J. S. Brown,

Windlass Water Elevator,

No. 35,295. Patented May 20, 1862.

Fig. 2.

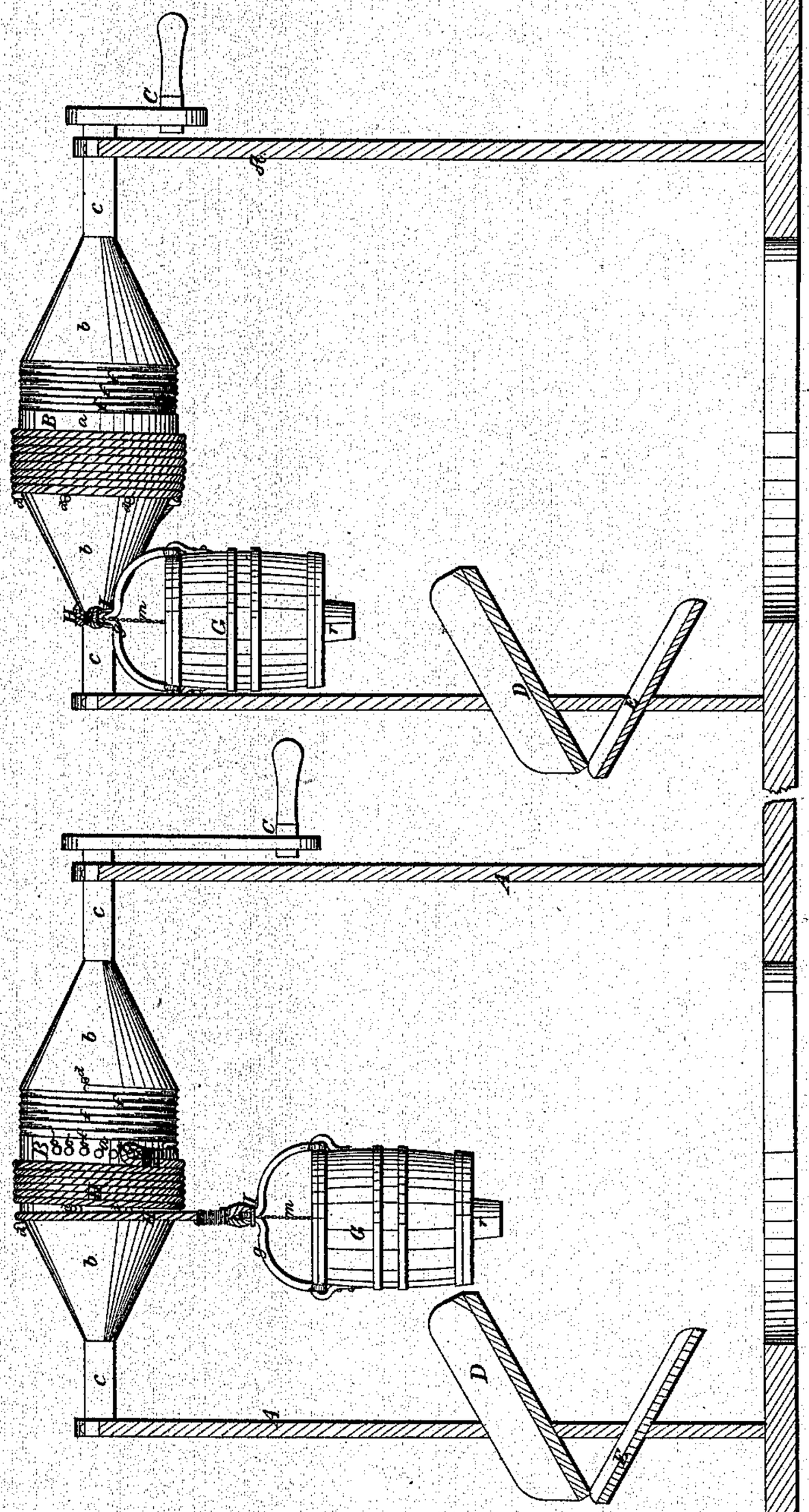

Fig. 1.

Fig. 5.

Fig. 4.

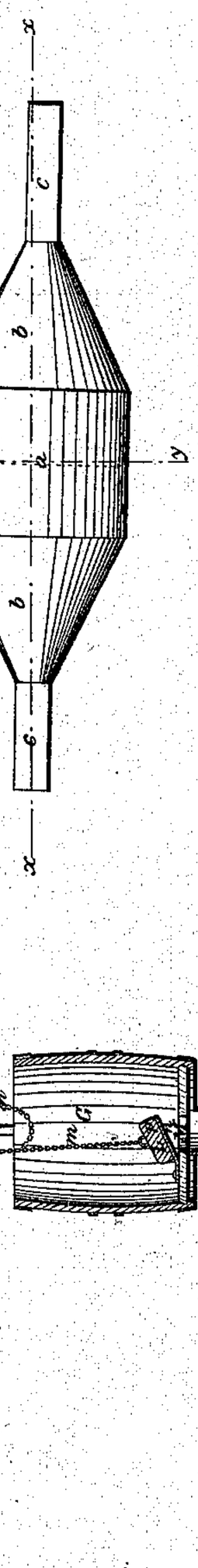

Fig. 3.

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J. S. BROWN, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO HIMSELF, AND JOSEPH KENT, OF NEW ALBANY, INDIANA.

IMPROVEMENT IN WATER-ELEVATORS.

Specification forming part of Letters Patent No. **35,295**, dated May 20, 1862.

To all whom it may concern:

Be it known that I, J. S. BROWN, of Washington, in the District of Columbia, have invented a new and Improved Apparatus for Drawing Water from Wells in Buckets; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a vertical section of the curb and side elevation of the windlass and bucket of my improved water-drawing apparatus, the bucket being shown in its position just before being moved over the spout; Fig. 2, a corresponding view just after the bucket has been moved over the spout and when its valve is lifted for discharging the water therein; Fig. 3, a vertical section of the bucket, as in Fig. 2, when discharging the water, the view being at right angles to that in Fig. 2; Fig. 4, a view of the windlass slightly modified; Fig. 5, a plan of a part detached.

Like letters designate corresponding parts in all of the figures.

A well-curb, A, of ordinary construction is employed, the spout D of which is also constructed as usual, except that it projects inward rather farther than usual, to an extent to be determined by the size and position of the bucket. In addition to the discharging-spout D another spout, E, called the "dipping-spout," is located just beneath the said spout D, and inclines inward instead of outward far enough to discharge whatever water it receives into the well. Its outer upper end projects outward a very little farther than the spout D and as close beneath it as practicable, so that when the water is flowing in a stream from the discharging-spout this lower spout does not interfere with the current; but as soon as the stream of water ceases and the water begins to fall in drops from the spout D it descends vertically and is all caught in the dripping-spout and conveyed thereby back into the well. The advantage of this is obvious. It obviates the wetting of the platform in warm weather, thus removing the liability of its becoming infested with vermin, and, especially in winter, preventing the platform becoming iced and slippery.

The windlass B is composed of a cylindrical portion, *a*, on which an ordinary rope or cord, H, is wound for raising the bucket G from the well, and a conical portion, *b*, (or if two buckets are used two conical ends, *b b*, as shown in the drawings,) for moving the bucket over the discharging-spout. The shaft or axle *c* may either be turned out of wood in one piece with the windlass itself or of iron and passed through the center of the windlass. The shaft has nothing peculiar in construction, and a winch, C, of common construction may be used to turn the windlass.

The diameter of the cylindrical portion *a* of the windlass should be sufficient to give as much slope or inclination to the conical portion *b* as necessary to cause the rope to run readily off to the apex thereof. About eight or ten inches in diameter will be found sufficient for a conical portion of as many inches in length, and eight inches of side motion given to the bucket will be sufficient to convey it far enough over the discharging-spout.

The upper end of the rope H is attached to the windlass by a pin, *t*, Fig. 1, or its equivalent, which is removable and transferable to different holes, *o o*, situated in line of circle in the windlass, so that the rope may be so adjusted in length that when it is wound around the windlass to the termination of the cylindrical portion and about to run off on the conical portion *b* the bucket G shall be just high enough to pass over without touching the discharging-spout D by an obliquely-upward side movement, substantially as indicated in Fig. 1, and the height of the windlass above the spout D is such in relation to the height of the bucket G and its bail *g* that when the rope shall have run off the whole length of the conical portion *b* of the windlass to the shaft *c* it shall be all wound up, substantially as shown in Fig. 2.

The position of the windlass is such that when the rope H is ready to run off upon the conical portion *b* the bucket G shall be as close to the inner end of the spout D as practicable without striking against it, as seen in Fig. 1, and the length of the conical portion *b* is sufficient to carry the bucket far enough over the spout to discharge all the water therein from a central aperture in the bottom of the bucket, as indicated in Fig. 2. In order to

insure the success of this movement of the bucket, it is necessary that the rope H shall be wound around the windlass a uniform number of times before running off upon the conical portion. This is generally secured readily by the mere adjustment of the rope properly in first putting on, as it will usually wind its coils close to each other; but since some persons do not turn the windlass very steadily there is some liability to disarrangement. The desired uniformity, however, is easily attained by simply placing the windlass B at a slight inclination, the end on which the rope winds being a little the highest, as indicated in Fig. 4, the red line *x x* indicating about the proper degree of inclination. This causes the rope always to hug the previous coil, so that it must necessarily wind closely and uniformly; but when two buckets are employed this inclination cannot be given to the windlass. The same result, however, may be nearly as effectually accomplished by having the (otherwise) cylindrical portion *a* of the windlass taper a little both ways toward the middle, as indicated by red lines at *s s* in Fig. 4. These two modifications are intended as the simplest and cheapest means of effecting the desired result to be adopted. A better but somewhat more costly means of securing the coiling of the rope properly is a spiral groove, *f*, cut like a screw-thread in the cylindrical portion of the windlass, as shown at the right end in Figs. 1 and 2. This spiral groove is readily made when the windlass is turned in an engine-lathe. The width of the groove should be a very little greater than the diameter of the rope used. A short pin or projection, *d*, is also required to be located in the proper position, just where the rope is to start to run off on the conical portion of the windlass, to prevent the buckets drawing off the coils of the rope from the cylindrical portion, and also to insure the rope's starting at the right point on the circumference of the windlass to run off. When no groove *f* is employed, there should be several of these pins just at the junction of the cylindrical and conical portions of the windlass, substantially as shown in Figs. 1 and 2.

The water is discharged through an aperture, M, Fig. 3, in the center of the bottom of the bucket, so that it will fall into the spout D in whatever way the bucket may hang. If desired, there may be a short tube, *r*, below the aperture M, to direct the stream of water more steadily and compactly into the spout below. The aperture is covered by a valve, L, of any ordinary construction. This valve is lifted for discharging the water at the proper time by the action of the windlass or of its shaft *c*, substantially as follows:

The bail *g* of the bucket has an eye or loop in the middle projecting upward at right angles thereto, and the rope H is passed through this eye, then doubled over itself a short distance, where the two parts are fastened together by a cord or any equivalent means, as at *h* in the drawings. Over the eye of the bail a short lever, I, (shown separately in Fig. 5,) is placed, a central slot, *i*, therein embracing said eye, so that the lever may readily vibrate vertically thereon. There are apertures *l l* in the ends of the lever, into which two branches of a small chain or cord, *m*, are respectively hooked. The branches are of even length and unite a little below the bail, and thence only a single chain is required, extending downward to the valve L. This chain is of the proper length to be nearly but not quite straight when the bucket-bail is upright and the lever I is horizontal. When the rope H has run off over the conical portion *b* of the windlass upon the shaft *c* and has all been taken up thereby, the doubled part *h* naturally presenting its flat or broad side to the windlass and the bail of the bucket itself striking the windlass, as shown in Fig. 2, cause the bucket to assume such a position as to present the lever I, either one end or the other, nearly or quite at right angles to the windlass, and as one end of it strikes the windlass it is depressed thereby, the opposite end being elevated to an equal extent, as clearly shown in Fig. 3. The effect is to raise that branch of the chain *m* which is attached to the elevated end of the lever, and consequently to draw upon the single portion of the chain and to lift the valve, as shown, and it obviously makes no difference which end of the lever is depressed, the effect on the lower end of the chain and on the valve is the same. When the rope begins to be unwound again, the lever is brought back again to a horizontal position by the weight of the valve in the act of closing. The valve requires to be weighted in any case sufficiently to keep it closed under water, and this is sufficient for the purpose above named. The weight *p* is very cheaply made of cast-iron, and is fastened to a piece of leather, *n*, for the packing and hinge.

When the bucket is moved over the spout and suspended from the axle of the windlass, it is very easy to sustain it while discharging the water, so that a child may draw water with little danger, even though no ratchet-wheel and pawl are used, which, however, may be employed, if preferred. As soon as the bucket is emptied of the water, the small leverage exerted by it on the windlass enables it to be overbalanced by the winch or crank C, which is made sufficiently heavy for that purpose, and is arranged so as to hang on the opposite side of the windlass to the bucket in that position, thus preventing its descent into the well unless started back purposely.

When two buckets are used, another spout, D, is located in the opposite side of the well-curb to receive the water from it. This is very convenient when two pails are brought at once to be filled, one being placed under

one spout and the other under the other spout; but both spouts may unite on one side, if preferred.

Instead of two buckets, a counter-weight may be employed to equalize the weight of the single bucket both in ascending and descending. The cord of the weight will run on the windlass in the place of the rope of the additional bucket.

A roof or other protection from the weather should be placed over the windlass. This is not absolutely necessary, but is very desirable with any kind of windlass.

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

1. The conical portion *b* of the windlass, or its equivalent, for conveying the raised bucket over the discharging-spout, arranged and operating substantially as herein specified.

2. The lever I and double branch chain or cord *m*, acting in combination, substantially as specified, for lifting the valve.

3. Overbalancing the empty bucket G' when suspended at or near the conical portion of the windlass, by the crank or winch *c*, substantially as and for the purpose herein set forth.

4. The dripping-spout E, arranged and operating in combination with the discharging-spout D, substantially as and for the purpose herein specified.

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Witnesses:
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