

T. T. BISHOP.  
Water Purifier and Elevator.

No. 216,823.

Patented June 24, 1879.

Fig. 1.

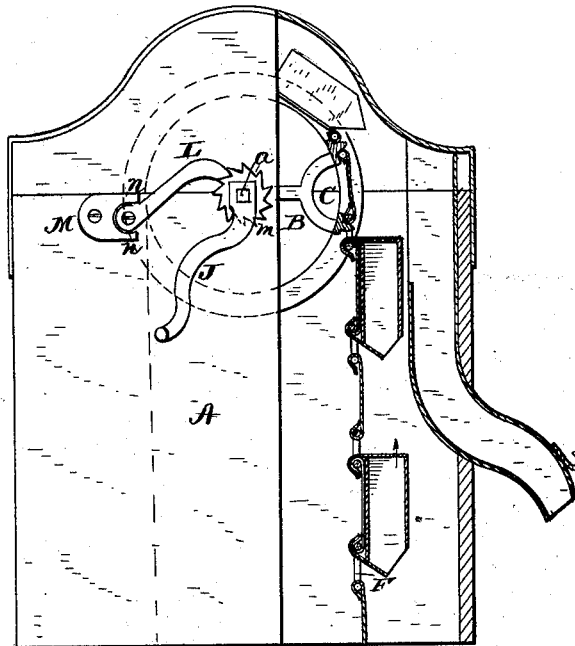


Fig. 2.

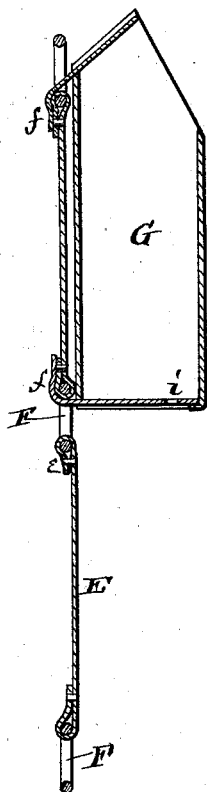
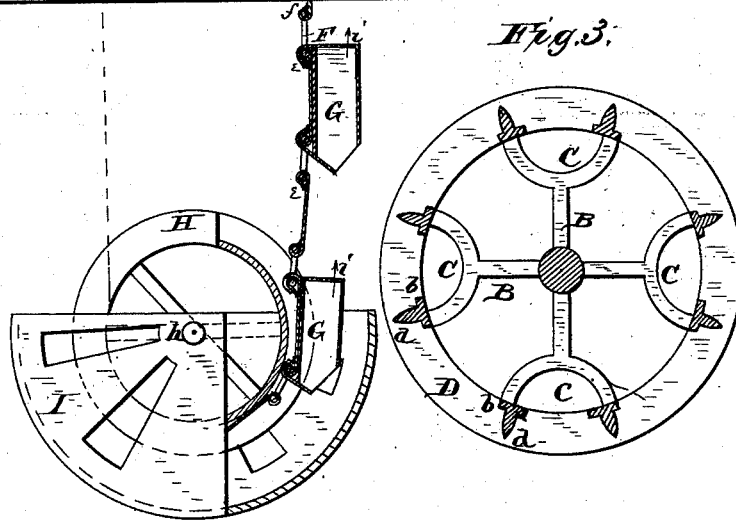


Fig. 3.



WITNESSES

*P. L. Ouraud*  
*C. L. Ewert*

INVENTOR

*Thomas T. Bishop*

# UNITED STATES PATENT OFFICE.

THOMAS T. BISHOP, OF WASHINGTON, D. C., ASSIGNOR OF ONE-HALF HIS  
RIGHT TO JOSEPH D. BOND, OF SAME PLACE.

## IMPROVEMENT IN WATER PURIFIERS AND ELEVATORS.

Specification forming part of Letters Patent No. **216,823**, dated June 24, 1879; application filed  
May 23, 1879.

### *To all whom it may concern:*

Be it known that I, THOMAS T. BISHOP, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Water Purifiers and Elevators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the construction and arrangement of a water purifier and elevator, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of my machine, one-half being in vertical section. Fig. 2 is an enlarged section of a part of the endless chain, showing the mode of attaching the bucket. Fig. 3 is a section of the upper or driving wheel.

A represents a box, of any suitable construction, to be placed on and secured to the platform over the well. In suitable bearings attached to this box is placed a shaft, *a*, having the driving-wheel formed with it.

This driving-wheel is composed of two sets of radial arms, B, each set consisting of four arms equidistant from each other. The outer end of each arm forms a semicircle, C, making two prongs, terminating in the rim or flange D, which rim thus has eight equidistant bearing-points. The two rims D D are, at the extremities of said prongs, connected by cross-bars *b b*, and on each cross-bar is a projecting rib, *d*, which lies within the peripheries of the two rims or flanges D D.

The entire wheel thus constructed, with the shaft *a*, is cast in one piece, making a strong and durable and yet light wheel, around which the endless bucket-chain is passed. This chain is composed of sheet-metal plates E, connected by elongated links F, the ends of said plates being bent or doubled in the links and riveted, as shown at *e*. The plates E are of such length

that the ribs *d* of the wheel will just fit and enter into the links F and take hold of the same for operation, the plates lying between the rims or flanges D D of the wheel.

To every alternate plate E of the chain is attached a bucket, G, which is made of sheet metal, of substantially the form shown. The top and bottom plates of this bucket are extended at the back sufficiently far to admit of their being passed through the links F F, and then bent or clinched, as shown at *f f*, whereby the bucket is held firmly to the chain, and yet can be easily detached when required for repairs or other purposes.

In the bottom of each bucket G is an air-vent, *i*, which allows the air to escape to a certain degree when the bucket plunges, top foremost, into the water. A certain portion of the air, however, is carried down with the bucket into the water, thereby purifying the same and keeping it at all times sweet and pure.

When the process of elevating the water stops, a number of buckets will be coming up out of the well full of water. The air-vents *i* allow this water to escape and return to the well.

The endless bucket-chain described may be of any desired length, according to the depth of the well in which it is used, and inside of such chain, at the bottom, is placed a flanged wheel, H, provided with journals *h h*. This wheel is intended to keep the chain at all times in proper position for work, and rolls in the chain, the flanges preventing it from slipping off to either side. It has, however, been found that this wheel will sometimes come out of place; and to obviate this difficulty, and to protect the buckets as they pass around at the bottom, I provide a semi-cylindrical guard, I, which is hung upon the journals *h* of the wheel H, and is of such size that the buckets of the chain can pass freely within the same around the wheel. This guard I not only keeps the wheel H in place, but also keeps the chain in place on the wheel, and protects the buckets while passing around the wheel.

On one end of the shaft *a* is secured a crank, J, for rotating the upper or driving wheel.

On the shaft *a* is further secured a ratchet-wheel, *m*, into which takes a dog or pawl, *L*, pivoted to the side of the box *A*, to prevent backward motion of the wheel.

It often happens in elevators of this character that the dog or pawl is inadvertently or by accident thrown back from the ratchet-wheel, when the main wheel will turn back rapidly and the crank be apt to injure any person standing by. To prevent this I attach to the box a small plate or casting, *M*, which is forked and has its two prongs, *n n*, fitting above and below the pivoted end of the dog.

This device is made of such size and fitted to the dog in such a manner that the dog can only rise far enough to clear the teeth of the ratchet-wheel when the same is turning forward, but cannot be thrown far enough away from said ratchet-wheel to allow the same to turn backward. All liability of accidents from this source is therefore entirely obviated.

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

1. In a water purifier and elevator, the main or driving wheel, consisting of the shaft *a*, two sets of radial arms, *B*, with prongs *C* at their ends, the rims *D D*, cross-bars *b*, and ribs *d*, all constructed substantially as herein set forth.

2. The endless chain composed of the plates *E* and links *F*, united in the manner described, and the buckets *G*, having their top and bottom plates *f* extended, passed through the links, and clinched, substantially as herein set forth.

3. The semicircular guard *I*, in combination with the wheel *H* and endless bucket-chain, whereby the buckets are prevented from striking the sides of the well and protected from injury, substantially as and for the purposes herein set forth.

4. The plate or casting *M*, provided with the prongs *n n*, in combination with the dog or pawl *L* and ratchet-wheel *m*, whereby the ratchet-wheel and its shaft are prevented from turning backward, substantially as and for the purposes herein set forth.

5. In a water purifier and elevator, the combination of the main wheel *C D*, with ribs *d*, the endless chain *E F*, buckets *G*, with air-vents *i*, the flanged wheel *H*, and semicircular protecting-guard *I*, substantially as and for the purposes herein set forth.

THOMAS T. BISHOP.

Witnesses:

C. L. EVERT,  
F. L. OURAND.