(No Model.) 4 Sheets—Sheet 1.

G. B. BASSETT.

WATER METER.

No. 569,271 Patented Oct. 13, 1896.

Fig. 1.

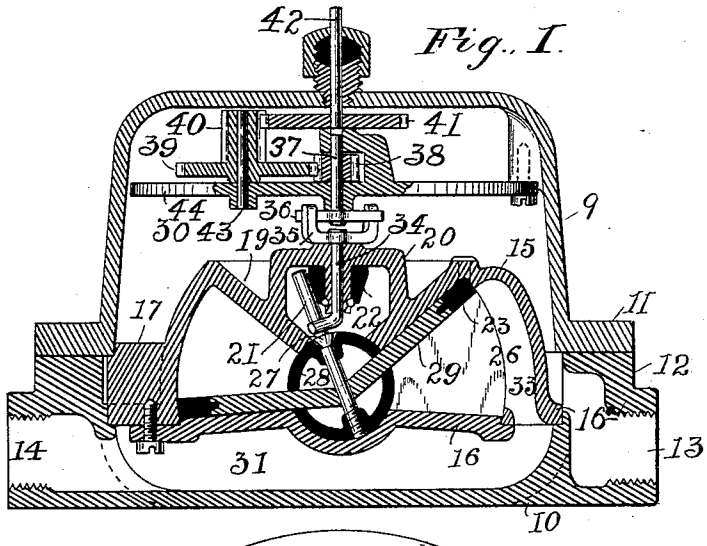

Fig. 2.

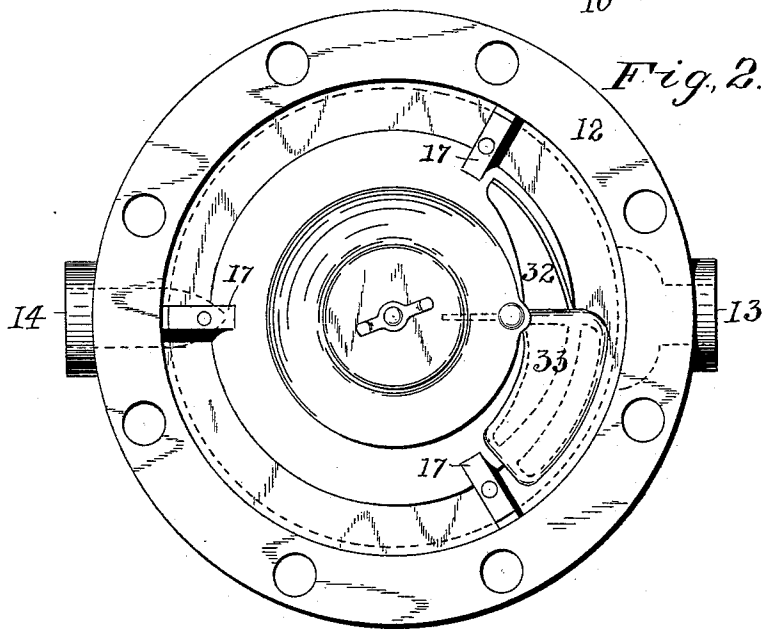

Fig. 3.

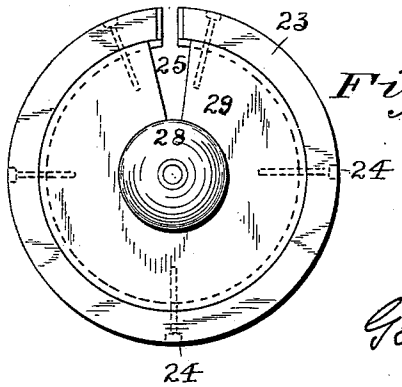

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Fig. 4.

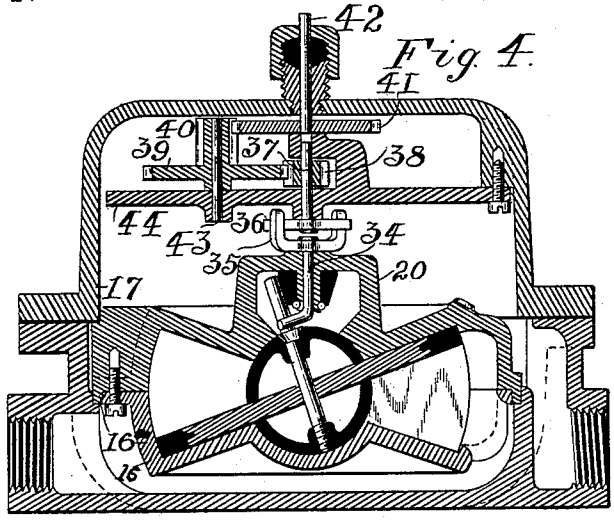

Fig. 5.

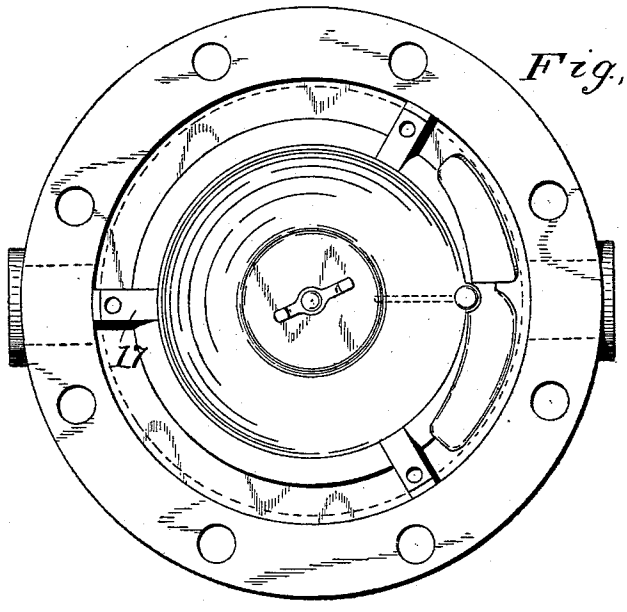

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Fig. 6.

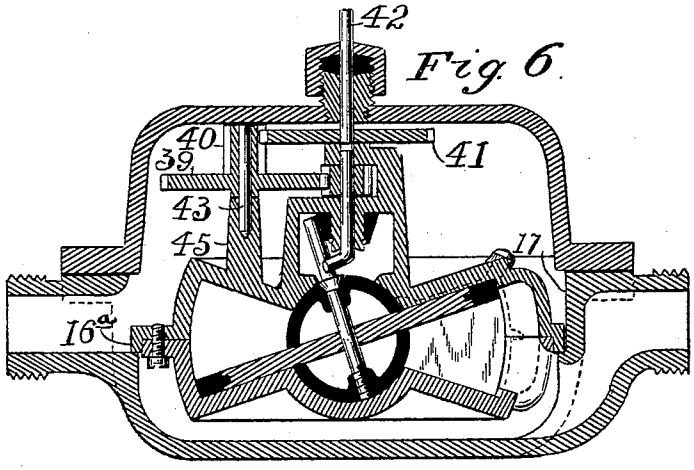

Fig. 7.

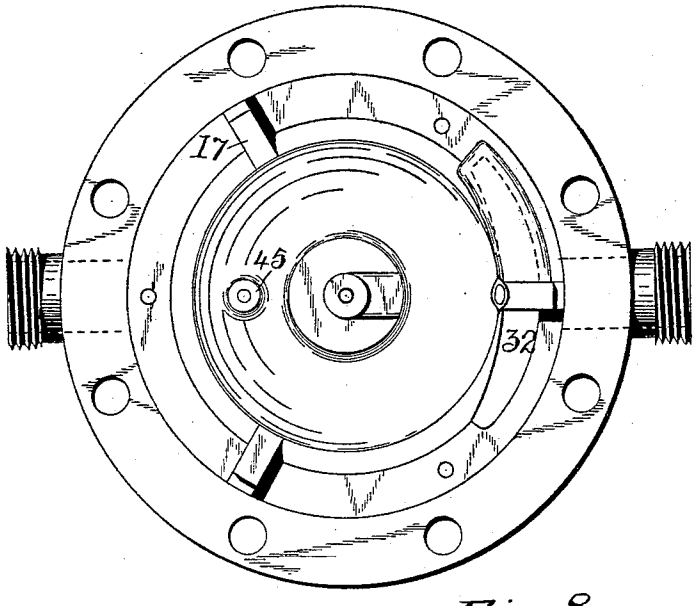

Fig. 8.

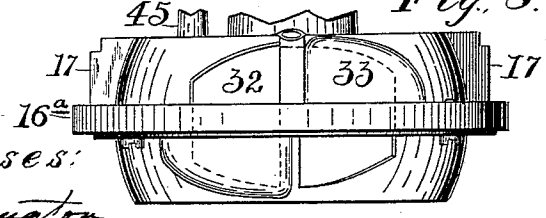

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Fig. 9.

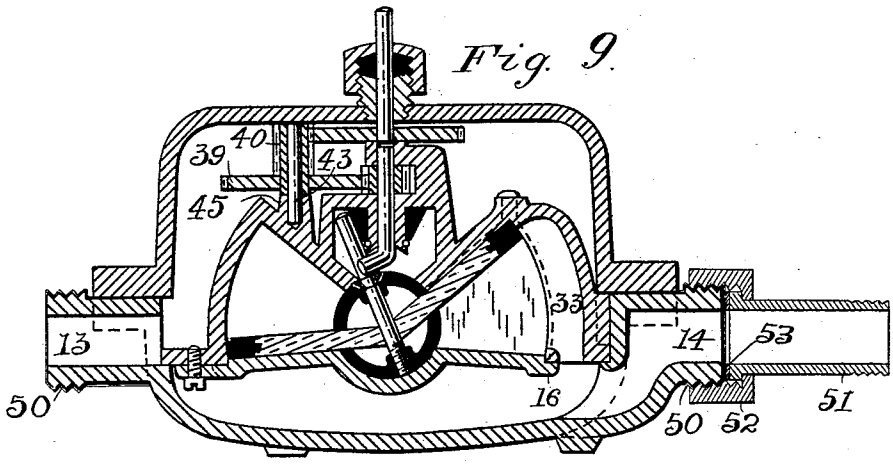


Fig. 10.

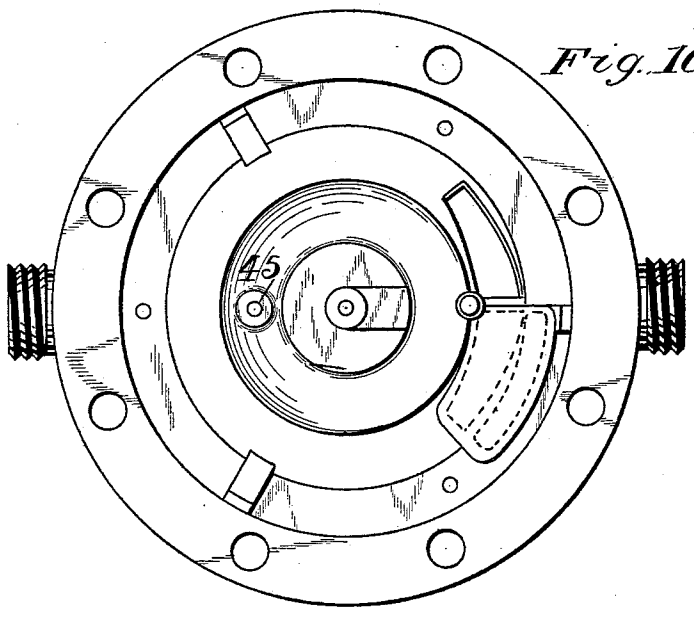
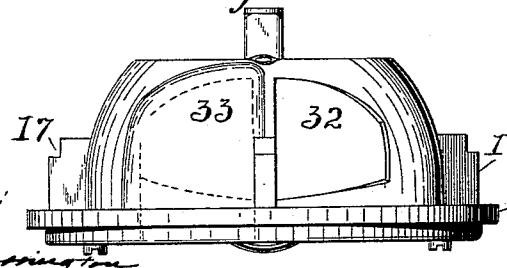


Fig. 11.



Witnesses:
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Inventor.
Geo. B Bassett

UNITED STATES PATENT OFFICE.

GEORGE B. BASSETT, OF BUFFALO, NEW YORK.

WATER-METER.

SPECIFICATION forming part of Letters Patent No. 569,271, dated October 13, 1896.

Application filed October 30, 1894. Serial No. 527,442. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. BASSETT, of Buffalo, New York, have invented a new and useful Improvement in Water-Meters, which improvement is fully set forth in the following specification.

This invention has reference to the construction of water-meters, and in particular to meters of the type illustrated in Letters Patent No. 501,203, granted to me July 11, 1893.

The invention includes various improvements in the construction of such meters tending to simplicity in construction, certainty in operation, durability, lessening of wear, and other desirable results, as will more fully appear. Heretofore in the construction of such meters it has been common to use an oscillating measuring-disk made of hard rubber. I have found it desirable, particularly for large meters, to use a disk of metal clamped at its center between two parts of the sphere, and provided at its edge with a hard-rubber ring forming the wearing-surface of the disk. This ring can be readily removed and replaced by another when worn, and preferably it is made of such length that its ends project into the slot made in the disk for the reception of the diaphragm and receive the thrust of the disk on the diaphragm. The disk-chamber is entirely separate and detachable from the outer casing, which is made in two parts, of which the lower contains the inlet and outlet spuds. The disk-chamber has an annular flange which rests upon a seat of corresponding shape formed in the lower part of the outer casing between said inlet and outlet openings, and has lugs projecting from its spherical wall upon which the inner circular edge of the upper part of the outer casing bears, the disk-chamber being by this means held in place.

In a device having the characteristics above referred to and in which communication must be provided from one of the spuds (that opening above the seat on the lower part of the casing) around the upper part of the disk-chamber to the space above the same it is obviously impracticable to secure the disk-chamber by allowing the upper part of the casing to rest directly upon a continuous flange thereon, as has been done in apparatus not embodying the characteristics referred to, for the reason that the desired communication would thereby be closed. To avoid such difficulties, the lugs are provided, thus permitting the flange on the disk-chamber to be made of such thickness as not to interfere with the spud-opening, and providing means for allowing the disk-chamber to be rigidly secured between the two parts of the casing. The gearing for transmitting motion from the disk-spindle to the register is so mounted and arranged that the upper part of the outer casing, which ordinarily carries the register, can be turned axially to any desired position with reference to the disk-chamber and lower part of the casing.

The invention includes certain details of construction and combinations of parts, which will be described in detail, and specifically pointed out in the claims.

In the accompanying drawings, which form part of this specification, I have illustrated several forms of water-meters embodying the invention.

Figure 1 is a vertical central section of one form of meter. Fig. 2 is a top plan view thereof with the upper part of the outer casing removed. Fig. 3 is a top plan view of the measuring-disk. Fig. 4 is a vertical section of a form of meter employing a flat disk. Fig. 5 is a top plan view thereof with the upper part of the outer casing removed. Fig. 6 is a vertical section of another form of meter. Fig. 7 is a top plan view thereof with the upper part of the casing removed. Fig. 8 is a side view of the disk-chamber. Fig. 9 is a view similar to Fig. 6, Fig. 10 a view similar to Fig. 7, and Fig. 11 a view similar to Fig. 8, of another form of meter constructed in accordance with the invention.

The casing, as shown in all the figures, is composed of two detachable parts 9 and 10, which may be fastened together, as by bolts passing through their meeting flanges 11 12, or in any other suitable way. Since the meeting flanges are circular, it is obvious that part 9 can be turned axially with reference to part 10 and will fit equally well in all positions. The disk-chamber, gearing, and other parts connected with the casing are so constructed as to admit of this axial adjustment. To this end also the inlet and outlet

spuds are formed wholly in the part 10, so that the part 9, on which the register is usually mounted, can be turned to the position most convenient for reading the register without reference to the position of the water-pipe. The disk-chamber is also composed of two parts 15 16. It is entirely separate from the casing, being removably attached thereto in the following way: From the spherical part 15 of the disk-chamber projects an annular flange 16^a, which rests in an annular seat in the base 10 of the casing. Above this flange at suitable points are lugs 17, formed integral therewith. Three of these are shown, though the number is not important. They are notched to receive the inner edge of the part 9 of the casing, and as this edge is circular it will fit in any position, and the gearing is so arranged that part 9 may be turned to any position.

The disk-chamber divides the space within the casing into an inlet-compartment 30 and an outlet-compartment 31. The former communicates with the inlet-opening 13 and with the inlet-port 32 of the disk-chamber, and the latter communicates with the outlet-port 33 and with the discharge-opening 14.

The ends of the disk-chamber are coned inward, and an inclosed recess is formed by a housing 20, integral with the cone 19, this recess inclosing the upper end of the disk-spindle 21, which bears against a hard-rubber roller 22. This part of the construction shown is not claimed herein, as it is embraced in my Patent No. 530,743, dated December 11, 1894. The disk is formed of a metal web 29, which may be flat, as in Figs. 4 and 6, or cone-shaped, as in Figs. 1 and 9. On the edge of the metallic web is a hard-rubber ring 23, which takes all the wear of the disk. It is preferably secured to the web 29 by a tongue and groove, and held from turning by screws 24. The disk has the usual radial slot 25 for the diaphragm 26, and the ends of the ring 23 project into this slot, (see Fig. 3,) so as to take the thrust of the disk against the diaphragm.

The pivot ball or sphere 28 is made in two parts, which are fastened together and to the disk by means of the spindle 21, which has a conical projection 27, bearing on one part of the sphere, and is screwed at its end into the other part.

The disk-spindle communicates its motion to a shaft 34, which passes through the center of the housing 20. As shown in Figs. 1 and 4, this shaft carries at its upper end cross-arm 35, having its end bent upwardly, and which is engaged by a straight cross-arm 36 on shaft 37. The latter carries a pinion 38, from which motion is transmitted with reduced speed to the register-shaft 42 through gear 39, pinion 40, and gear 41. Gear 39 and pinion 40 turn on pin 43, which is fixed to a plate 44, attached to part 9 of the casing. Since the axes of the shafts 34, 37, and 42 are all coincident with the center line of the casing, it is obvious that part 9 can be turned axially to any desired position without affecting the operation of the transmitting-gear. This form of gearing is particularly designed for large meters, but its use is not essential, since it is possible to employ the gearing shown in Figs. 6 and 9, which is substantially like that described in my patent mentioned above. In these figures the pivot-pin 43 of the gear 39 and pinion 40 is tapped into a lug 45 on the end cone of the disk-chamber.

In meters of small size, such as shown in Figs. 9 and 10, it is customary to employ externally-threaded spuds 13 14 and a detachable coupling. Since a screw-joint, if made of iron, would quickly rust and render uncoupling difficult or impossible, it has been customary to make the lower chamber and the spuds of brass, which is expensive. To obviate this difficulty, I make the lower casing of iron with the external threads cut on the spuds, and then galvanize the whole by dipping in the usual way. I then recut the threads in the galvanizing-coating, leaving a film 50, Fig. 9, over the iron. The spud is then joined to the pipe or coupling-spigot 51 by the internally-threaded nut 52, a gasket 53 being interposed, forming a detachable joint. In larger meters, where the detachable coupling is not made directly to the meter itself, this improvement is not of importance; but for the type of meters illustrated in Figs. 6 and 9 it has been found to be of great value.

Other modifications in addition to those already described may be made in details of construction of the various parts without departing from the principles of the invention, and some of the improvements described may be used without the others.

Having thus described my invention, what I claim is—

1. In a disk water-meter, the combination with a two-part casing, one part of said casing having an internal annular seat or shoulder and inlet and outlet openings formed entirely within and located respectively above and below said seat, of a disk-chamber resting on said seat and having lugs at suitable points, against and over which the other part of the casing rests for securing the disk-chamber in the casing, substantially as described.

2. In a disk water-meter, the combination with a two-part casing, both parts having suitable meeting edges one part being provided with an annular seat and with inlet and outlet openings formed entirely within said part and located respectively on opposite sides of said seat, below the meeting edges, a disk-chamber having an annular flange resting on said seat, and lugs projecting above said flange and against and above which the meeting edge of the other part engages when said parts are assembled, substantially as described.

3. In a disk water-meter, the combination

of a casing formed in two parts, one part having inlet and outlet openings and an annular seat, the other part being circular in cross-section and adjustable axially to any position on the lower part, and a disk-chamber having an annular flange fitting said seat, being also axially adjustable said chamber dividing the space within the casing into two compartments communicating respectively with the inlet and outlet openings, and having also lugs above said flange upon which rests the circular edge of one part of the casing, and gearing for driving a register carried part by the disk-chamber and part by the adjustable portion of the casing, arranged and operating, substantially as described.

4. In a disk water-meter, the combination with the outer casing having two parts joined by symmetrical meeting flanges, one part being provided with an annular seat for the disk-chamber and an inlet-opening on one side of said seat and an outlet-opening on the other side thereof, both said inlet and outlet openings being formed entirely in the side wall of the one part, of a separate removable disk-chamber provided with a lateral annular flange resting in said seat so as to divide the space between said disk-chamber and said outer casing into an inlet-chamber and an outlet-chamber, and also provided with an inlet-port on one side of said annular flange and an outlet-port on the other side thereof, so that each of the two parts of the outer casing and the disk-chamber may be adjusted axially to any position relative to each other, substantially as described.

5. The combination with the disk-chamber of a measuring-disk comprising a metallic web, and a hard-rubber ring attached to said web by a tongue and groove, substantially as described.

6. The combination with the disk-chamber and diaphragm, of a measuring-disk comprising a metallic web having a radial slot for said diaphragm, and a hard-rubber ring removably fastened on the edge of said web, and having its ends projecting into the slot so as to receive the thrust of the disk on the diaphragm, substantially as described.

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

GEORGE B. BASSETT.

Witnesses:

CHAS. M. HARRINGTON,

M. E. WARWICK.