2 Sheets—Sheet 1.

A. J. CLEMMONS.
Water-Elevator.

No. 209,655. Patented Nov. 5, 1878.

Fig 1.

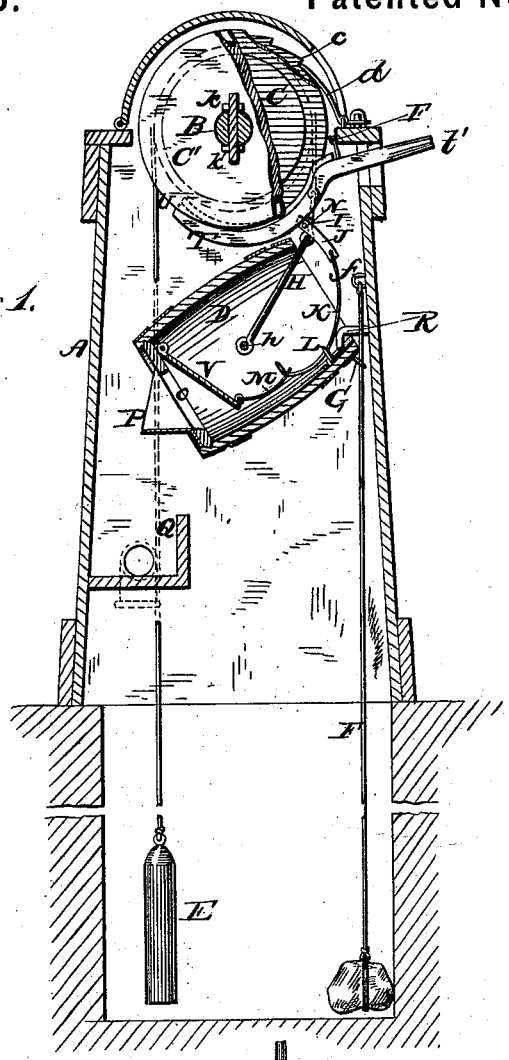
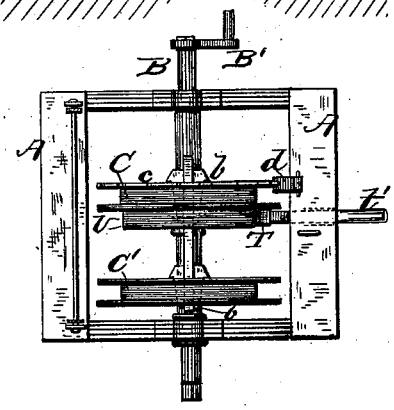


Fig 2.



WITNESSES

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2 Sheets—Sheet 2.

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Fig 3.

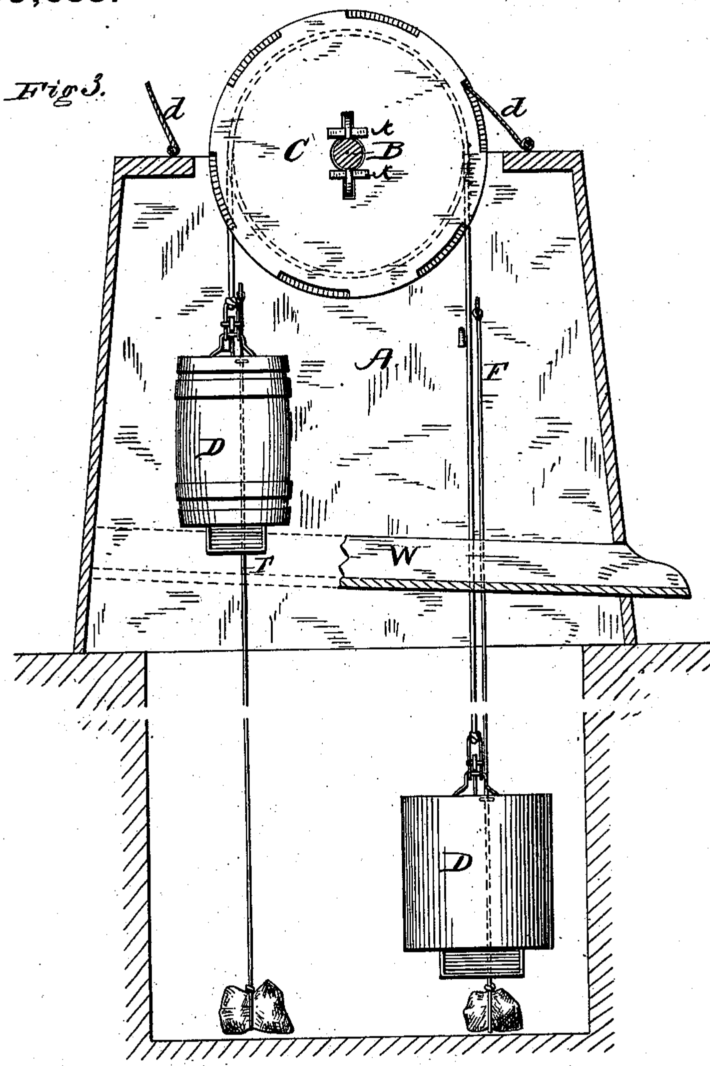
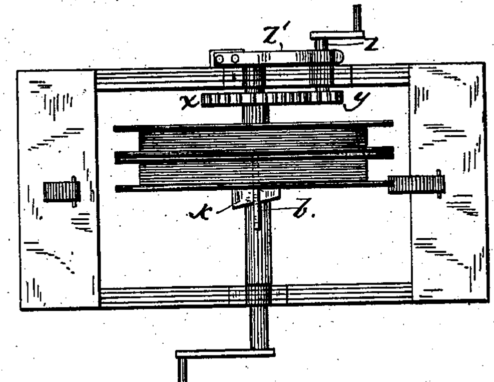


Fig. 4.



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ALVEUS J. CLEMMONS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN WATER-ELEVATORS.

Specification forming part of Letters Patent No. **209,655**, dated November 5, 1878; application filed September 17, 1878.

To all whom it may concern:

Be it known that I, ALVEUS J. CLEMMONS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Elevators; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my invention, partly in section, showing the position of the bucket when discharging its contents. Fig. 3 is a similar view of a modified form of the invention, in which two buckets are employed; and Figs. 2 and 4 are top-plan views of the arrangements shown in Figs. 1 and 3.

Like letters of reference in the several figures denote the same parts.

My invention relates to that class of water-elevators in which buckets are employed, in connection with chains or ropes and suitable winding apparatus, to raise water from a well and discharge the same automatically into a proper trough or spout; and it consists, primarily, in providing the bucket with a pivoted bail, by which it is suspended, and in the peculiar construction and arrangement of the devices for effecting the connection between said bail and the hinged valve in the bottom of the bucket, whereby the valve is enabled to open freely in filling the bucket and to be readily lifted when the bucket is tilted to discharge its contents.

It further consists in the combination of the bucket and its suspending-rope and winding apparatus with the guide-wire and a projecting stop arranged near the upper end of the guide-wire, whereby the bucket is raised from the well and tilted automatically at the proper time to discharge its contents.

It further consists in the peculiar construction of the shaft upon which the winding-drums are mounted, whereby said drums are held securely without weakening the shaft, and are also enabled to be slid along said shaft and independently turned to adjust the ropes or chains to the height of the water in the well.

I will now proceed to describe my invention more particularly, reference being had to the accompanying drawings.

In said drawings, A represents a casing or frame, in the upper portion of which is journaled a cross-shaft, B, provided with a suitable operating-crank, B′, and bearing two drums, C C′, the former carrying the rope or chain of the bucket D and the latter the rope or chain of a counterbalancing-weight, E. A wire cable or rod, F, is secured to the casing at *f*, and fastened firmly at the bottom of the well by means of a weight, preferably a large stone; and on the side of the bucket there is an eye or staple, G, which is adapted to embrace loosely the wire F and guide the bucket steadily in its ascent and descent. The bucket is provided with a bail, H, pivoted within it on a cross-rod, *h*, and to the upper part of this bail an open link, I, is articulated, to which the lifting rope or chain is in turn secured. A small leather strap, J, passes through the link I, and connected with this strap is a curved wire, K, which passes through a ring, L, held by a staple on the inside of the bucket, and engages at its lower end with a flat link, M, articulated to a valve, V, hinged to the bottom of the bucket and arranged to open upward. This connection between the pivoted bail and valve enables the latter to be easily lifted in filling the bucket, and yet is very effective in raising the valve to discharge the contents of the bucket when the latter is tilted, as shown in Fig. 1.

The strap J is prevented from slipping out of the link I by means of a pin, N, inserted in one of a series of holes in the strap; and by changing the pin to the various holes the valve is opened more or less widely when the bucket is tilted. The bottom of the bucket is formed with an opening, *o*, intended to be covered by the valve, and with an inclined chute, P, to direct the discharge of the water when the valve is lifted. The said bottom and chute are preferably constructed of cast metal in one piece.

The operation of raising the water and discharging it into the trough or supply-spout Q is as follows: The bucket being at the top, the operator works the crank and unwinds the chain or rope from the drum C, thus lowering the bucket into the well, the drum C′ meanwhile winding up the rope connected to the counterbalance-weight, and rendering the performance of this operation very easy. The

bucket in its descent is guided by the wire or rod F, and on reaching the water the valve is forced open and the bucket fills. The crank is then turned in the opposite direction, and the bucket begins its ascent with its burden, being guided and steadied and prevented from oscillating by the wire F.

As the bucket reaches the upper end of the wire F it strikes a curved projection or stop, R, affixed to the casing, which causes it to tilt to one side, as shown in Fig. 1, thereby opening the valve through the medium of the connections above described, and allowing the water to escape through the opening *o* in the bottom of the bucket, whence it is directed by the chute P into the trough or supply-spout Q. It will be observed that the stop R is located directly in the path of the bucket as it slides up the wire F, and therefore its engagement with the edge of the bucket is always insured, which would not be the case were no guiding-wire used and the bucket allowed to turn and oscillate while ascending.

The cross-shaft B, upon which the drums C C′ are mounted, is formed with longitudinal flanges *b b*, extending a portion of its length, as shown in Fig. 2. The drums are provided with openings corresponding in form with these flanges, and are slid into their proper position, and locked by means of keys *k k*, driven through openings in the flanges on each side the main portion of the shaft. This construction obviates the necessity of cutting into or recessing the main shaft for the passage of the keys, while it materially assists in holding the drums in position and preventing them from turning. By removing the keys the drums may be slid along the shaft until the flanged portion is passed, and then independently turned to the right or left to wind or unwind the chains thereon to suit the depth of water in the well.

In Fig. 1, T represents a brake, consisting of a lever pivoted to the casing at F, and having a curved friction-surface adapted to engage with an extension, V, of the drum C, and a handle, *t′*, projecting through the casing within convenient reach of the operator. This lever is normally held out of contact with the extension V of the drum by its own gravity, but can be readily applied when necessary.

One or more of the side flanges *c* of the winding-drum are provided with ratchet-teeth, and a pawl, (or pawls,) *d*, is pivoted to the casing, and engages with said ratchet when the filled bucket is being elevated.

In Figs. 2 and 4 I have shown a modified form of the invention, in which each drum is employed to operate a bucket, instead of one a bucket and the other a counter-weight, as in the device above described. It is obvious that thus duplicating the elevating-buckets involves a separate guiding-wire and tilting-hook for each, while the ratchets on the flanges of the drum are constructed so that they will engage with pawls on either side as the crank is turned to the right or left. The buckets are arranged to discharge into a common trough or supply-spout, W.

Instead of the crank, or in addition thereto, a gear-wheel, X, may be placed upon the shaft B, and a pinion, Y, meshed therewith, as seen in Fig. 4, for the purpose of gaining greater leverage on the shaft B, and enabling a child to operate the elevator.

The shaft Z, carrying the pinion Y, is held in position by a spring, Z′, as shown, which admits of the easy application and removal of said shaft.

I claim as my invention—

1. The combination of the bucket D, pivoted bail H, link I, strap J, curved wire K, ring L, flat link M, and hinged valve V, substantially as described, for the purposes specified.

2. The perforated strap J, rendered adjustable within the link I by means of the pin N, for the purpose of causing the valve to open more or less widely when the bucket is tilted, substantially as described.

3. The combination of the bucket and its suspending and winding apparatus with the guide-wire rod F and the stop R, for automatically tilting the bucket, substantially as described, for the purpose specified.

4. The combination of the shaft B, having the longitudinal flanges *b b*, the drums C C′, and the locking-wedges *k k*, whereby the said drums are enabled to be slid along the shaft until the flanged portion is passed, and then independently turned to the right or left to adjust the chains or ropes to suit the height of the water in the well, and to be securely held in adjusted position by the wedges, substantially as described.

A. J. CLEMMONS.

Witnesses:
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L. W. WALLACE.