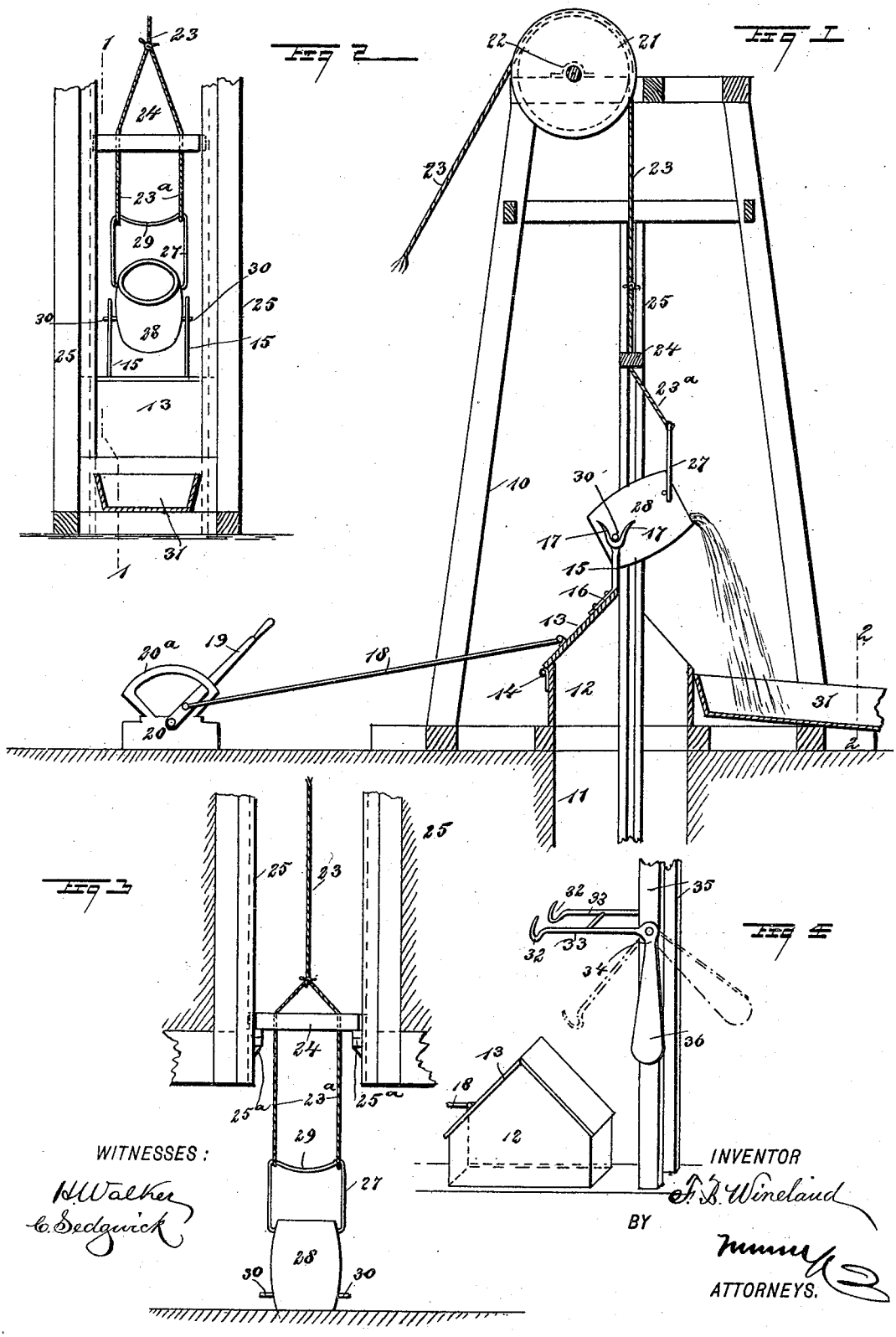
(No Model.)

F. B. WINELAND.

BUCKET DUMPING APPARATUS.

No. 491,958. Patented Feb. 14, 1893.



UNITED STATES PATENT OFFICE.

FRANK B. WINELAND, OF BRECKENRIDGE, COLORADO.

BUCKET-DUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 491,958, dated February 14, 1893.

Application filed April 29, 1892. Serial No. 431,193. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. WINELAND, of Breckenridge, in the county of Summit and State of Colorado, have invented a new and Improved Bucket-Dumping Apparatus, of which the following is a full, clear, and exact description.

My invention relates to improvements in dumping devices for hoisting buckets such as are used to raise water, ore, and other material from a well or mining shaft, and the object of my invention is to provide a simple apparatus by means of which the buckets may be practically self-dumping, and by means of which also the door at the top of the shaft may be closed as the bucket ascends, so as to prevent the material from dropping back.

To this end, my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a sectional elevation of the apparatus, showing the bucket in the act of being dumped; Fig. 2 is a broken front elevation of the same, with the main frame removed; Fig. 3 is a broken front elevation of the shaft, showing the bucket lowered to receive its load; and Fig. 4 is a detail perspective view of a modified form of the apparatus.

The main hoisting frame 10, is erected over the mouth of the shaft 11, and this shaft is provided at the top with the usual housing 12, having a swinging door 13, which is hinged at its lower edge, as shown at 14, and the inner edge of the door supports a pair of supporting arms 15, which are arranged parallel with each other and extend vertically upward, the supporting arms having their lower ends flattened and bent, as shown at 16, to enable them to be easily secured to the door, and the upper ends of the supporting arms terminate in forks having diverging tines 17, these forks being adapted to receive the pins or trunnions on the bucket as hereinafter described.

The door 13, connects by means of a cable or rod 18, with a swinging lever 19, which is fulcrumed on a base 20, and moves over a common form of quadrant 20^a, and this lever may be moved by the engineer who has charge of the dumping apparatus so as to open and close the door at the proper time; but the particular mechanism described need not be used for operating the door, as the door may be swung by any suitable means.

A winding drum 21, is journaled on a shaft 22 at the top of the frame 10, and a cable 23, operated by the engine in the usual way, extends over the drum and has one end secured to branch cables 23^a, as shown in Fig. 2, and these pass through a cross head 24, which slides vertically between the posts 25, which extend downward into the elevator well. The cross head prevents the cables from twisting. The lower ends of the cables 23^a, are secured to opposite sides of the bail 27 of a bucket 28, the bail being bent downward at the center and at the top, as shown at 29, thus forming end recesses or pockets to which the ropes or cables are secured, and the center bend prevents the ropes from slipping inward. The bucket 28, has near its bottom and on opposite sides, projecting pins or trunnions 30, which are placed a little off the center, and which are adapted to enter between the tines 17, when the bucket is dropped and the door is closed. At one side of the housing 12, is a chute 31, adapted to receive and carry away the water or other material dumped by the bucket 28. Near the bottom of the shaft 11 are stop blocks 25^a, which are fixed to the inner sides of the posts 25, and the cross head 24, by striking upon the blocks, limits the downward movement of the bucket.

The operation of the apparatus is as follows: The bucket is hoisted in the usual way by the winding of the cable 23, and as the bucket ascends, the engineer tilts the lever 19 so as to open the door 13 sufficiently for the bucket to pass. After the bucket has passed the door, the door is allowed to drop back to place by manipulating the lever 19, and the cable 23, is unwound a little so that the bucket will drop, and in its descent the trunnions 30, are caught by the forks of the supporting arms 15, and the bucket is tipped over, as shown in Fig. 1, and its contents delivered into the spout or chute 31. The door 13, is then opened and the bucket allowed to descend.

In Fig. 4 I have shown a modified form of the apparatus, and here bell crank levers, the arms 33 of which have hooks, 32 at their ends, are pivoted at their elbows at 34 to vertical timbers 35, the lower ends of said levers being weighted as at 36.

The bucket trunnions 30, are adapted to be caught, when the bucket is dropped back as described, by the hooks 32 on the ends of the upper arms 33 of the bell cranks 34, which are pivoted on the uprights 35, adjacent to the shaft 11. The upper arms of the bell cranks extend into the path of the bucket, and the lower arms 36, being weighted hold the upper arms in a horizontal position.

When the bucket is hoisted it will pass readily upward by the arms 33, and when the bucket is lowered the trunnions 30 catch in the hooks 32, and the bucket overbalancing the weighted arms 36, swings downward and outward between the uprights 35, and is dumped.

It will be understood that any swinging door may be used instead of the door 13, as shown, and the supports upon the door or actuated by the door, made to engage the trunnions of the bucket.

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

1. The combination with the hoisting bucket provided below its bail with opposite trunnions 30, 30, of supporting arms having open bearings or forks into which the said trunnions may be seated to support the bucket when tilted, substantially as set forth.

2. The combination, with the vertically movable hoisting bucket having projecting trunnions thereon, of a swinging door arranged in the path of the bucket and provided with supporting arms adapted to engage the bucket trunnions, substantially as described.

3. The combination, with the vertical side posts and the cross-head held to slide between the posts, of a bucket suspended from the cross-head and provided with projecting trunnions, a swinging door arranged in the path of the bucket, and supporting arms carried by the door and adapted to engage the bucket trunnions, substantially as described.

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Witnesses:
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