

# H.F. Read Water-Meter

Sheet 1 of 2 Sheets

N<sup>o</sup> 92883

Patented Jul. 20. 1869.

Fig. 1.

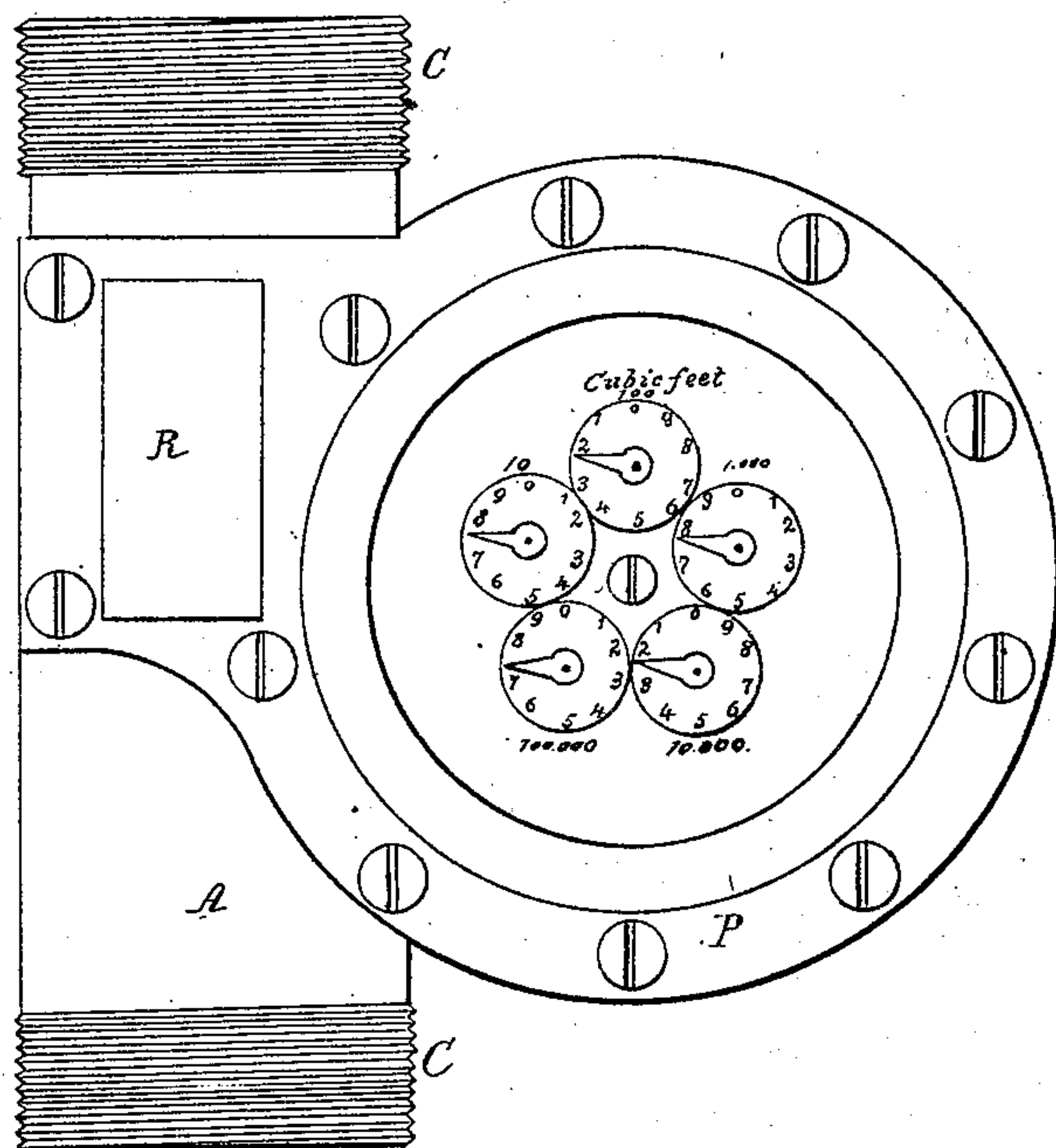


Fig. 5.

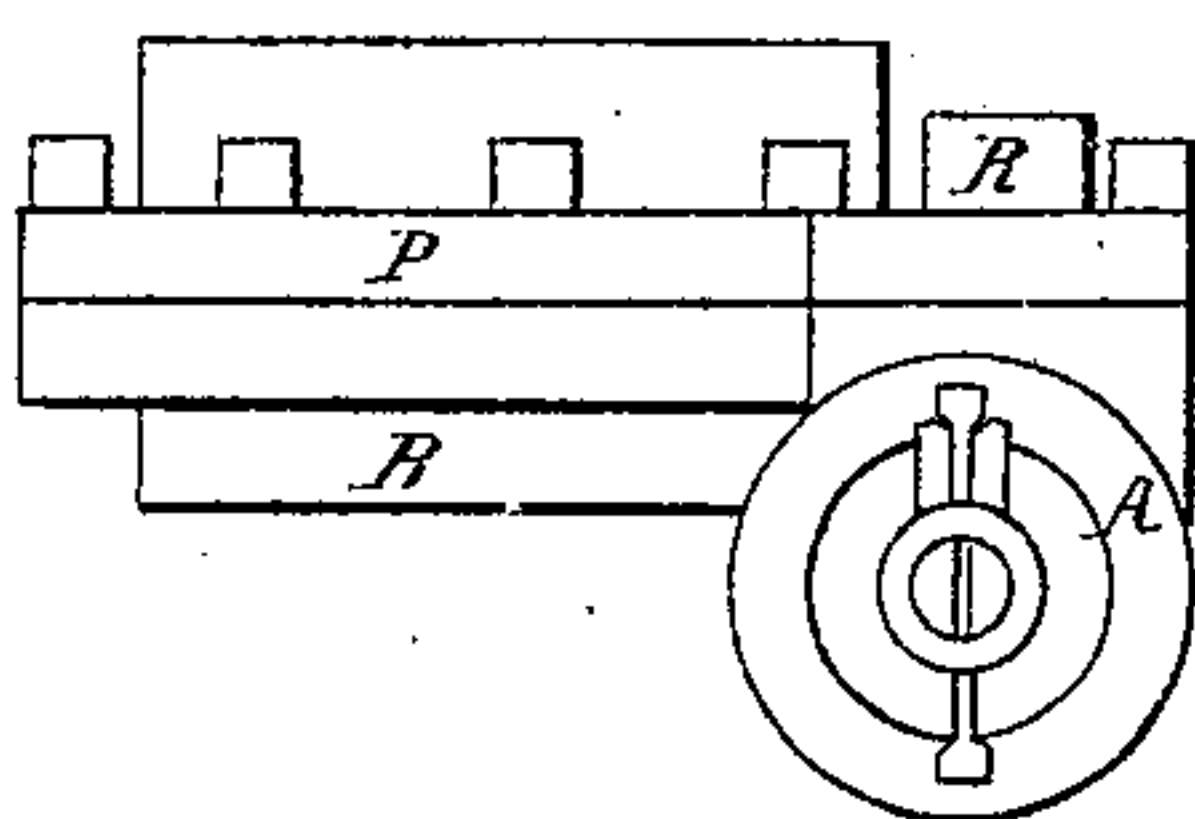


Fig. 2.

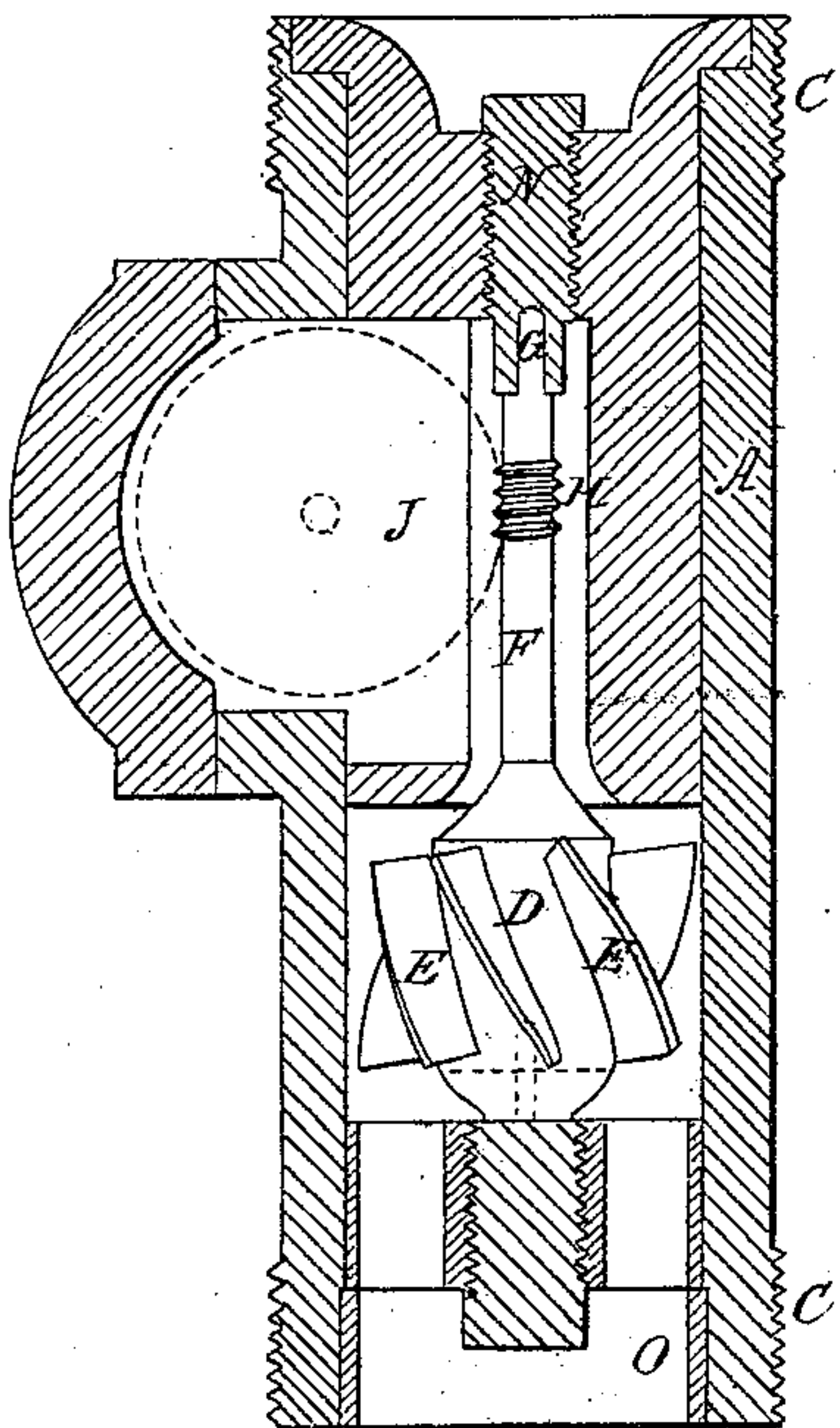


Fig. 3.

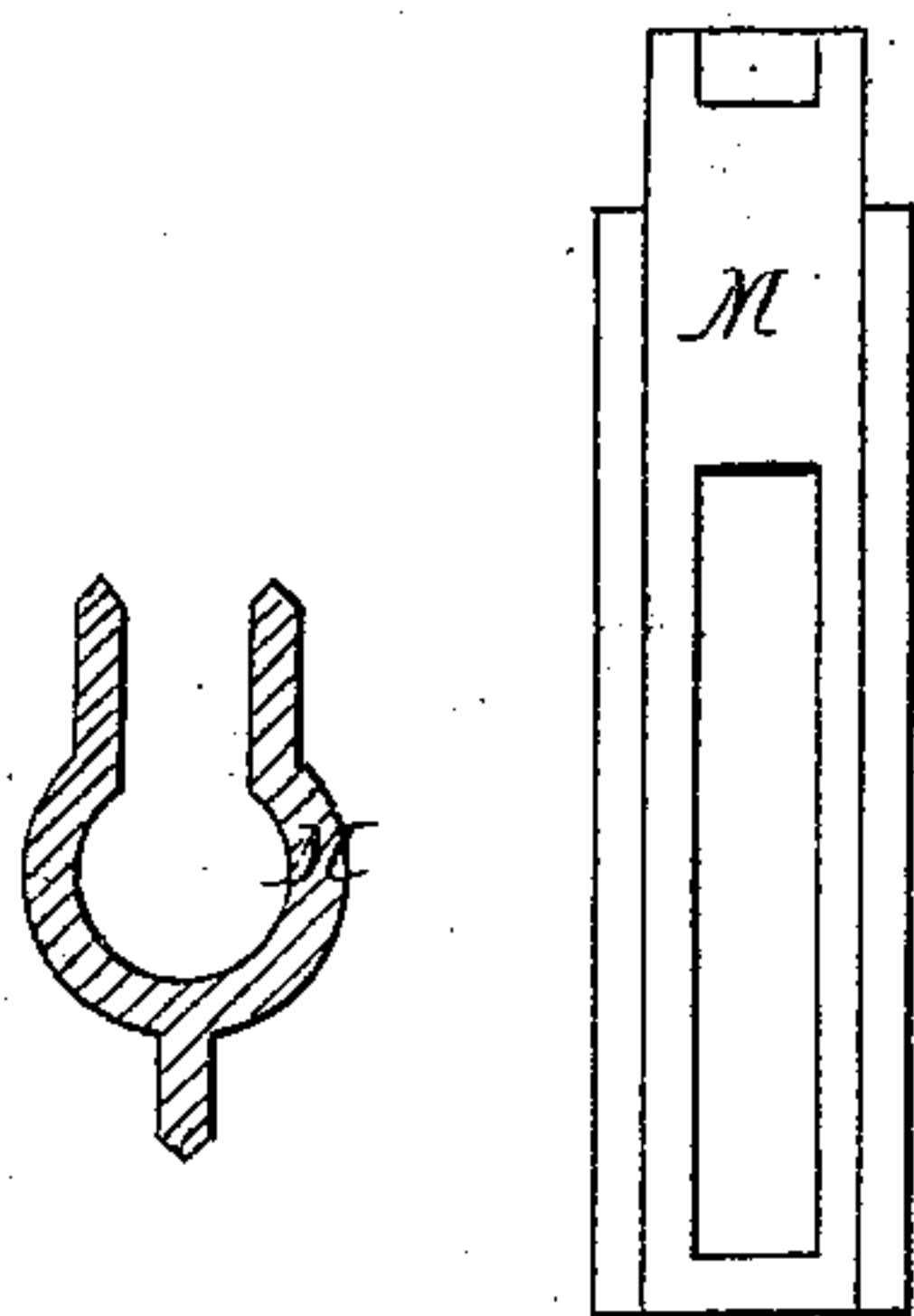
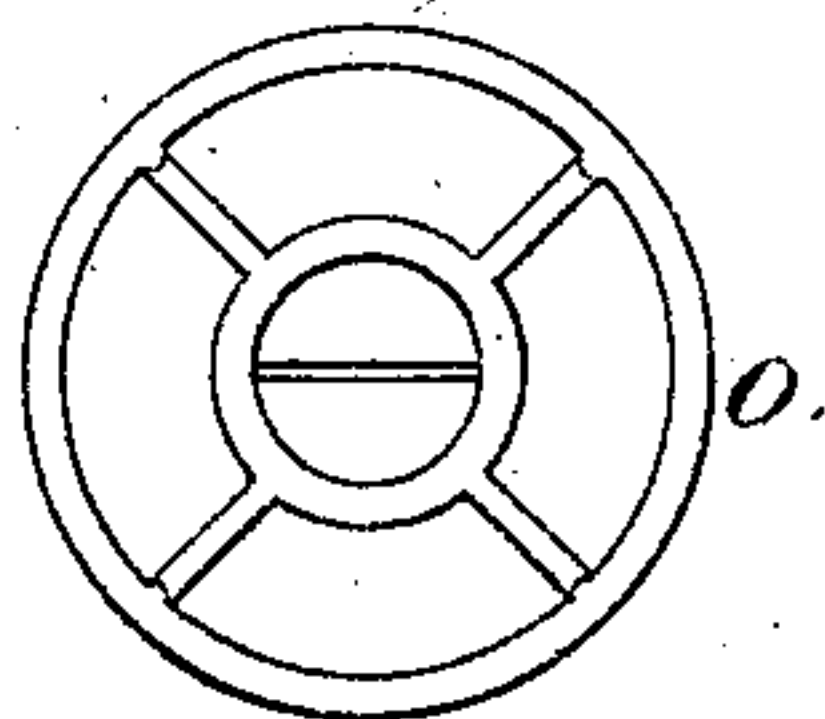


Fig. 4.



Witnesses:

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Fig. 7.

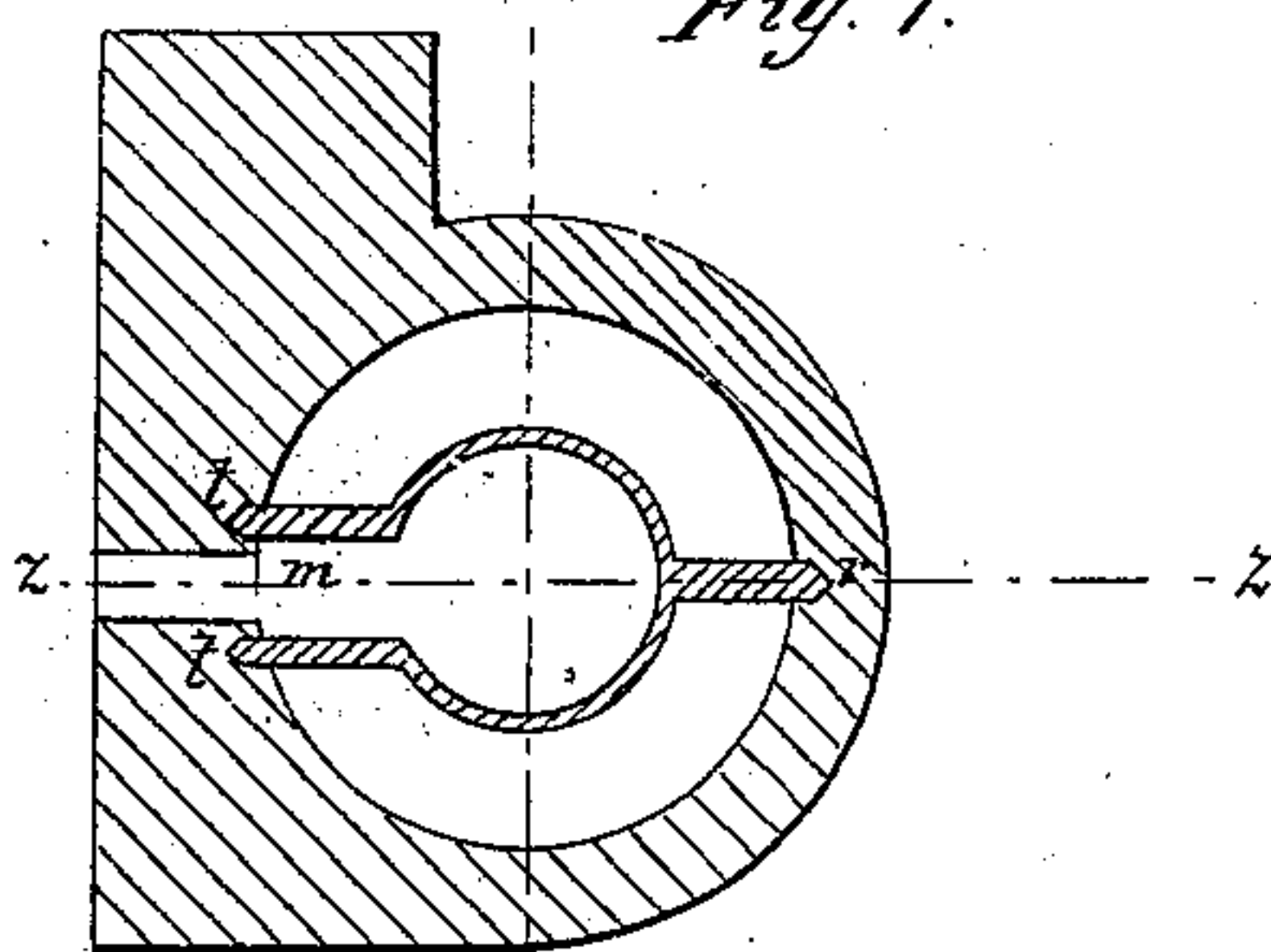


Fig. 6.

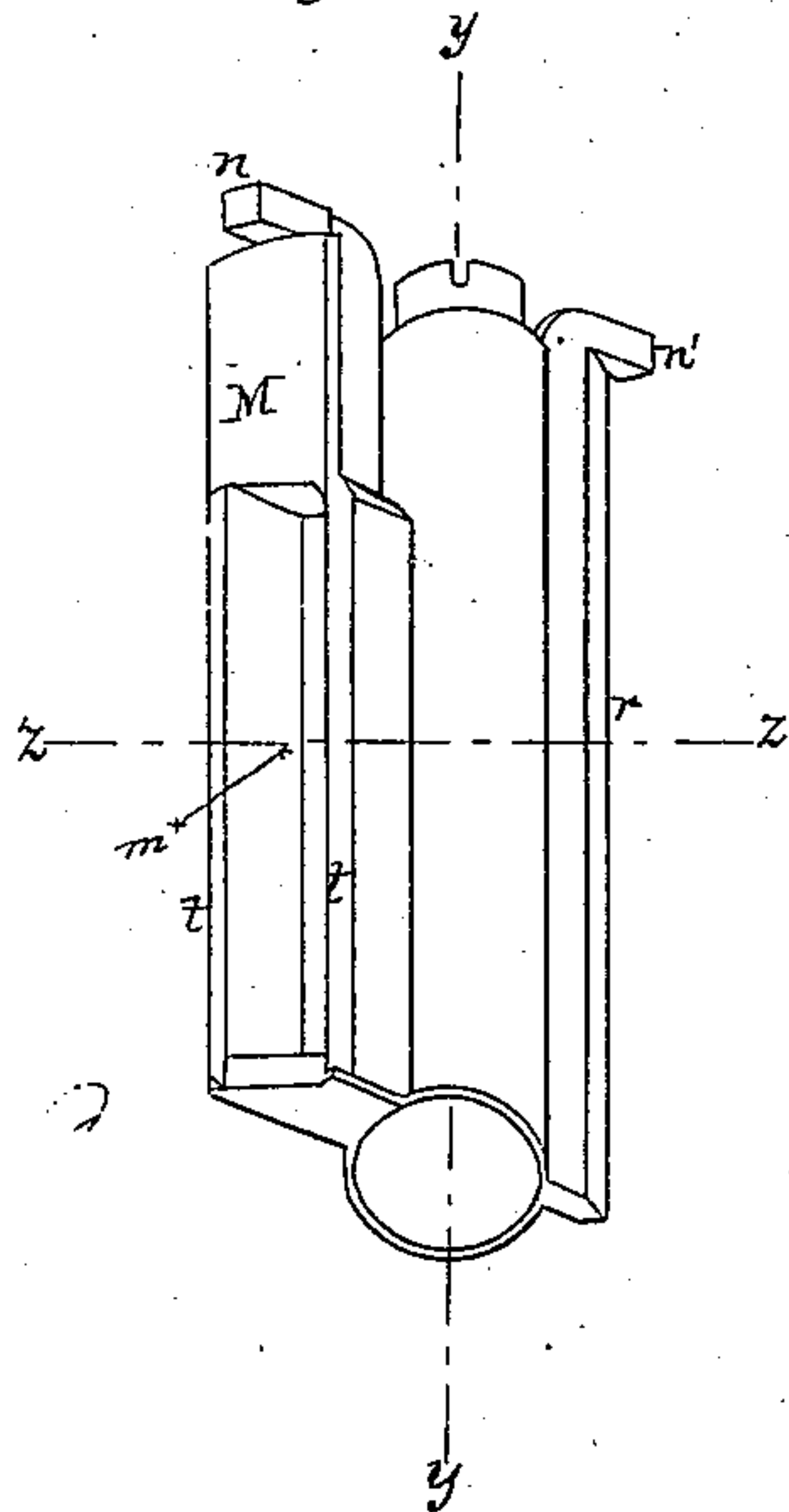


Fig. 8.

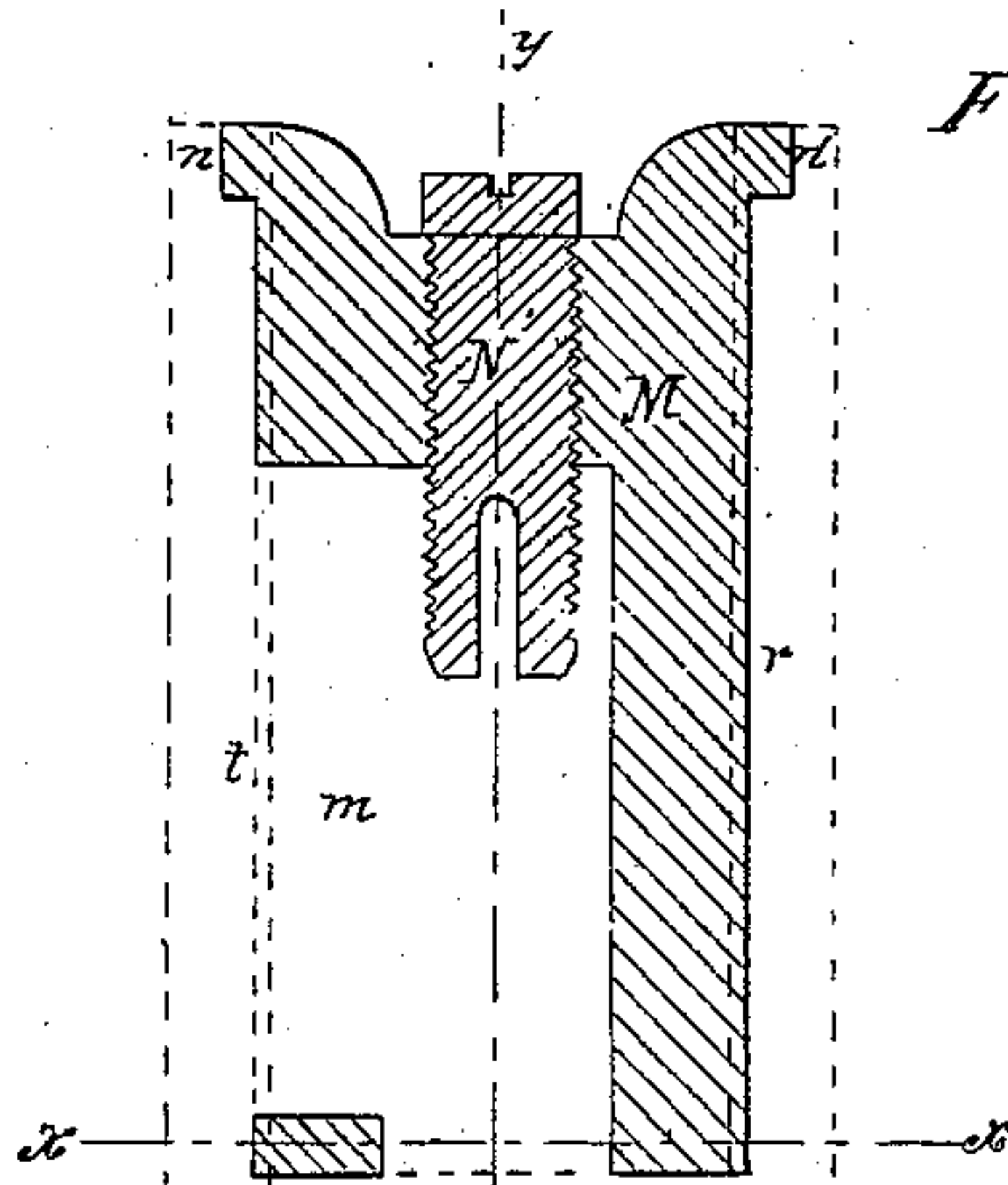


Fig. 9.

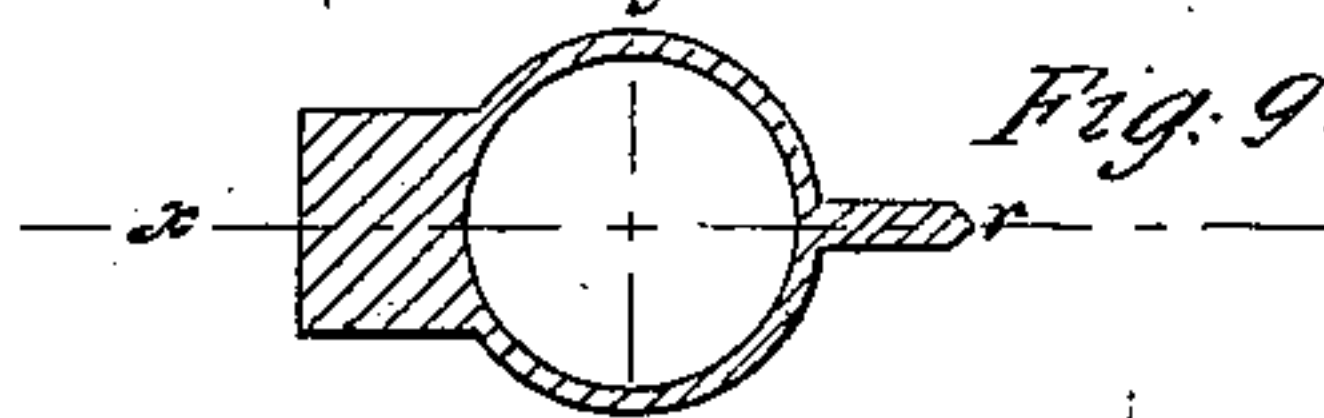
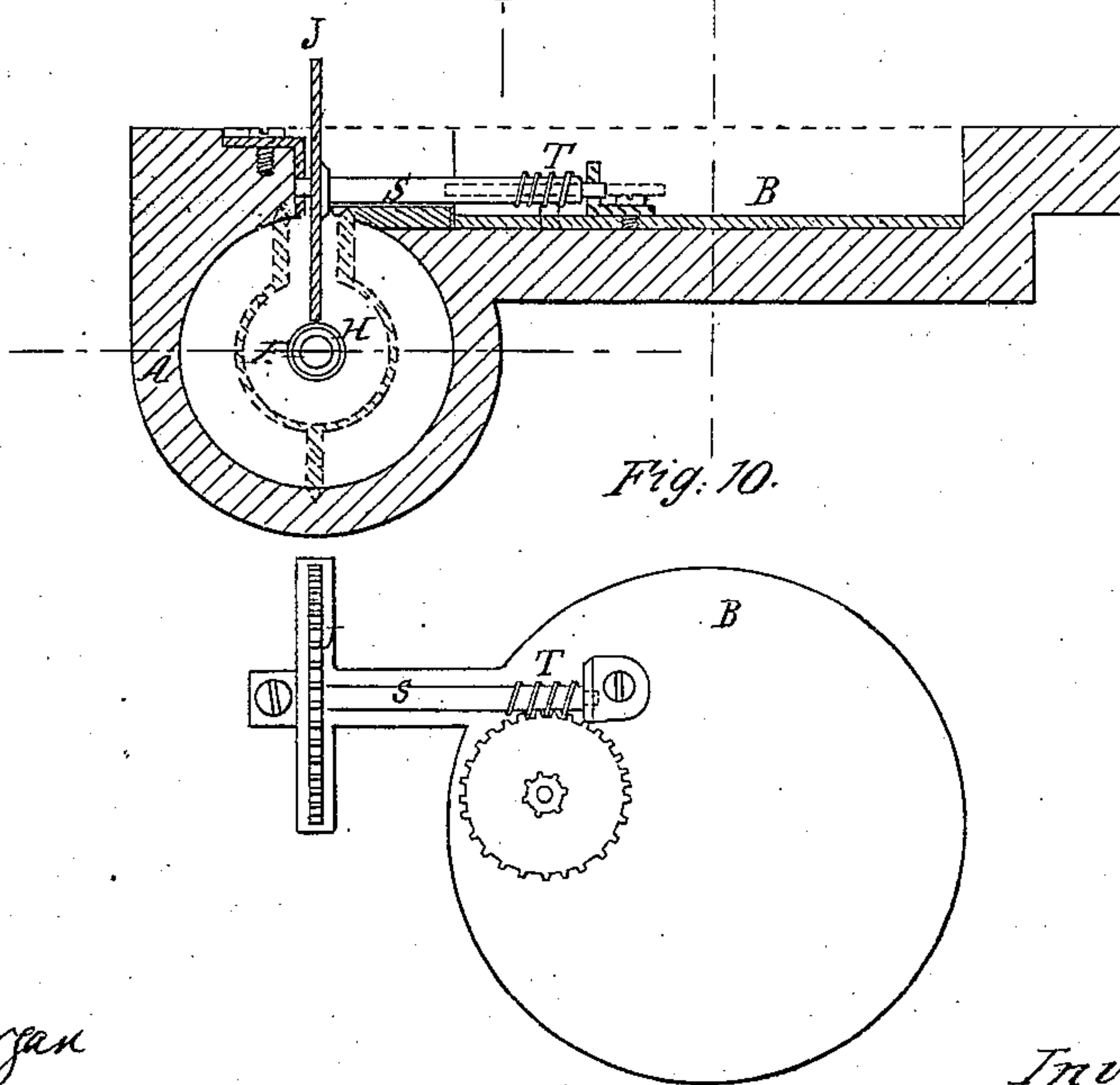


Fig. 10.



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# United States Patent Office.

HENRY F. READ, OF BROOKLYN, NEW YORK.

Letters Patent No. 92,883, dated July 20, 1869; antedated July 13, 1869.

## IMPROVEMENT IN WATER-METERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY F. READ, of the city of Brooklyn, county of Kings and State of New York, have invented certain new and valuable improvements in Water-Meters; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a perspective view of the front of the meter.

Figure 2 is a vertical sectional view of the same, and of the screw-propeller in position.

Figure 3 is a perspective view of the shield, and a cross-section of the same.

Figure 4 is an end view of the circular piece O, which holds the lower centre-screw.

Figure 5 is a top-end view of the cylinder and dial-box, and on the drawing A is presented in half scale.

Figure 6 shows a perspective view of the sleeve, or shield M.

Figure 7 shows a horizontal section of the cylinder A and shield M.

Figure 8 shows a vertical section of the shield M, and its flanges *r r*, and double flange *t t*.

Figure 9 shows a lower-end view of the shield.

Figure 10 shows a cross or horizontal sectional view of the cylinder, shield, shaft F, dial-box, driving-wheel J, shaft S, and endless screw T.

A, in figs. 1 and 2, shows the main cylinder, through which the water passes, on the outer ends of which are the screw-threads C C, for the purpose of connecting it with the supply-pipes.

In fig. 5, B is the dial-box, in which the counters or indicators are placed.

In fig. 1, P is the cap-piece, with a glass in it, to be placed over the face of the dial on which the indicators are placed, and R is the wheel-house, in the same piece with the cap.

In fig. 2, D is the body of the screw-propeller, and E E are the wings of the same, located inside of the cylinder A.

The nature of my invention consists in the formation of the cylinder and dial-box, made of any suitable material, so that cheapness of construction, uniformity in size, proportion of parts, and accuracy in operation are secured; and, further, in such a construction of the screw-propeller, which is revolved by the passing water, as will secure accuracy and uniformity of operation; and, further, by the peculiar form and construction of a shield, hereinafter described, protecting the wheel in the cylinder and those in the dial-box, and other delicate parts therein contained, from any mechanical action of the passing water, as well as from the introduction of sediment, or other disturbing matter.

To enable others to make and use my invention, who are skilled in the art, I will proceed to describe its construction and operation.

In the first place, I cast, of any suitable material, the cylinder A and dial-box B, of any form desired, as also the cap P and wheel-house R. The general form of these parts is shown in fig. 1.

The wheel, as shown in fig. 2, has the form of a screw-propeller, and is caused to revolve by the action of the water in its passage through the cylinder A.

On the shaft, at H, fig. 2, is placed an endless screw, which screw engages with the cogs or spurs upon the driving-wheel J, which is indicated by a dotted line in fig. 2, and shown in fig. 10, and which revolves upon a shaft passing through its centre, and causes it to revolve, and, by any proper and suitable devices, the shaft, when revolving, communicates motion to the indicators on the face of the dial, and the quantity of water passing through the cylinder is indicated with accuracy.

Of course due care will be taken, in the first place, that the wings shall have just sufficient twist or pitch to produce the desired effect in the most effectual manner.

The upper end of the shaft F forms a journal, G, which works in the upper screw-centre N.

The body D of the propeller is made with an orifice in the centre of its lower end, so that an agate, or a piece of hardened steel, may be placed and held therein by means of a bushing, and upon this hard substance the propeller revolves, upon the point of a steel spindle extending up from the centre of the lower screw-piece.

This screw-piece is held in position and adjusted by the circular piece O, an end view of which is represented by fig. 4.

This piece consists of the hub and four radial flanges, extending from the exterior of the hub to the interior surface of the main cylinder.

The flanges or arms are to hold the hub securely in its central position, and it has a concave screw-thread in its interior to correspond with the convex thread upon the lower screw-piece.

Another important part of the meter is the sleeve or shield M, which is constructed with a flange extending from the rear of its circumference to the inner surface of the cylinder, and having a bevelled edge, which fits into a groove made in the cylinder for its reception, and from the opposite, or front side of it, another flange, *t t*, extends likewise, as a radius, to the inner surface of the cylinder, and fits closely into grooves therein.

This flange, however, is divided from a point near the upper end, as shown in fig. 6, so as to form the slot, or opening *m*, into the interior of the shield itself.

This opening is made for the purpose of allowing



the driving-wheel J to revolve therein, and engage with the endless screw H.

The edges of this flange being bevelled, and fitted closely into grooves in the cylinder, the water flowing through the cylinder is divided into two currents by the shield, one on each side, neither of which can touch or act mechanically on the driving-wheel J until after they have arrived at the lower end thereof, where they unite again, and from which point the water cannot reach the driving-wheel, or gearing in the interior of the dial-box, except by rising up in the shield from which it flows into the dial-box, and these (the shield and dial-box) being once filled with water, retain it, as it cannot escape against the current.

It will therefore be easily perceived; that when the shield and dial-box are thus once filled with clean or clear water, muddy water may then be passed through the meter without even reaching the inner gearing.

The principal office of this shield is to protect the delicate gearing in the interior of the dial-box against any direct mechanical action of the water in its passage through the cylinder, as well from sand, sediment, or any other matters, which might be injurious or destructive to the parts themselves, or disturb or interfere with their actions.

As the cylinder stands upright, as shown in fig. 1, and as the shield covers the whole shaft from the top down to the body of the propeller, it is evident that no sediment, or other solid substance, can reach the interior of the dial-box and the works therein, because their own gravity and the force of the flowing current, would drive them out and through the lower end of the cylinder.

It will be noted that, according to the plan and construction of my meter, the water passes directly through the cylinder, and is not made to pursue a circuitous course, as in some other meters, and therefore its motion and action are simple, and not so liable to indicate an erroneous measurement, as otherwise might be.

Furthermore, the division of the stream of water, in its passage through the cylinder from the supply-pipe, and before its action upon the screw-propeller, has a strong tendency to destroy any circular motion or current which the water might have upon entering the cylinder from the supply-pipe, and thus secure a simple and direct action of the same upon wings of the propeller.

Having thus fully described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The sleeve, or shield M, having the two radial flanges *t t*, and the flange *r*, on the opposite side, and slot *m*, constructed substantially as and for the purpose specified.

2. The endless screw H, the driving-wheel J, and the wheel-house R, in combination with the shield M, when used together, in the construction of a water-meter, and all constructed substantially as and for the purpose described.

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Witnesses:

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JOHN A. PALMER.