

No. 719,400.

PATENTED JAN. 27, 1903.

W. R. WILCOX.
BUCKET DUMPING APPARATUS.

APPLICATION FILED FEB. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

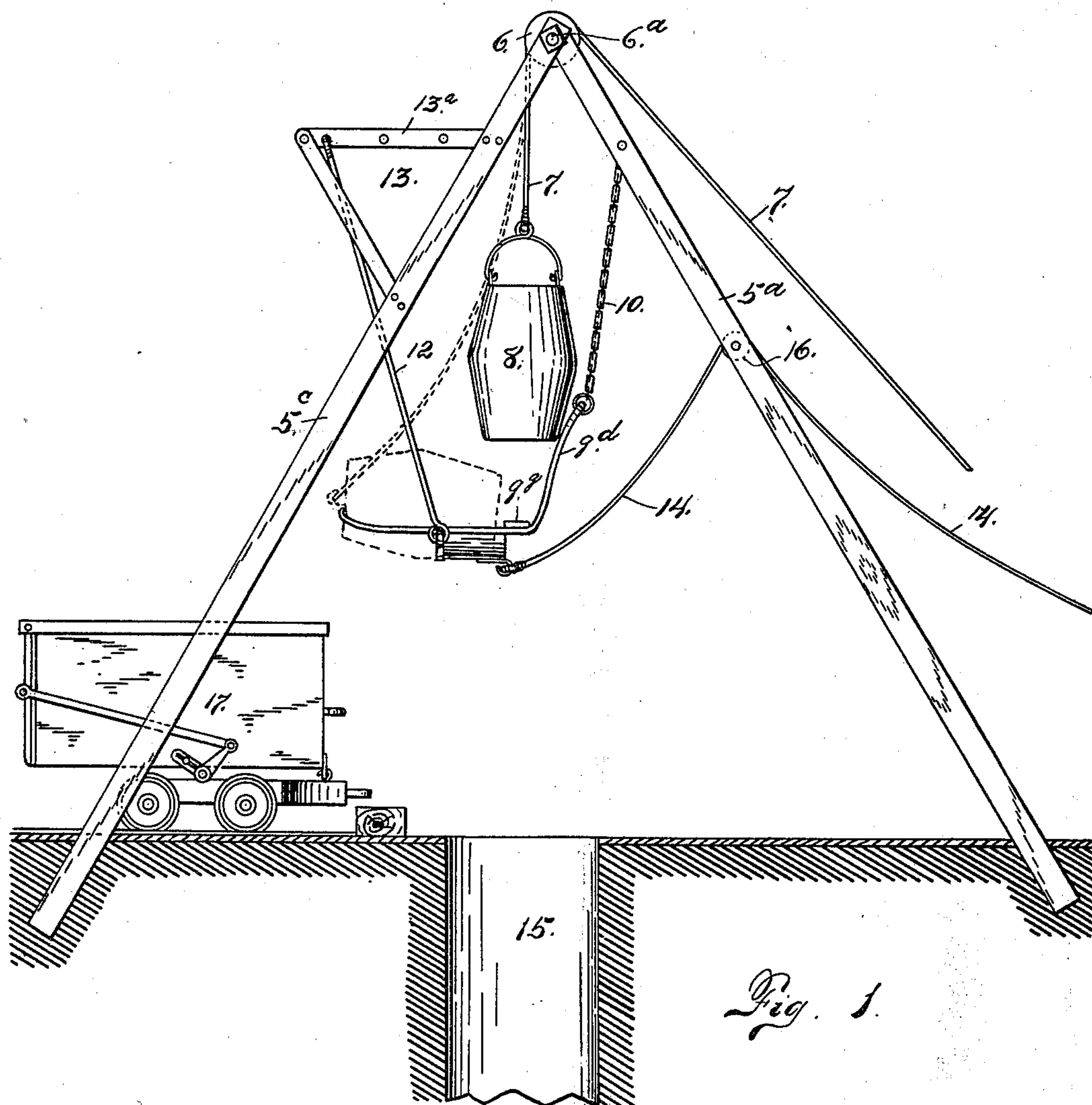


Fig. 1.

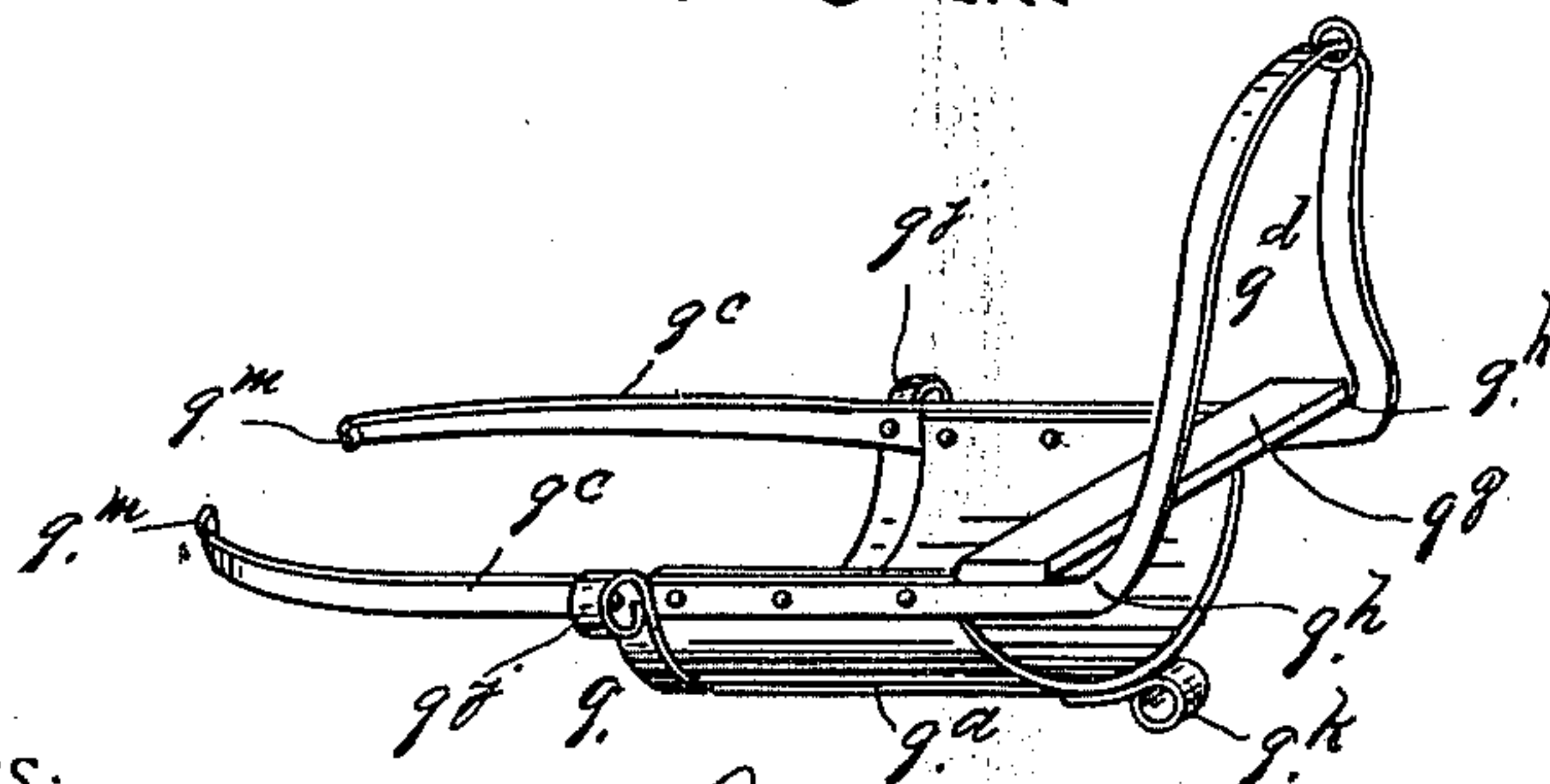


Fig. 3.

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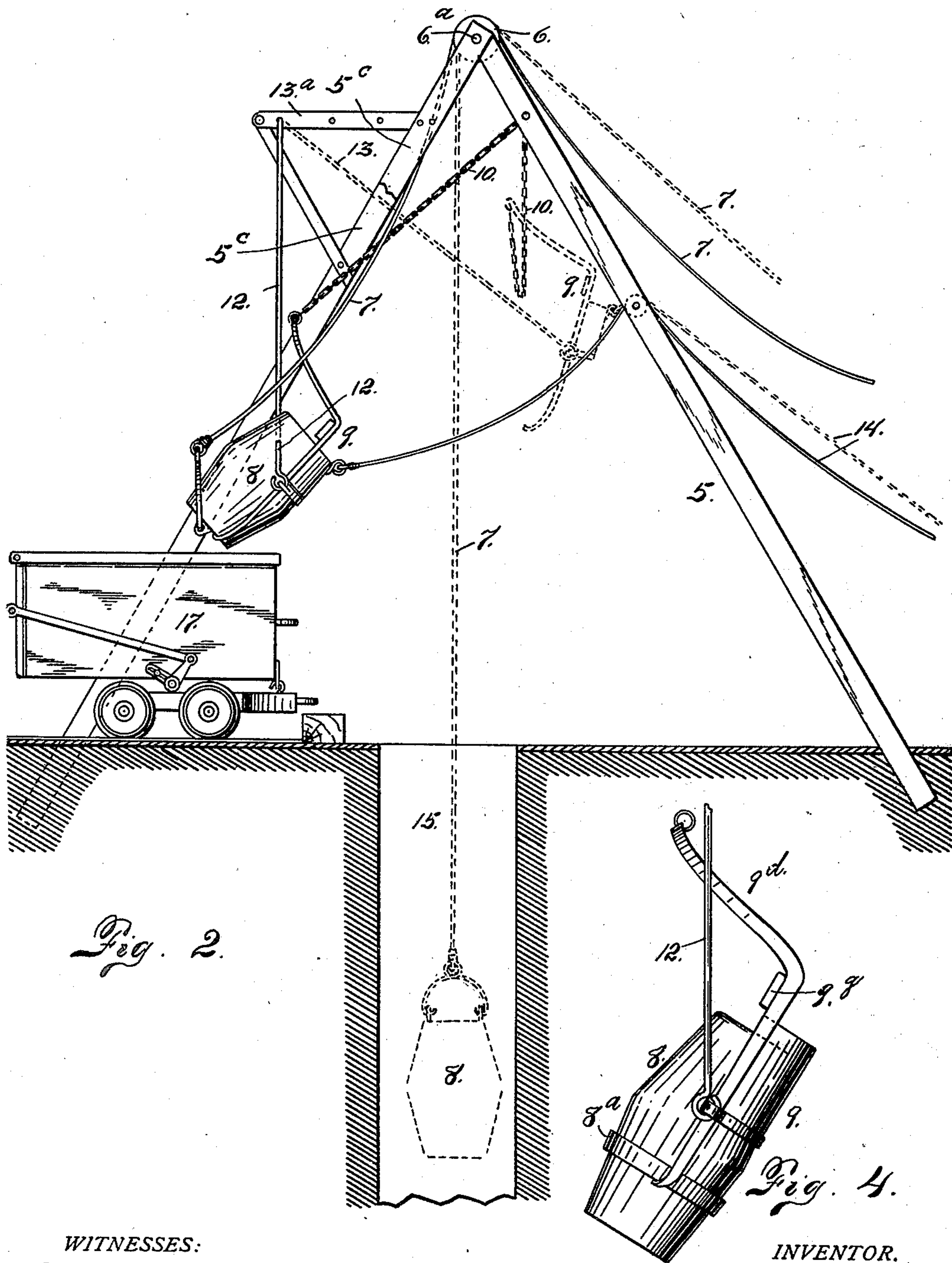


Fig. 2.

Fig. 4.

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WILLIAM R. WILCOX, OF SARATOGA, WYOMING.

BUCKET-DUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 719,400, dated January 27, 1903.

Application filed February 8, 1902. Serial No. 93,241. (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, my object being to provide a device of this class more especially intended for use in dumping ore-buckets as they are drawn from mining-shafts; and to this end the invention consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of my improved bucket-dumping apparatus, the bucket being shown in two positions, one in full lines and the other in dotted lines. Fig. 2 is a similar view with one bar of the gallows-frame broken away, showing the dumping device in two positions and the bucket in two positions different from those shown in Fig. 1. Fig. 3 is a perspective view of the dumping device shown in detail and on a larger scale. Fig. 4 is a side elevation showing a modified form of dumping device and bucket, the parts being shown in the dumping position.

Certain features set forth in this specification, but not broadly claimed, are claimed in a simultaneously-pending application, Serial No. 98,148, filed March 14, 1902.

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

Let the numeral 5 designate a gallows frame or support of ordinary construction consisting of three bars connected at the top by a spindle 6^a, upon which is mounted a pulley 6, over which passes the rope or cable 7, to one extremity of which is connected a bucket 8, the other extremity of the cable being con-

nected with suitable hoisting mechanism. (Not shown.)

The dumping device 9 consists of a curved body part 9^a, two forwardly-projecting arms 9^c, an angular bail 9^d, and a cross-piece 9^e. The arms 9^c are rigidly attached to the body part and project forwardly therefrom, their forward extremities being bent inwardly to form hooks 9^m. The lower parts of the bail-arms extend along the opposite sides of the body part, to which they are rigidly secured by rivets or other suitable fastening devices. At the rear extremities of the side arms there are bends 9^h, from which extend the upwardly-projecting arms of the bail. Immediately forward of the bends 9^h is the cross-piece 9^e, whose extremities are secured to the bail in any suitable manner. The dumping device, as shown, is supported upon the frame by a chain 10 and two rods 12. The chain is connected at its lower extremity with a ring attached to the top of the bail, its opposite extremity being connected with the frame-bar 5^a at a suitable point above. The rods 12 are respectively suspended from angle-brackets 13, projecting forwardly or to the left, referring to Figs. 1 and 2, their lower extremities being connected with eyes 9^j, formed on opposite sides of the dumping device. A pull-cord, rope, or cable 14 is connected at one extremity with an eye 9^k, formed on or attached to the bottom of the body of the dumping device at its rear extremity. The dumping device is held in a horizontal or approximately horizontal position, (shown in Fig. 1,) since the rear part of the device is of sufficient gravity to produce this result.

When the apparatus is in use, the dumping device is held in the position shown by dotted lines in Fig. 2 until the bucket, which is drawn from the shaft 15, is raised to the position shown in full lines in Fig. 1. The cord or cable 14, which passes over a pulley 16 on the bar 5^a, is then slackened and the dumping device allowed to swing to the position shown by full lines in Fig. 1 or until the upper part of the bail 9^d rests against the lower part of the bucket. The cable 7 is then slackened and the bucket descends in an upright position until the rear part of its bottom engages the cross-piece 9^e, which being too narrow to form a support for the bucket

causes the latter to tip forwardly and occupy a position lengthwise of the dumping device, as shown by dotted lines in Fig. 1. When this occurs, the inwardly-bent hooks 9^m, 5 formed on the forward extremities of the arms 9^c of the dumping device, as aforesaid, engage the edge of the bucket at the top and retain it in position on the dumping device. It will be noticed by observing the drawings 10 that the rods 12 are connected with the dumping device rearwardly of the center. Hence the greater portion of the weight of the loaded bucket is forward of the plane of suspension, whereby the center of gravity of the 15 dumping device and load occupies a position forward of said plane, causing the dumping device to tip forwardly. The center of gravity, which is rearwardly of the plane of suspension when the dumping device is unoccupied, 20 is shifted to a position forwardly of said plane when the bucket occupies a position lengthwise thereon, as aforesaid. Simultaneously with the tipping operation the bucket and dumping device swing forwardly, since the 25 supporting-rods 12 are connected with the brackets 13 in a vertical plane forward of a plane passed through the center of gravity of the load suspended by the rods. Hence the load will swing forwardly in the effort to 30 cause these two planes to coincide or to bring the center of gravity of the bucket and dumping device directly beneath the point of suspension, whereby the rods 12 assume a vertical position. (See Fig. 2.) The object of 35 this arrangement is to cause the bucket to dump into a car 17 or other suitable receptacle located at one side of the mining-shaft. The upper bars 13^a of the brackets 13 of the 40 frame are provided with a series of holes into which the upper extremities of the rods may be hooked, whereby the forward movement of the bucket and dumping device preparatory to or during the act of dumping may be regulated at will. After the bucket is dumped 45 the dumping device is pulled rearwardly by the cord, rope, or cable 14 to the position shown by dotted lines in Fig. 2. During this operation the bucket is lifted from the dumping device by winding up the cable 7, after 50 which it is allowed to descend into the shaft and the operation is repeated.

From the foregoing it will be understood that the cord 14, connected with the dumping device, may be manipulated by the person in 55 charge of the hoisting apparatus, so that no extra help is required in operating the dumping mechanism.

In the construction shown in Fig. 4 the bucket 8 is provided with a band 8^a, which is 60 gripped by the hooks 9^m of the dumping device when the bucket is in position on the latter. It will be observed that in this construction the dumping device is the same, except that the arms 9^c are somewhat shorter relatively than in the construction shown in the 65 other view.

Having thus described my invention, what I claim is—

1. In a bucket-dumping apparatus, the combination with a suitable frame, of a dumping device, suspension means therefor whereby the device is arranged to swing across the vertical path of the bucket, the suspension means being connected with the device rearwardly of the center of gravity when the 75 bucket occupies a position lengthwise thereon, the rear part of the device being of such gravity as to maintain the device in the horizontal or approximately horizontal position when empty. 80

2. In a bucket-dumping apparatus, the combination with a suitable frame, of a bucket-dumping device suspended from the frame and adapted to hold the bucket when tipped on its side, suspension means connected 85 with the device rearwardly of the center of gravity of the device and bucket when in the last-named position, the gravity of the parts of the device being arranged to cause it to assume the horizontal or approximately 90 horizontal position when empty.

3. In a bucket-dumping mechanism, the combination with a suitable frame, of a bucket-dumping device, supporting means 95 connected with the dumping device whereby the latter is adapted to swing across the path of the vertically-moving bucket, the said device having a part engaging the bottom of the bucket and constructed to cause the bucket 100 to tip automatically as the latter is lowered to engagement with the dumping device, the said part being too narrow to form a support for the bucket.

4. The combination with a suitable frame, of a bucket supporting and dumping device, 105 suspension means connected with said device rearwardly of the center of the bucket when the latter is tipped on its side thereon, the rear extremity of said device being of sufficient gravity to maintain it in the horizontal 110 or approximately horizontal position when empty, the arrangement being such that the center of gravity is shifted forwardly by the bucket when lying lengthwise on the device, sufficiently to cause the latter to tip to the 115 bucket-dumping position, substantially as described.

5. The combination with a suitable frame, of a dumping device constructed to form a support for the bucket when lying upon its 120 side, the device having a bail, suspension means connected with the frame and with said bail, and suspension means connected with the body of the dumping device forward of the bail, the suspension devices being so 125 arranged and connected, that the dumping device will maintain an upright position when empty, but will tip forwardly when occupied by the bucket, substantially as described.

6. In bucket-dumping apparatus, the combination with a suitable frame, of a dumping 130 device constructed to hold the bucket when

lying upon its side, and having forwardly-extending arms terminating in hooks adapted to engage the bucket and prevent it from slipping during the dumping operation, and suspension devices connected with the dumping device to retain it in an upright position when empty, but arranged to allow it to tip when occupied by the bucket, substantially as described.

10 7. In bucket-dumping apparatus, the combination with a suitable frame, of a dumping device adapted to hold the bucket when lying upon its side, and having forwardly-extending arms adapted to engage the bucket and
15 prevent it from slipping off during the dumping operation, and a bail extending rearwardly and forwardly from the body of the device, suspension means connected with the bail, and suspension means connected with
20 the body of the device forward of the bail, the construction and arrangement being such that the dumping device occupies an upright position when empty, but will tip to dump the bucket when occupied by the latter, substantially as described.

25 8. The combination with a suitable frame, of a dumping device constructed to hold a bucket when lying upon its side, having forwardly-projecting arms, a rearwardly-extending bail, and a rearwardly-located cross-piece,
30 suspension means connected with the bail, suspension means connected with the body of the device forward of the cross-piece, and

manipulating means connected with the said device, substantially as described.

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9. The combination with a suitable frame, of a bucket-dumping device comprising a curved body part, forwardly-extending hook-arms, a rear upwardly-projecting bail, a cross-piece located forward of the upwardly-projecting part of the bail, suspension means
40 connected with the bail, suspension means connected with the body part, and manipulating means connected with the said device, substantially as described.

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10. The combination with a frame, of a dumping device, rods connected with the dumping device rearwardly of its center of length, the upper extremities of the rods being connected with the frame, the said device having
50 a rearwardly-extending, upwardly-projecting bail, suspension means engaging said bail with the frame, and manipulating means, the arrangement being such that when the device is at rest ready to receive the bucket, the
55 rods occupy an inclined position with their upper extremities in a plane forward of the plane of their extremities connected with the dumping device, substantially as described.

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

WILLIAM R. WILCOX.

Witnesses:

DENA NELSON,
A. J. O'BRIEN.