

(No Model.)

O. BRYANT.
WATER MOTOR.

No. 551,754.

Patented Dec. 24, 1895.

Fig.1

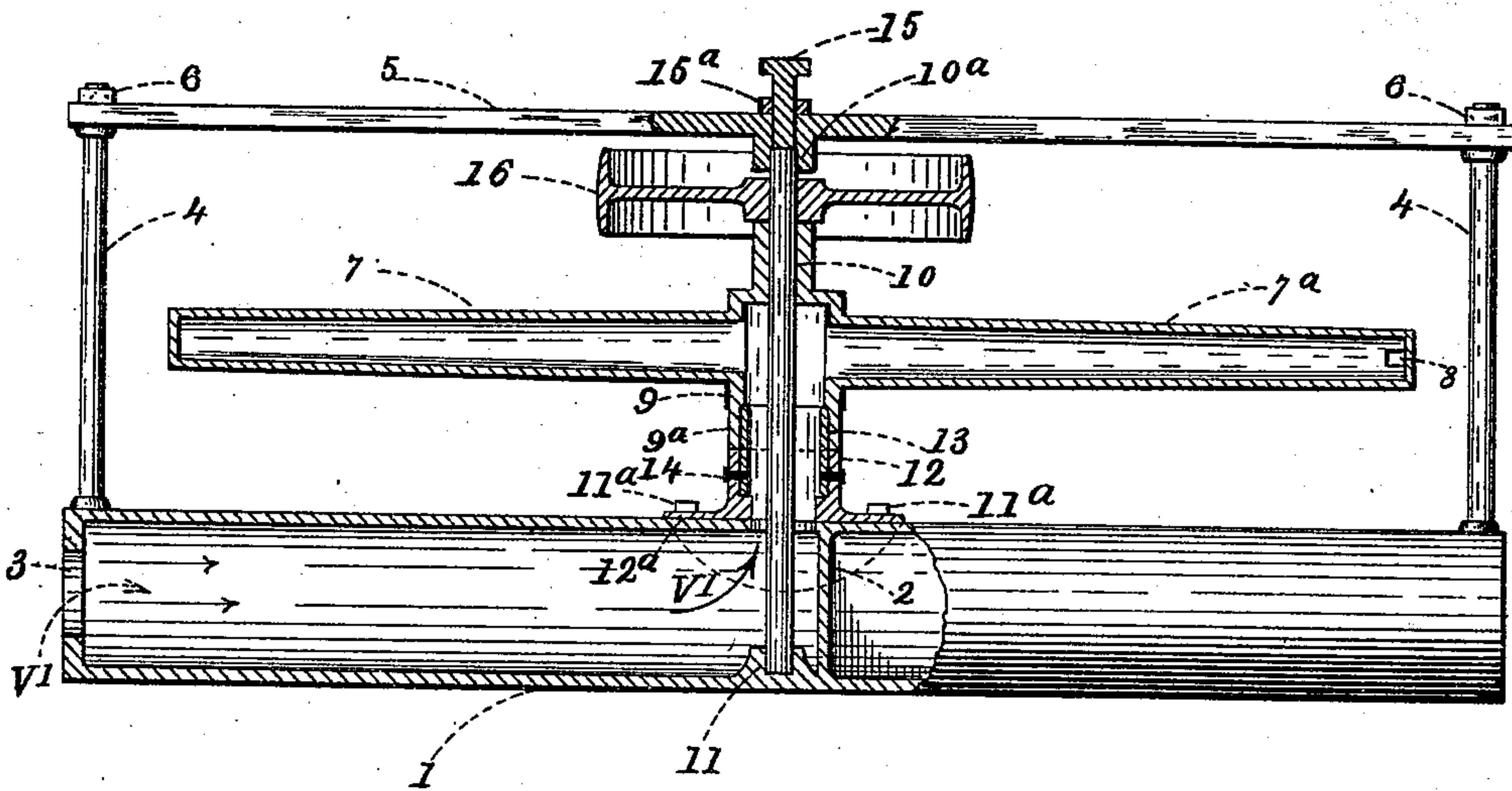


Fig.2

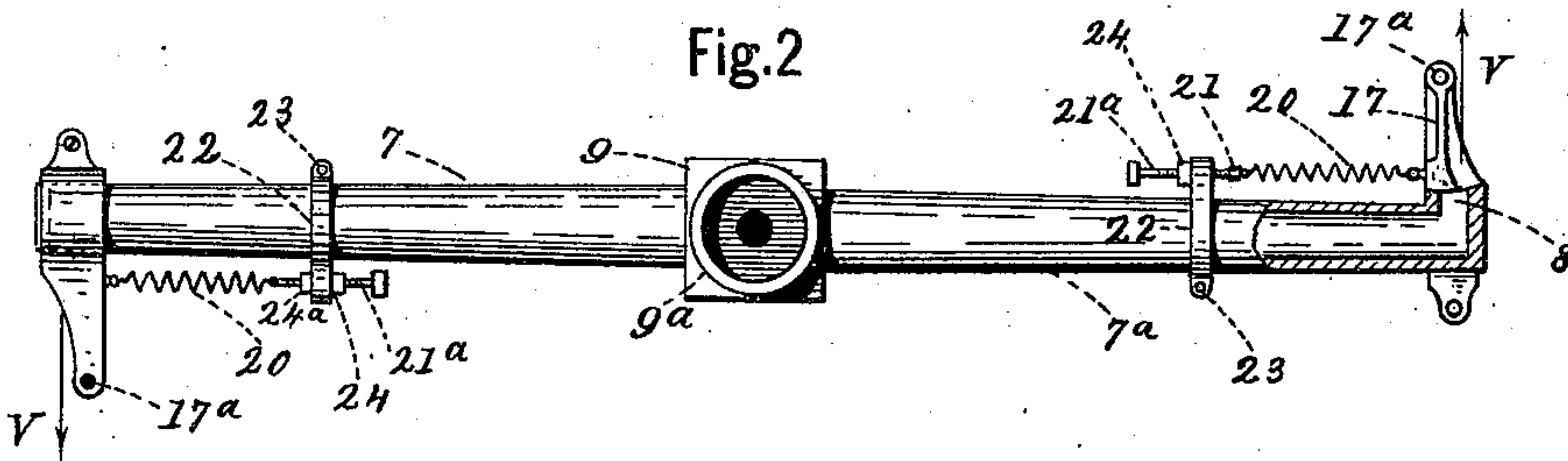
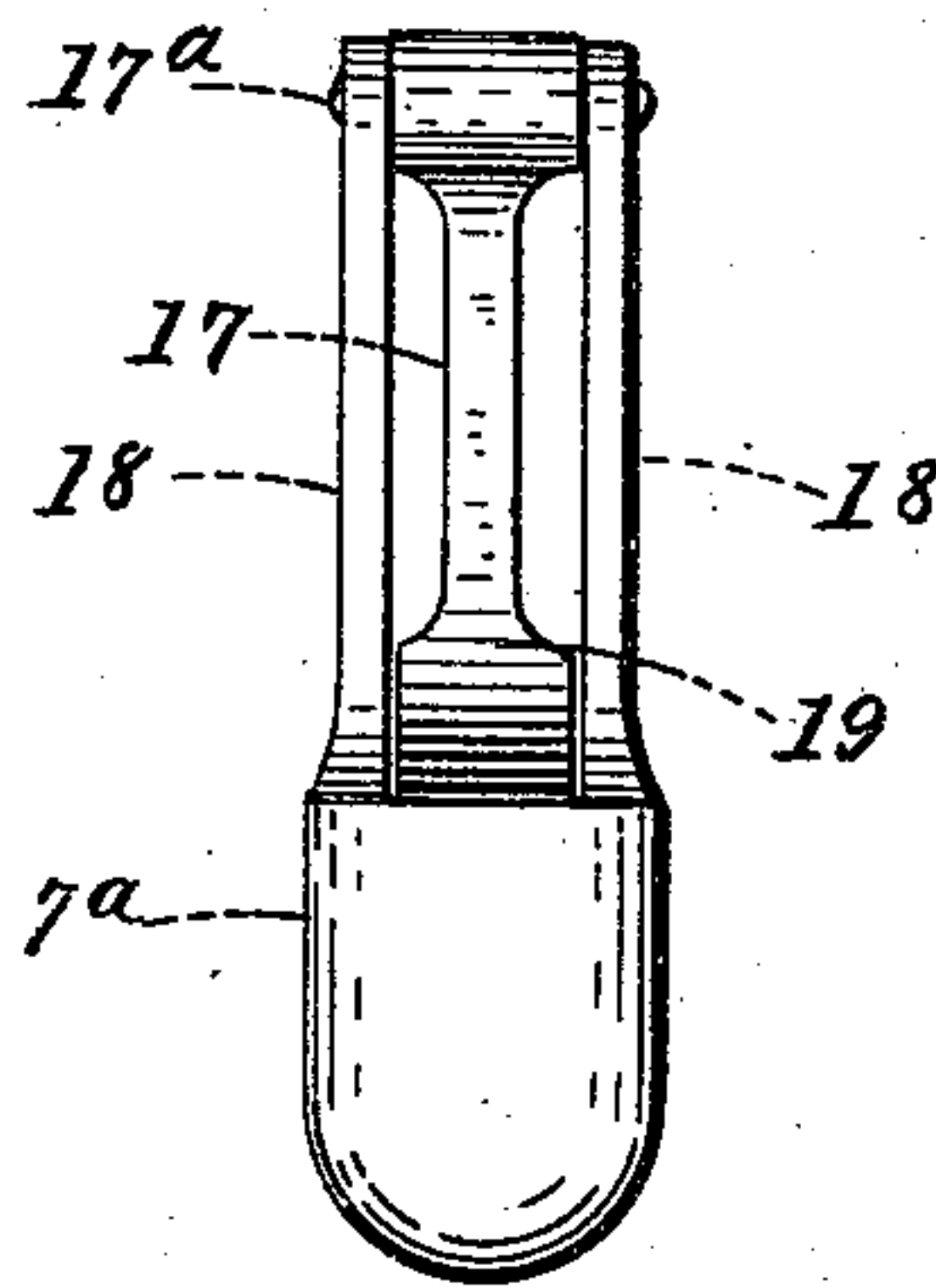
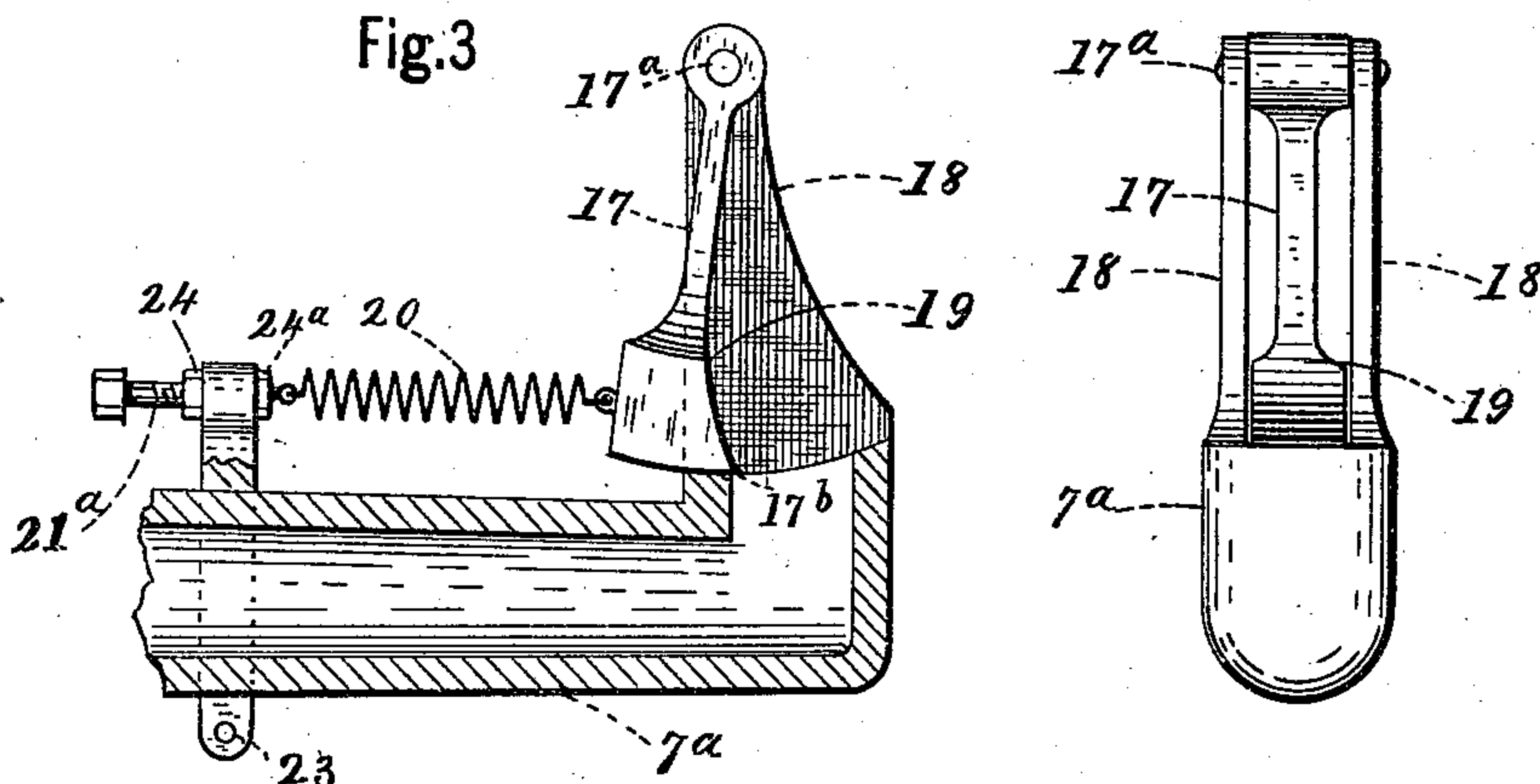


Fig.4.



Witnesses.

Robert A. Geary.
J. M. Caldwell.

Orrin Bryant, Inventor.
By James Sangster,
Attorney.

UNITED STATES PATENT OFFICE.

ORRIN BRYANT, OF BUFFALO, NEW YORK.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 551,754, dated December 24, 1895.

Application filed June 11, 1891. Serial No. 395,835. (No model.)

To all whom it may concern:

Be it known that I, ORRIN BRYANT, a citizen of the United States, residing in Buffalo, in the county of Erie 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 certain improvements in what are known as "reaction water-motors" and will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side sectional elevation of the motor complete, partly in section. Fig. 2 is a detached under side view of the motor, (that is, when the motor is adapted to run as shown in Fig. 1, but it is intended to be made to run either in a horizontal or a vertical plane.) Fig. 3 is an enlarged sectional elevation of one end of the device for showing more clearly the speed-regulator, showing also a slight modification in the construction of the supporting-frame for holding the pivoted speed-regulator. Fig. 4 is a front end view of Fig. 3.

In said drawings, 1 represents the lower portion of the supporting-framework. It consists of a hollow portion having a partition 2 near the lower bearing, and at the end is an opening 3, to which the supply-pipe is attached for supplying water to the motor.

4 represents the side frame-pieces and 5 the top frame-piece. It is removably secured in place by the screw-nuts 6.

The body of the motor consists of two long either straight or slightly-tapering tubular arms 7 and 7^a, the tapering form, substantially as shown, being preferred. Each arm 7 and 7^a is provided with a side outlet-opening 8 at the end. These two openings 8 are placed upon opposite sides, so that the water as it leaves flows in opposite directions, or in the direction of the arrow V. (Shown in Fig. 2.) The two hollow arms 7 and 7^a are connected to and project out from a centrally-located vertical cylindrical body portion 9, the upper portion 9 being square and the lower portion or rim 9^a being round, substantially as shown in Fig. 2, but the whole central body portion may be round, if desired.

Through the central body portion is passed and rigidly secured a vertical shaft 10, mount-

ed in bearings 10^a at the top and 11 at the bottom.

To the top of the horizontal hollow frame portion is secured by bolts 11^a a short tubular supporting portion 12, the bolts 11^a passing through the flange 12^a. The portion 12 is enlarged on the inside, so as to receive a tubular packing 13 (see Fig. 2) of leather or other suitable material. This packing is secured in place by rivets 14 or the equivalent thereof and the upper portion slips up and fits nicely into the rim 9^a, the rim being enlarged on the inside to receive it.

At the top of the frame is a set-screw 15 and a jam-nut 15^a. Its object is to adjust the position of the vertical shaft 10, and consequently the position of the motor.

It will be noticed that the lower edge of the rim 9^a rests on the top of the supporting portion 12 and turns thereon.

The driving-wheel 16 is shown in Fig. 1, and may be connected by a belt with any suitable driving-pulley for transmitting the power.

At the ends of the arms 7 and 7^a is located the regulating device, which consists of the arms 17, pivoted by pins 17^a to the supporting-frames 18, one at each end of the motor. (See Fig. 2, also Figs. 3 and 4.)

The mouth of the outlet-openings 8 are each made in a curve radiating from the center of the pins 17^a, and the lower ends 17^b (see Fig. 3) of the arms 17 are curved so that they form valves that fit them nicely and allow the arms 17 to swing easily back and forth and still have a close fit. To prevent the water as it issues from the nozzles from interfering with the action of the regulator I incline the face 19 of the swinging arms 17 slightly backward, substantially as shown, so that the water issues without touching it, so as not to interfere with its action. At the back of each arm 17 is connected a spiral spring 20, having its opposite end secured to a swivel 21 on the end of the screw 21^a. The screw 21^a passes through a supporting-piece 22 secured to the motor-arms by a screw 23, or in any well-known way. The screw 23 is provided with a jam-nut 24 on one side of the supporting-piece 22 and a jam-nut 24^a on the opposite side. From this construction it will be seen that as the motion of the motor in-

creases, the centrifugal force will cause the regulating-arms to close the outlet-openings in proportion as the motion increases, thereby acting as a simple and perfect speed-regulator. The tension of the spring 20 can be adjusted by means of the screws 21^a and the jam-nuts for tightening it to the point adjusted. This device can be also used with steam and be made to operate exactly in the same way. I therefore do not limit myself to the use of water alone.

The operation of the device will be readily understood from the foregoing description. One important advantage in entering the fluid that operates the motor through the lower portion in the direction of the arrows V' (see Fig. 1) is that it tends to lift the motor and thus support it on the column of water, so that the friction is thereby greatly diminished.

I claim as my invention—

1. The combination with a water motor, consisting of hollow arms having opposite side outlet openings, of a hollow central portion connected to said arms, and communicating with the inlet, speed regulating devices attached to the ends of the hollow arms and consisting of the pivoted arms 17, the supporting frames 18, to which said arms are pivoted, curved lower ends 17^b, inclined faces

19, swivels 21, spiral springs 20, each having one end secured to the arms 17, and the opposite end secured to the swivels 21, screws 21^a, attached to the said swivels, and passing through and held by the supporting pieces 22, for adjusting the tension of the springs, and jam nuts for locking them at the points adjusted, supporting pieces 22, and means for adjusting and fastening them on said arms, whereby as the motion of the motor increases, the centrifugal force will cause the regulating arms to close the outlet openings in proportion as the motion increases, substantially as and for the purposes described.

2. In a water motor, the combination with the hollow arms thereof, of speed regulating devices, consisting of forked supporting portions projecting at right angles from the ends of the said hollow arms, regulating arms pivoted between the said supporting portions, supporting pieces secured to the hollow arms, springs attached at one end to the supporting pieces and at the other to the regulating arms, and means for adjusting the said supporting pieces and thus the tension of the springs, substantially as described.

ORRIN BRYANT.

Witnesses:

J. M. CALDWELL,
JAMES SANGSTER.