

No. 746,634.

PATENTED DEC. 8, 1903.

W. H. LARRABEE.

ROTARY METER.

APPLICATION FILED OCT. 12, 1903.

NO MODEL.

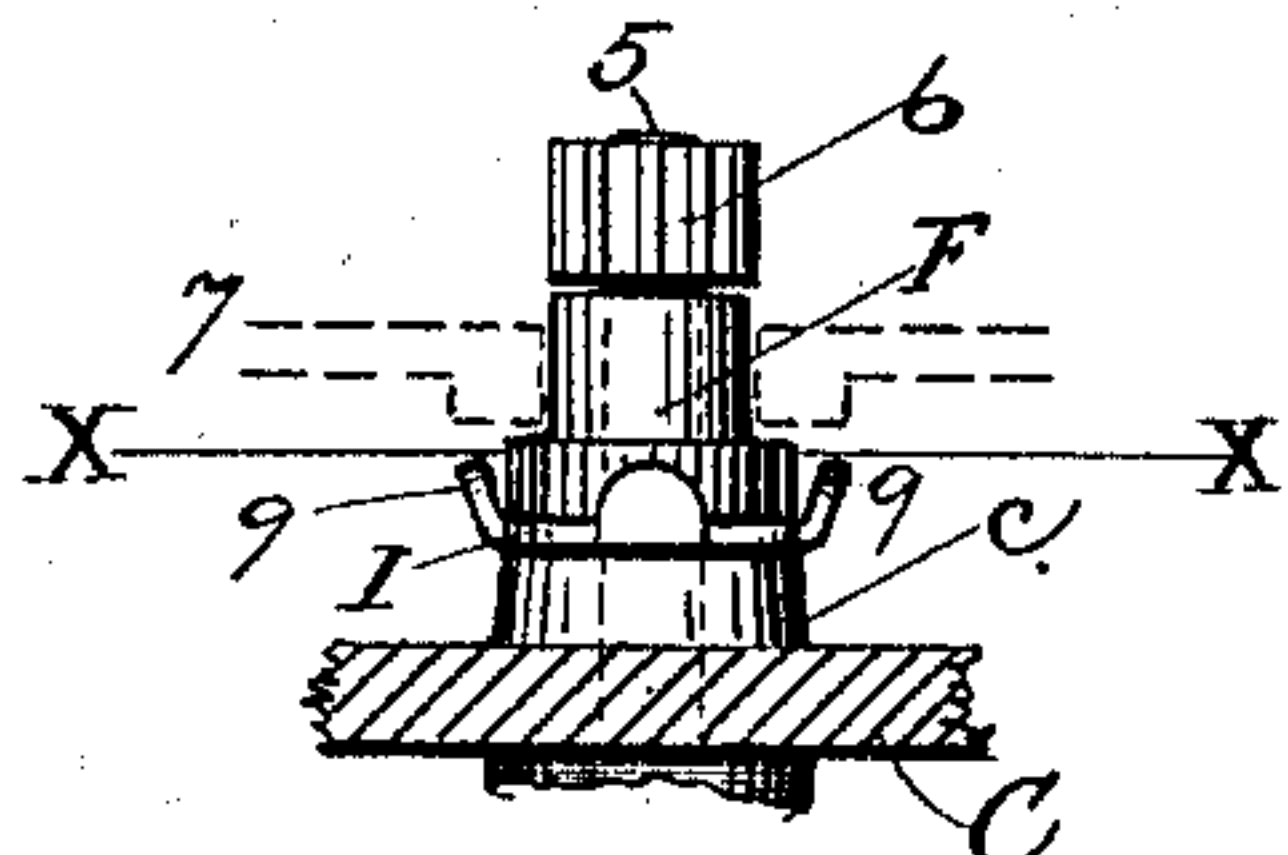
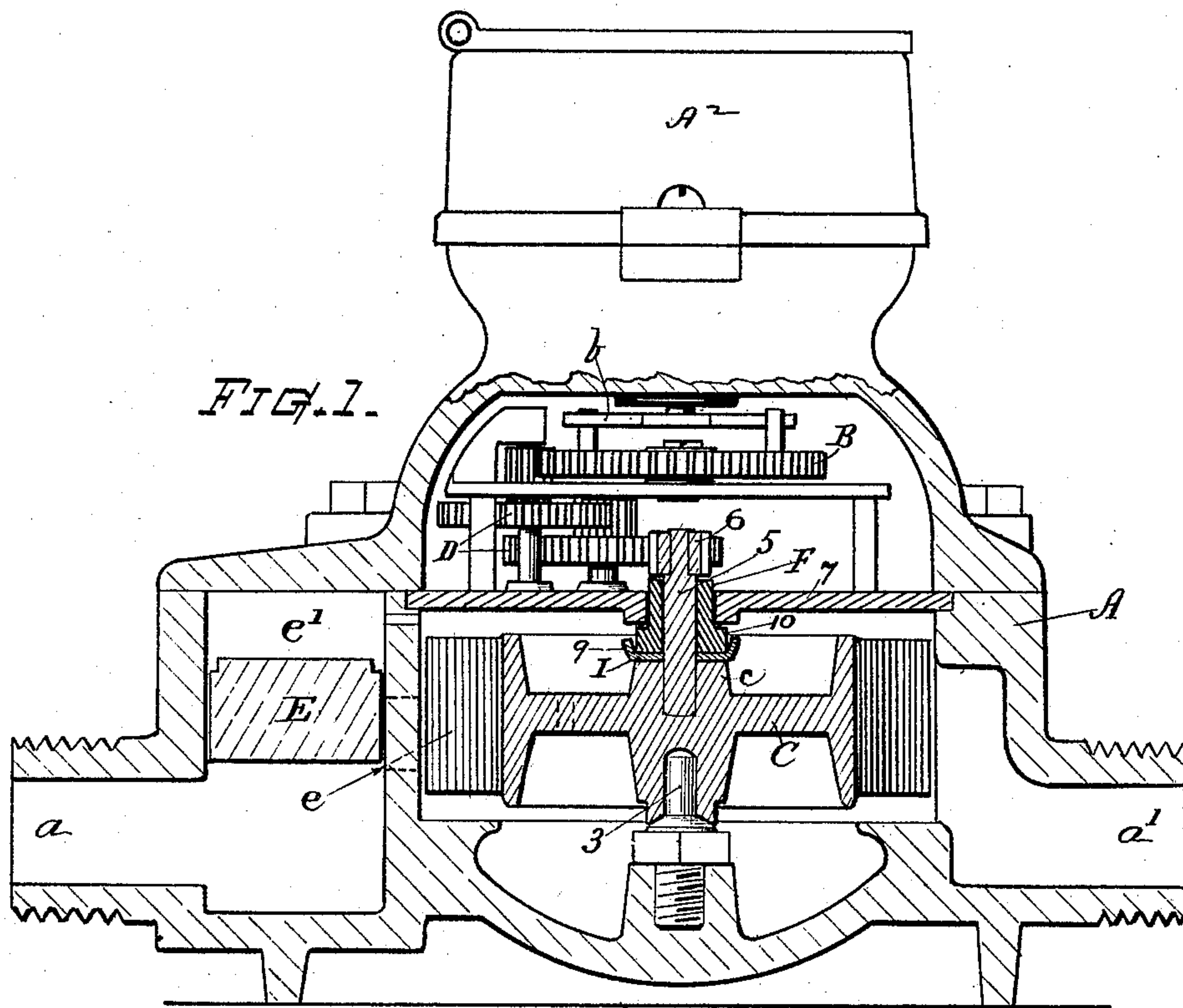


FIG. 2.

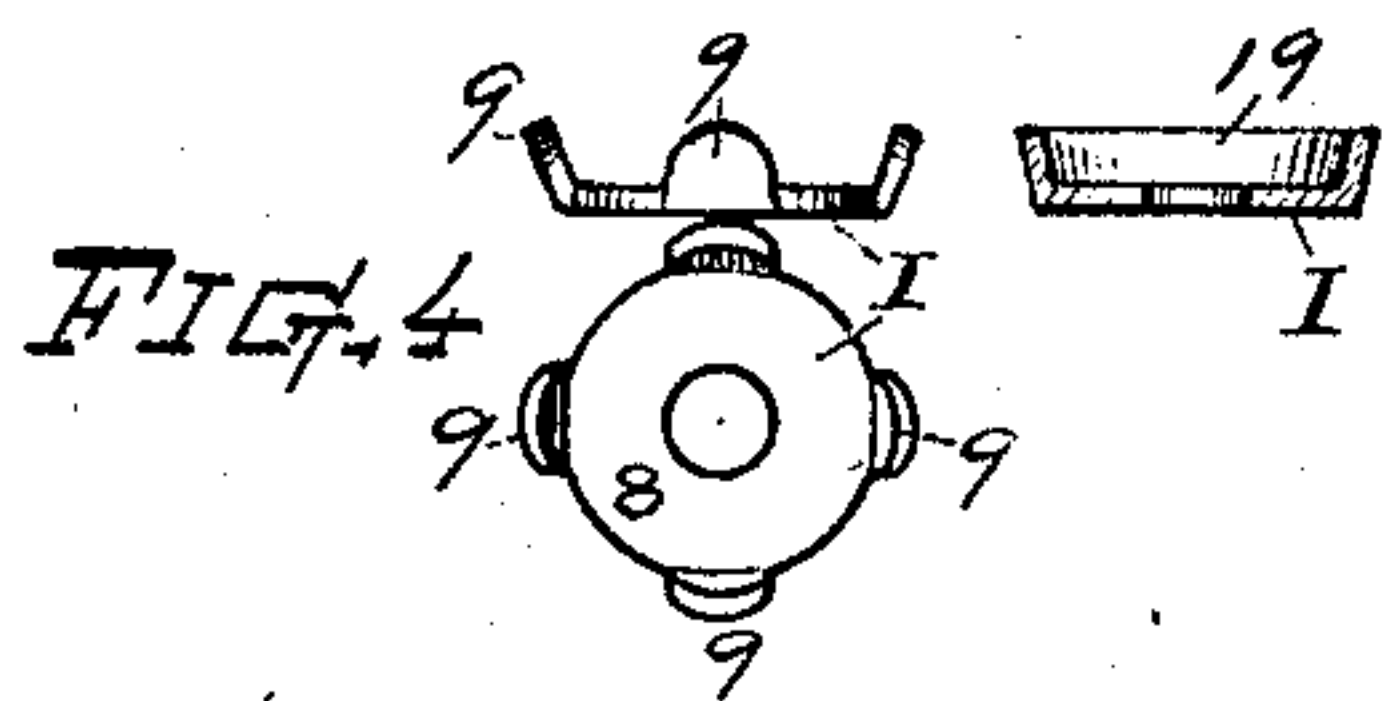


FIG. 4.

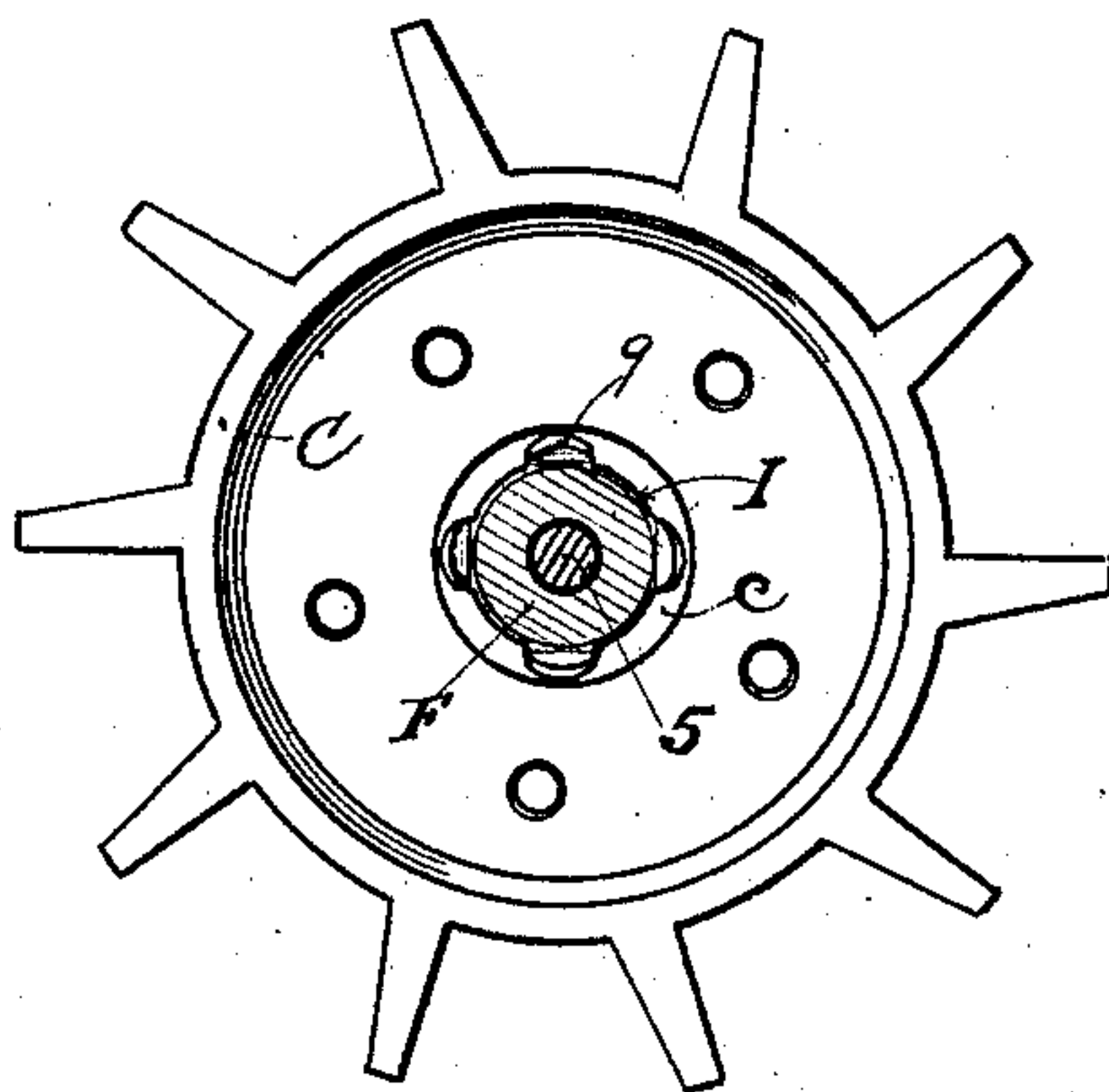


FIG. 3.

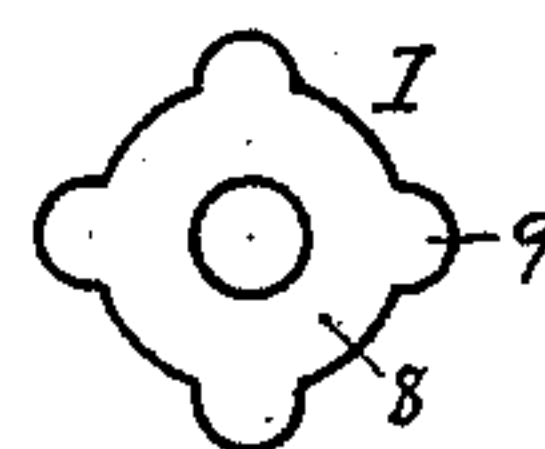


FIG. 6.

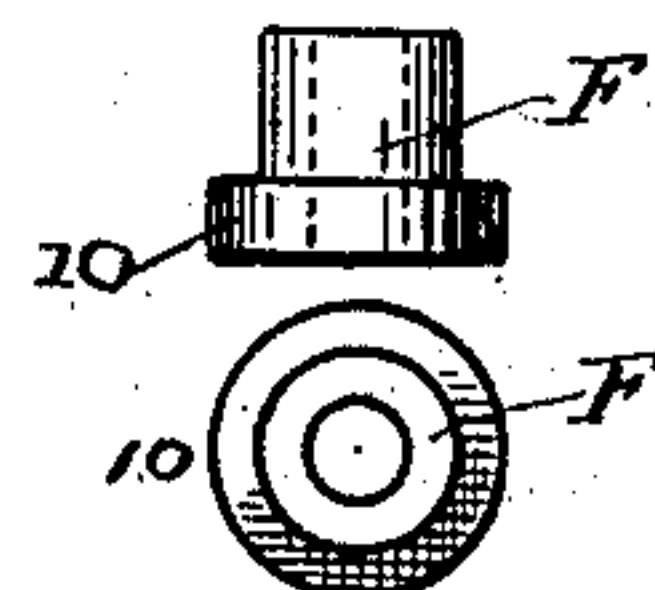


FIG. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM H. LARRABEE, OF WORCESTER, MASSACHUSETTS.

ROTARY METER.

SPECIFICATION forming part of Letters Patent No. 746,634, dated December 8, 1903.

Application filed October 12, 1903. Serial No. 176,655. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. LARRABEE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Rotary Meters, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

This invention relates to that class of rotary meters employing a single revolving wheel-piston arranged to whirl upon a pintle support and having a stem or spindle provided with a pinion-gear for working the register-operating gearing. In this class of meters it has heretofore been found as an objection that rapid and irregular wearing of the bearing-surfaces occurs at the ends of the hard-rubber parts, causing derangement in the action and variations in the registration of flow. Also in some instances there results a cutting off by wear of the piston-stem, especially where the meter is employed for water that carries gritty sediment.

The object of my present improvement is to obviate these objections and to prevent excessive wear and irregular friction between the surfaces of the rubber piston-wheel and the rubber bushing for the upper axis, also to prevent the cutting of the axle or piston-stem.

To this end my invention consists in the combination of mechanisms hereinafter described and as illustrated in the accompanying drawings, wherein—

Figure 1 represents a vertical sectional view of a water-meter having my improvement embraced therein. Fig. 2 is a side view of the bearing members at the top of the piston. Fig. 3 is a horizontal section of the same at line X X. Fig. 4 shows the detail of the bearing-plate, Fig. 5 the detail of the bearing-bushing, and Fig. 6 a blank from which the bearing-plate may be made.

On the drawings, A denotes the meter-casing, provided with inlet and outlet spuds a and a' and having in its upper section A^2 the usual registering mechanism, which is operated by the arm b , that engages with pins on the gear B of the driving-train.

C indicates the radially-winged wheel-piston, which is made of hard rubber or vulcanite and is freely rotatable within the meter-chamber by the force of the water or fluid entering through the passway e , which is controlled by the automatic valve E, arranged in the antechamber e' , that connects with the inlet-spud.

The numeral 3 indicates the piston-supporting pintle; 5, the piston-stem or upper axial spindle, fixed in the piston-hub c and having fixed on its end the drive-pinion 6, that engages and operates the register-driving train D.

All of the above-mentioned parts are well known, but are herein shown to afford a better understanding of the improved construction.

F indicates a tubular flanged bushing made of hard rubber and arranged as a bearing for the piston-stem through the top plate 7 of the meter-chamber. This bushing is fitted to turn freely on the stem 5 and also to turn freely within the opening through the plate 7.

Between the lower end of the hard-rubber bushing F and the upper end of the hub c of the hard-rubber piston C, I arrange a metal bearing-plate I, comprising a flat annular bearing-disk 8, having upwardly-turned edges or lips 9, that are fitted to disconnectedly embrace the peripheral edge 10 of the bushing-piece at its lower end or, if preferred, the end of the hub c , the metal plate forming a rotatively loose concentrically-confined antiwear-reinforce between the two hard-rubber surfaces of the wheel-piston and rotatable bushing. This bearing-plate is best made of brass and can be punched from sheet metal in a blank of the form shown in Fig. 6 and the lips 9 subsequently turned upward, as shown in Fig. 4, by means of suitable dies, thus making a plate that can be dropped into place without attention to fastening or fitting when assembling the parts and which may be used either side up, though preferably as shown. If in any instance preferred the bearing-plate can be made with an entire rim turned up about its edge, as at 19. The bearing-plate is unattached in relation to both the bushing and the piston, but is maintained in concentric relation to the axis and with its disk perpendicular thereto, so that the parts

can have ample freedom of action without tending to effect irregularity of wear and the cutting action in the piston-stem obviated.

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

1. The combination, in a rotary meter, of a rotatable piston-wheel, its axle-stem, the rotatable bushing for the upper axle-bearing, and the unattached intermediate bearing-plate having means at the exterior of the bearing-surfaces for maintaining it axially concentric with the bushing and axle-stem, for the purpose set forth.

2. The combination, in a rotary meter, of the hard-rubber or vulcanite piston-wheel, its metallic axis-stem and pinion fixed thereon,

a piston-supporting pintle, the revoluble hard-rubber bushing supporting said axis-stem within the casing, and an intermediate metallic bearing-plate disposed between the end surfaces of said piston-wheel and bushing, said bearing-plate being provided with turned-up edges or lips that circumferentially but disconnectedly engage the periphery of said bushing, exterior to the bearing-surface, substantially as set forth.

Witness my hand this 5th day of October, 1903.

WILLIAM H. LARRABEE.

Witnesses:

CHAS. H. BURLEIGH,
SIMEON E. KING.