

R. NYE.

AUTOMATIC DUMPING DEVICE FOR ORE BuckETS.

APPLICATION FILED APR. 7, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

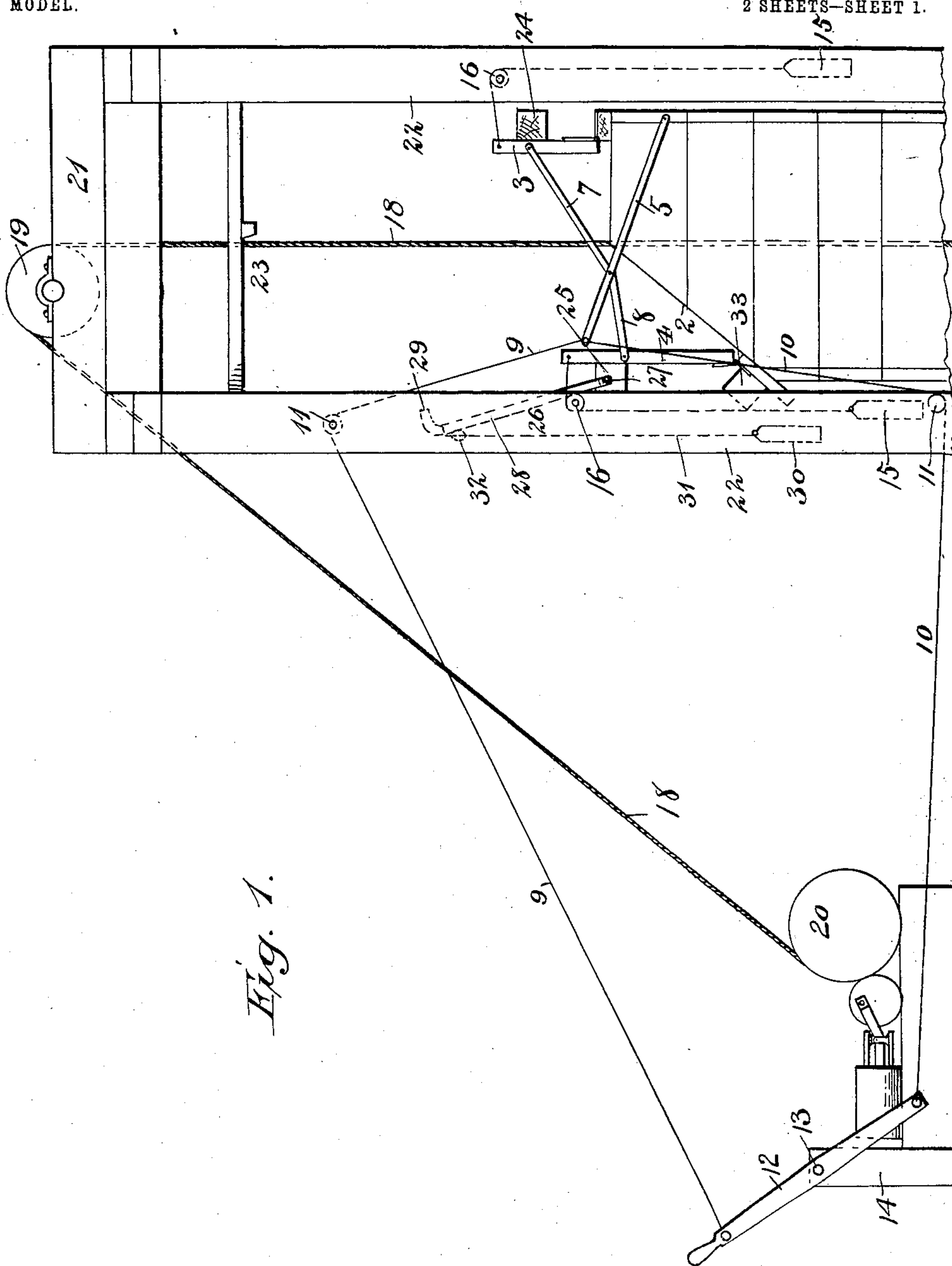


Fig. 1.

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No. 735,571.

PATENTED AUG. 4, 1903.

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2 SHEETS—SHEET 2.

Fig. 3.

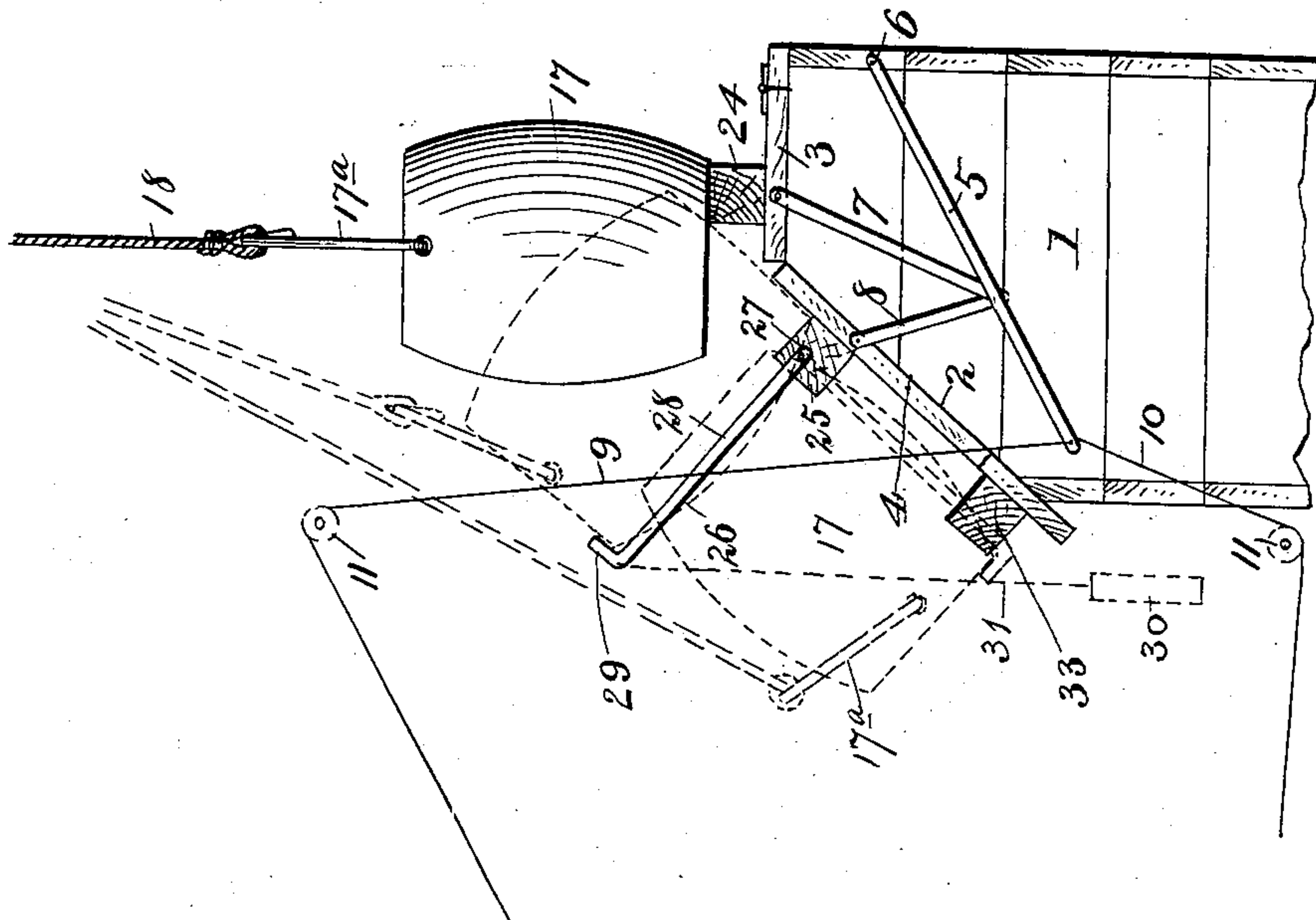
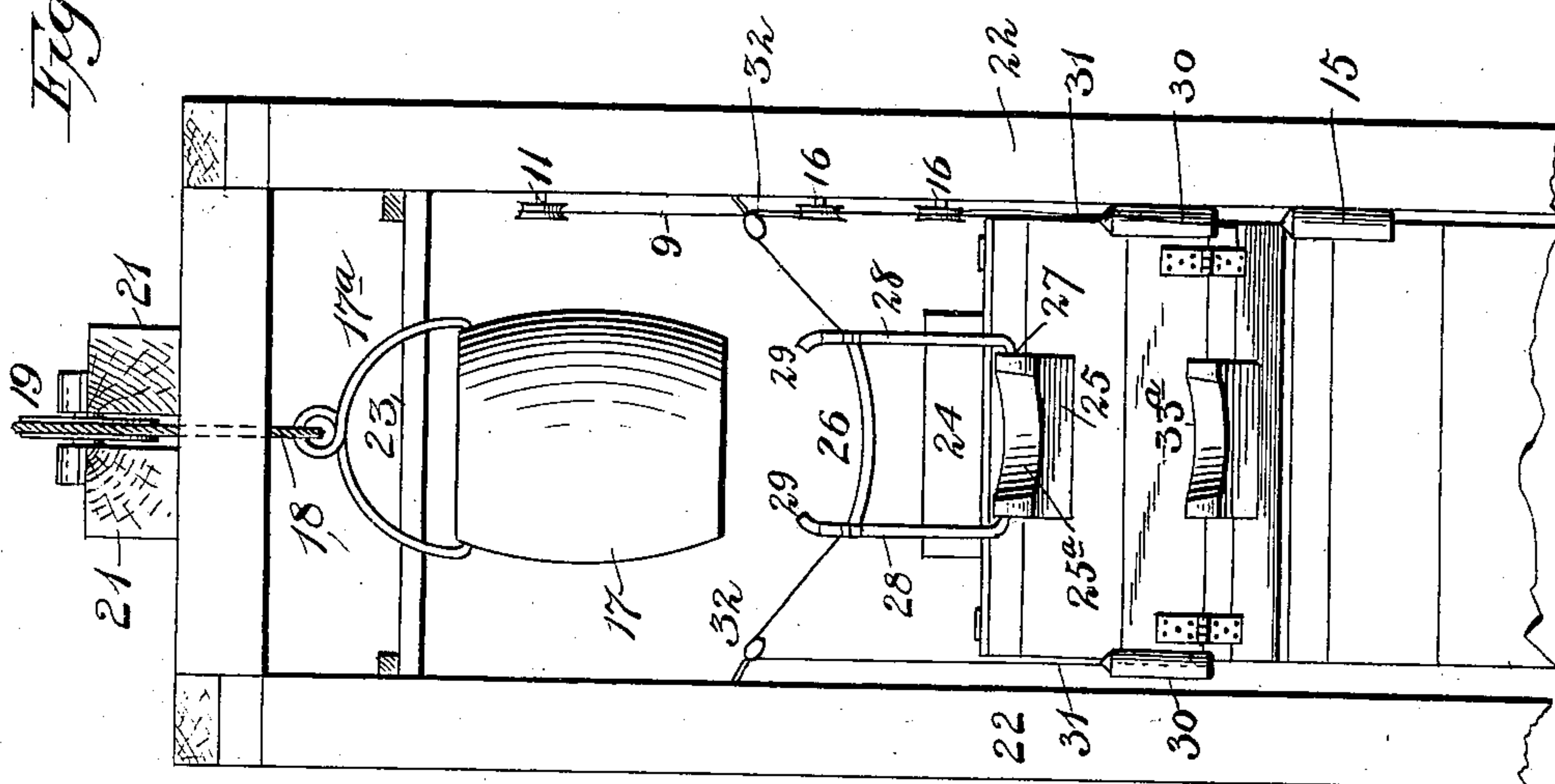


Fig. 2.



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## UNITED STATES PATENT OFFICE.

ROBERT NYE, OF MOLINE, ILLINOIS.

## AUTOMATIC DUMPING DEVICE FOR ORE-BUCKETS.

SPECIFICATION forming part of Letters Patent No. 735,571, dated August 4, 1903.

Application filed April 7, 1903. Serial No. 151,479. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT NYE, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented new and useful Improvements in Automatic Dumping Devices for Ore-Buckets, of which the following is a specification.

My invention relates to automatic dumping devices for ore-buckets, and has for its object to construct a simple counterpoised carrier to receive an ore-bucket and dump it without danger of spilling any of the load into the shaft.

The simple and novel construction employed by me in carrying out my invention is fully described and claimed in this specification and illustrated in the accompanying drawings, forming a part thereof, in which—  
Figure 1 is a side elevation of my device with the doors up, bucket down in the shaft, and the carrier in its normal raised position. Fig. 2 is a rear elevation with bucket raised and the doors closed. Fig. 3 is a side elevation of the bucket resting on the heel-block and with other positions shown in dotted lines.

The numeral 1 designates a housing built over the mouth of a shaft. One-half of the top of the housing 1 is cut away on one side at 2 on an angle of about forty-five degrees, and the casing is normally closed by a horizontally-extending door 3 and an inclined door 4, both hinged to the casing 1. A trip-lever 5 is fulcrumed at one end on a pin 6, seated in the casing 1, and is connected by link-bars 7 and 8 to the doors 3 and 4, respectively. Trip-lines 9 and 10 are connected to the free end of the lever 5. They pass over sheaves 11 and are connected to opposite ends of an engineer's lever 12, fulcrumed intermediate its ends on a pin 13, seated in a standard 14. Counterpoise-weights 15 are connected to the doors 3 and 4 by suspension-cords passing over guide-sheaves 16. These weights serve to hold the doors in a position of neutral equilibrium, holding them open when open and closed when closed. By means of the lever 12 the engineer can open and close the doors 3 and 4 without leaving his post.

An ore-bucket 17, having a bail 17<sup>a</sup>, is attached to the end of a cable 18, which passes

over a guide-sheave 19 and around a drum 20 of a hoisting-engine. Cross-bars 21 support the sheave 19 and are themselves supported by uprights 22, which also support a guide-bar 23, which is located parallel to a heel-block 24, mounted on the door 3 to one side of the center of gravity of the bucket 17 as it is suspended by the cable 18. Mounted on the door 4 and extending parallel to the heel-block 24 is a toe-block 25, rounded out at 25<sup>a</sup> on the contour of the bucket. To embrace the bucket and support it during the act of dumping, a yoke-shaped carrier or carriage 26 is pivoted by its cross-bar 27 to the toe-block 25, with its parallel arms 28 extending at about an angle of forty-five degrees to the vertical and with their extremities bent at a right angle to form toes 29, designed to engage the rim of the bucket 17. Counterpoise-weights 30 are connected to the carrier 26 by means of suspension-cords 31, passing over a sheave 32. A head-block 33 is mounted on the casing 1 just below the door 4 in position to limit the downward swing of the carrier 26 and bucket 17 and is rounded out at 33<sup>a</sup> to accommodate the bucket.

In sketching the operation of my device, I will suppose its initial position to be that illustrated in Fig. 1 of the drawings. As the bucket 17 is raised through the action of the hoisting-engine and cable 18 it will pass up through the open doors 3 and 4 and the bail 17<sup>a</sup> will engage the guide-bar 23 and be brought into position with its curved arms resting against the bar. This will bring the bucket 17 in proper position with respect to the heel-block 24. The doors 3 and 4 are then closed by means of the engineer's lever 12 and connecting mechanism, after which the cable 18 is slacked off by the engineer and the bucket 17 lowered onto the block 24, when further slacking will permit it to tilt to the left into the embrace of the carrier 26. As soon as the weight of the bucket rests in the carrier 26 it will overcome the weights 30 and swing the carrier 26 to the left and the toes 29 will hold the bucket from slipping off after it has passed the horizontal. As soon as the load is dumped the bucket 17 is pulled up by the cable 18, when the weights 30 will restore the carrier 26 to its initial position. The



doors 3 and 4 are then raised by the use of lever 12, after which the bucket is lowered and the operation repeated.

I do not wish to be limited as to details of construction, as these may be modified in many particulars without departing from the spirit of my invention.

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

1. In a device for dumping buckets, the combination of an incline, a yoke-shaped inclined carrier pivoted to the upper end of said incline and bearing feet for engaging the rim of the bucket, a counterpoise-weight connected to said carrier to retard the tilting movement of the bucket, and a heel-block located to be engaged by one side of the bucket to tilt it into the embrace of the carrier.

2. In a device for dumping buckets, the combination of an inclined base, a pivoted inclined carrier bearing upwardly-extending arms bearing toes on their upper ends to engage the rim of the bucket, a counterpoise connected to said carrier, and means for tilting the bucket into the embrace of said carrier, substantially as described.

3. In a device for dumping buckets, the combination of an incline, a carrier pivoted to said incline to embrace a bucket and permit it to tilt over and dump, a counterpoise

connected to said carrier to retard the movement of the bucket, and means for tilting said bucket into the embrace of said carrier, substantially as described.

4. In a bucket-dumping device, the combination of a downwardly-inclined plane, a carrier pivoted to the upper end of said plane and inclined to the vertical, a counterpoise connected to said carrier, a heel-block located adjacent to said incline to engage the bucket and tilt it into the embrace of said carrier, and a guide-bar located to engage the bail of the bucket to bring it into position above said heel-block, substantially as described.

5. In a bucket-dumping device, a casing mounted over the mouth of a shaft, two swinging doors closing said casing, a trip-lever fulcrumed at one end and connected by link-bars to said doors, an engineer's lever fulcrumed intermediate its ends and trip-cords connecting the free end of said trip-lever to opposite ends of said engineer's lever, substantially as described.

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

ROBERT NYE.

Witnesses:

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T. G. JANNEY.