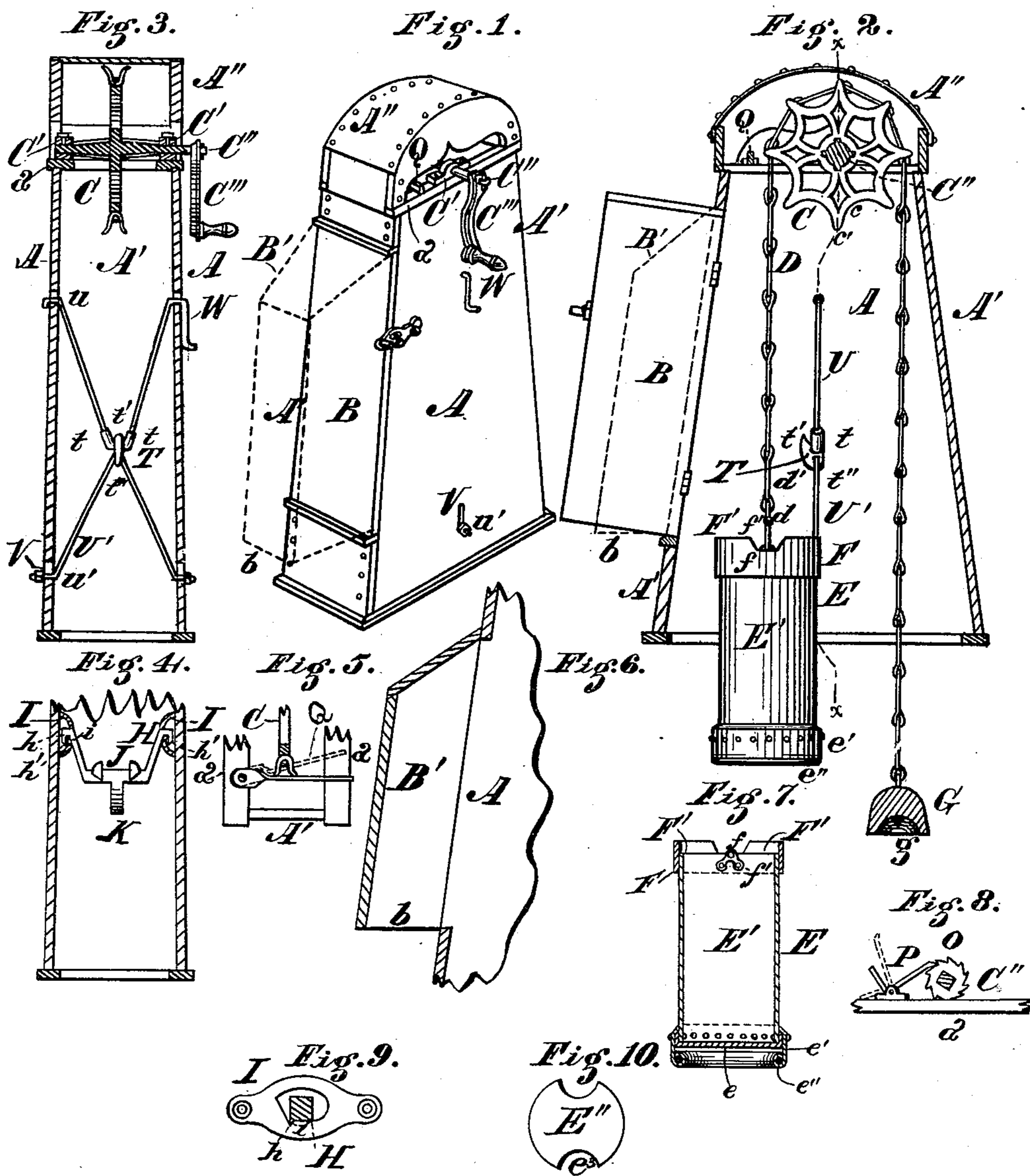


(No Model.)

E. F. DUNAWAY.
WATER ELEVATOR.

No. 262,750.

Patented Aug. 15, 1882.



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UNITED STATES PATENT OFFICE.

ELIJAH F. DUNAWAY, OF COVINGTON, KENTUCKY.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 262,750, dated August 15, 1882.

Application filed August 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH F. DUNAWAY, a citizen of the United States, and a resident of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Water-Elevators, of which the following is a specification.

This invention relates to water-elevators, and has for its object to improve the construction of the elevating-buckets, and to improve the means for tilting and discharging the buckets when elevated to the proper point. These objects I accomplish by the construction and arrangement illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a water-elevator, showing the curb provided with one door-opening, the dotted lines illustrating the manner of extending the front of the curb, which extension is open at its bottom to permit the discharge of water. Fig. 2 is a longitudinal central sectional view, showing the interior of the curb, the elevating-bucket, and devices for tilting the latter. Fig. 3 is a sectional view on the line *xx* of Fig. 2. Fig. 4 is a broken sectional view, illustrating a modified form of device for tilting the water-bucket; Fig. 5, detached plan view of a device for locking the sprocket or drive wheel which elevates the bucket. Fig. 6 is a broken central section of the extended curb-front; Fig. 7, a vertical central sectional view of the water-elevating bucket; Fig. 8, a modified form of device for locking the sprocket or drive wheel which elevates the bucket; Fig. 9, an elevation of one of the journal-boxes of the modified tilting device shown in Fig. 4; Fig. 10, a plan view of the float used in connection with the bottom of the bucket.

In the drawings, the letters *A A'* indicate the curb or casing, which is of the usual construction, and *B* the hinged door for closing the opening at the front of the curb. In lieu of the hinged door, however, the curb or casing may be extended, as indicated in dotted lines at *B'*, which is the preferred construction, because a hinged door is objectionable, owing to the liability of children falling into the well through the door-opening. If the curb be extended, as indicated by dotted lines, the bot-

tom of such extension will be left open, as at *b*, for the discharge of water into a suitable vessel or receptacle.

The sprocket or drive wheel *C* and its shaft *C'* are preferably cast integral or in a single piece, and the shaft is furnished with longitudinal strengthening-ribs, its ends resting and rotating in journal-boxes *C'* on the top pieces, *a*, of the curb or casing. The sprocket or drive wheel is provided with forked arms *c c'*, having flaring mouths to permit the entrance of the links composing the chain *D*.

The letter *E* indicates the water-elevating bucket, which is provided with ears *f'*, secured on the inside thereof, near the upper edge, to permit the passage of the bucket by any obstacles. The bucket is suspended from the chain *D* by a bail, *d*, connecting with the link *d'*, and the bucket is composed of a hollow cylinder, *E*, of galvanized iron, with its bottom *e* flanged and soldered or otherwise secured in place. A hoop or ring, *e'*, is secured to the bottom of the bucket, and its lower edge is rolled or turned inward, forming a bead, *e''*, to engage a tilting device, as hereinafter explained.

To the top of the bucket is secured a metal band, *F*, which projects above the upper edge of the cylinder and is provided with side notches, *f*, arranged in line with the bail *d* and extending to the upper edge of the cylinder *E*. The band *F*, with its side notches, *f*, constitutes spouts *F' F'*, so that the bucket can be filled to the upper edge of the cylinder *E* and still avoid spilling as the bucket is tilted to discharge its contents. The band *F* also subserves the function of a weight to overbalance the weight at the bottom, and thereby insure the sinking and filling of the bucket; but this can be accomplished by the employment of a float, *E''*, having notches *e³*, which is introduced between the bead *e''* and the bottom *e* of the bucket, and which will be of sufficient buoyancy to counteract the extra weight at the bottom thereof.

A weight, *G*, is hung on one end of the chain to counterbalance the weight of the bucket, and it is preferably provided with a concave bottom, *g*, for the purpose of agitating the water by the expulsion of air from the said cav-

ity when the weight passes downward. In order to tilt the bucket when elevated into the curb and discharge its contents, I employ two V-shaped levers, U and U', the lower one, U', of which is the shorter, and is made of one piece of metal, with its ends *u'* bent outwardly and pivoted in slots V, in which they move when in operation, and its central bent portion passing through an eye in a lower curved extension, *t*², of lever U. The upper lever, U, is pivoted at its upper ends, *u*, in elongated holes in the curb, one end being bent outward and downward to form a crank-arm, W, to swing the levers backward for permitting the descent of the bucket.

T indicates a casting having two arms, *t t*, in which the lower ends of the lever U are secured, and a hook, lug, or lugs, *t'*, which engage the bead on the bottom of the bucket.

*t*² indicates a curved lower extension of casting T, in which the lever U' hinges.

The extension *t*² is curved, so that when the bucket comes in contact with it in its ascent it will be moved backward thereby, and return to its normal position after the bucket has passed the lug *t'* and permit the engagement of the lug with the beaded bottom. These long levers U U' occasion the necessity of but a very limited extension-front to the curb, as they swing backward in tilting and discharging the bucket, the length of the slots V permitting them to swing just sufficient distance backward to bring the mouth of the bucket directly over the discharge-opening.

In Figs. 4 and 9 I have illustrated a modified form of lever mechanism for tilting the bucket when elevated into the curb or casing. In this instance a single lever, H, is employed, and it is furnished with knife-edges *h* and hook-lugs *h'*, which pivot on knife-edge bearings *i* in the plates I, which are secured on the interior of the curb or casing in the path of the bucket in its ascent. The lever H, it will be seen, is yoke-shaped, and it is provided with hook-lugs J, which are located on that face of the lever which is in juxtaposition to the bucket, and it is also provided with a depending arm, K, curved rearwardly, against which the edge of the bucket strikes in its ascent and causes the lever to swing in a direction away from the bucket. As the bucket approaches its discharging-point the lever swings back to its normal position and the lugs J come in contact with the bead *e''* on the bucket, so that by a

reverse movement of the sprocket or drive wheel the bucket is caused to tilt forward and empty, the said lugs on the lever H serving as supports for the lower edge of the bucket to effect such object.

In the operation of the water-elevating devices herein described a locking device to prevent the sudden fall of the bucket may be necessary.

In Figs. 1 and 5 I have shown a simple device for effecting such object; and it consists of a swinging lever, Q, mounted on the top of the curb in such relation to the sprocket or drive wheel that it can be swung under one of its forked arms *c c'*, and be thereby temporarily held in a stationary position, a reverse movement of the lever releasing the wheel and permitting the bucket to descend.

In Fig. 8 I have illustrated another device for accomplishing the same object, which consists simply of a ratchet-and-pawl mechanism, O and P, located at one end of the shaft C'' of the sprocket or drive wheel.

What I claim is—

1. In a water-elevator, the bucket E, provided with spouts F' F' and notches *f f* at its top, and beaded band *e' e''* and bottom *e*, constructed substantially as and for the purpose specified.

2. The spout-bucket E, suspended by a bail, *d*, from a drive-chain, D, and having a weighted top, F' F', and beaded bottom *e' e''*, for operation in connection with a swinging lever for tilting and thereby discharging it of its contents, substantially as herein set forth.

3. In a water-elevator, the spout-bucket suspended from a drive-chain, and having a weighted top and beaded bottom, in combination with pivoted lever mechanism for tilting the bucket, substantially as and for the purposes set forth.

4. In a water-elevator, the device for tilting the bucket, comprising a pair of swinging levers, U U', hinged together, and provided with a lug arranged and adapted to engage the bucket, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ELIJAH F. DUNAWAY.

Witnesses:

JNO. E. JONES,

EUGENE L. FIRNKOESS.