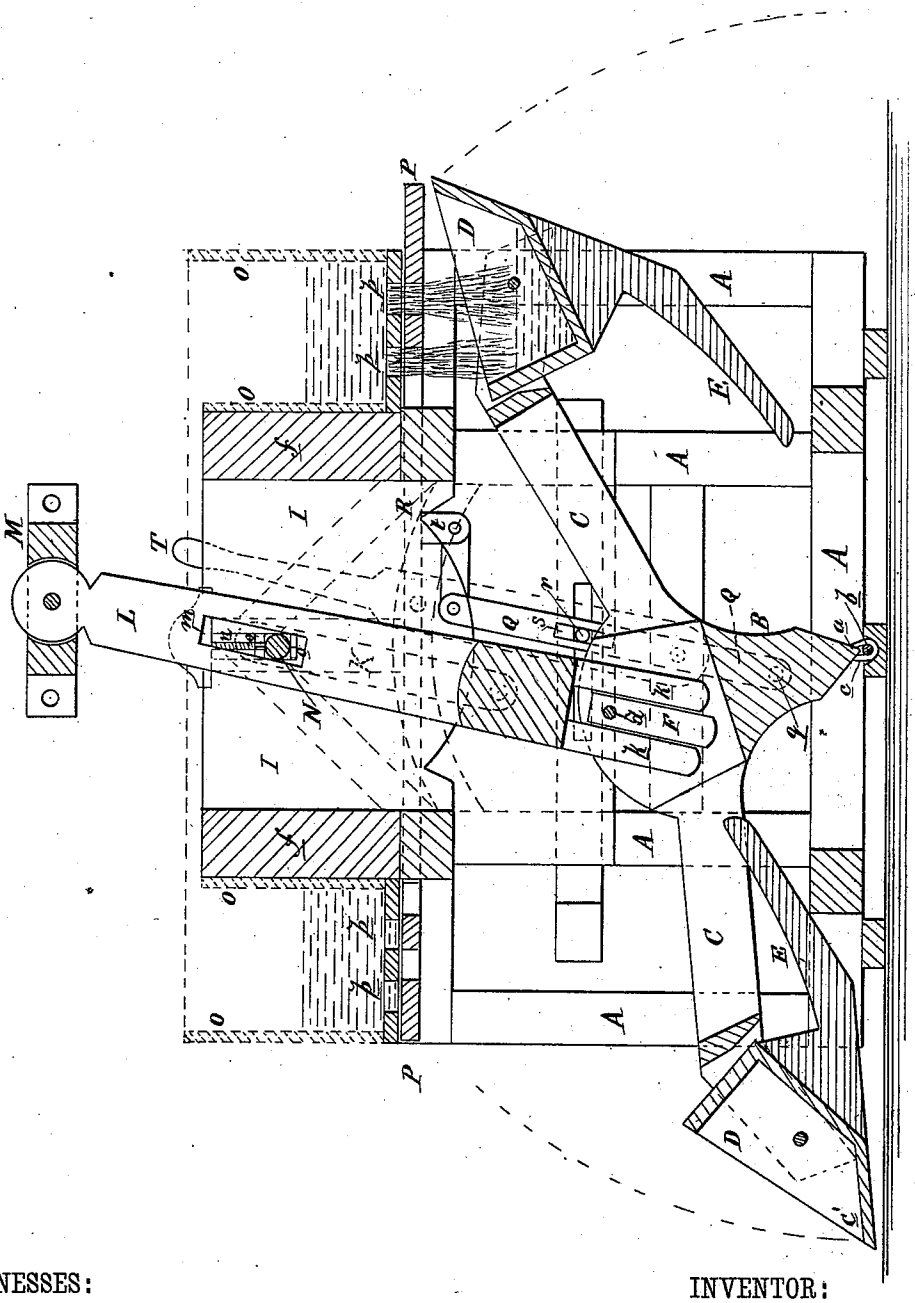
2 Sheets—Sheet 1.

W. LAY.

Water-Motor.

No. 227,023. **Patented April 27, 1880.**

Fig. 1.



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C. Sedgwick

INVENTOR:

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2 Sheets—Sheet 2.

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Fig. 3.

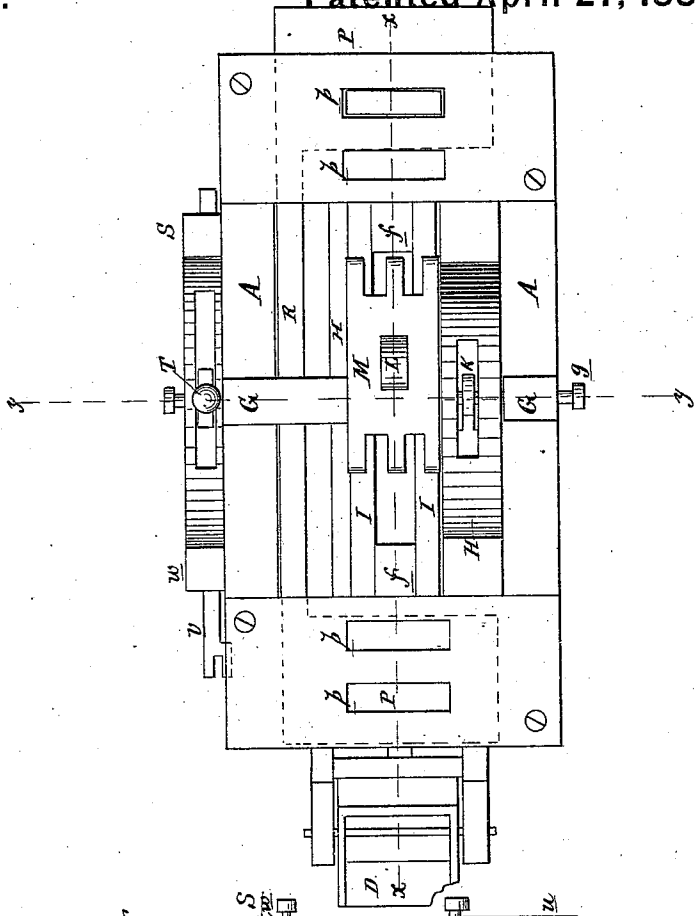
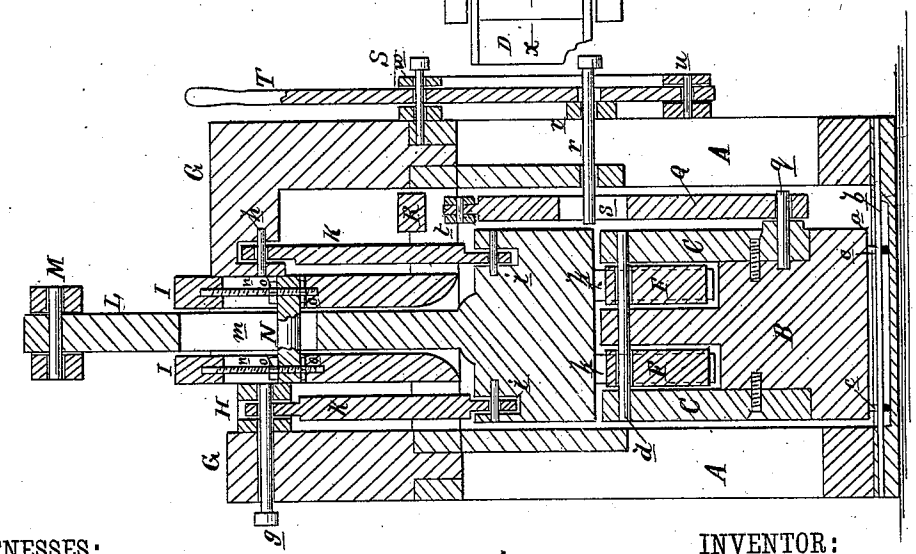


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM LAY, OF SENECA CITY, SOUTH CAROLINA.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 227,023, dated April 27, 1880.

Application filed November 22, 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 *x x*, Fig. 3. Fig. 2 is a sectional elevation of the device on line *y y*, Fig. 3. Fig. 3 is a plan of the device.

Similar letters of reference indicate corresponding parts.

The object of this invention is to provide a cheap, simple, and powerful water-motor for running machinery or performing other work that can be operated with a small quantity and with but slight fall of water.

This invention is designed as an improvement on the water-motor for which my application for Letters Patent was allowed on the 22d September, 1879.

In the drawings, A represents the frame supporting the mechanism. B is the upright post, whose tapered and grooved end *a* rests and rocks on the round rod *b*, that is laid in a groove in one of the bottom frame-timbers. The staples *c* serve to hold the said post B in place.

C C are two parallel arms, made broad at their centers and with downward bends at their ends, that are, midway of their length, firmly fastened to the sides of the post B. Between the ends of these arms C are pivoted the buckets D D, provided with outward-sloping lips *c'*, and having secured to their bottoms the levers E E, which are inclined downward and inward.

On the rod *d*, that passes transversely through the arms C and the upward-projecting tongue of the post B, are pivoted, on either side of the said tongue, the movable blocks F F, whose function will be hereinafter explained.

Fixed on the top of the frame A are the standards and arches or trusses G H and the two parallel centrally-fixed plates I, which latter are set on their edges and have their ends held apart and connected by the end pieces, *f*. Suspended from these standards or trusses G H on pins *g h* are the swinging beams K. Passing downward between the plates I is the driving-lever L, which is swung from the beams K, the lower ends of the said beams K being pivoted in the slots *i* in the projecting sides of the said lever L, as shown. The lower end of the said driving-lever L is forked into four prongs, *k*, that fit over the tongue of the post B and over the movable blocks F F. In the top of the said lever L is a pivoted coupling device, M, by means of which the power of the motor may be transmitted by pitman, crank, or otherwise to operate any machinery.

Through the slot *m* in the driving-lever L passes the fulcrum N of the said lever. The ends of this fulcrum N rest on vertical slots in the opposite plates I, and through these ends pass the vertical adjustable screw-rods *n*, each of which is furnished with a nut, *o*, on either side of the said fulcrum N, in order to hold it firmly in position and in order to adjust it. The vertical adjustment of this fulcrum N determines the sweep or movement of the top of the lever L.

The dotted lines O in Fig. 1 indicate the water-receptacle attached to the device, and P P are the valves that move under the ports *p* of the bottom of the said receptacle O.

Projecting laterally from the post B near its lower end is a stud, *q*, on which is pivoted the lower end of the slotted valve-lever Q, that is fulcrumed on the pin *r*, which passes through its slot *s*, and passes upward to make a crank-connection with the depending lug *t* of the valve-rod R.

It will be seen that the buckets D D are adjusted directly under the ports *p* of the water-receptacle O.

When the parts of the machine are in the position shown in Fig. 1 the water falls into the higher bucket, and carrying it down causes the other to rise, and as the bucket-lever E of the descending bucket comes in contact with the bed of the machine, or any stop provided for it, the bucket is tipped and the water discharged from it, as shown on the left of Fig. 1. Then the opposite bucket, having become filled, descends under the weight of water and carries the empty one up, and thus by the alternate filling and emptying of the alternate buckets the desired motion is given to the working parts of the machine.

The movement of the post B imparts proper motion to the valves P P by means of the lever Q and valve-rod R, and the same movement of the post B gives reciprocating motion to the driving-lever L through the medium of the blocks F F, that slide in the forks of the said lever.

On the side of the device is a projecting frame-work, S, against which another similar machine to the one herein described may be placed and be controlled by the same controlling-lever.

T is the said controlling-lever for adjusting and controlling the valves P P of one or two machines. This lever T is fulcrumed in the lower timber, *u*, and is connected by the pin *r*, on which the valve-lever Q is pivoted, said pin *r* passing through the horizontally-sliding bar *v* to the said valve-lever Q, so that it may control its movements. The handle of the said controlling-lever T is confined in the slot shown in the arched beam *w*.

These machines are especially designed to be used as motors where there is not water enough or too slight a head of water for successfully operating the ordinary water-motors, or where it is important to have a simple and inexpensive apparatus for utilizing water-power.

I do not strictly confine myself to the precise construction and parts herein shown, for I am aware that considerable modifications may be made in both without departing from my invention; but,

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

1. The rocking post B, parallel arms C C, and buckets D D, provided with levers E E, combined and constructed substantially as herein shown and described.

2. The combination of rocking post B and pivoted blocks F F with the driving-lever L, provided with prongs *k*, substantially as and for the purpose described.

3. As a means for transmitting power from a water-motor, the forked and slotted driving-lever L, provided with a coupling device, M, in combination with the swinging beams K, constructed and arranged substantially as herein shown and described.

4. The valves P P, rocking post B, stud *q*, slotted valve-lever Q, and valve-rod R, in combination, substantially as set forth.

5. The combination of the controlling-lever T with the valve-lever Q, valve-rod R, and valves P P, substantially as herein shown and described, said lever T being arranged to control one or more sets of valve-levers and valves, as herein set forth.

WILLIAM LAY.

Witnesses:
J. W. STRIBLING,
W. J. BEARD.