

No. 715,228.

Patented Dec. 2, 1902.

# W. R. WILCOX. BUCKET DUMPING APPARATUS.

(Application filed Apr. 28, 1902.)

(No Model.)

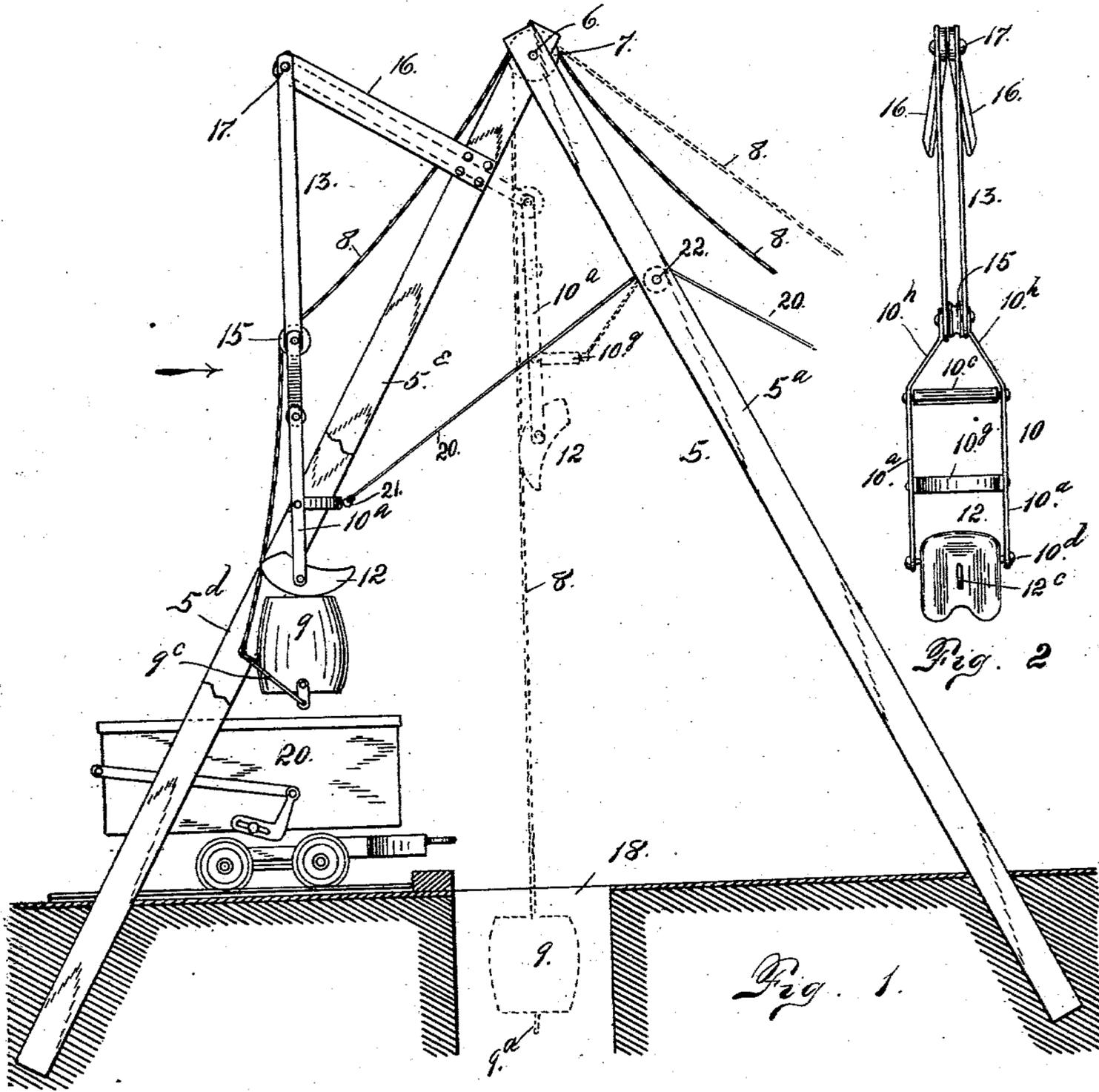


Fig. 1.

Fig. 2.

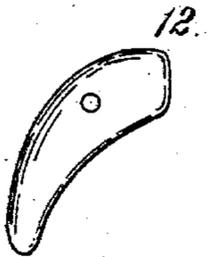


Fig. 3.

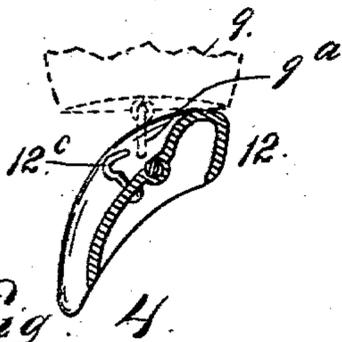


Fig. 4.

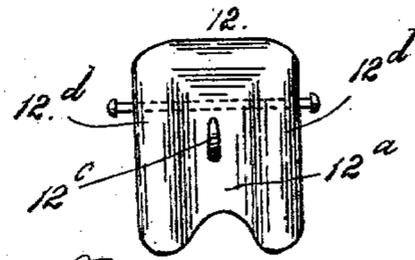


Fig. 5.

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# UNITED STATES PATENT OFFICE.

WILLIAM R. WILCOX, OF SARATOGA, WYOMING.

## BUCKET-DUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 715,228, dated December 2, 1902.

Application filed April 28, 1902. Serial No. 105,114. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. WILCOX, a citizen of the United States of America, residing at Saratoga, in the county of Carbon and State of Wyoming, have invented certain new and useful Improvements in Bucket-Dumping Apparatus; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in bucket-dumping apparatus, being especially intended for use in dumping ore-buckets as they are drawn from mining-shafts. It may, however, be employed to equal advantage in other relations where the performance of a similar function is required.

The invention will first be described in detail and the novel features subsequently pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my improved bucket-dumping apparatus, one bar of the gallows-frame being partly broken away. Fig. 2 is a front view of the dumping device or a view looking in the direction of the arrow in Fig. 1. Fig. 3 is a side view in detail and on a larger scale of the pivoted lower part of the dumping device. Fig. 4 is a section of the same, showing by dotted lines the bucket in engagement therewith just before the ring of the bucket engages the hook of the device. Fig. 5 is a front view in detail of the device shown in Fig. 3.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a gallows-frame comprising bars 5<sup>a</sup>, 5<sup>c</sup>, and 5<sup>d</sup>, connected at the top by a pin 6, upon which a pulley 7 is mounted. The cable 8, connected with the bucket 9, passes over the pulley 7 and leads to a suitable hoisting apparatus. (Not shown.)

The dumping device 10 comprises two parallel side arms 10<sup>a</sup>, an upper roller 10<sup>c</sup>, a lower spindle 10<sup>d</sup>, an intermediate rearwardly-bowed part 10<sup>e</sup>, and a device 12, pivoted on the spindle 10<sup>d</sup>. Above the roller 10<sup>c</sup> the parallel arms approach each other, as shown at

10<sup>b</sup>, their upper extremities being connected with a link 13 by a spindle 14, upon which is mounted a pulley 15. As shown in the drawings, the link 13 is composed of two parallel parts, and its upper extremity is pivotally connected, as shown at 17, with a pair of arms 16, rigidly attached to the respective bars 5<sup>c</sup> and 5<sup>d</sup> of the frame. The pivoted part 12 is provided with a central groove 12<sup>a</sup>, in which is located a hook 12<sup>c</sup>, occupying a position slightly below the parts 12<sup>d</sup> on opposite sides of the groove, whereby it does not catch on or interfere with the bucket as the latter is drawn upwardly.

The dotted lines in Fig. 1 show the position or the approximate position of the dumping device as the bucket is drawn upwardly from the shaft 18. It will be observed that the said device is held in this position by the hoisting-cable 8, which engages the pulley 15, as hereinafter described. As the bucket continues its upward movement it engages the pivoted device 12 and pushes the latter rearwardly or toward the right in Fig. 1 until the bucket is raised to a position above the part 12. The bucket then swings into place between the arms 10<sup>a</sup> and directly above the pivoted part 12. To the bottom of the bucket is applied a ring 9<sup>a</sup>, lying in the same plane as the bucket-bail 9<sup>c</sup> when the bucket is suspended in the upright position. This ring must be in a certain position—namely, that shown in Fig. 4—in order to engage the hook 12<sup>c</sup> of the pivoted part 12. As the bucket is drawn upwardly if the ring is not in the proper position, as above explained, the bail of the bucket will strike the roller 10<sup>c</sup>, which will crowd the bail around to the proper position and turn the bucket to bring the ring into position to engage the hook 12<sup>c</sup>. Then as the bucket is lowered it first engages the rear and uppermost part of the device 12, which normally occupies the position shown in the drawings, being inclined. The part 12 as the bucket settles thereon is turned on its pivot to throw the ring into engagement with the hook. Then as the cable is further slackened the bucket and dumping device swing forwardly and the bucket dumps into a car 20, located at one side of the mining-shaft. As the bucket and dumping devices swing forwardly the bucket tips simul-

taneously to the dumping position. After dumping the cable is wound up to return the bucket and dumping device to the upright position, after which the bucket is lifted sufficiently to disengage its ring from the hook of the part 12. The dumping device is then drawn out of the way by means of a cord 20, connected with the dumping device at any suitable point. As shown in the drawings, this cord is connected with the part 10<sup>s</sup>, as shown at 21, and passes over a pulley 22, mounted on the frame-bar 5<sup>a</sup>. This movement of the dumping device permits the bucket to be again lowered into the shaft.

Having thus described my invention, what I claim is—

1. In bucket-dumping apparatus, the combination with a suitable frame, of a bucket provided with a depending ring attached to its bottom, a device suspended on the frame and composed of two separated arms, a part connecting said arms and bowed outwardly therefrom on one side, a device pivoted between the arms at their lower extremities and having a hook adapted to engage the ring of the bucket as the latter is lowered to rest thereon, the arrangement being such that the bowed part prevents the bucket from tipping rearwardly, while the pivoted part is shaped to cause the bucket to tip forwardly, substantially as described.

2. In bucket-dumping apparatus, the combination with a suitable frame and bucket, of a dumping device suspended on the frame and composed of two parallel arms separated to receive the bucket and suitably connected, a device pivoted to the arms at their lower extremities, a part located intermediate the arms and connecting them to prevent the bucket from tipping in one direction, the pivoted part being shaped to cause the bucket to tip as the latter is lowered to position thereon, a ring applied to the bottom of the bucket, and a hook attached to pivoted device, substantially as described.

3. In bucket-dumping apparatus, the combination with a suitable frame, of a bucket-dumping device comprising two arms, a bow-shaped part connecting the arms on one side, a part pivoted between the arms at their lower extremities and provided with a hook, a

bucket provided with a ring adapted to automatically engage the hook of the device as the bucket is lowered to position thereon, a pulley located at the upper extremity of the device and adapted to be engaged by the bucket-hoisting cable, and a link connecting the upper extremity of the device with the frame beyond the plane of the bucket-hoisting cable, substantially as described.

4. In bucket-dumping apparatus, the combination with a frame, of a dumping device suspended thereon, and having a pivoted part at one extremity, a pulley at the opposite extremity to engage the bucket-hoisting cable, and an intermediate part arranged to engage the bucket-bail and turn the latter to the proper dumping position as the bucket is hoisted.

5. In bucket-dumping apparatus, the combination of two separated arms, a device pivoted between the arms at their lower extremities and adapted to be connected with the bucket in operative relation as described, a bow-shaped part connecting the arms above the pivoted device, a roller between the arms above the bow-shaped device, a pulley at the top of the device for engaging the bucket-hoisting cable, and a link connecting the upper extremity of the device with the part beyond the normal plane of the cable.

6. In bucket-dumping apparatus, the combination of two separated arms, a device pivoted between the arms at their lower extremity and adapted to be connected with the bucket in operative relation as described, means for suspending the dumping device on the frame, means located at the top of the device and adapted to be engaged by the hoisting-cable for holding the device in operative relation, and suitable means connected with the device for pulling it to one side of the path of the bucket to enable the latter to be lowered into the shaft, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM R. WILCOX.

Witnesses:

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A. J. O'BRIEN.