

UNITED STATES PATENT OFFICE.

JOHN I. SHOTWELL, OF GARNETT, KANSAS.

IMPROVEMENT IN ROTARY WATER-ELEVATORS.

Specification forming part of Letters Patent No. 129,299, dated July 16, 1872.

To all whom it may concern:

Be it known that I, JOHN I. SHOTWELL, of Garnett, in the county of Anderson and State of Kansas, have invented a new and valuable Improvement in Rotary Pumps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

The drawing is a representation of a vertical section of my invention. Fig. 2 is a detached view.

This invention has relation to rotary pumps; and consists in the construction and novel arrangement of devices, as hereinafter described, by means of which water, after being admitted to a submerged valve-case, is conveyed to any required height by the rotation of a vertical tube.

In the accompanying drawing, A designates a box constructed with an internal space, B, of an irregular curved form approximating an ellipse, and an opening in one side, marked B', to admit water to said space. C indicates a metal cylinder, secured to the lower end of a rotating well-tube, and arranged to rotate within the box A, being located at one side of the internal space B, or near the opening B', and having its bearings in recesses cut in the top and bottom of said box. Through the center of the cylinder C is cut a vertical opening through which passes a valve, D. This valve consists of a thin plate or board having on each end a triangular projection, *d*. These projections are respectively on opposite sides of the valve, and have their outer surfaces curved to correspond with that part of the wall *z* of the space B located about at B'. E designates the well-tube, extending from the cylinder C, into which it opens, to any desirable height, passing through the inclined discharge-spout E', which is supported upon standards F. G represents a pinion, fixed to the tube E, and gearing with a toothed wheel, G', secured to the end of a horizontal crank-

shaft, H. I represents a crank, by turning which rotary motion is given to the well-tube and valve-cylinder through the medium of the bevel-gearing. J indicates a number of apertures cut in the well-tube above the discharge-spout, for the escape of water. K denotes a loose collar surrounding said aperture, and constructed with a single discharge-opening, *k*. This collar has for its object to prevent the scattering of spray, and also to serve as a means of closing the openings J when it is wished to discharge the water from the mouth of the tube through a hose or otherwise. I' indicates braces attached to the spout E', and supporting the shaft H.

The operation of this pump is as follows: The water entering the box A through the opening B', is carried around by each of the respective projections *d*, as the well-tube and valve-cylinder revolve. The nature of the space B and the relative arrangement of the cylinder and valve cause the latter to slide through said cylinder, one of the projections *d* passing away from the cylinder while the other approaches it, and both ends at all times in contact with the wall of the space B, or so nearly in contact therewith as to prevent any considerable flow of water through the separating crevices. Between the valve-plate and one side of the opening in the cylinder through which it slides there is left a space for the admission of water. When brought close to the mouth of said opening, one of the projections *d* just fills it. Now, when the cylinder is rotated and either end of the valve brought to the opening B', such end is in the position above described, closing the mouth of the cylinder-opening. The water enters the box A in front of said end. Accordingly, as the cylinder continues its rotation, this end or projection of the valve is pressed outward, and consequently diminishes the space to be occupied by the bulk of the water preceding it, and causes the water to find an escape upward through the well-tube.

I claim as my invention—

1. The loose perforated collar K, in combi-

nation with the rotary pump-tube E having perforations J, as and for the purpose specified.

2. The box A having an elliptical or nearly elliptical cam-wall, *z*, in combination with the reciprocating-valve D having the curved ends *d* shouldered at *d'*, and the slotted cylinder C, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN I. SHOTWELL.

Witnesses:

J. T. LAUTER,
J. H. WILLIAMS.