

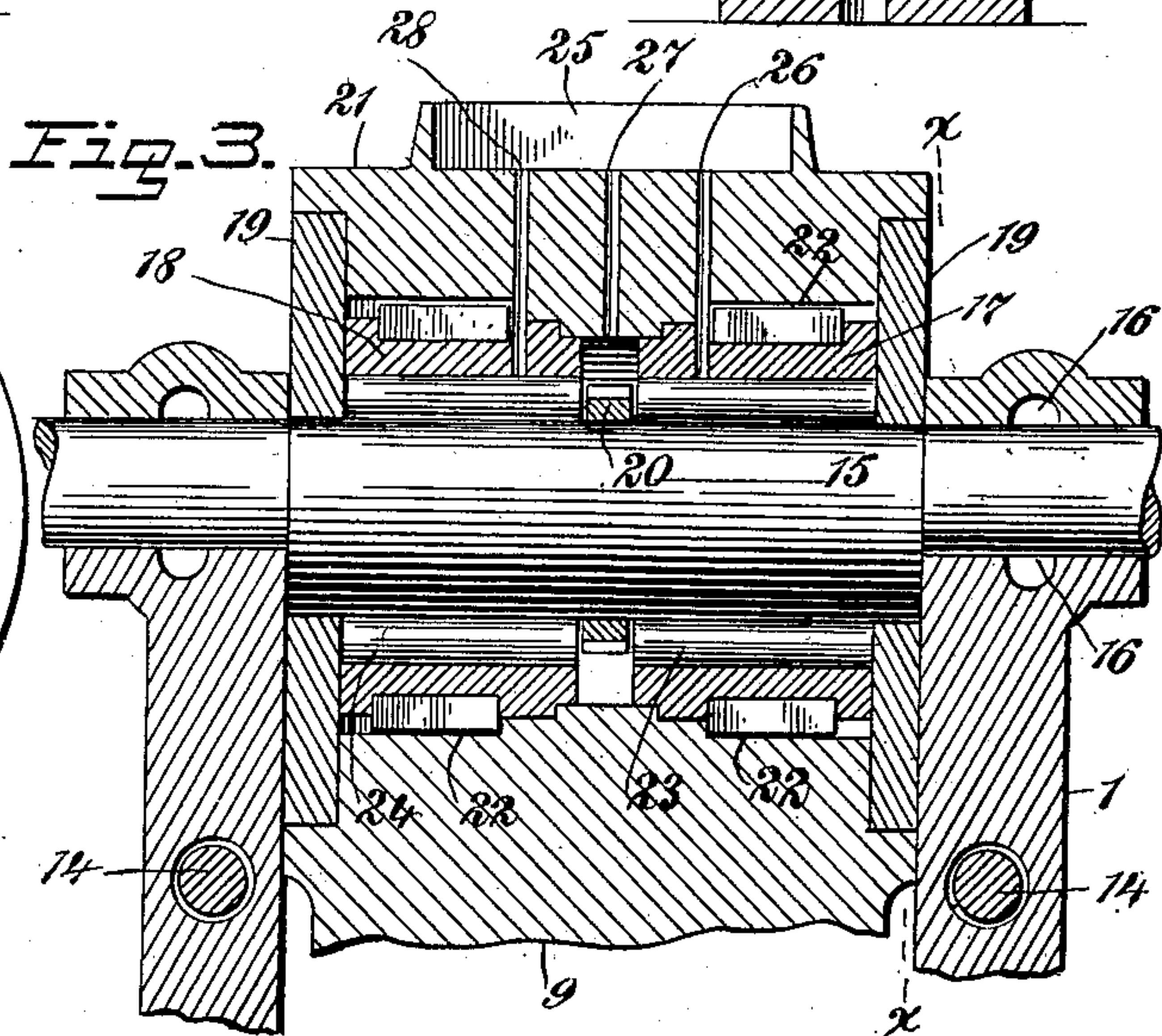
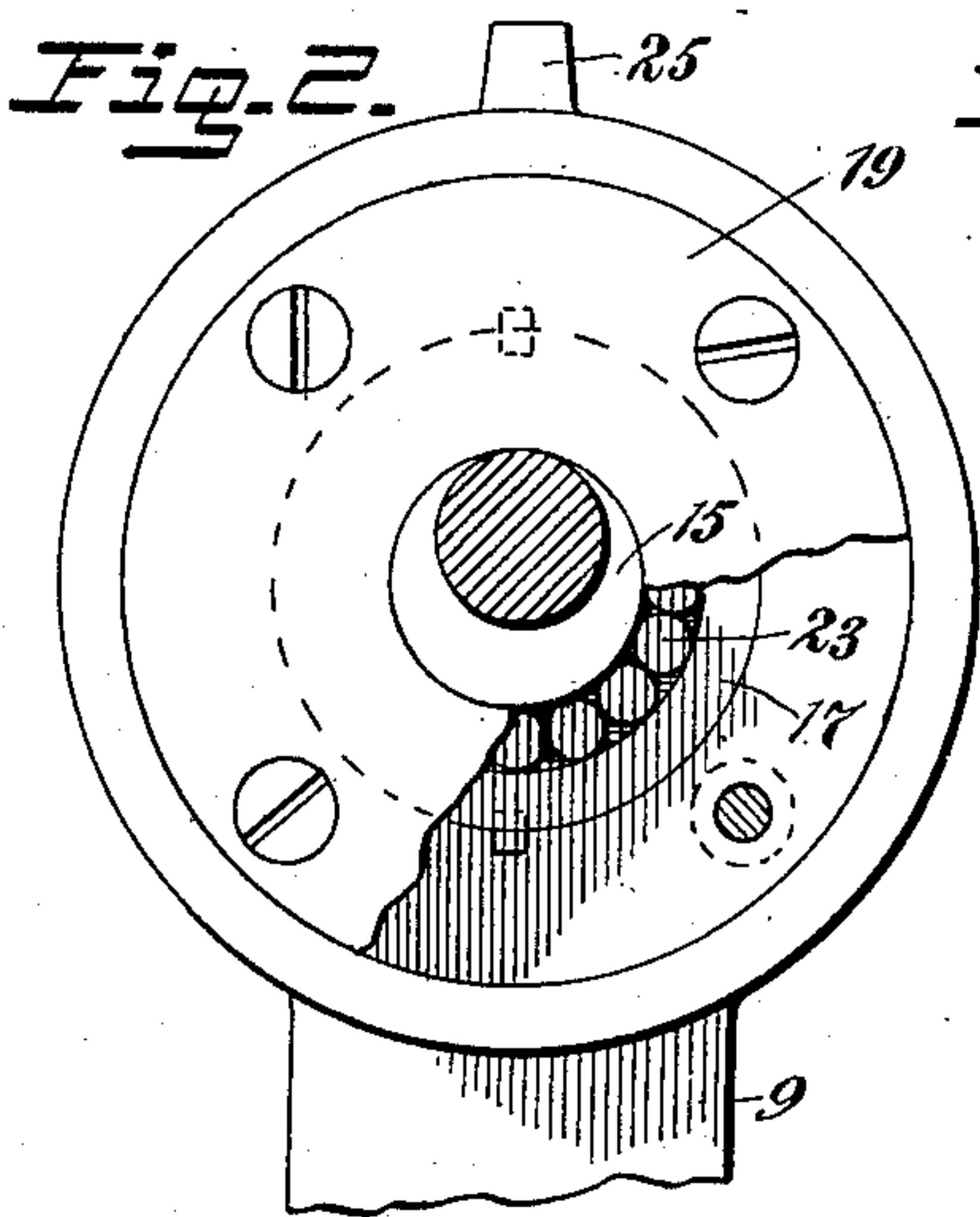
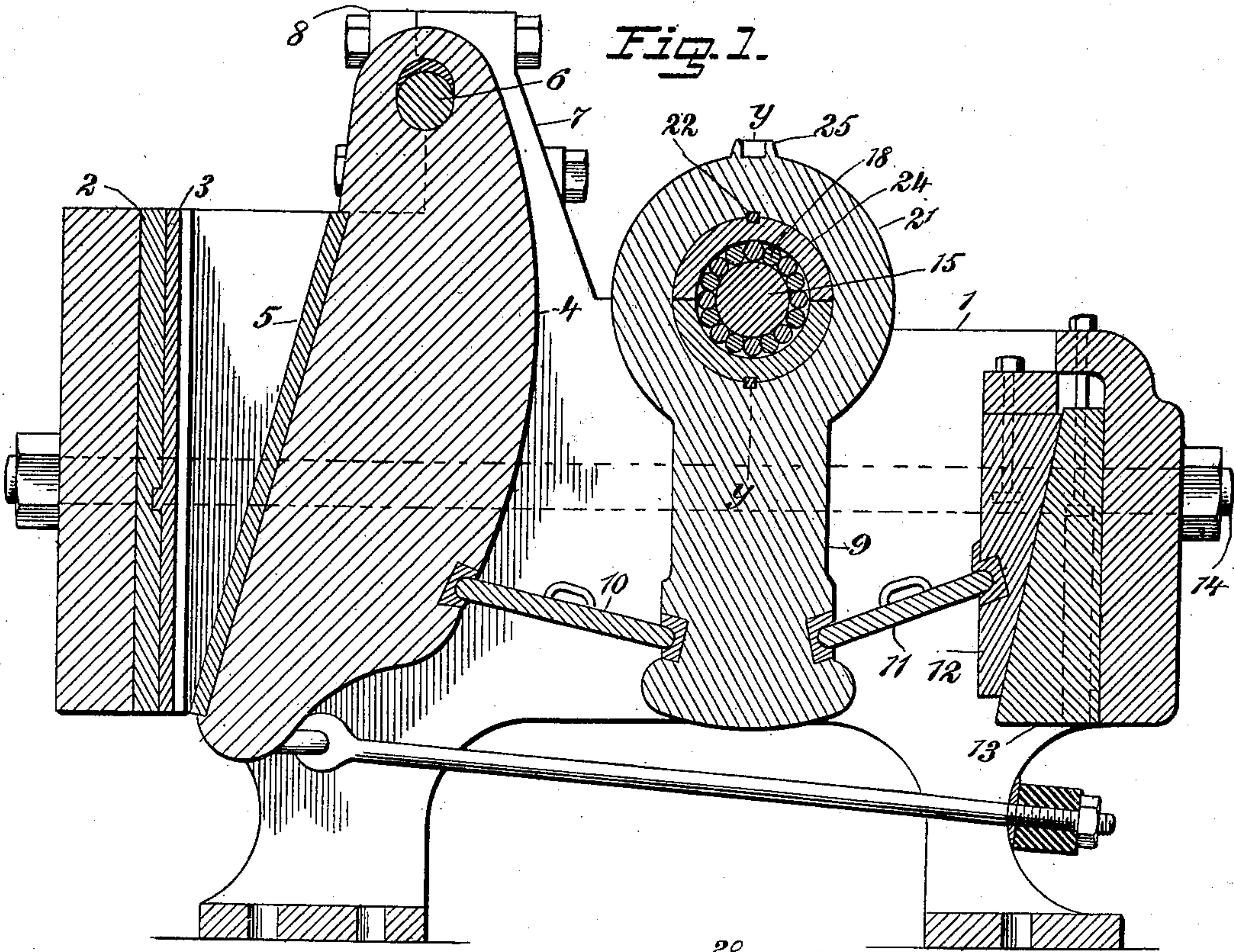
No. 734,332.

PATENTED JULY 21, 1903.

T. E. HURLEY.
CRUSHER.

APPLICATION FILED JAN. 14, 1902.

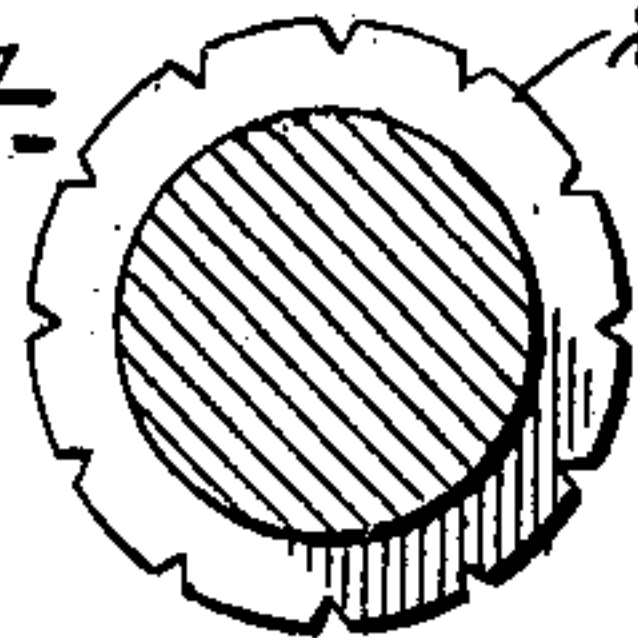
NO MODEL.



WITNESSES:

James F. Duhamel
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Fig. 4.



INVENTOR

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TIMOTHY EDWARD HURLEY, OF BUTTE, MONTANA.

CRUSHER.

SPECIFICATION forming part of Letters Patent No. 734,332, dated July 21, 1903.

Application filed January 14, 1902. Serial No. 89,680. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY EDWARD HURLEY, a citizen of the United States, and a resident of Butte, in the county of Silverbow and State of Montana, have invented a new and Improved Crusher, of which the following is a full, clear, and exact description.

This invention relates to improvements in machines for crushing rock and the like; and the object is to provide a crusher with its pitman-bearings of novel construction so arranged that friction will be reduced to a minimum. Other novel features will appear in the general description.

I will describe a crusher embodying my invention and then point out the novel features in the appended claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of a crusher embodying my invention. Fig. 2 is a section on the line *xx* of Fig. 3 with a portion of an end plate of the pitman-head broken away. Fig. 3 is a section on the line *yy* of Fig. 1, and Fig. 4 shows an oil carrier or distributor employed.

Referring to the drawings, 1 designates the frame of the machine, in the forward portion of which is a fixed jaw-back 2 and a fixed jaw-plate 3, these parts being of the usual construction. The swinging jaw 4 has on its front face the usual swing jaw-plate 5, and this jaw 4 is mounted on a shaft 6, having bearings in uprights 7, formed integrally with the sides of the frame, and in plates 8, bolted to said uprights 7. It will be noted by the dotted lines in Fig. 1 that the bearing portions in the uprights 7 at the top extend beyond a vertical line drawn through the center of the shaft. By this construction the main portion of the pressure or thrust will be borne by the said uprights, thus lessening the possibility of loosening the plates 8 or of breaking the same.

The pitman 9 has toggle connection 10 with the swinging jaw and toggle connection 11 with the toggle-block 12, engaged by the adjusting-wedge 13 in the usual manner. To take the strain on the ends of the frame, bolts 14 are passed through the ends and

tightened by tightening-nuts. This is a very essential feature of the frame construction, as it very materially strengthens the same and prevents movement. The pitman is operated by an eccentric 15, having bearings in the side portions of the frame 1, the walls of these bearings being provided with recesses 16 to receive oil and an oil-ring or waste saturated in oil.

Arranged within the head of the pitman are bushings 17 18, which at their outer ends engage against removable plates or rings 19, and attached to the eccentric between the inner ends of the bushings is a collar 20, the purpose of which will be hereinafter described. This collar, it will be noted in Fig. 4, is provided with notches in its periphery. The bushings 17 and 18 may be each made in sections, if desired, and they are held from rotation relatively to the head 21 of the pitman by means of feathers 22. Placed between the bushings and the eccentric are the friction-rollers 23 24, which at their outer ends engage against the plates or rings 19, and they are prevented from movement toward each other by means of the collar 20.

On the upper side of the head 21 is an oil-cup 25, and ducts 26, 27, and 28 lead from this oil-cup through the head, the ducts 26 and 28 extending, respectively, through the bushings 17 and 18, while the center duct 27 discharges into the space between the inner ends of the bushings and over the collar 20. When the machine is in operation, the oil will flow through the ducts 26 and 28, thoroughly lubricating the rollers, and the oil passing through the duct 27 will fall into the chamber between the bushings, and the oil in the chamber will be carried up and around and thoroughly distributed by means of the collar 20.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a crusher, a frame, a fixed jaw, a swinging jaw, an eccentric-shaft having bearings in said frame, a pitman operated by the eccentric-shaft and connected with the swinging jaw, bushings arranged in the pitman-head and surrounding the eccentric-shaft, removable plates on the sides of the head and engaging the outer ends of the bushings, the in-

ner ends of said bushings being spaced apart,
rollers arranged between the bushings and
the eccentric-shaft and spaced apart at their
inner ends, the outer ends of said rollers en-
5 gaging the said removable plates, a collar
rigidly secured to the shaft at the space be-
tween the bushings and arranged between
the inner ends of the rollers to prevent end
movement of said rollers, the said collar hav-
10 ing peripheral notches, an oil-cup on the up-
per side of said head, a central duct leading
from said oil-cup to the space between the in-

ner ends of the bushings, and ducts at oppo-
site sides of the central duct and extending
through the said bushings to the rollers, sub- 15
stantially as specified.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

TIMOTHY EDWARD HURLEY.

Witnesses:

H. A. REID,
ALEX. GRAY.