

(No Model.)

W. F. SMITH.
AUTOMATIC DUMPING BUCKET.

No. 604,432.

Patented May 24, 1898.

Fig. 1.

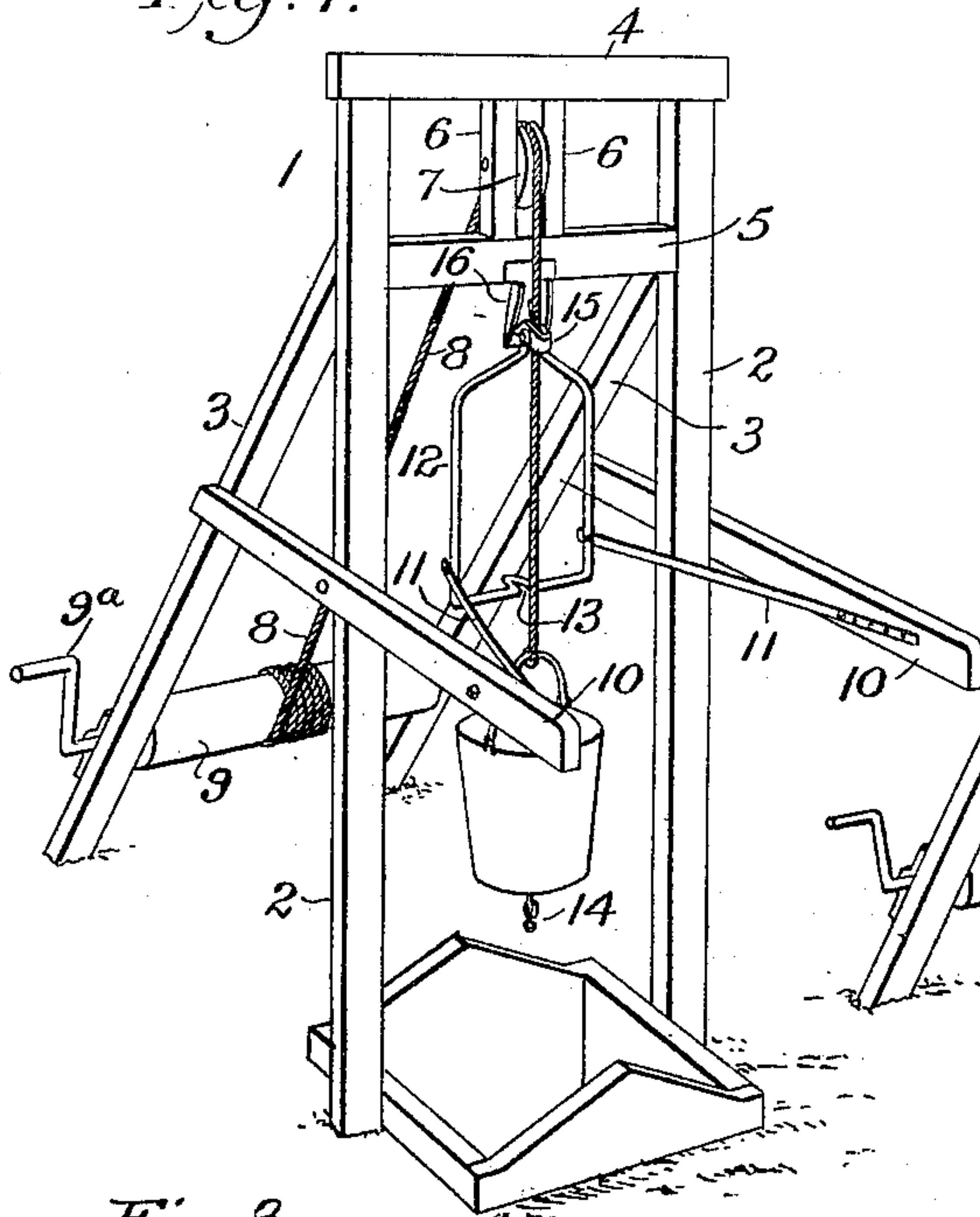


Fig. 2.

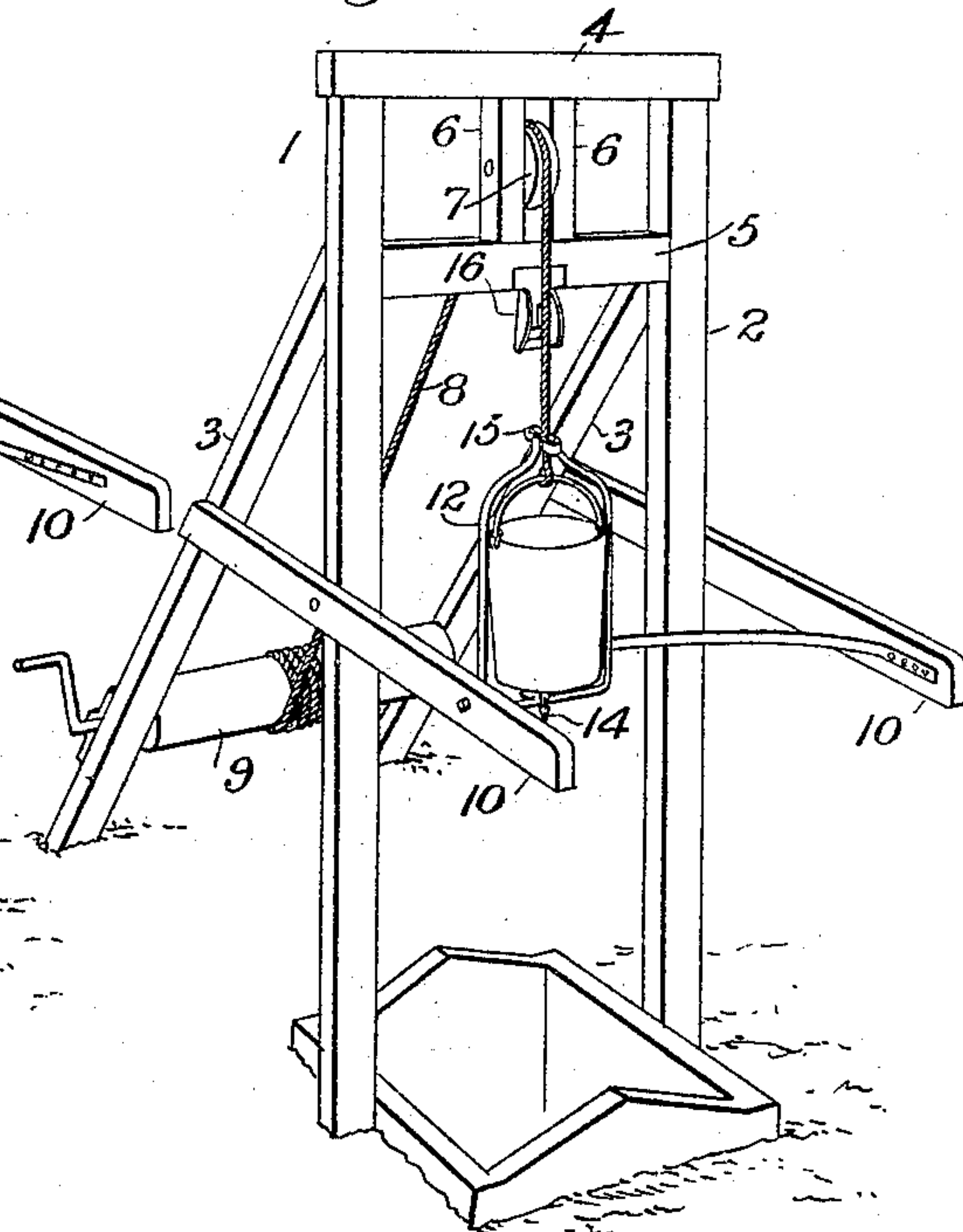


Fig. 3.

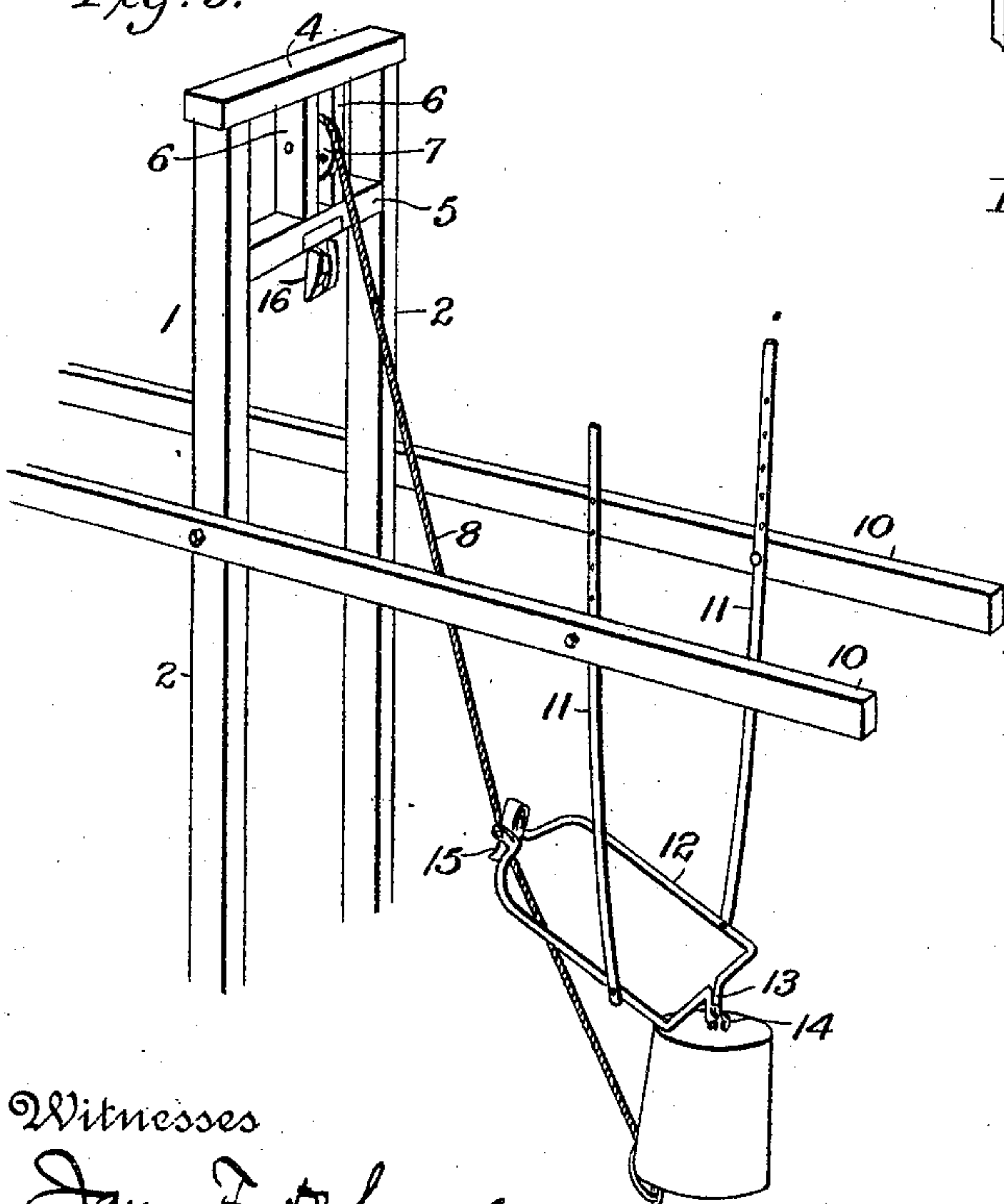
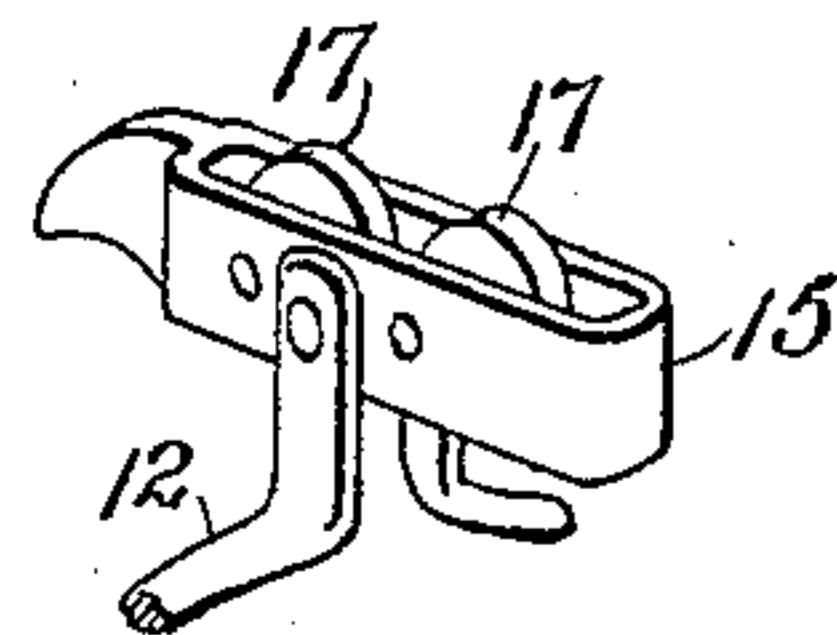
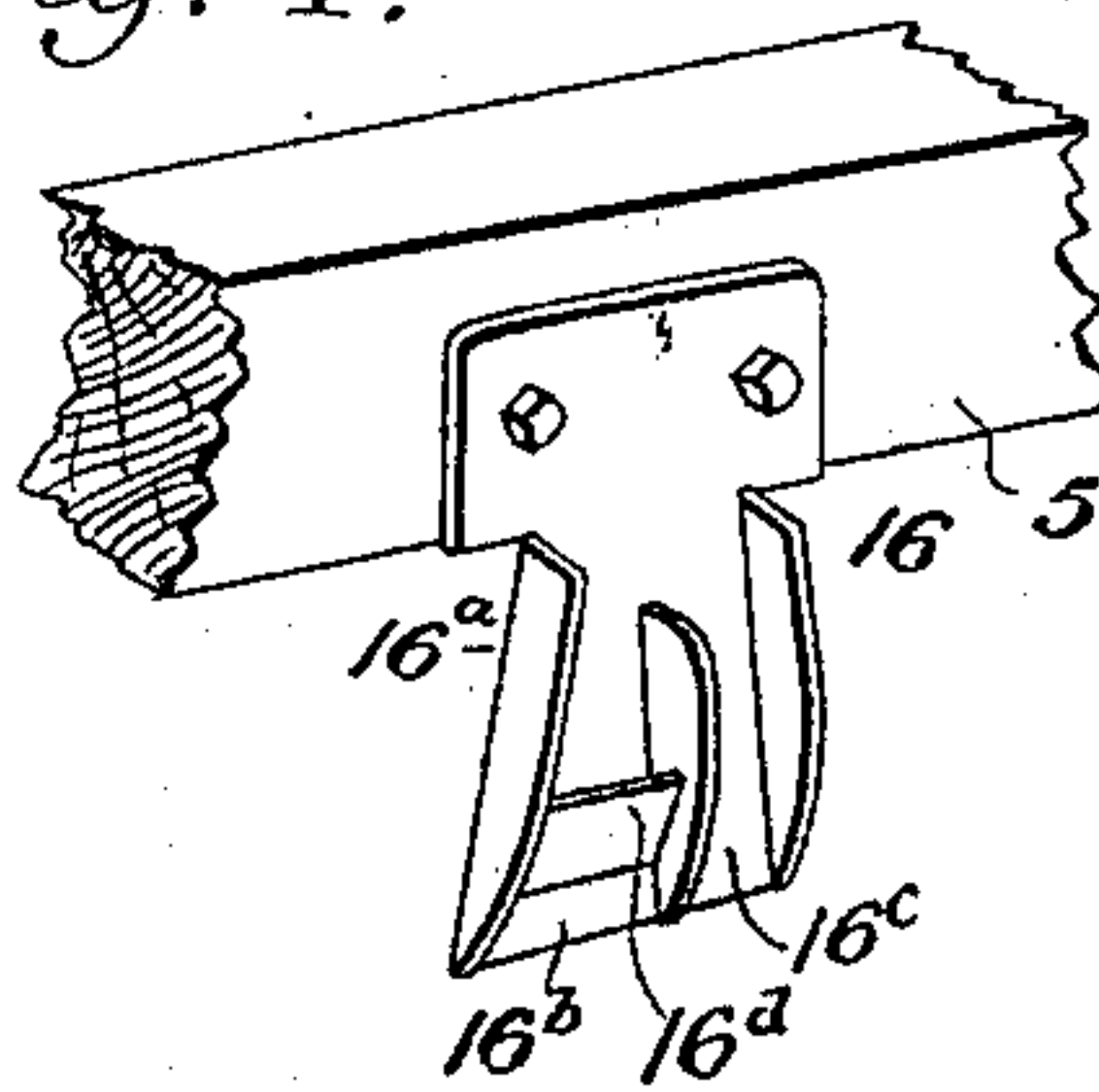


Fig. 4.



Witnesses

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AUTOMATIC DUMPING-BUCKET.

SPECIFICATION forming part of Letters Patent No. 604,432, dated May 24, 1898.

Application filed April 26, 1897. Serial No. 633,962. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. SMITH, a citizen of the United States, residing at Cripple Creek, in the county of El Paso and State of Colorado, have invented certain new and useful Improvements in Automatic Devices for Dumping Buckets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in automatic dumping devices primarily intended for use in connection with buckets employed in removing ore, but which may be used advantageously in connection with buckets used in removing other material, the object being to provide an automatic device of this character which is so arranged that as the bucket is hoisted to a certain elevation the device will automatically engage therewith, after which by a sudden return movement of the bucket it will be caused by its own weight to be lowered and dumped automatically.

A further object of the invention is to provide a suitable arrangement of parts whereby the automatic dumping device may be retained in a certain position to receive the bucket as it ascends.

To these ends the invention comprises certain novel features of construction and arrangement of parts whereby it is made simpler and better adapted for the purposes for which it is intended and whereby other important advantages are attained, as will be hereinafter fully described, and specifically defined in the appended claims.

In the accompanying drawings, Figure 1 represents a perspective view of a suitable framework arranged above the opening from which the ore or other material is being taken, showing my invention applied thereto, the bucket in this instance being shown as released from contact with the dumping mechanism and ready to descend. Fig. 2 is a similar view, but showing my invention in engagement with the bucket just prior to being lowered to dump the latter. Fig. 3 is a similar view showing the parts in the position they will assume when the bucket has been dumped; and Fig. 4 is a detail view of a spring-catch employed to hold the dumping mechanism elevated in position to receive the

bucket, this position being clearly shown in Fig. 1.

Similar reference-numerals designate corresponding parts in all figures of the drawings.

1 represents a suitable framework composed of the vertical beams 2 2, which are arranged directly in line with the opening from which the ore or other material is taken, and 3 3 are similar beams connected to the vertical beams near their upper extremities, from whence they incline downwardly, their lower extremities being fixed to suitable beams, or they may be embedded in the ground, as may be found most convenient. Cross-bars 4 and 5 are arranged, the former upon the top of the vertical beams 2 and the latter sufficiently below to leave a space in which bars 6 6 are arranged, a space being left between said bars to receive a sheave or pulley 7, over which the rope 8 passes. One end of this rope is attached to the bail of the bucket and the other end passes over a windlass 9, located between the beams 3 3 near their lower extremities, a suitable crank 9^a being secured thereto to facilitate the rotation thereof in raising and lowering the bucket, as will be readily understood.

Two bars 10 10 are securely fastened to the intermediate portions of the beams 2 and 3, and their outer ends extend beyond the former sufficiently to receive the ends of a pair of rods 11 11, which are pivotally secured thereto, and the opposite ends of these rods 11 are pivotally secured to a stirrup or bail 12, which is intended to engage with the bucket when the latter rises to the proper elevation. This stirrup or bail is formed out of a suitable metal or iron and its lower end is bent into a horizontal position away from the path of the bucket, so that the bucket in ascending and descending will not strike the lower horizontal member of the bail, and is provided with an open loop 13 to receive within it a small chain 14, which is secured to the bottom of the bucket, and the upper ends of the stirrup or bail are bent inwardly toward the center, where they are provided with a finger 15, which is adapted to engage with a catch 16, located below the beam 5, and to which it is rigidly secured. The finger 15 is slotted to receive within it two rollers or sleeves 17, between which the rope or cable 8 moves while the bucket is being raised or lowered.

As before mentioned, the catch is rigidly secured to the beam 5 and is composed of a metal plate having an extension 16^a, which latter is provided with a vertically-inclined central wall, and the edges of the extension are turned and also inclined to form side walls, thus forming two grooves or channels 16^b and 16^c, through which latter the finger 15 above referred to will pass as it rises. The groove or channel 16^b is provided with a transverse ledge 16^d, which is adapted to engage the finger 15 after it has traveled up the groove or channel 16^b and passed above the upper extremity of the central wall, which it will be observed is somewhat shorter than the side walls of the plate, into the channel or groove 16^c.

In order to release the bucket, an upward movement is given thereto, and the finger 15 will pass over the upper end of the divisional wall into the groove or channel 16^c, after which the downward movement thereof is unobstructed, as will be apparent.

The outer ends of the arms 11 are provided with a series of holes for the purpose of adjusting the dumping mechanism to operate to dump the bucket at any desired place.

In order to release bail 12 from ledge 16^d when in motion, finger 15 passes upward on the left side of the flange or divisional wall to the upper end thereof, which is set at an angle of fifteen degrees from perpendicular, at which point, by the force of gravity, it (15) swings laterally to the right into a perpendicular position and naturally drops into the groove or channel 16^c, after which the downward movement is unobstructed, as will be apparent.

The operation of my invention is substantially as follows: The parts being in the position shown in Fig. 1, the stirrup or bail will be in position to receive the bucket when it has risen to the proper elevation. By raising the bucket in the manner just described the stirrup or bail will then fall until the open loop 13 shall engage with the chain 14, depending from the bottom of the bucket. A lowering of the bucket will cause the arms 11 to swing upon their pivots until they have brought the bucket beyond the opening, where the latter will fall forward and dump its contents through the continued slackening of the rope 8, as clearly shown in Fig. 3. The crank is then moved to wind the chain upon the windlass, which will cause the bucket to rise again until its bail is in its proper relative position with the end of the stirrup or bail, after which both will rise together until the finger shall have been brought into contact with the catch, in which position the chain will fall out of the open loop at the bottom of the stirrup or bail, and thus again permit of the descent of the bucket.

It will be thus seen that my invention provides in a simple and inexpensive manner an automatic dumping device which is applicable to various uses, which is strong and dura-

ble and not easily gotten out of order, and by use of which all contact with the bucket is absolutely avoided.

Modifications may be made without departing from the essential features of my invention, and I do not wish to be understood as limiting myself to the precise details of construction herein shown and described, but reserve the right to make such changes and alterations therein as may be considered to fairly fall within its spirit and scope.

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

1. An automatic dumping device comprising a frame, a stirrup or bail provided with an open loop to engage a chain secured to the bottom of the bucket when the latter has risen to a proper elevation, arms pivotally secured to the said stirrup or bail and frame and adapted to move the stirrup or bail and bucket to dump the same, substantially as described.

2. An automatic dumping device comprising a framework, a stirrup or bail provided with an open loop to engage a chain secured to the bottom of the bucket when the latter has risen to a proper elevation, a finger located at the upper extremity of the said stirrup or bail, adapted to engage a catch and keep the stirrup or bail elevated, and arms pivotally connected to said stirrup or bail, and to the frame, and adapted to move the stirrup and bucket to dump the latter, substantially as described.

3. An automatic dumping device for dumping buckets comprising a frame, a stirrup or bail provided with an open loop to engage a chain secured to the bottom of the bucket, a finger located at the upper extremity of the stirrup or bail adapted to engage a catch arranged upon the frame, the said finger being provided with an opening to receive pulleys or sheaves, a rope adapted to pass between said pulleys, one end of which rope is secured to the bail of the bucket and the other to a windlass, and arms adjustably connected to the frame and pivotally secured to the stirrup or bail and adapted to move the latter with the bucket downward and dump the same, substantially as described.

4. An automatic dumping device comprising a framework, a stirrup or bail provided with an open loop to engage a chain secured to the bottom of the bucket, a finger located upon said stirrup or bail, and a catch arranged upon the framework, said catch being provided with vertical grooves or channels in one of which is located a ledge adapted to engage said finger, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM F. SMITH.

Witnesses:

W. S. WOODS,
D. MACMASTER.