(No Model.) 2 Sheets—Sheet 1.

P. BALL.

ROTARY WATER METER.

No. 386,795. Patented July 31, 1888.

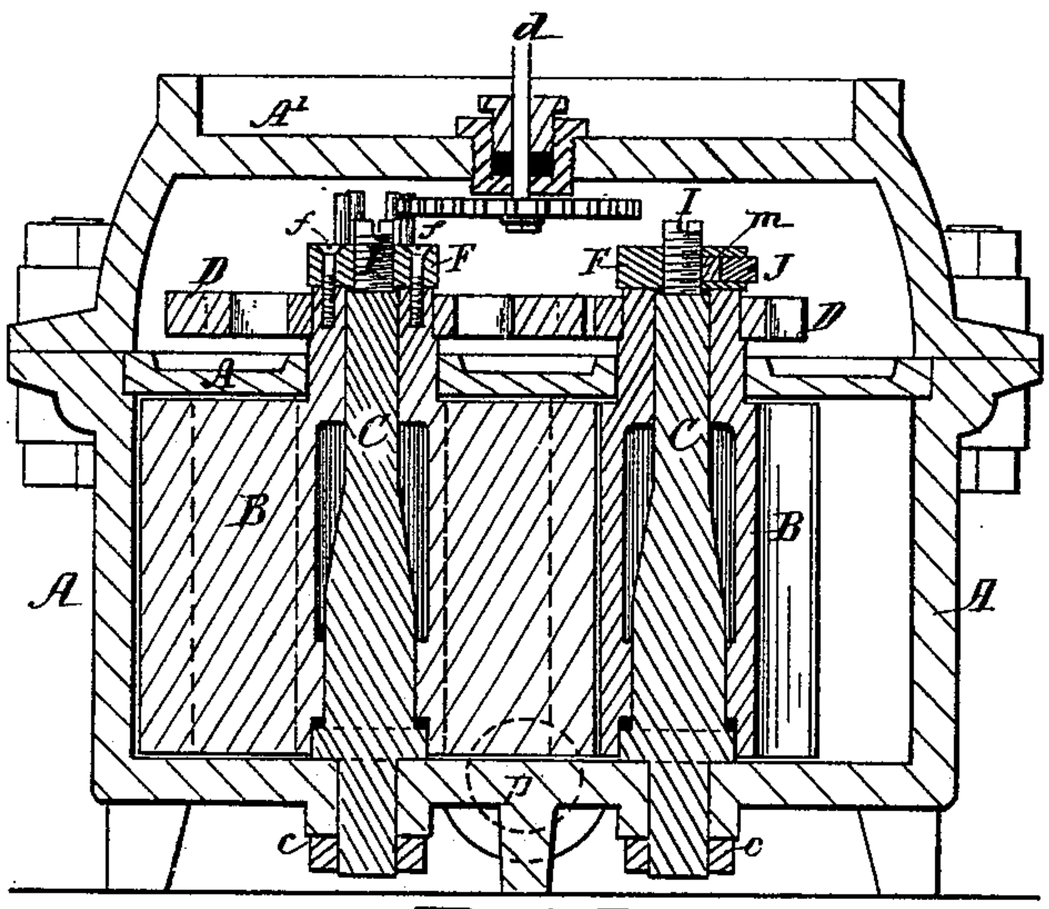

FIG. 2

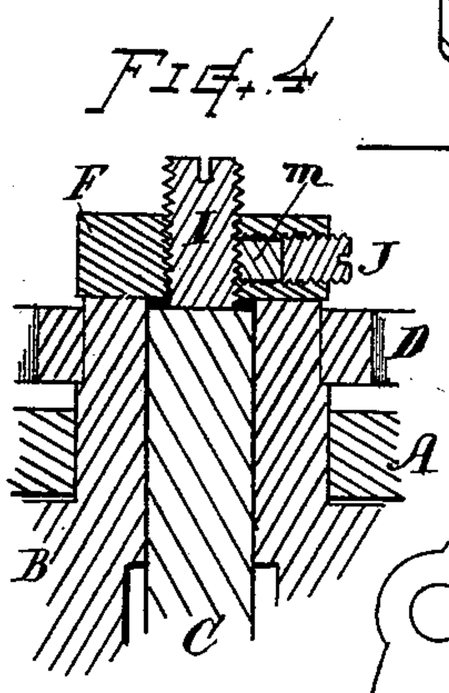

FIG. 4

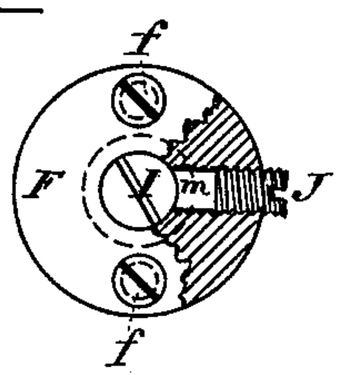

FIG. 3

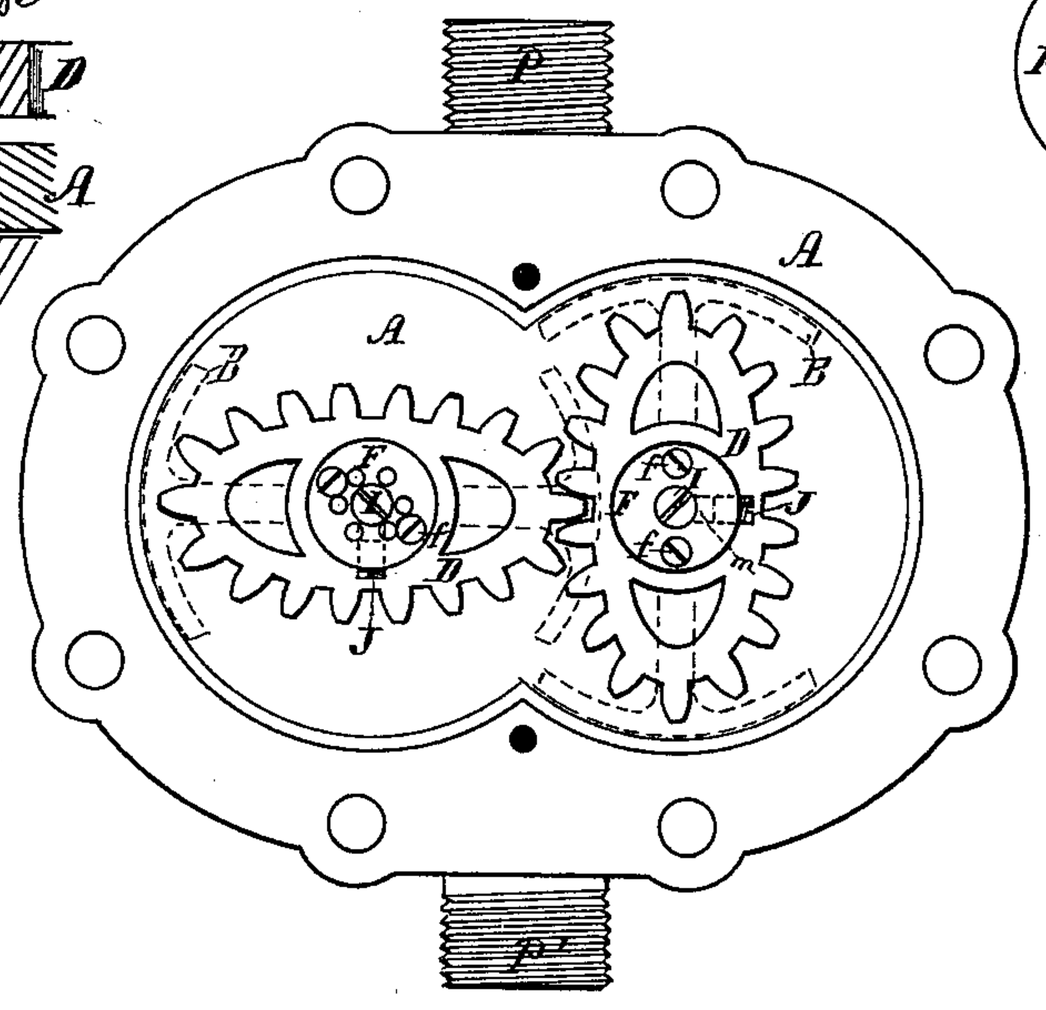

FIG. 1

WITNESSES.

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(No Model.)

2 Sheets—Sheet 2.

P. BALL.

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FIG. 5

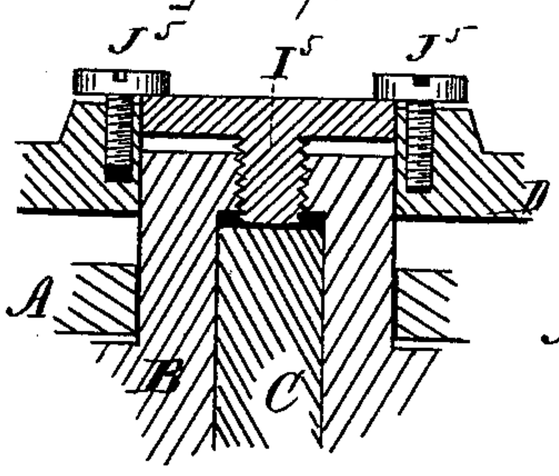


FIG. 6

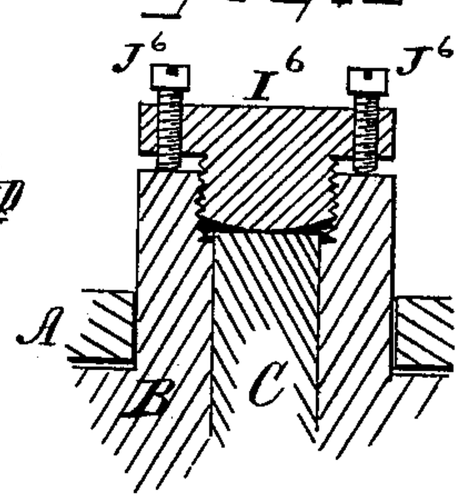
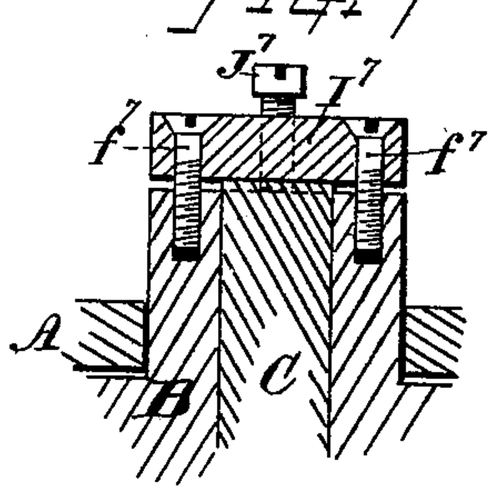


FIG. 7



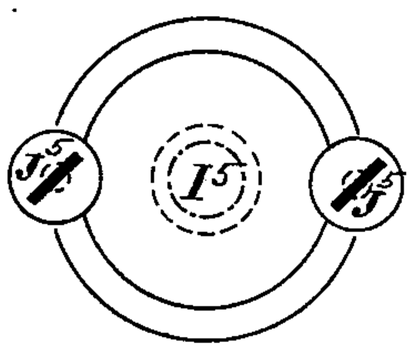


FIG. 5a

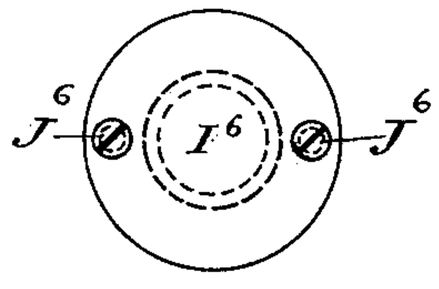


FIG. 6a

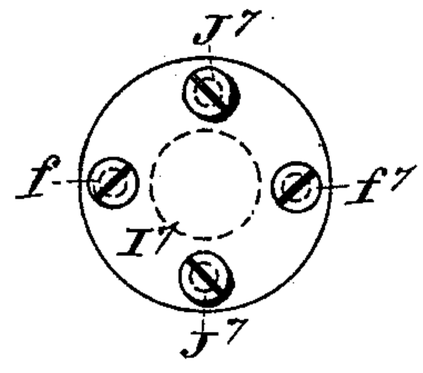


FIG. 7a

FIG. 8

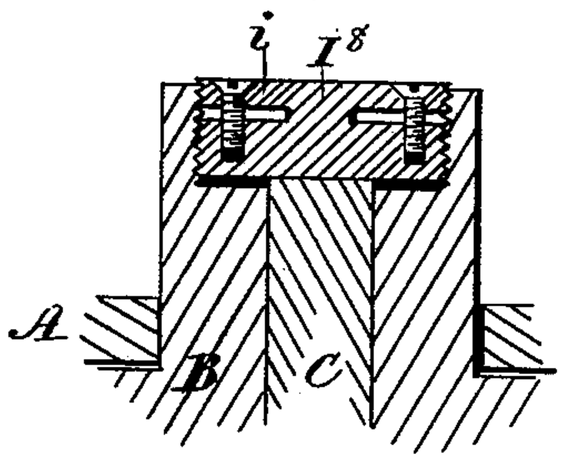


FIG. 9

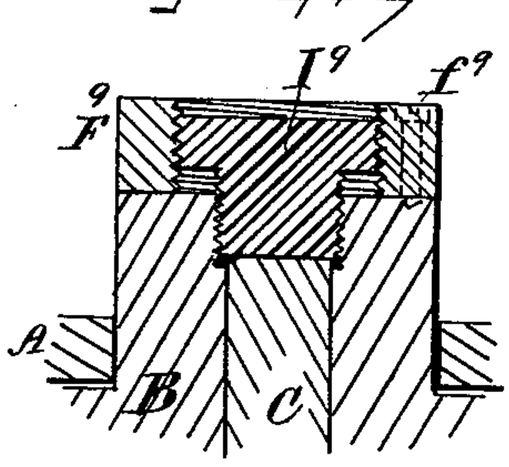
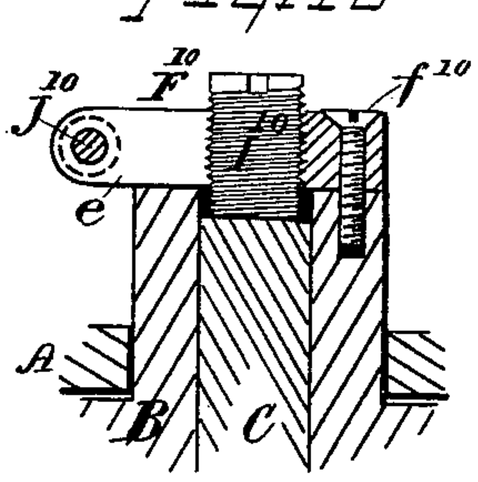


FIG. 10



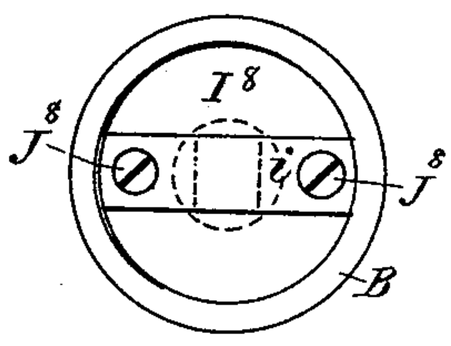


FIG. 8a

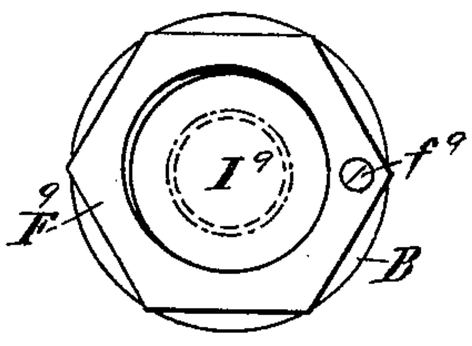


FIG. 9a

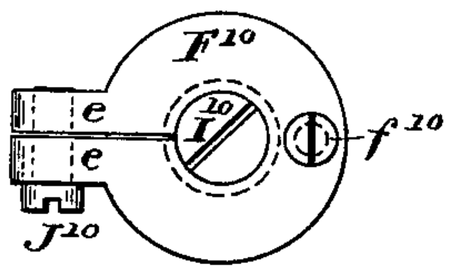


FIG. 10a

WITNESSES

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UNITED STATES PATENT OFFICE.

PHINEHAS BALL, OF WORCESTER, MASSACHUSETTS.

ROTARY WATER-METER.

SPECIFICATION forming part of Letters Patent No. 386,795, dated July 31, 1888.

Application filed June 14, 1887. Serial No. 241,302. (No model.)

To all whom it may concern:

Be it known that I, PHINEHAS BALL, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Rotary Water-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.

In rotary water-meters of the class herein referred to as heretofore constructed the horizontally-rotating pistons have been suspended and supported from the top end of an upright stationary pintle or post by means of a plain flat plate or cap screwed to the top end or hub of the piston and disposed to take bearing and to turn upon the top end surface of the pintle or center post, thus bringing the wear and friction onto these adjacent bearing-surfaces. By continued use the bearing-surfaces become worn, so that the pistons drop below their proper position and drag upon the bottom of the casing or shell, thereby retarding or stopping their movement and causing derangement in the proper metering of the fluid or water passing through. To effect repairs in this respect it has been necessary and customary to remove the bearing plate or cap and file off its under surface, and, in case of the post having worn down, to file off the end of the hub of the piston until readjustment was attained. This is a work requiring such a degree of nicety that the owners or users of the meters have been induced to send the meters back to the manufactory rather than attempt to make the adjustment by the aid of ordinary mechanics, this being frequently a matter of considerable expense, inconvenience, and delay.

The object of my present invention is to obviate this objection and to provide means whereby adjustment of the pistons can be effected, with the requisite degree of nicety, without the necessity of filing off any of the parts, and in a way that will be convenient, accurate, and substantial.

My invention consists in the combination, with the rotary water-meter piston fitted to run close between the top and bottom surfaces within the casing and the stationary post or pintle whereon said piston is suspended, of a removable cap-plate carrying a bearing-piece of hard metal provided with screw-threads for effecting adjustment to support the piston in proper relation to the casing, and means for binding the screw-threads, so that the parts cannot become displaced by jar or friction in the operation of the meter, as hereinafter more fully described, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a plan view of a rotary meter, illustrating my invention, the top portion of the meter being removed. Fig. 2 is a longitudinal vertical section through the centers of the pistons and their supporting parts. Fig. 3 is a part plan and part sectional view of the supporting-cap and adjusting devices. Fig. 4 is a central vertical section of the piston supporting and adjusting devices. Figs. 5, 6, 7, 8, 9, and 10 are central vertical sectional views showing modifications of supporting and adjusting devices, in combination with a rotary meter-piston; and Figs. 5^a, 6^a, 7^a, 8^a, 9^a, and 10^a are plan views of the same, respectively corresponding to the several sectional views according to number.

In referring to parts, A denotes the shell or casing of the meter.

B B indicate the rotating pistons, C C the upright pintles or posts fixed in the bottom of the casing, whereon the pistons are supported, and D the gears intermeshing from one piston to the other, so that they will rotate in unison. Said parts may be constructed and arranged in the ordinary well-known manner as heretofore employed in this class of meters, as may also the registering devices (not shown) and the means for imparting movement thereto through the geared shaft *d*, and consequently said parts need not be herein more particularly described.

F indicates the suspending cap or plate secured to the top end or hub of the piston B by means of the screws *f*, so that said cap can be readily taken off and replaced with the aid of a screw-driver, first, of course, removing the top casing, A′, of the meter.

I indicates a stud or bearing-piece having a wearing-surface that turns on the end surface of the pintle or post C, and which is preferably formed of some hard metal that will resist rapid wear of the bearing-surfaces. Said bear-

ing-piece is fitted with screw-threads, by means of which it can be adjusted for sustaining the piston at slightly greater or less height in relation to the top end surface of the post C and the casing A.

Combined with the adjustable bearing-stud, I employ a cramp device for binding upon the threads and securing the bearing-stud at position of adjustment, so as to prevent it from working out of place by jar or friction when the meter is in operation. Said cramp is preferably constructed substantially as illustrated in Figs. 2, 3, and 4. A tapped or threaded hole is formed through the cap F, meeting the stud I. In this hole is a loose block, *m*, having on its end sections of screw-thread that match the threads on the stud I and fit against the side thereof, while behind said block is a binding screw, J, which can be turned in or out for imparting or relieving the pressure on the threads of the bearing-piece. When screw J is turned in, the bearing-piece or stud I will be held fast by the binding action of the part *m* against its threads, and when said screw J is loosened the bearing-piece or stud will be freed sufficiently for its convenient adjustment. By means of this mechanism the piston of the rotary meter can be very easily and accurately adjusted, and any future adjustment for taking up the wear can be made by any ordinary mechanic or person simply and conveniently, and, if desired, without detaching the meter from the supply-pipes.

Figs. 5 and 5ª show a modified construction wherein the adjustable bearing-piece I^5 is made with a broad flat head, the threads in this instance being cramped by means of binding-screws J^5, arranged to draw down the edges of said head.

Figs. 6 and 6ª show a modified construction wherein the adjustable bearing-piece I^6 is made with a flanged head, and the binding-screws J^6 are arranged through the flange to press against the end of the hub of the piston.

In both of the above modifications the bearing-piece is connected by being screwed into the end of the hub of the piston B.

Figs. 7 and 7ª show the bearing-piece I^7 made as a disk connected by screws f^7, that pass through plain holes in the disk, and the binding is effected by screws J^7, that are fitted to threaded openings in the disk and press against the end of the hub of the piston B.

Figs. 8 and 8ª show a modification wherein the bearing-piece I^8 is provided with a yielding bar, *i*, connected to and extending across it and its periphery screw-threaded, with corresponding threads on the ends of the bar. In this the binding-screws J^8 are arranged through the bar and to screw into the body of the piece, and the binding is effected by turning down said screws, so as to spring down the ends of the bar *i* sufficiently to cramp the threads at their ends. This form is adapted to large-sized meters.

Figs. 9 and 9ª show a modification wherein the bearing-piece I^9 is fitted with screw-threads to the hub of the piston B, and its flanged head is fitted with screw-threads to an annular cap, F^9. The cap may be provided with a screw, f^9, for retaining it in position, or, if preferred, said screw could be omitted. In this construction the binding may be produced by differential action of the upper and lower threads.

Figs. 10 and 10ª show a modification wherein the plate F^{10} is vertically slit at one side and provided with ears or projections E. The binding-screw J^{10} is arranged horizontally through said ears for drawing the two sides of the slit together, and thus cramping the part upon the threads of the stud or bearing-piece I^{10}.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. In a liquid-meter having the rotary pistons B suspended upon upright stationary pintles and fitted to work closely between the top and bottom surfaces within the casing, the combination, with the rotary piston, its pintle, and inclosing-casing, of a removable cap-plate, in connection with the hub of the piston, carrying a bearing-piece provided with screw-threads for effecting adjustment of the piston up or down in relation to the inclosing-casing, and means, substantially as described, for cramping or binding said screw-threads to prevent derangement of the adjustment when the meter is in use, as hereinbefore set forth.

2. The combination of the meter-casing, the upright pintles, the rotating piston mounted thereon, with the top and bottom ends of said piston closely adjacent to the inner surfaces of the casing, the adjustable screw-threaded bearing-stud in connection with the top end of the piston, the cramping-piece fitting upon the screw-threads of said bearing-stud, and the binding-screw for giving pressure thereon, all substantially as shown and described.

Witness my hand this 20th day of May, A. D. 1887.

PHINEHAS BALL.

Witnesses:
CHAS. H. BURLEIGH,
ELLA P. BLENUS.