

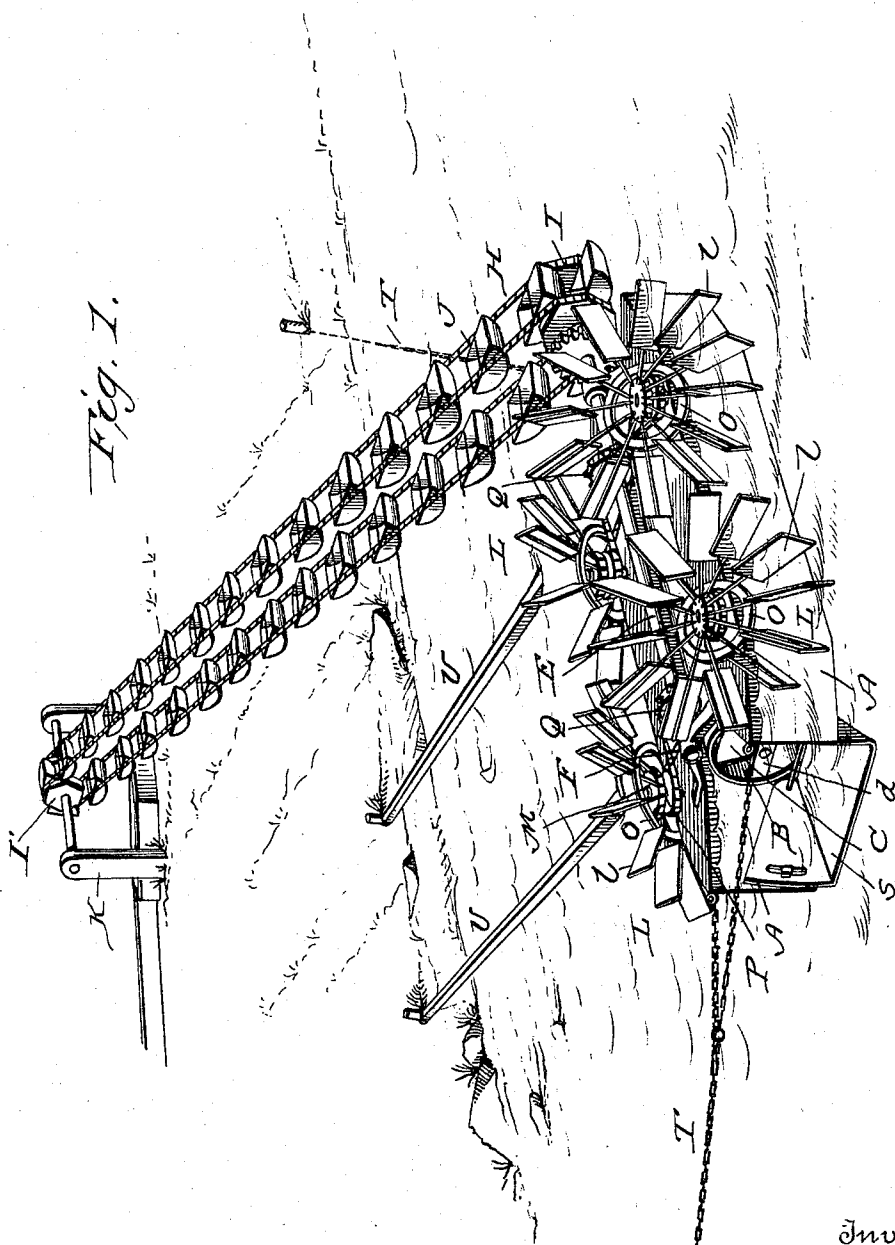
(No Model.)

2 Sheets—Sheet 1.

A. BOUCHARAT.
DEVICE FOR LIFTING WATER.

No. 540,230.

Patented June 4, 1895.



Witnesses
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UNITED STATES PATENT OFFICE.

AUGUSTE BOUCHARAT, OF GUSTON, COLORADO.

DEVICE FOR LIFTING WATER.

SPECIFICATION forming part of Letters Patent No. 540,230, dated June 4, 1895.

Application filed September 24, 1894. Serial No. 523,958. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTE BOUCHARAT, a citizen of the United States, residing at Guston, in the county of Ouray and State of Colorado, have invented new and useful Improvements in Devices for Lifting Water, of which the following is a specification.

My invention relates to that class of devices for lifting water in which a motor actuated by the current of the stream lifts the water of the stream to the requisite level by means of devices driven by the motor.

Exterior to the cylinder and parallel with the screw shaft I provide a second shaft to which motion is communicated from the screw shaft by means of suitable gearing. An endless bucket chain or other suitable water lifting device passes at one end over a pulley or sprocket wheel mounted on the second shaft and at the other end over a similar pulley on a fixed support on the river bank. Horizontal paddle wheels mounted on the floats and turned by the current are connected to the pulley shaft by suitable devices to assist in revolving the shaft where the force of the current flowing through the cylinder is insufficient, and guides are provided to lift the paddles clear of the water during a part of their revolution. The motor being maintained in the river current and submerged to a sufficient depth by ballasting the floats, rises and falls with the rise and fall of the river while it automatically and continuously lifts the water from the stream itself to the locality where it is desired.

Where the force of the current is sufficient to raise the water without the aid of the horizontal paddle wheels, I dispense with them and the pulley shaft, and mount the pulley directly on the end of the screw shaft.

In the accompanying drawings, which illustrate my invention, Figure 1 is a view in perspective of the hydraulic motor and floats anchored in the river current, with the bucket-chain attachment. Fig. 2 is a plan view of the same; and Fig. 3 is a longitudinal section, partly in relief, through the cylinder.

A A are the floats made of any suitable material and which may be pointed at both ends as shown in the drawings.

a is a manhole which provides access to the interior of the floats.

B is the cylinder suitably secured between the floats and containing the helical screw C mounted upon its shaft D which turns in bearings *d d* across the cylinder head at both ends.

E is the second or pulley shaft parallel with the screw shaft D above which it is located. F F are its bearings which also serve to connect the floats A A.

G and H are the gear wheels mounted respectively on the shafts D and E by which movement is transmitted from one to the other.

I is the sprocket pulley mounted on and turning with the shaft E.

J is a bucket chain of well known construction passing over the pulley I, and I' is a similar pulley mounted on the frame of the stationary receiver K on the river bank, which supports the other end of the bucket chain.

L are the horizontal paddle wheels consisting of the paddles *l* pivoted to the hub M so as to have a vertical rise and fall and N is the hub shaft rotating in suitable bearings in the float.

O are the guides mounted on the floats which lift the paddles clear of the water during part of their revolution.

P are sprocket wheels mounted on and turning with the paddle wheel shafts N. Q are similar sprocket wheels mounted on and turning with the pulley shaft E, and R are suitable link-chains passing over the sprocket wheels P and crossing over the pulley shaft E where the lower turn of the chain engages with the sprocket wheel Q on the shaft.

S is an adjustable funnel at the head of the cylinder between the floats to facilitate the flow of the current into the cylinder.

T T are the anchor chains which secure the floats to the river bank and U U beams having a vertical play which hold the floats in the current of the stream while permitting of their rise and fall with that of the water level.

Where the current is of sufficient strength to rotate the screw shaft D and operate the bucket chain without the assistance of the horizontal paddle wheels L, I dispense with the wheels and the shaft E and mount the pulley I on the prolonged extremity of the shaft D, as shown in dotted lines in Fig. 3, at a sufficient distance from the cylinder mouth

not to interfere with the outflow of the water therefrom.

The operation of my invention is as follows: The floats being anchored in the stream at a suitable distance from the bank and ballasted in order to immerse the apparatus as shown in Fig. 1, the force of the current flowing through the cylinder and impinging against the paddle wheels causes the rotation of the shaft E and with it the continuous travel of the bucket chain which lifts the water from the river and delivers it at the top of the bank as shown.

My invention presents many advantages over all constructions known to me which render it particularly suitable for use in shallow rivers liable to sudden rise and fall such as those most frequently met with in the mountainous regions of the West.

The bucket chain connection between the bank and the floats permits of a constant delivery of water at that point, no matter how low the stream may fall or how high it may rise; and by employing a supplemental motor actuated by the surface flow of the stream, I am enabled to reinforce the operation of the screw, which being nearer the bottom of the stream, meets in such shallow rivers as I have described, a current flowing at a rate less than that of the surface water owing to the well known laws of friction, an important consideration in these conditions for which my invention is especially adapted, while it allows me to use the full force of the central current in case of high water.

I do not limit myself to the specific details of construction of the paddle wheels, of the paddle guides, or of the connecting gear between them and the pulley shaft or between the pulley shaft and the screw shaft; neither do I confine myself to the particular form of bucket chain shown, as all of these devices may be greatly varied without departing from the spirit of my invention; but

What I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic device for raising water from a stream and delivering it to a station-

ary receiver, the combination with a pair of floats of a primary motor consisting of a tube having a fixed relation to and between said floats and containing an interior rotatively supported helical screw blade, a supplemental motor consisting of horizontally rotating paddle wheels mounted upon said floats, a main shaft mounted upon said floats, suitable gears engaging said primary and said supplemental motors with said main shaft to reinforce each other, a pulley upon said main shaft, a stationary receiver on the bank, a pulley mounted above said receiver in a fixed relation thereto, and a suitable bucket chain or belt engaging both of said pulleys whereby water is automatically and continuously delivered to the receiver at all stages of high and low water, substantially as described.

2. In an automatic device for raising water from a stream and delivering it to a stationary receiver, the combination of the floats A, the cylinder B secured between the floats in the direction of the current, its contained helical screw C and shaft D rotating in suitable bearings secured to the floats, the pulley shaft E also rotating in suitable bearings secured to the floats, the connecting gears G H between the shafts, the horizontal and opposite paddle wheels L mounted in pairs on the floats and having the vertically adjustable paddles I, the paddle guides O, the sprocket wheels P mounted on and turning with the paddle wheel shafts N, the sprocket wheels Q mounted on the shaft E, the chains R connecting each pair of sprocket wheels P with the sprocket wheels Q, the pulley I mounted on the shaft E, the stationary receiver K on the river bank the fixed pulley I', and the bucket chain or belt J passing over the pulleys and driven by the pulley I, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

AUGUSTE BOUCHARAT.

Witnesses:

P. ANTONIETTI,
THEO. POULDIS.