It will of course be understood that in practice any suitable materials and proportions may be used for the various parts, and it will be seen that the head and handle may be cast  
5 with the groove and opening formed therein and may be finished with simple and cheap machine treatment, giving an extremely cheap, simple, and efficient implement.

What is claimed is—

10 As an article of manufacture, a wrench consisting of a head and a handle tapered away from the head and formed integral therewith, the head having a transverse perforation there-  
15 intersecting the perforation and extending into the opposite faces of the handle adjacent to the head, a drum having a reduced terminal stem having ratched recesses therein, said drum and stem being cast integral and the  
20 drum being arranged with the recessed portion of its stem in a perforation, a pin removably engaged with the stem at the opposite side of the head from the drum, pawls pivoted in the slots of the head in position to engage

the ratchet-recesses of the stem and having 25 their opposite ends arranged in the slots of the handle, said head having a second perforation formed transversely therethrough, a spring disposed in the second perforation and resting with its ends against the pawls in the 30 rear of the pivots of the latter, a ring slidably engaged over the handle and lying against the head, and a pin removably engaged transversely through the handle in the rear of the ring, said ring having an interior recess dis- 35 posed to receive the rear ends of the pawls interchangeably, each of said pawls being adapted, when its rear end is engaged with said recesses, to engage its opposite end with the ratchet-recesses of the head. 40

In testimony whereof I hereunto sign my name, in the presence of two subscribing witnesses, on the 26th day of November, 1900.

FRANK D. HARRIS.

Witnesses:

M. P. SMITH,  
CHAS. BRANDT, Sr.