

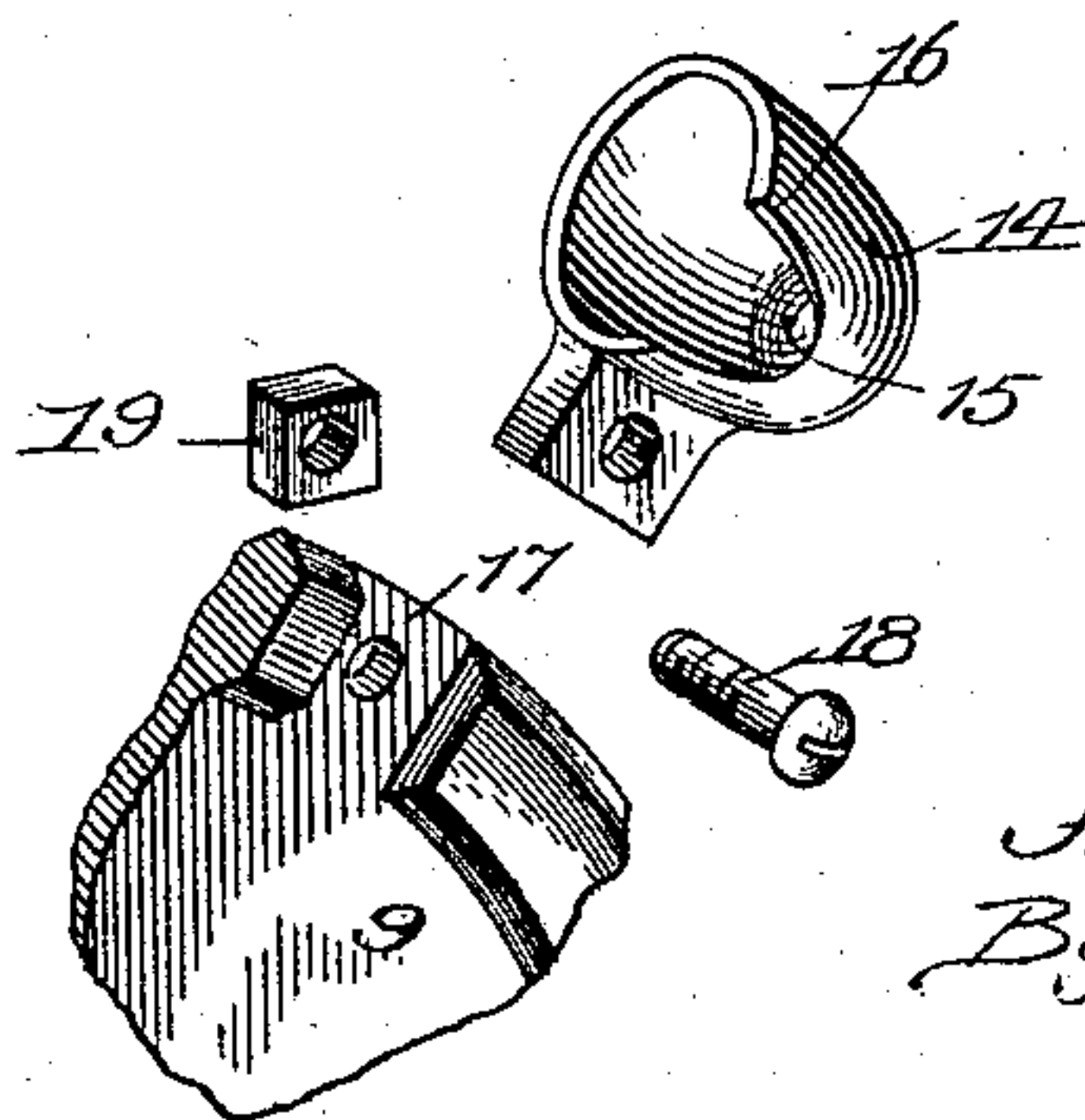
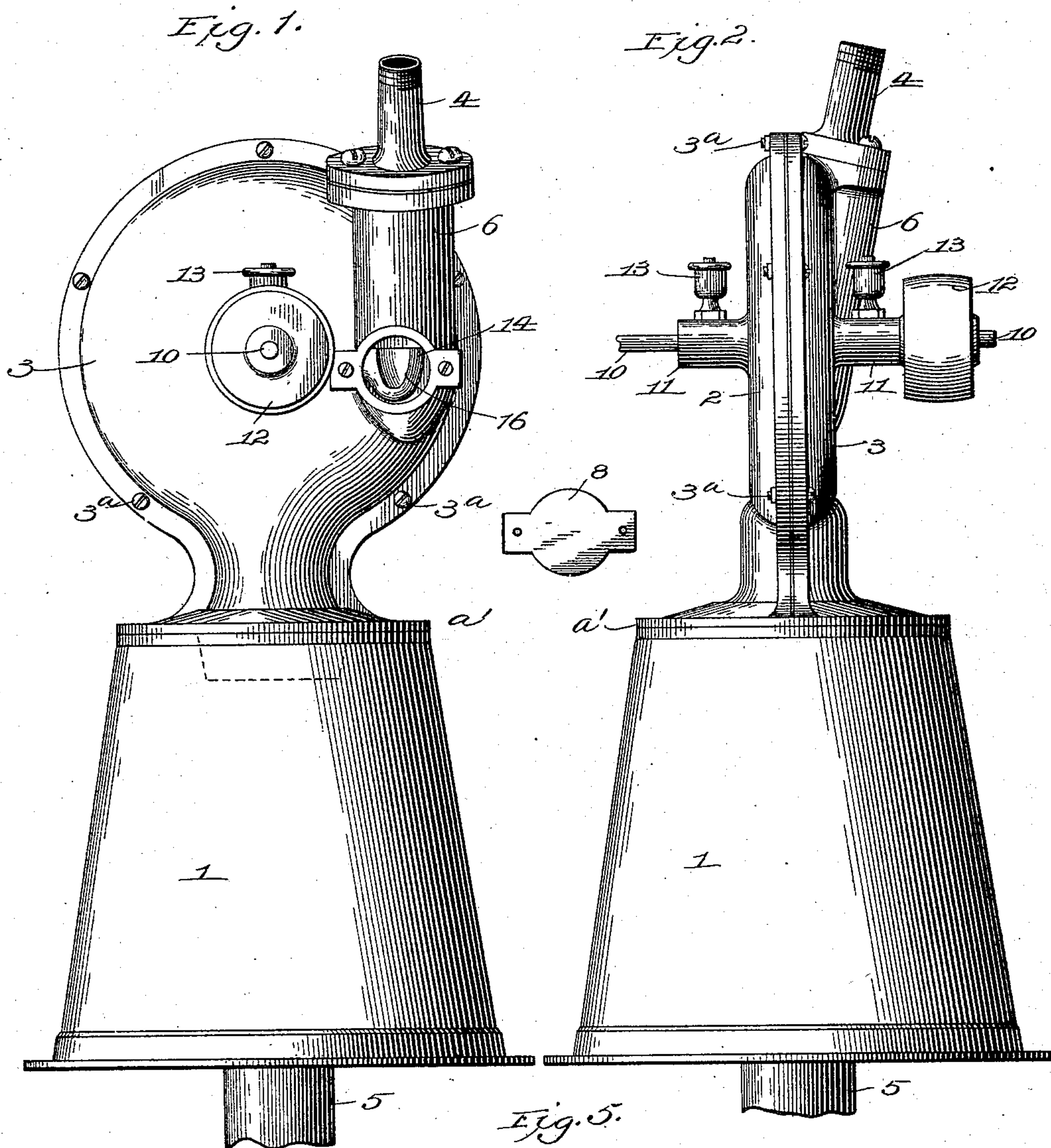
(No Model.)

3 Sheets—Sheet 1.

A. D. OLES.  
WATER MOTOR.

No. 572,684.

Patented Dec. 8, 1896.



Witnesses:  
Harry S. Pomeroy  
Geo. C. Cramer

Inventor:  
Abram D. Oles.  
By Knight Bros.  
Atty's.

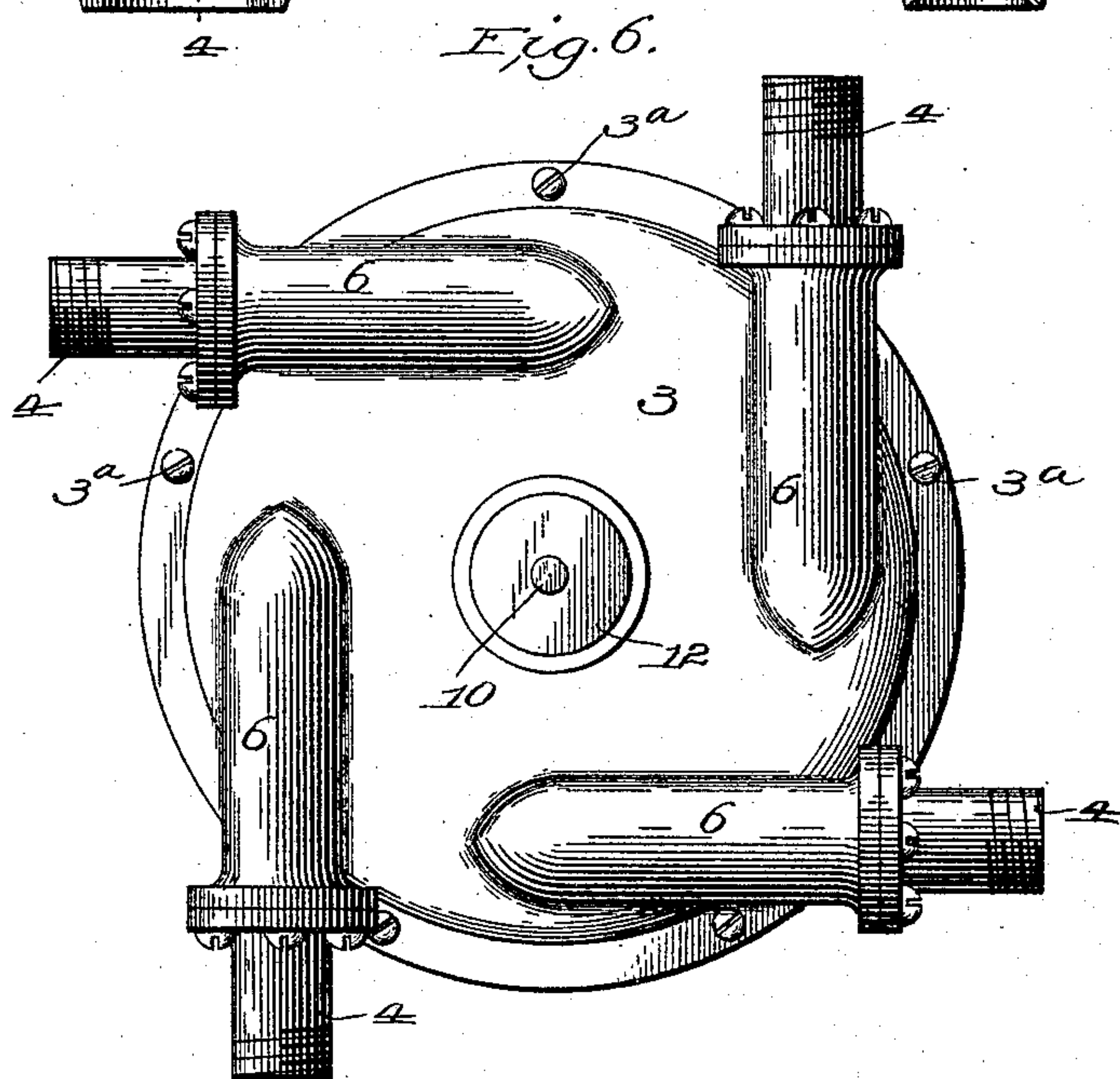
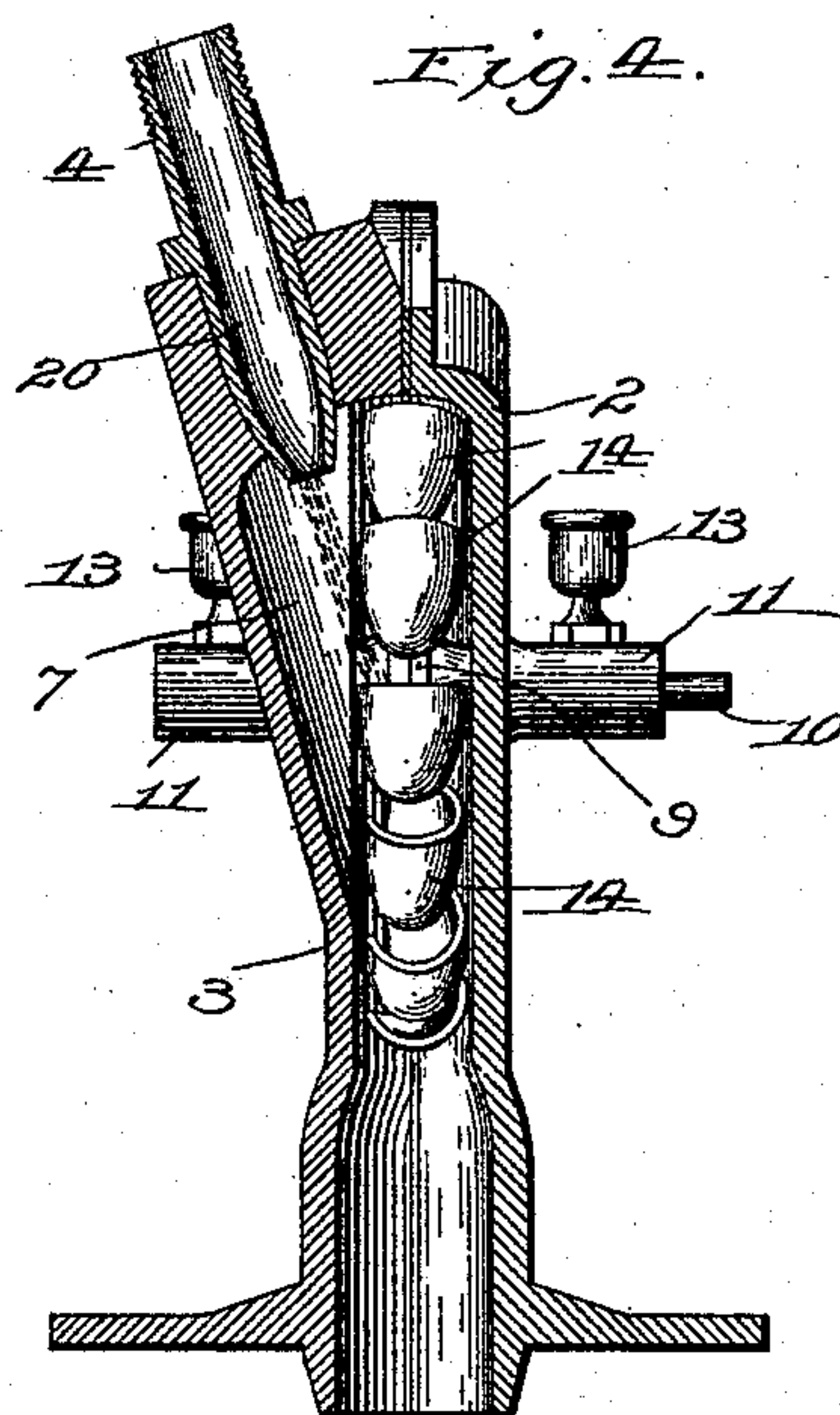
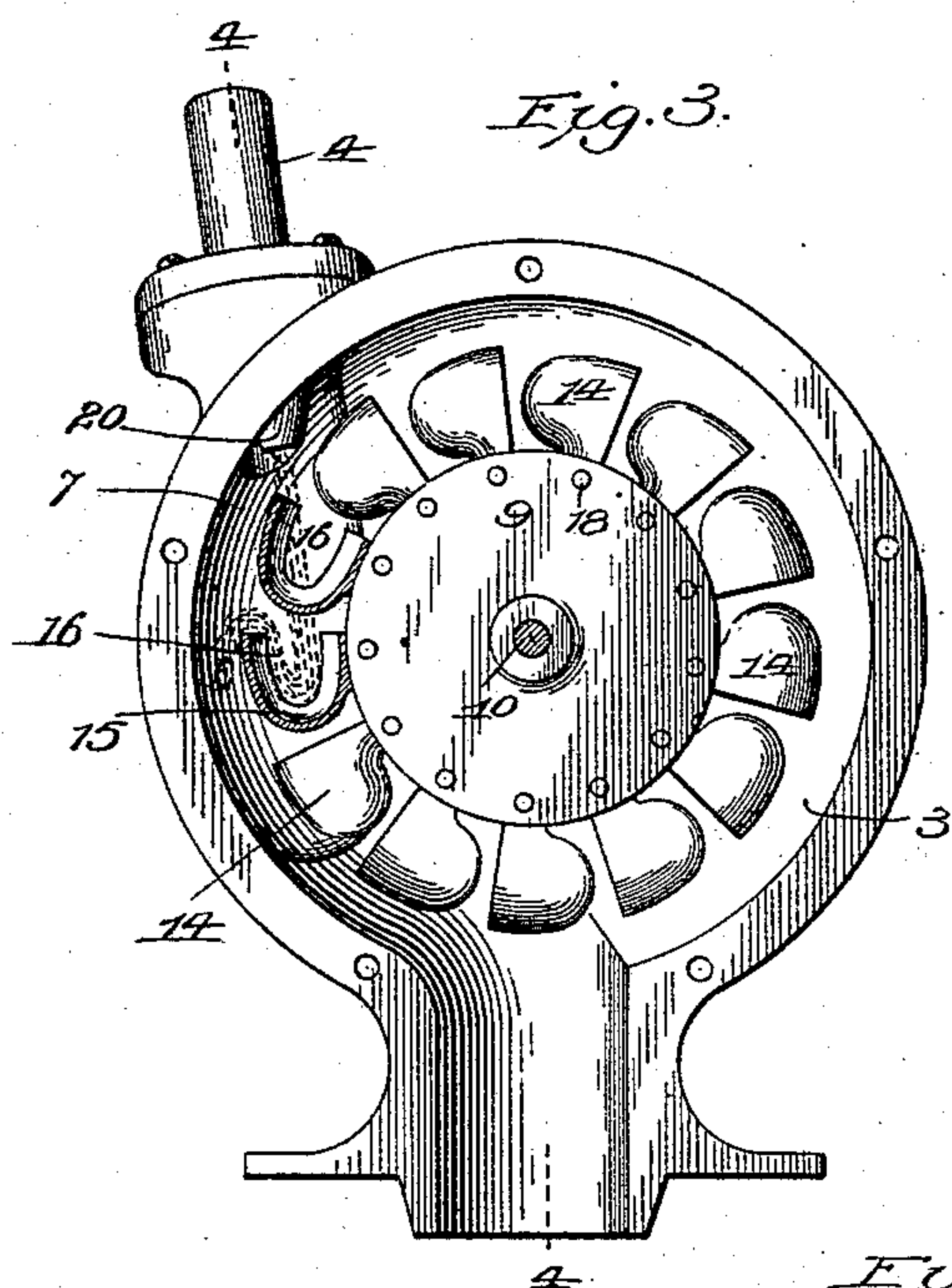
(No Model.)

3 Sheets—Sheet 2.

A. D. OLES.  
WATER MOTOR.

No. 572,684.

Patented Dec. 8, 1896.



witnesses:

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Inventor:

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By Knight Bros.  
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(No Model.)

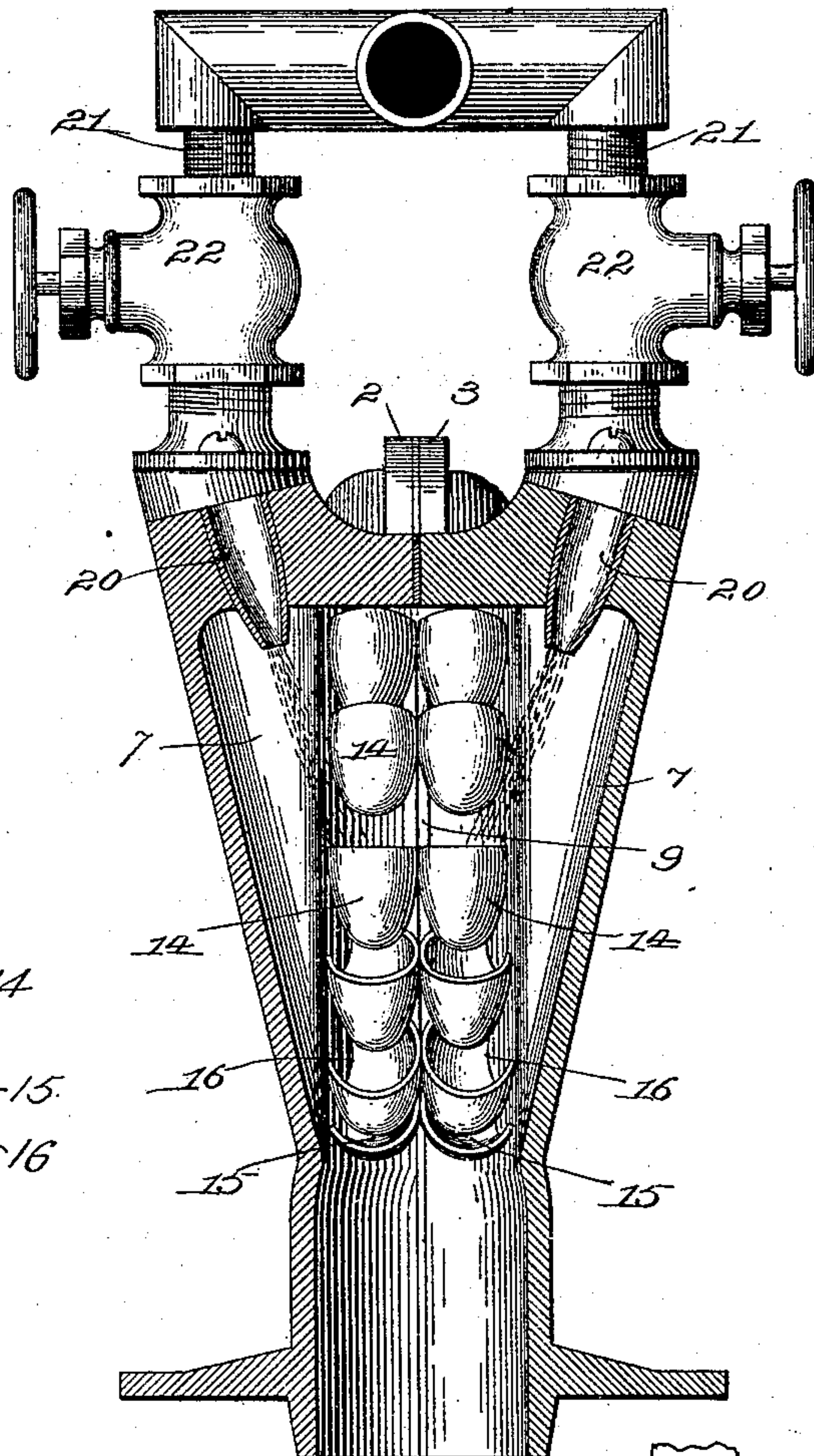
3 Sheets—Sheet 3.

A. D. OLES.  
WATER MOTOR.

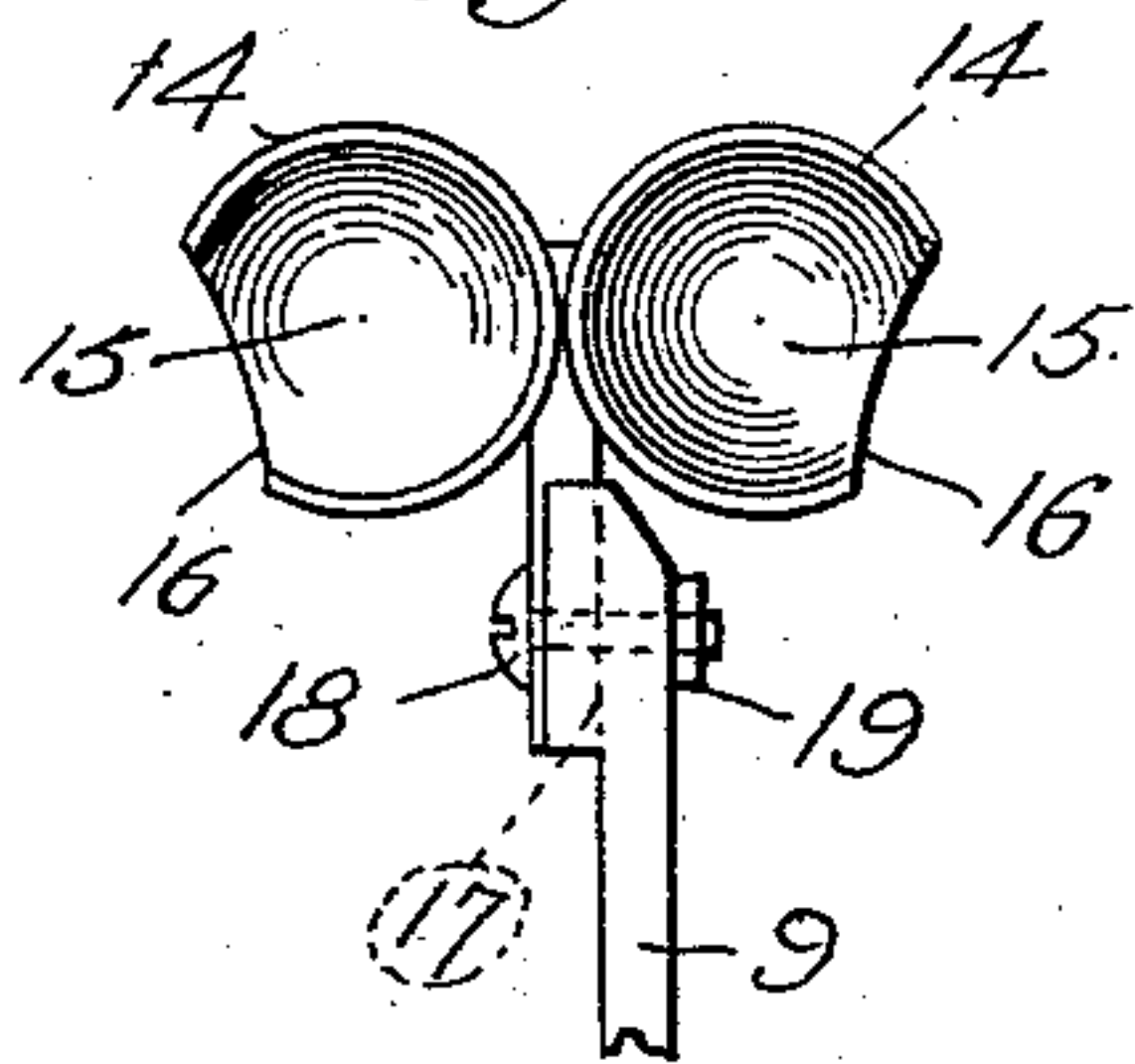
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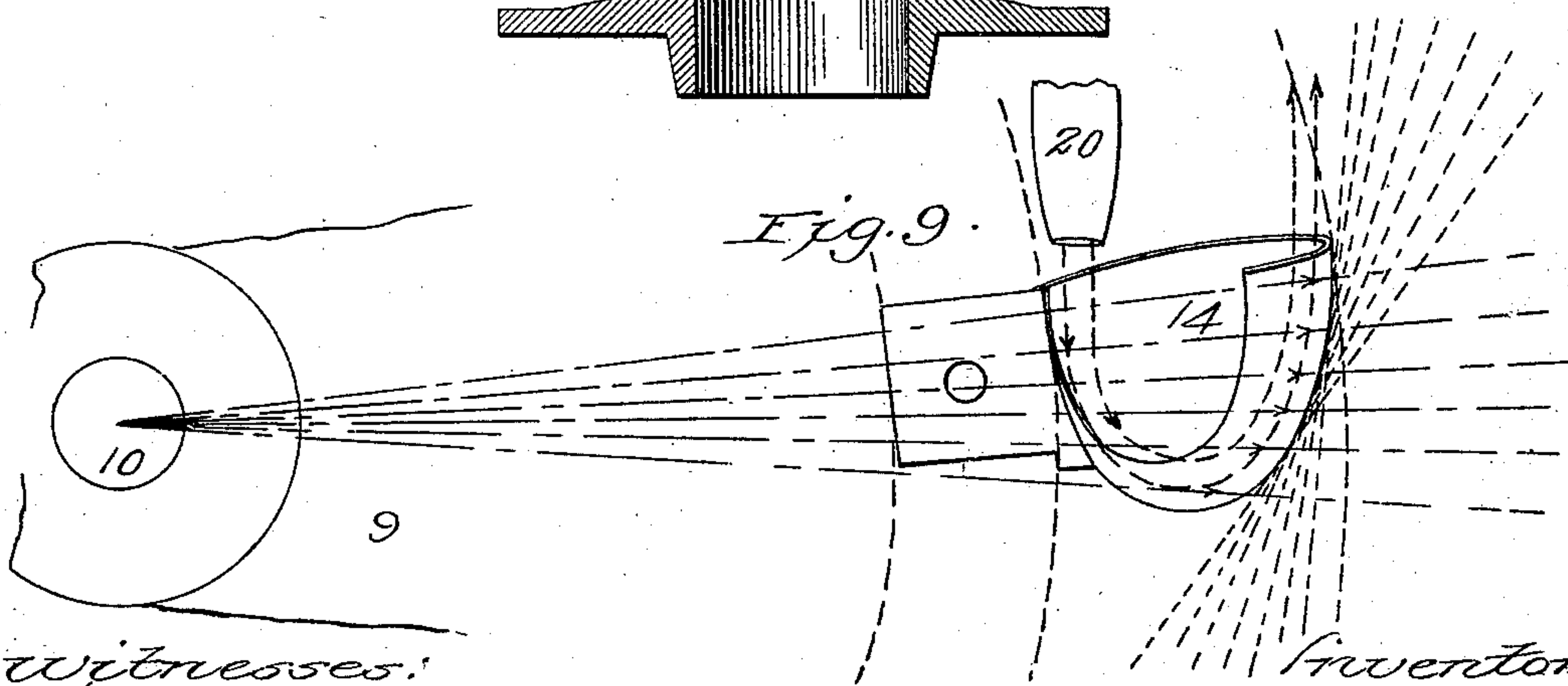
*Fig. 7.*



*Fig. 8.*



*Fig. 9.*



Witnesses:

Harry E. Pomeroy.  
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Inventor:

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# UNITED STATES PATENT OFFICE.

ABRAM D. OLES, OF UNADILLA, NEW YORK.

## WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 572,684, dated December 8, 1896.

Application filed December 29, 1894. Serial No. 533,368. (No model.)

*To all whom it may concern:*

Be it known that I, ABRAM D. OLES, a citizen of the United States, residing at Unadilla, in the county of Otsego and State of New York, have invented certain new and useful Improvements in Water-Motors, of which the following is a specification.

My invention relates to an improvement in water-motors; and the object of my invention is to obtain the full power of the water used, whereby the power of the motor is increased, and also to form an efficient, compact, and durable device.

It is a well-known fact that to obtain the full power of water a complete reversion of its direction is necessary, and also that in machines of this description the tendency of the bucket-wheel is to throw the water operating it to the periphery thereof, both of which facts, if combined in a water-motor, would tend to increase its power. Therefore to obtain these advantages in a water-motor it is necessary to completely reverse the direction of the water after striking the buckets, and also to have the water strike the buckets at a point near the center of the wheel carrying them, so that the water can be thrown off at the outer edge of the buckets by centrifugal force. I attain these objects by my invention, which consists, broadly, of a bucket-wheel mounted within a suitable casing and composed of a disk or wheel having a number of cups or buckets secured to the periphery of the disk or wheel, and these buckets are formed with a curved bottom and a cut-out portion at one side thereof, so that as the water enters the bucket at a point nearer the center of the disk or wheel the water is thrown outward by the centrifugal force, and also upward by reason of the curved bottom of the buckets.

My invention also consists in admitting the water to the casing through a recess formed therein, so that any water which may be in the casing will not break the force of the jet.

My invention further consists of certain features of novel construction that will be hereinafter referred to, and specifically pointed out in the claim.

In order that my invention may be fully understood, I will proceed to describe the

same with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved motor mounted on a suitable base. Fig. 2 is an end elevation thereof. Fig. 3 is a side elevation, partly in section, with one side of the casing removed. Fig. 4 is a vertical section taken on the line IV IV, Fig. 3. Fig. 5 is a detail perspective view of one of the buckets or cups detached from a portion of the disk or wheel. Fig. 6 is a view showing a motor provided with a number of jet-inlets. Fig. 7 is a vertical section of a modification of my invention. Fig. 8 is a detail top view of a portion of the bucket-wheel employed in the modified form of motor, and Fig. 9 is a detail view showing in dotted lines the direction of the bucket-wheel and jet and also showing the effect of the curved bottom and centrifugal force on the water in the cups or buckets.

In the said drawings, 1 represents a suitable base on which the motor is mounted, it being provided with a top plate *a*, to which the motor is attached, and a suitable opening through which the outlet-pipe of the casing extends. If desired, this base may be dispensed with and the motor set up at any desired point.

The casing of the motor is composed of two parts 2 3, secured together by means of bolts 3<sup>a</sup>, and it is provided with an inlet-opening 4 at the top and a suitable outlet-opening 5 at the bottom thereof. One side of the casing is formed with a raised portion 6, so as to form a recess 7 on the interior of the casing, which recess forms a chamber for the water jet entering the casing to prevent its being interfered with by any water which may be within the casing. By this arrangement the great objection of sprayed and revolving water within the casing, which interferes with the jet entering the casing, is overcome.

8 represents a plate secured to the raised portion 6 to cover an opening formed therein. This plate, which may serve as a name-plate, is adapted to be removed in order to ascertain if the jet is working properly on the cups or buckets.

9 represents the disk or wheel, which is mounted within the casings 2 3 and upon a



shaft 10, having its bearings in the extended ends 11 of the casing. This shaft 10 has also rigidly mounted on it a driving-pulley 12, or it may be provided with a gear or other wheel used in operating machinery.

13 represents oil-cups mounted on the extended journal ends 11 for containing a lubricant for the shaft 10.

14 represents a series of buckets or cups formed, as shown in Figs. 5 and 9, with a curved bottom 15 and a cut-out portion 16 on one side and extending nearly to the bottom of the cup, and they are secured in openings 17 in the periphery of the disk or wheel 9 by means of a bolt 18 and nut 19. The object in so forming the cups is that the jet of water entering the casing will strike into the cups or buckets through the cut-out portion within the radius of the wheel on a plane that is approximately parallel to the face of the wheel and also at a point within the outer edge of the cups, and as it strikes on the curved bottom it (the water) is guided upward and outward, or its direction is reversed and is guided to the outer side of the cup and over the edge thereof. The water is aided in passing outward and over the edge of the cup by the centrifugal force of the disk or wheel, which as the water strikes the cups, attached thereto at the point indicated in Fig. 9, throws it outward and over the edge of the cups. (See Figs. 3 and 9.) After the water is discharged from the cups it drops to the lower part of the casing and passes out through the opening at the bottom thereof.

In order to get the full benefit of the jet of water, it is admitted into the casing through the jet-tube 20, secured to the upper end of the casing in any suitable manner and at an angle thereto. (See Fig. 4.) After leaving the jet-tube the water passes through the recess 7, which protects it from any water which may be in the casing and allows it to strike into the cups through the cut-out portions in them. A further advantage in admitting the water to the casing in this manner is that it is not broken into by the succeeding cup until after the preceding cup has passed completely out of the path of the jet.

Thus it will be seen from the above description that I attain not only the force of the jet of water on the bucket-wheel without the usual side action, but also the centrifugal pressure of the water as it is thrown outward by the centrifugal force and over the edge of the cups, which tends greatly to accelerate the speed of the motor.

In Fig. 6 I have shown a horizontal motor provided with four jets, though any number may be used, which by my arrangement do not interfere with each other, but tend to in-

crease the speed of the motor. In this figure the construction and operation are exactly the same as shown and described with reference to Figs. 1 to 5, inclusive.

In Fig. 7 I have shown a modification of my motor. In this instance the casing is formed with the two recessed openings 7, through which the water passes, it being supplied through the jet-tubes 20 by means of the supply-pipes 21, provided with the valves 22. The jet-tubes in this form of motor are the same as in the form shown in the other figures, they being secured to the casing at an angle and by any suitable means. The disk or wheel 9 in this form is provided with a number of buckets or cups 14, formed as shown in Fig. 5 and designed to operate in the same manner. These cups are preferably cast integral with each other (see Fig. 8) and are secured to the disk 9 in the same manner as shown in Fig. 5. It will be seen from Fig. 7 that either one of the jets may be used independently of the other by shutting off the water from either one of the jets by means of the valves 22, though in this construction it is better to use both jets, as greater power can be obtained from the motor.

In Fig. 9 I have shown more clearly the principles of my motor. In this figure it will be clearly seen that as the water enters the cups the curved bottom changes its direction, and as it is following the curved bottom the centrifugal force of the disk or wheel acts on the water and aids very materially in guiding the water to the outer edge. Furthermore, it will be seen that the water is completely reversed and discharged from the cup or bucket before the succeeding cup has entered the path of the jet.

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

In a water-motor, the combination of a disk or wheel having secured thereto a number of cups or buckets each formed with a curved bottom and a cut-out portion on one side thereof, a jet-opening arranged to one side of the plane of the cups or buckets and directing a jet of water onto the cups or buckets within the radius of the wheel, in a plane approximately parallel with the face of the disk or wheel whereby the direction of the water is reversed and through centrifugal force will be thrown to the edge of the cups or buckets away from the center and there discharged, substantially as in the manner explained.

ABRAM D. OLES.

Witnesses:

R. K. TELLER,  
E. CHAMPION.