W. H. Plumb.

Archimedian Screw Water Elevator.

No. 94,971. Patented Sept. 21, 1869.

Fig. 3.

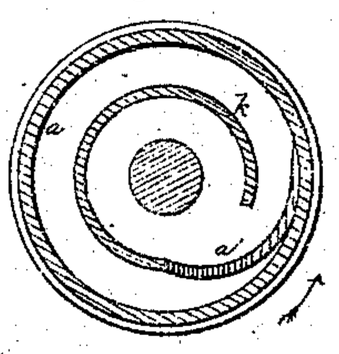
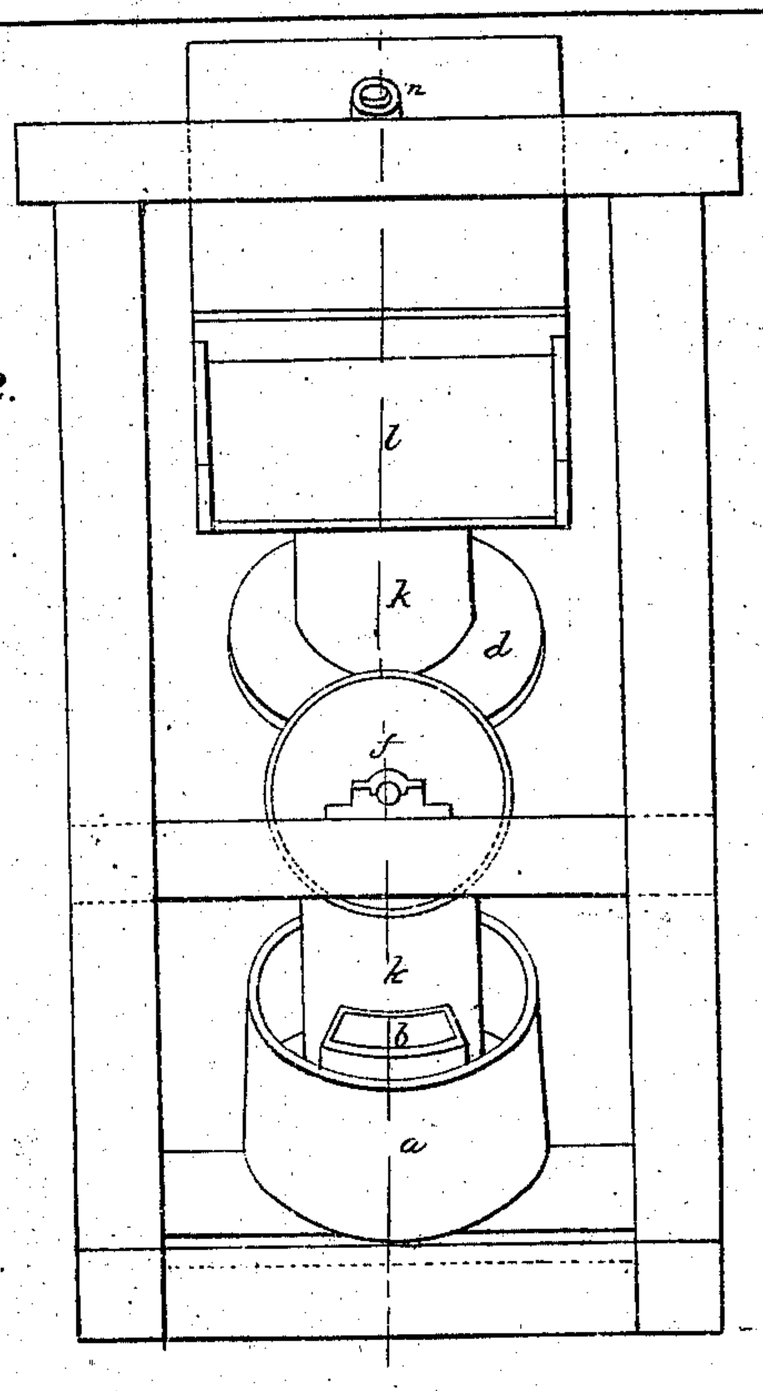


Fig. 1.

Fig. 2.



Witnesses:
Chas. A. Smith
Geo. T. Pinckney

Inventor:
William H. Plumb
per L. W. Serrell Atty

United States Patent Office.

WILLIAM H. PLUMB, OF NEW YORK, N. Y.

Letters Patent No. 94,971, *dated September* 21, 1869; *antedated September* 8, 1869.

IMPROVEMENT IN ARCHIMEDEAN SCREW WATER-ELEVATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM H. PLUMB, of the city and State of New York, have invented, made, and applied to use, a certain new and useful Improvement in Archimedean Screws; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1 is a vertical section of my improved Archimedean screw;

Figure 2 is an elevation of the same; and

Figure 3 is a sectional plan, at the line *x x*, fig. 1.

Similar marks of reference denote the same parts.

In the use of Archimedean screws for raising water difficulty has been experienced in consequence of the lower journal and box wearing out rapidly, by the gritty materials passing into the same while beneath the water, and this is particularly the case where the screw is employed for raising sand and water, in gold and other mining-operations.

The nature of my said invention consists in a tub applied at the lower end of the screw-cylinder, and revolving with it for receiving the liquid to be raised, thereby keeping the step or lower journal clean, and free from water or gritty particles; also, in flanges and rims applied to the upper part of the screw-cylinder, so that the water will be delivered by a spout without running down the outside of the cylinder; and lastly, in an arrangement of gearing to drive the cylinder, so as to steady and partially support the same near the middle part thereof.

In the drawing—

a represents a tub, applied around the bottom of the cylinder *k*, within which is the spiral worm or screw, as usual.

The cylinder *k* is set at an inclination, and an opening is provided at the bottom, on one side, and within the tub *a*, so that the liquid or material supplied by the spout *b* into the tub *a* shall be directed into the cylinder *k*, by the wing *a'* within the tub *a*, (see fig. 3,) as said tub and cylinder revolve together in the direction of the arrow.

The step or lower journal *m* is of any usual construction, and it is kept dry and clean in consequence of the use of the tub *a*.

The upper end of the screw *k* is supported by a journal and box, *n*, as usual, and the liquid is raised and delivered by the revolution of the screw-cylinder.

g is a flange, around the upper end of the cylinder *k*, with a pendent rim, *h*, above the stationary enclosing spout or discharge-box *l*, and around the opening of the same, through which the cylinder *k* passes, is a rim, *i*. These parts being properly placed, the liquid, and other material overflowing from the cylinder *k*, falls upon the flange *g*, and passes away by the spout *l*, and nothing can run back upon the exterior of the cylinder *k*, in consequence of the drip-ring *h* and projecting rim *i*.

The pulley *f* is to be rotated by competent power, and turns the pinion *e*, that is formed with a conical portion, 2, taking the conical portion 3 and flange 4 of the bevel-gear *d*. These parts steady and support the cylinder *k* near the middle thereof, and teeth, at 5 and 6, interlocking, insure the rotation of the cylinder *k* by the pulley *f*.

The teeth 5 and 6 do not have to bear any of the weight, as the conical surfaces sustain the same.

When the screw-cylinder *k* is of considerable length, it may be steadied and sustained by friction-rollers applied at suitable points.

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

1. The tub *a*, attached to the lower end of the inclined screw-cylinder *k*, and revolving with the same, in combination with the spout *b* for discharging the water into said tub *a*, so as to keep the step or journal *m* free from water and gritty substances, as specified.

2. The wing *a'*, in combination with the tub *a*, and screw-cylinder *k*, as and for the purposes specified.

3. The discharge-box *l*, formed with the rim *i*, and enclosing the upper end of the inclined screw-cylinder *k*, in combination with the flange *g* and pendent rim *h*, as and for the purposes specified.

4. The conical support 3, surrounding the screw-cylinder *k*, in combination with the conical support 2, upon the shaft of the pulley *f*, so as to steady and sustain the inclined screw-cylinder while being revolved, substantially as set forth.

In witness whereof, I have hereunto set my signature, this 7th day of July, A. D. 1868.

W. H. PLUMB.

Witnesses:

LEMUEL W. SERRELL,

CHAS. H. SMITH.