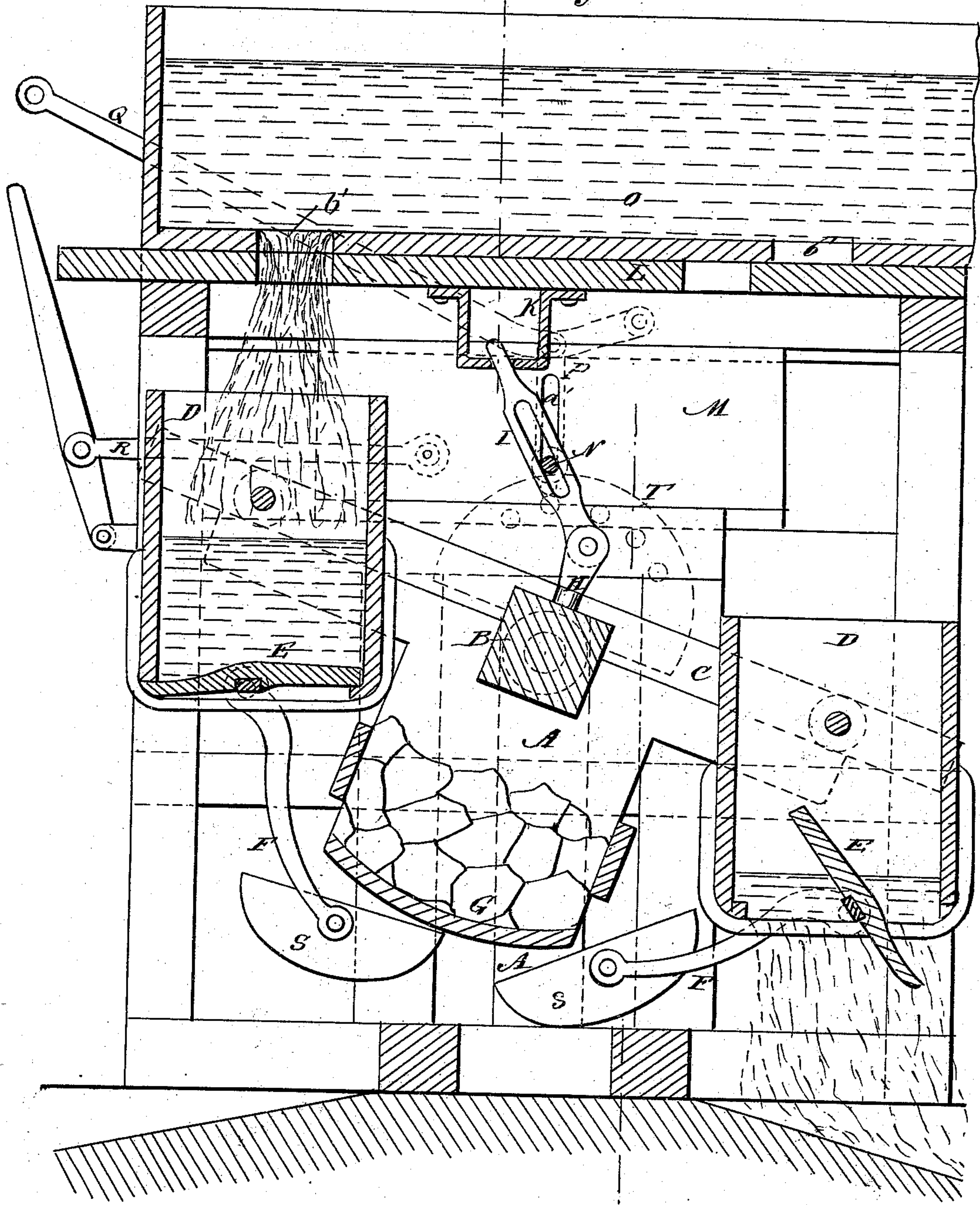


W. LAY.  
Water-Motor.

No. 223,930.

Patented Jan. 27, 1880.



WITNESSES:

*C. Verux*  
*C. Sedgwick*

INVENTOR:

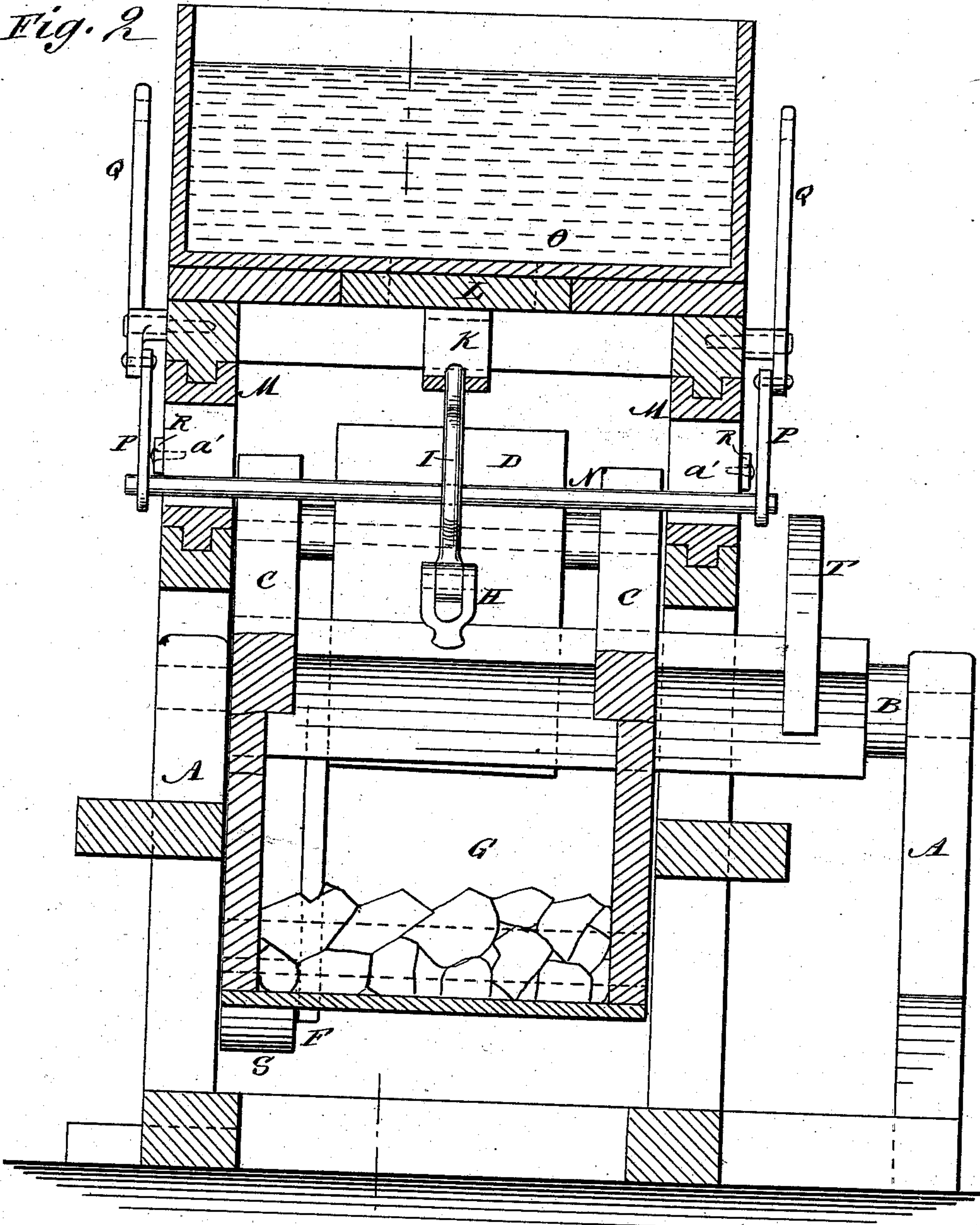
*W. Lay*  
BY *Wm. H.*  
ATTORNEYS.

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Fig. 2



WITNESSES:

*C. Naveux*  
*C. Sedgwick*

INVENTOR:

*W. Lay*  
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# UNITED STATES PATENT OFFICE.

WILLIAM LAY, OF SENECA CITY, SOUTH CAROLINA.

## WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 223,930, dated January 27, 1880.

Application filed August 15, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM LAY, of Seneca City, in the county of Oconee and State of South Carolina, have invented a new and Improved Water-Motor, of which the following is a specification.

Figure 1 is a sectional elevation of the device on line *xx* of Fig. 2. Fig. 2 is a sectional elevation of the device on line *yy* of Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to provide a cheap and simple water-motor for raising water or running machinery that can be run on streams where there is not sufficient fall of water for wheels without the construction of costly dams.

The invention consists of a balancing-box rigidly suspended from the rocking shaft for the reception of ballast or weights to assist in regulating the motion of the device; and it consists, further, of sliding valves for determining the flow of water from the reservoir to the buckets, which valves are connected with the rocking shaft by a slotted lever, and of pitmen, levers, and their connections for controlling the movement of the valves, and of several other parts to be hereinafter described.

In the drawings, A represents two standards of the frame-work, that afford bearings to the rocking shaft B, and C C are the two parallel arms or beams firmly fixed upon the shaft, and carrying between their ends the buckets D D, that swing on pivots, and are provided with valves E E in their bottoms. To the ends of the rods that pass through these valves are attached the automatic levers F F, that control their opening and closing.

G is a box for the reception of ballast or weights, that may be disposed so as to contribute to the steady running of the machine. H is a lug rising vertically from the shaft B, and adjustable by raising or lowering with key or nuts, and having pivoted in it the slotted lever I, whose upper and free end is entered into the lug K, that is fastened to the lower face of the valve L; and passing through slots *a'* in the movable slide M and through the slots in the lever I is the rod N, that serves as an adjustable fulcrum for the lever, and enables it, when motion is given to the rocking shaft, to move the valve L back and forth.

The water-reservoir O is situated above the device, and its bottom is provided with openings or ports corresponding to those in the slide-valve, but in such position that only one port in the reservoir and one in valve coincide at the same time.

P P are crank-rods loosely attached to the ends of rod N, and connecting it with the governor-levers Q Q, that have one end fulcrumed on the frame of the machine, while the other is attached to a governor. The rising and falling of these levers elevates or depresses the rod N within the slotted lever I, and thus controls and regulates its swing and the consequent extent of valve motion.

By means of the pitmen R R the movable slides M may be moved back and forth, carrying with them the rod N, the lever I, and consequently the valve L. Thus it will be seen that by means of these pitmen the movement of the machine may be reversed at will.

The buckets D D are adjusted directly under the ports *b' b'* in the water-reservoir. Hence, when the parts of the machine are in the positions shown in Fig. 1 the water falls into the higher bucket, and, carrying it down, causes the other to rise, and as the pivoted shoe S of the valve-lever F of the descending bucket comes in contact with the bed of the machine, or rest provided for it, it causes the lower end of the lever to be lifted, so that the valve E is opened and the water discharged, as shown on the right in Fig. 1. As the motion is reversed the weight of the lever and shoe balances the valve, holding it closed till opened by the shoe striking the bed of the machine, or the rest provided for it.

It will be seen that by alternately filling and emptying the alternate buckets the desired motion is given to the machine. As the governor-rods are elevated the play of the sliding valve is restricted and the opening of the ports lessened, and by the action of the pitmen in moving the slotted slides M the machine may be started or stopped, or its direction of motion reversed.

The machine is easily taken apart and transported, and is of very simple construction. Its power may be increased simply by extending the arms or beams carrying the buckets.

The tanks or reservoirs need not be attached to the machine, for they may be conveniently



located elsewhere, and other parts of the device may be modified without departing from the principle of the invention.

T represents a device firmly fixed to the 5 rocking shaft, to which attachment may be made for transmitting the power of the device.

I do not strictly confine myself to the parts and construction herein shown, for I am aware that they may be considerably modified without departing from the principle of the invention; but,

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

15 1. The box G, in combination with the shaft B and buckets D D, substantially as herein shown and described.

2. The combination of shaft B, lug H, slotted lever I, lug K, and valve L, substantially 20 as herein shown and described.

3. The slides M, provided with slots  $a'$ , lever I, and rod N, substantially as and for the purpose described.

4. The crank-rods P P, levers Q Q, and pitmen R R, substantially as herein shown and 25 described.

5. In the construction of a water-motor, the combination of shaft B, arms C C, buckets D D, provided with valves E E, levers F F, provided with shoes S S, box G, slotted lever I, 30 rod N, slides M, levers Q Q, and pitmen R R, substantially as herein shown, and for the purpose described.

WILLIAM LAY.

Witnesses:

W. B. WHITE,  
JOHN N. TODD.