

(No Model.)

2 Sheets—Sheet 1.

J. C. KELLEY.
PISTON FOR WATER METERS.

No. 534,749.

Patented Feb. 26, 1895.

Fig. 1.

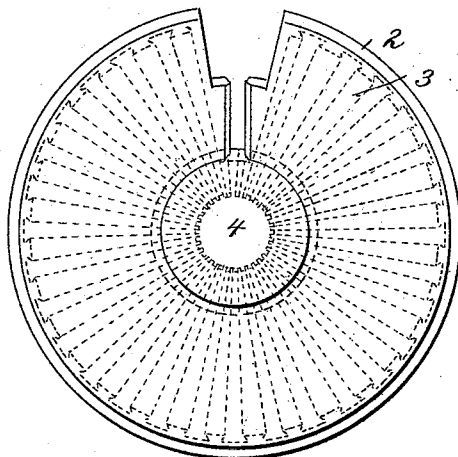


Fig. 2.

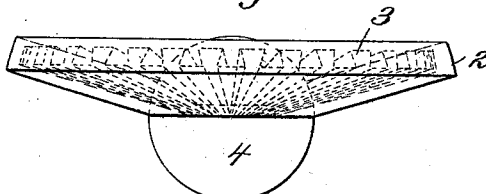


Fig. 3.

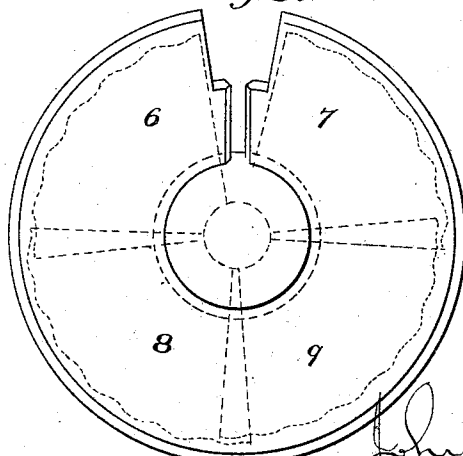
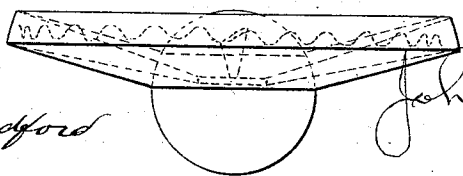


Fig. 4.



Inventor.

John C. Kelley

By

John A. Johnson
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Witnesses:
August Johnson
Edwin L. Bradford

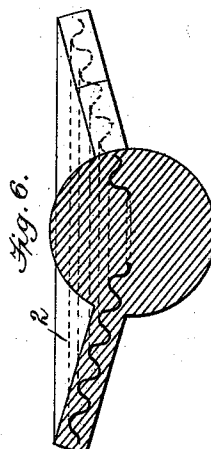
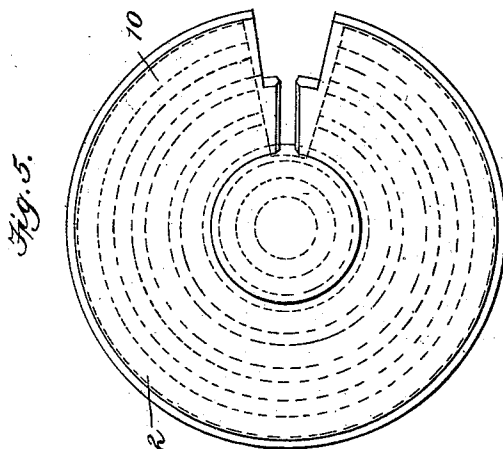
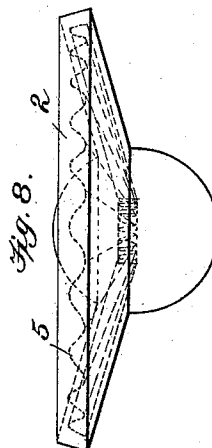
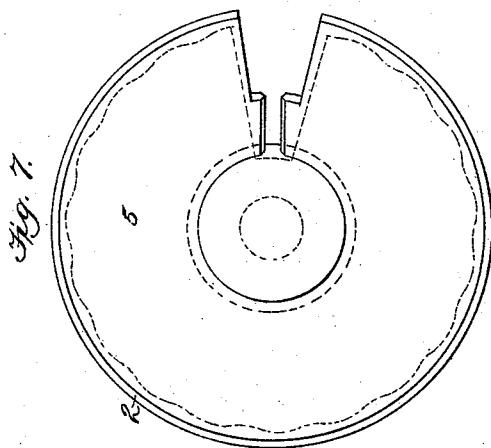
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2 Sheets—Sheet 2.

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WITNESSES:

Aug. H. Johnson
Edwin L. Bradford

INVENTOR
John C. Kelley
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UNITED STATES PATENT OFFICE.

JOHN C. KELLEY, OF BROOKLYN, NEW YORK.

PISTON FOR WATER-METERS.

SPECIFICATION forming part of Letters Patent No. 534,749, dated February 26, 1895.

Application filed May 31, 1892. Serial No. 434,954. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. KELLEY, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Pistons for Water-Meters, of which the following is a specification.

My present invention relates to nutating pistons for fluid meters preferably made of hard rubber and provided with a skeleton of strengthening material, preferably made of metal, and it consists of certain novel parts and combinations of parts particularly pointed out in the claims concluding this specification.

For the purpose of enabling others skilled in the art to understand my present invention and to practice it in the forms at present preferred by me, I will describe the structures illustrated in the annexed drawings, which show nutating pistons in several different forms, all of them involving my present invention; but it will be understood that my invention is not limited to the precise forms shown and described herein, as various modifications may be made without departing from the spirit and without exceeding the scope of the claims.

Referring to said drawings: Figures 1, 3, 5, and 7 are top views of nutating pistons involving my invention; and Figs. 2, 4, and 8 are side views, respectively of Figs. 1, 3, and 7. Fig. 6 is a side view of Fig. 5 partly in section.

All the pistons shown in the drawings are of cone shape, although it is obvious that my invention is equally applicable to nutating pistons of other shapes, such, for example, as disk shaped pistons.

Referring to Figs. 1 and 2, 2 is a piston preferably made of hard rubber and provided with an interior skeleton of strengthening material. This skeleton preferably consists of a continuous sheet of thin metal 3 extending from within the ball 4 of the piston to near its outer rim, said sheet being corrugated or bent in angles which are not right angles. Instead of making this skeleton of a single piece of metal, as shown in Figs. 1 and 2, it may be made of

a series of plates, as is shown in Figs. 3 and 4, where the plates are of serpentine form in side view.

Referring to Figs. 7 and 8, the strengthening skeleton is made of a single sheet of metal, 55 5, radially corrugated.

In Figs. 3 and 4 the strengthening skeleton is made of plates 6, 7, 8, and 9 likewise radially corrugated, the ends of adjacent plates overlapping.

Referring to Figs. 5 and 6, the skeleton is made of a sheet of metal concentrically corrugated. In this case also, if preferred, the skeleton may be made of sections with their edges approaching or overlapping each other. 65

By the use of a corrugated strengthening plate I am able to make a piston having all the advantages incident to the use of a skeleton of strengthening material, and yet of great lightness, so as not to interfere with the accuracy of the meter. Furthermore, by the use of a structure like that shown in Figs. 1 and 2, not only is great strength with little increase of weight obtained, but in the shape in which the metal is corrugated provides a series of under cuts or detailed grooves (as it were) into which the rubber is vulcanized and from which after setting it cannot subsequently withdraw. 75

In the foregoing specification I have described a few of the modifications which may be adopted in practicing my invention but I have not endeavored to specify all the modifications which might be employed, the object of this specification being to instruct persons skilled in the art to practice the several novel features of my invention in forms at present preferred by me and to enable them to understand its nature, and I desire it to be understood that mention by me of a few modifications is in no way intended to exclude others not referred to but which are within the spirit and scope of my invention. 85

Many of the details illustrated and above described are not essential to the several features of my invention separately and broadly considered. This will be indicated in the concluding claims, as in any given claim the omission of an element or the omission of reference to the particular features of the ele- 95 100

ments mentioned is intended to be a formal declaration of the fact that the omitted elements or features are not essential to the invention therein covered.

5 Having thus described the several structures involving my invention, what I claim, is—

10 1. In a water meter, a piston formed of hard rubber combined with a skeleton of strengthening material—such as metal—composed of a plurality of corrugated plates.

15 2. In a water meter, a piston formed of hard rubber combined with a skeleton of strengthening material—such as metal—composed of corrugated undercut plates.

3. In a water meter, a piston formed of hard

rubber combined with a sheet of thin metal extending from within the ball of the piston to near its outer rim, and corrugated or bent in angles which are not right angles. 20

4. In a water meter, a piston formed of hard rubber combined with a sheet of metal extending from within the ball of the piston to near its outer rim, and corrugated, substantially as described. 25

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

JOHN C. KELLEY.

Witnesses:

FRANK VINTON,
FRANK L. PLATT.