(No Model.)

G. W. CAMPBELL.

WATER ELEVATOR.

No. 352,394. Patented Nov. 9, 1886.

Fig. 1.

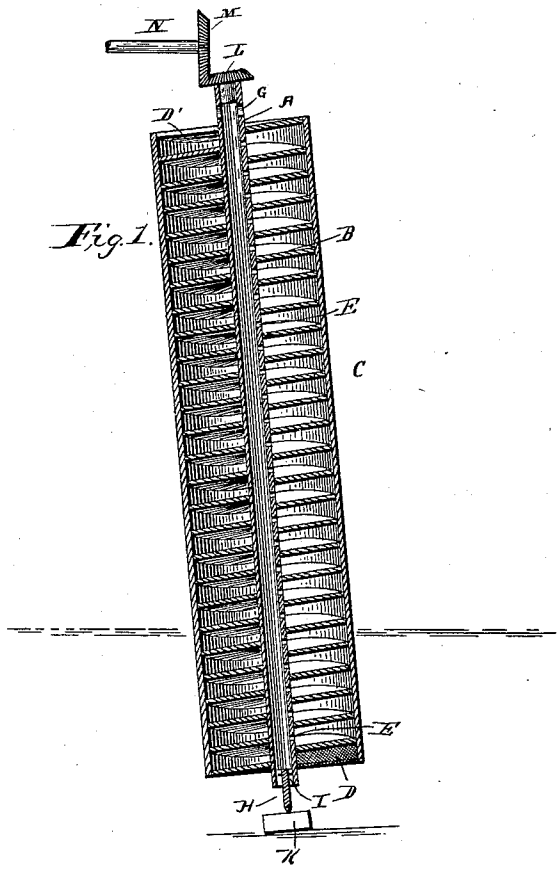
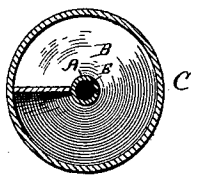


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE W. CAMPBELL, OF EL PASO, TEXAS, ASSIGNOR OF ONE-FOURTH TO E. C. ROBERTS, OF SAME PLACE.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 352,394, dated November 9, 1886.

Application filed May 5, 1886. Serial No. 201,164. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. CAMPBELL, a citizen of the United States, residing at El Paso, in the county of El Paso and State of Texas, have invented certain new and useful Improvements in Water-Elevators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain improvements in that class of water-elevators known as Archimedean screws; and it has for its objects to provide for the escape of the air initially held in the upper bends of the screw, so as to relieve the same of the pneumatic pressure caused thereby in connection with the ascending water, thus causing less resistance to the rotation of the screw, enabling it to be operated by decreased motive power. These objects I attain by the means illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical sectional view of my improved water-elevating screw, and Fig. 2 a transverse vertical sectional view of the same.

The letter A indicates a tube, which forms the axis of the screw, and B a continuous sheet of metal extending spirally around said tube from the lower end to the top, forming the "threads" of the screw.

C indicates a metallic tube inclosing the spiral sheet on the outside from the top to the bottom. The screw thus formed is provided with an induction-opening, D, at its lower end for the entrance of water, and an eduction-opening, D′, at its upper end for the escape of the same. At suitable intervals between the respective threads of the screw the tube is provided with transverse apertures E, for the escape of the air confined in the upper portions of the bends of the screw, the air passing into the pipe and out of the upper end of the same. In order to permit of this, the upper end of said tube is perforated as indicated by the letters G, and to prevent the collection of any water in the tube, escaping from the apertures leading from the screw-threads, the lower end of the axial tube is provided with a flattened journal, H, pointed at its lower end, and inserted in the tube in such manner as to leave passages I for the escape of the water.

The screw is arranged so as to set at an angle of greater or less degree, as shown in Fig. 1, with its lower end submerged in the water of a well or other source of supply, the journal being stepped in a bearing, K, at the bottom of the well. The upper end of the tube is journaled in a suitable bearing, and is provided with a beveled-cog gear-wheel, L, intermeshing with a similar wheel, M, mounted on a shaft, N, which receives motion from a suitable motor—such as a windmill, for instance. As thus constructed, when the screw is put in motion, the water taken up discharges the air from the upper bends as it rises to the same successively, relieving the bends of the pneumatic pressure caused by the weight of the ascending water upon the air, thus enabling the screw to elevate the water more readily, decreasing the resistance to its motion, and enabling it to be worked at a greater angle than heretofore.

As constructed the screw can be worked with less power than as formerly made, thus permitting of the use of lighter motive-power machinery.

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

1. A water-elevating screw having a hollow axial shaft provided with openings leading from between the threads to its interior, for the escape of the confined air, substantially as and for the purposes specified.

2. The combination, with the axial shaft perforated, as described, of the spiral metallic sheet and outer casing, the flattened journal secured in its lower end and stepped in a bearing-block at the bottom of the well, and the beveled gearing whereby the screw is driven by means of any suitable motor, substantially as and for the purposes specified.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. CAMPBELL.

Witnesses:

C. D. DAVIS,

JOHN C. JENKINS.