WILLIAM LAY, OF SENECA CITY, SOUTH CAROLINA.

WATER-MOTOR.

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To all whom it may concern:

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

Figure 1 is a sectional elevation of the de-
vice on line $x$ of Fig. 2. Fig. 2 is a sectional
elevation of the device on line $y$ of Fig. 1.

Similar letters of reference indicate corre-
sponding parts.

The object of this invention is to provide a
cheap and simple water-motor for raising wa-
ter 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 deter-
mining 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 stand-
rds of the frame-work, that afford bearings to
the rocking shaft B, and C C are two par-
allel 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 con-
trol their opening and closing.

G is a box for the reception of ballast or
weights, that may be disposed so as to con-
tribute 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 L; and passing through slots
$\alpha'$ 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 en-
able 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 open-
ings or ports corresponding to those in the 55
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 gov-
ernor 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 fall-
ing of these levers elevates or depresses the
rod N within the slotted lever I, and thus con-
trols and regulates its swing and the conse-
quent extent of valve motion.

By means of the pitmen B B the movable
slides M may be moved back and forth, carry-
ing with them the rod N, the lever I, and con-
sequently 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 un-
der the ports $b' b'$ in the water-reservoir. Hence, 75
when the parts of the machine are in the po-
sitions 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 $b$
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 85
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 go-
vernors are elevated the play of the sliding
valve is restricted and the opening of the
ports lessened, and by the action of the pit-
men in moving the slotted slides $M$ the ma-
chine may be started or stopped, or its direc-
tion of motion reversed.

The machine is easily taken apart and trans-
ported, and is of very simple construction. Its 100
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 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—

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 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 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, 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.