No. 626,519. Patented June 6, 1899.

G. B. BASSETT.

WATER METER.

(Application filed July 21, 1897.)

(No Model.)

Fig. 1.

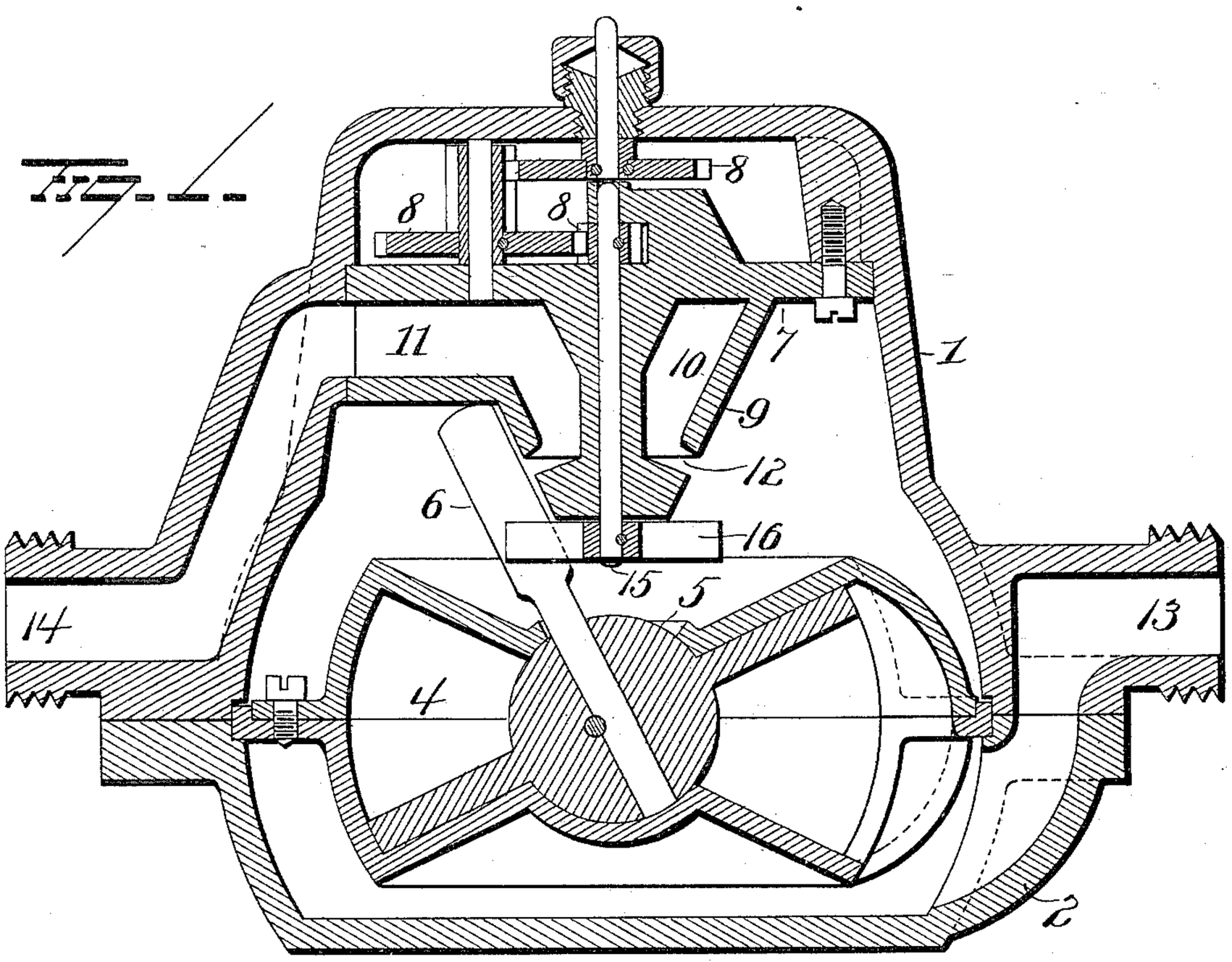
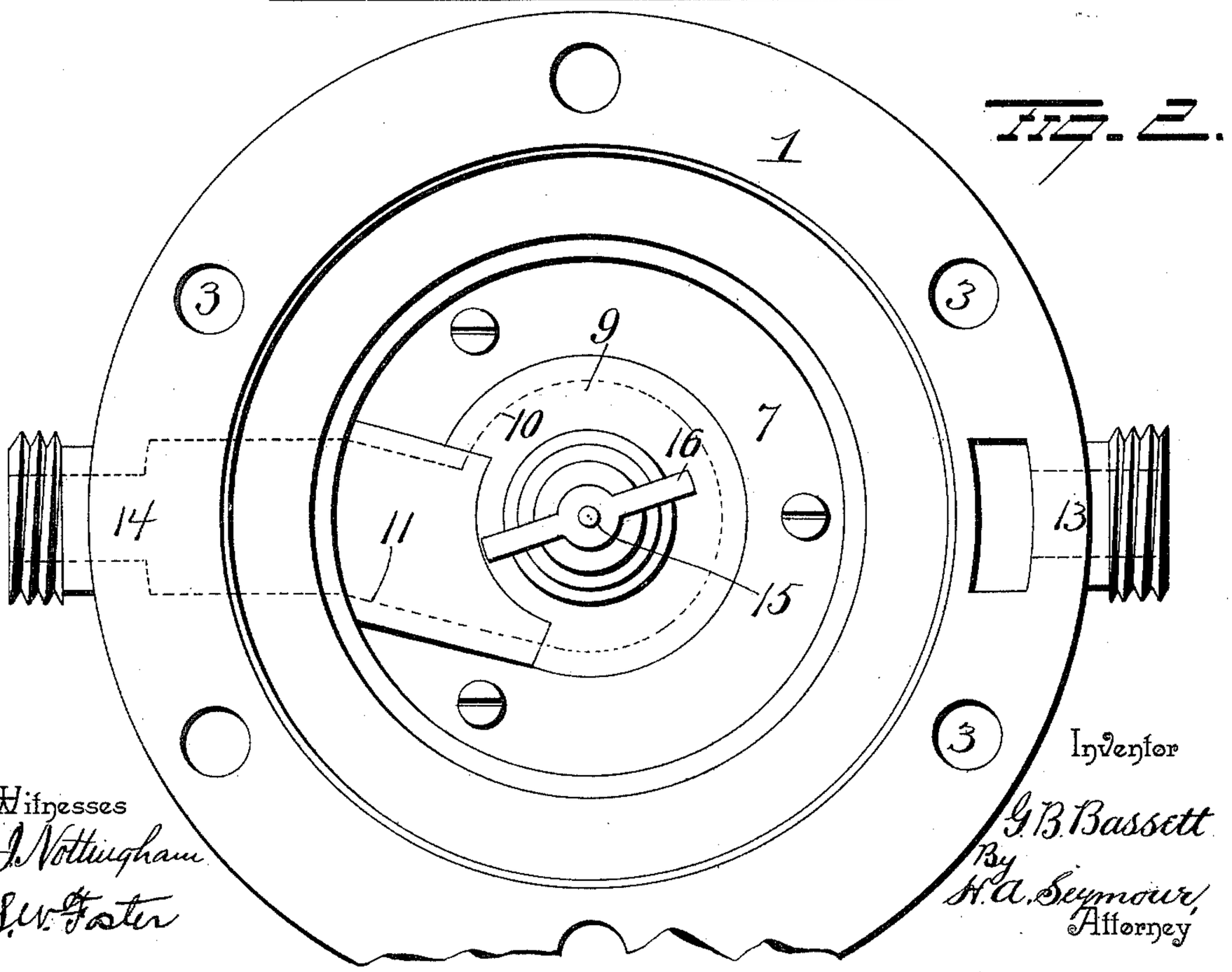


Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE B. BASSETT, OF BUFFALO, NEW YORK.

WATER-METER.

SPECIFICATION forming part of Letters Patent No. 626,519, dated June 6, 1899.

Application filed July 21, 1897. Serial No. 645,372. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. BASSETT, a resident of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Water-Meters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in water-meters, and more particularly to disk water-meters of that class shown in Letters Patent No. 501,203, granted to me on the 11th day of July, 1893.

The principal object of my present invention is to hold the disk-web in working contact with the end walls of the disk-chamber by the force of water acting exteriorly to the disk-chamber.

Another object of my invention is by the same means to assist the disk onward in its path.

I will now proceed to definitely describe my invention and then claim what I believe to be novel.

In the drawings, Figure 1 is a central vertical section of my improved meter. Fig. 2 is an upward inside view of the top outer casing with the disk-chamber removed.

The outer casing is composed of upper part 1 and lower part 2, held together at their meeting flanges by bolts passing through holes 3. Secured between and inclosed by the outer casings 1 and 2 is the disk-chamber 4, in which is mounted the nutating disk 5 with its projecting controlling-spindle 6. In the upper part of outer casing 1 is secured the intermediate gear-plate 7, on top of which is mounted the intermediate gearing 8. On the under side of gear-plate 7 is centrally situated the hollow jet-cone 9, having an internal annular chamber 10, which communicates with a tangential inlet-passage 11 and an annular jet-opening 12. The outer casing 1 is provided with an outlet-opening 13 and an inlet-opening 14, which latter communicates with inlet-passage 11, leading to the cone-chamber 10. The intermediate gear-shaft 15 extends downward through the center of jet-cone 9 and is provided with a crank-arm 16, which is turned around by disk-spindle 6 when the meter is operated, thus imparting motion to the intermediate gearing 8 and any counter that may be placed on top of the meter, but which is not shown in the drawings. The disk-chamber shown is of a form well known in the art and is provided with the usual radial partition-plate and inlet and outlet openings.

In the operation of my improved meter the water entering at inlet-opening 14 proceeds through the tangential passage 11 and enters the annular chamber 10. The water passes around this chamber with a circular motion, and then issues with a whirling motion from the annular opening 12 in the form of an annular conical jet and, impinging against the controlling disks-pindle 6, forces it outwardly and at the same time onward in its circular path with a force proportionate to the amount of water flowing through the meter. The water then passes through the measuring-disk chamber 4 in the usual manner and out of the meter through outlet 13. It is easily seen that the disk-spindle 6 being forced outwardly by the annular conical jet of water issuing from opening 12 holds the disk-web in variable elastic contact with the end walls of the disk-chamber with a force proportionate to the amount of water passing through the meter.

In operating disk meters there is a sliding contact between the disk-web and the cones or end walls of the disk-chamber, and the amount of friction between them will depend largely upon the force with which they are held in contact. Again, the tendency of the disk-web to lift away from joint-forming contact with the end walls of the disk-chamber is ordinarily least under small flows and greatest under large flows. Some disk meters as heretofore made are provided with springs for controlling the disk-spindle and for holding the disk-web against the end walls of the disk-chamber with a constant elastic pressure and consequent constant friction, whether under small or large flows, thus causing these meters to underregister on very small flows or very large flows. Also some disk meters as heretofore made are provided with rollers or guides for positively controlling the disk-spindle in its circular path, and thus positively holding the disk-web in joint-forming contact with the end walls of the disk-chamber. In that style of meter very accurate

and expensive work is necessary to insure that all the related parts are perfectly true and central, and at the same time such a meter is easily blocked by a small piece of gravel getting between the disk-web and the end wall of the disk-chamber. In my invention the disk-web is held in joint-forming contact with the end walls of the disk-chamber with a variable elastic pressure greater or lesser, according to a greater or lesser quantity of water passing through the meter, thus reducing the friction to a minimum on small flows and yet strongly holding the disk-web in joint-forming contact with the end walls of the disk-chamber on large flows. Also in my invention the disk-spindle does not bear on the jet-cone, and it does not make any material difference if the jet-cone and disk-spindle are relatively a little out of center. Also in my invention the disk-web is held in elastic contact with the end walls of the disk-chamber and can rise therefrom to pass over a small obstruction, such as a small piece of gravel, and not become blocked thereby.

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

1. In a disk water-meter, the combination with a disk-chamber and a disk therein, of a water-inlet exterior to the disk-chamber, the said inlet being so constructed that the water discharged therefrom assists the disk in its circular path.

2. In a disk water-meter, the combination with a disk-chamber, a disk therein and a disk-spindle, the disk-spindle being unsupported above the disk-chamber, of a water-inlet exterior to the disk-chamber and located within the conical or circular path described by the disk-spindle so that the water discharged against the disk-spindle operates to hold the disk in yielding contact with the end walls of the disk-chamber.

3. In a disk-meter, the combination with a disk and disk-spindle, of means for directing a water-jet onto the disk-spindle to assist the spindle onward in its path, substantially as set forth.

4. In a disk water-meter the combination with a disk-chamber, a disk therein and a disk-spindle, the latter being unsupported above the chamber, of a water-inlet having a ring-shaped opening adjacent to the spindle.

5. In a disk water-meter, the combination with a disk-chamber, a disk therein and a disk-spindle, the latter being unsupported above the disk-chamber, of an inlet-opening within the conical or circular path described by the nutating-disk spindle.

6. In a disk water-meter, the combination with a nutating measuring-disk and its spindle, of a nozzle for directing a current of water against the spindle in a direction to control the spindle in its circular or conical path.

7. In a disk water-meter, the combination with a water-chamber in which the disk-spindle moves, of means to direct a current of water tangentially to the path of said spindle, to assist the spindle onward in its path, substantially as set forth.

8. In a disk water-meter, the combination with a water-chamber in which the disk-spindle moves, of a nozzle for directing a current of water outwardly against said spindle so as to yieldingly hold the disk in contact with the end cones of the disk-chamber.

9. In a disk water-meter, the combination with a water-chamber in which the disk-spindle moves, of means for directing a current of water outwardly or centrifugally against the spindle as the latter moves in its circular path around the water-outlet.

10. In a disk water-meter, the combination with a nutating disk and its disk-chamber, of means whereby said disk is assisted onward by water-power acting centrifugally exteriorly to said disk-chamber, substantially as set forth.

11. In a disk water-meter, the combination with a gear-plate having a jet-outlet formed therein, of intermediate gearing carried by said gear-plate and a disk for actuating said gearing, substantially as set forth.

12. In a disk water-meter, the combination with a nutating disk and its disk-chamber, of a jet-nozzle through which the water passes before it enters the disk-chamber, and a power-transmitting device opposite the egress end of said nozzle.

13. In a disk water-meter, the combination with a nutating disk and its controlling-spindle, of a jet-nozzle situated within the circle described by the path of said disk-spindle, substantially as set forth.

14. In a disk water-meter, the combination with a nutating disk and its spindle, of an annular jet-nozzle, substantially as set forth.

15. In a disk water-meter, the combination with a disk and its spindle, of a jet-nozzle and a power-transmitting shaft and crank-arm mounted on said nozzle, substantially as set forth.

16. In a disk water-meter, the combination with a disk-chamber and disk, of a disk-spindle controlled by a water-jet located within the path of the spindle and acting outwardly against the spindle.

17. In a disk water-meter, the combination with a disk-spindle, of an intermediate gear-plate provided with a jet-opening for centrifugally controlling said spindle.

18. In a disk water-meter, the combination with a disk and a disk-chamber, of a water-discharge outlet located within the cone generated by the nutating of the axis of the disk so that the water discharged therefrom operates to hold the disk in contact with the end walls of the disk-chamber.

19. In a disk water-meter, the combination with a disk-chamber, disk and disk-spindle, of a water-discharge outlet located within the cone generated by the nutating of the axis of the disk, so that the water discharged therefrom operates against said spindle to hold the

disk in contact with the end walls of the disk-chamber.

20. In a disk water-meter, the combination with a disk and its disk-chamber, of means whereby said disk is held in yielding contact with the ends or cones of the disk-chamber by water-power acting exteriorly to said disk-chamber.

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

GEORGE B. BASSETT.

Witnesses:
MORTIMER O. WILCOX,
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