

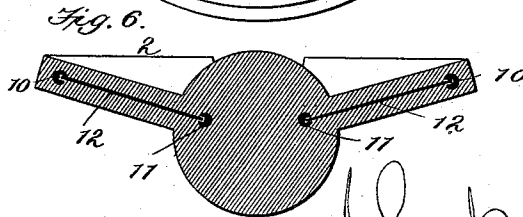
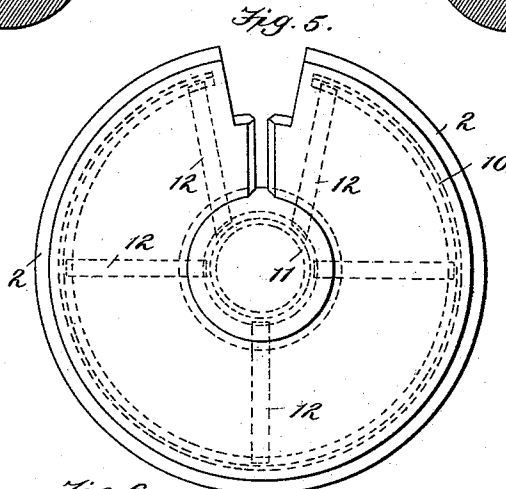
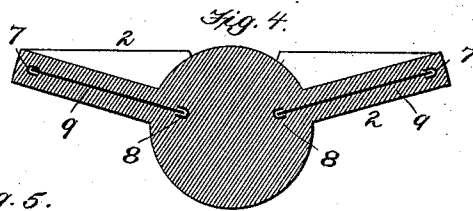
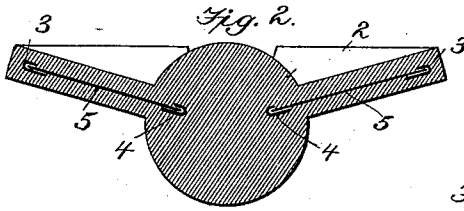
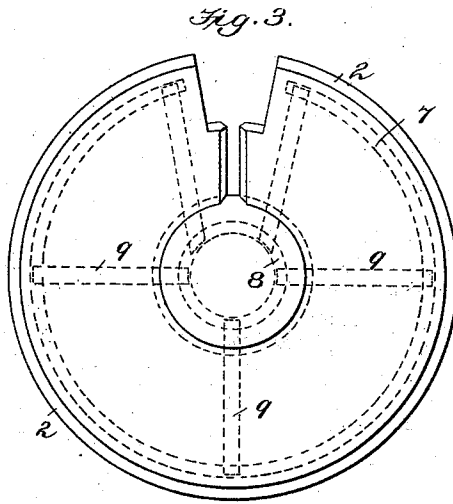
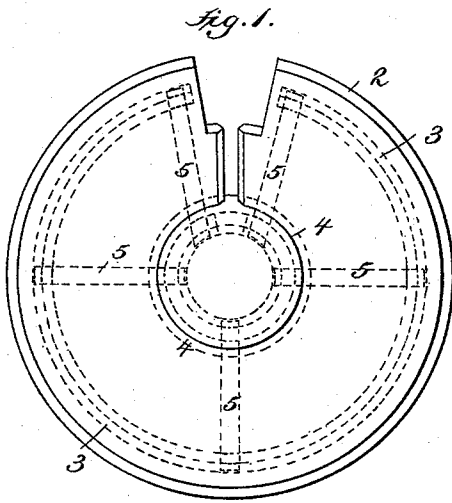
(No Model.)

2 Sheets—Sheet 1.

J. C. KELLEY.
PISTON FOR WATER METERS.

No. 534,748.

Patented Feb. 26, 1895.



WITNESSES:

Edw. Johnson
Edwin L. Bradford

INVENTOR

John C. Kelley
BY *Edw. Johnson*
his ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

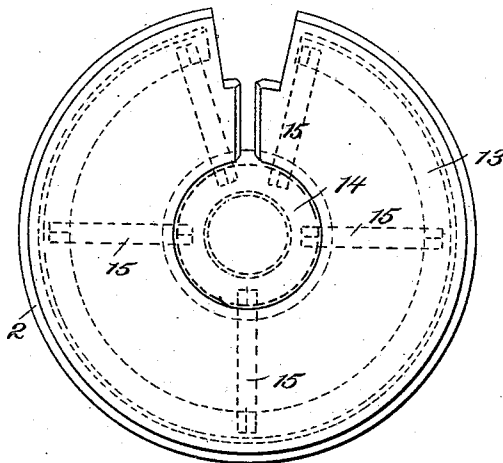
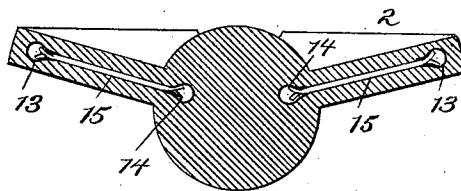


Fig. 8.



Witnesses:

August Johnson
Edwin L. Bradford

Inventor:

John C. Kelley
By *Johnson & Johnson*
his Attorneys.

UNITED STATES PATENT OFFICE.

JOHN C. KELLEY, OF BROOKLYN, NEW YORK.

PISTON FOR WATER-METERS.

SPECIFICATION forming part of Letters Patent No. 534,748, dated February 26, 1895.

Application filed May 31, 1892. Serial No. 434,953. (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 made of hard rubber or analogous material and provided with a skeleton of strengthening material, such as 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 which are at present preferred by me, I will describe the structure 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 present invention is not limited to the precise form 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. Figs. 2, 4, 6, and 8 are cross-sections through the same respectively.

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 made of hard rubber provided with a skeleton of metal. This skeleton consists of an outer ring 3 in the form of the letter J laid on its side and an inner ring 4, within the ball of the piston of the same shape. These two rings are held in position during the process of vulcanizing the rubber and are connected together by a series of spokes 5, the ends of which project between the limbs of the J-shaped rings 3 and 4.

Referring to Figs. 3 and 4, 2 is the piston and 7, 8, and 9 are the skeleton of strengthening material. In this case the rings 7 and

8 are made of a U-shaped piece of metal laid on its side, but in other respects the skeleton is substantially like that shown in Figs. 1 and 2.

Referring to Figs. 5 and 6, the rings 10 and 11 of the skeleton are made of round wire having a longitudinal slot through its length, into which the ends of the spokes 12 project.

Referring to Figs. 7 and 8, the rings 13 and 14 of the skeleton are made of a hollow wire having a longitudinal opening at one side and spokes 15 are made of strips slit at the ends and bent so as to engage with said rings.

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 not in any way intended to exclude others not referred to, but which are within the spirit and scope of my invention.

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

What I claim is—

1. In a water meter, a piston formed of hard rubber combined with a skeleton of strengthening material—such as metal—composed of rings and intervening connecting strips.

2. In a water meter, a piston formed of hard rubber combined with a skeleton of strengthening material—such as metal—composed of concentric rings one near the periphery of the piston and the other within the ball thereof and intervening connecting strips.

3. In a water meter, a piston formed of hard rubber combined with a skeleton of strengthening material—such as metal—composed of

slitted rings and intervening strips project-
ing into said slits.

4. In a water meter, a piston formed of hard
rubber combined with a skeleton of strength-
5 ening material—such as metal—composed of
rings with intervening strips loosely connect-
ing them.

5. In a water meter, a piston formed of hard
rubber combined with a metal ring embedded

in the rim and connected to the hub by a 10
skeleton frame.

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

JOHN C. KELLEY.

Witnesses:

FRANK VINTIN,
FRANK L. PLATT.