

No. 721,599.

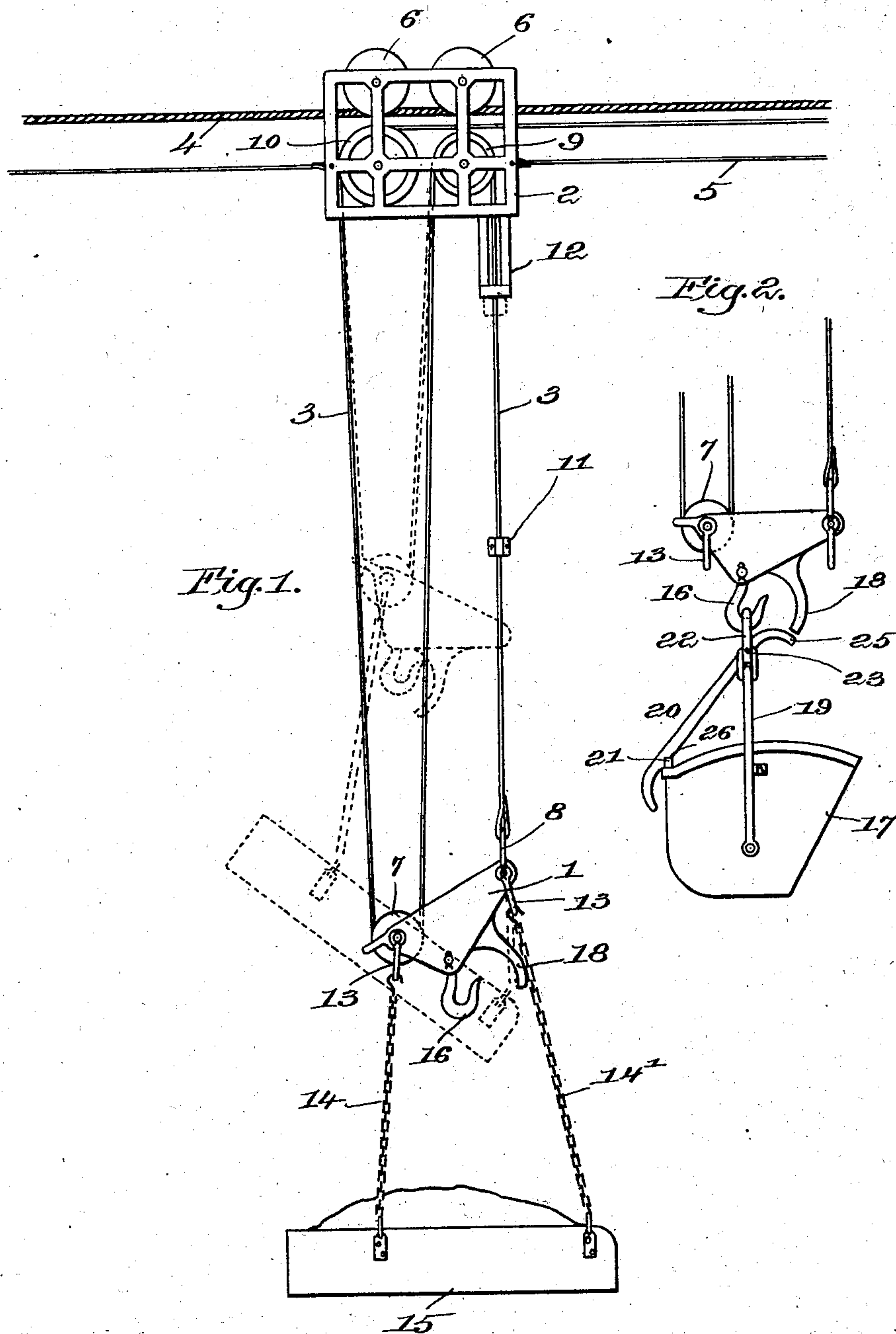
PATENTED FEB. 24, 1903.

A. E. NORRIS.  
HOISTING APPARATUS.

APPLICATION FILED JUNE 21, 1900.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses.

Thomas J. Drummond.  
Edward H. Allen.

Inventor.  
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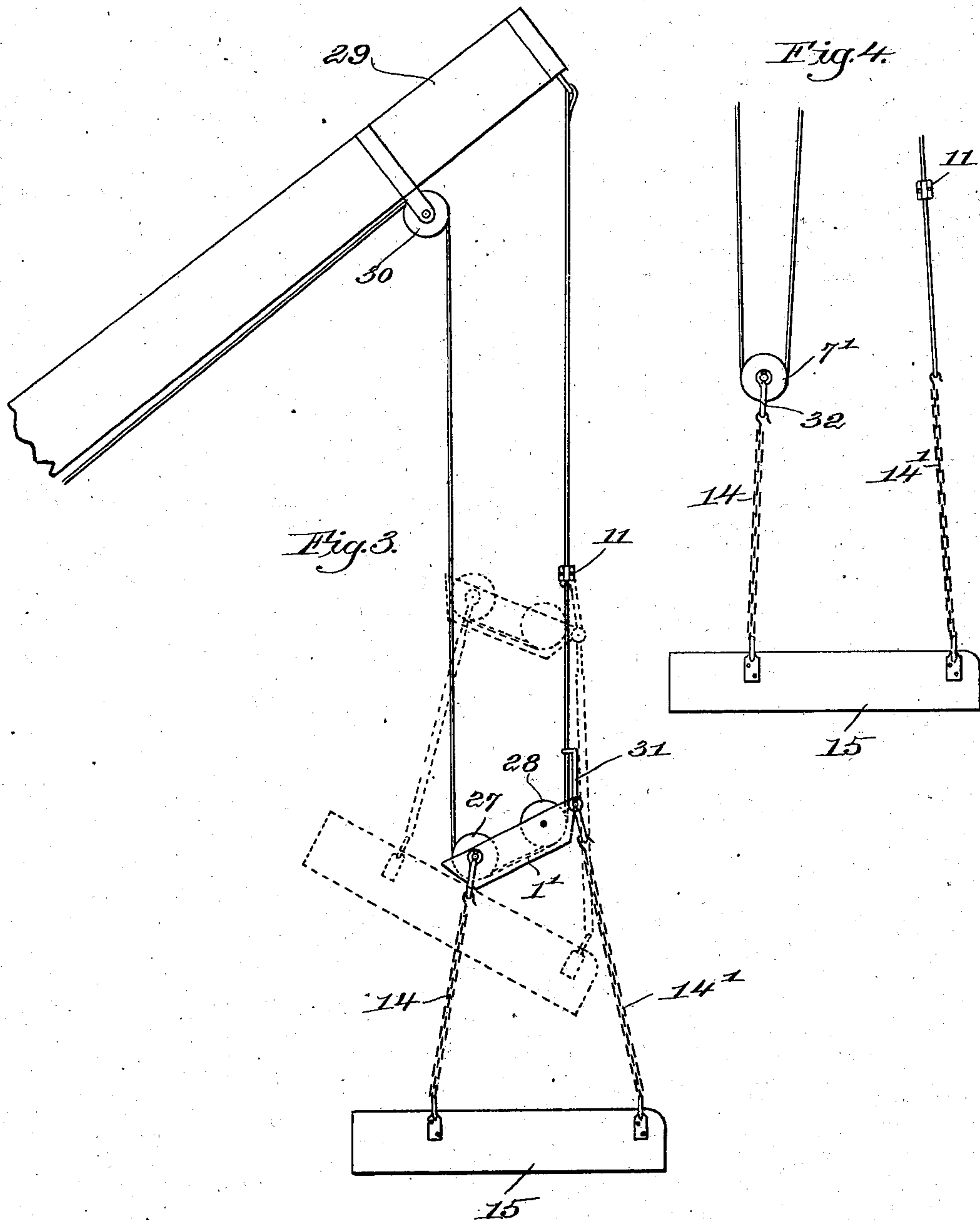
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# UNITED STATES PATENT OFFICE.

ALMON E. NORRIS, OF CAMBRIDGE, MASSACHUSETTS.

## HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 721,599, dated February 24, 1903.

Application filed June 21, 1900. Serial No. 21,035. (No model.)

*To all whom it may concern:*

Be it known that I, ALMON E. NORRIS, a citizen of the United States, residing at Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Hoisting Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates generally to hoisting apparatus for dirt, stone, and other materials; and its object is to provide a simple and efficient device whereby the load may be dumped whenever required, said dumping mechanism being operated automatically by the fall-rope.

The invention comprises as one of its features a fall-block, from which the load is suspended, means to tilt the fall-block, and means whereby when the fall-block is tilted the load is discharged.

In the drawings, Figure 1 is a view showing one embodiment of my invention, wherein the load is carried in a skip supported from a fall-block. Fig. 2 is a view showing the fall-block as carrying a bucket instead of a skip. Fig. 3 is a modification showing the load-carrier supported from a boom of a derrick, and Fig. 4 shows another modification.

In the embodiment of my invention shown in Fig. 1 the fall-rope 3, which may be of any suitable material and may be either a single rope or a plurality of ropes, is suspended from a carrier 2, supported on a suitable track 4 by means of rollers 6. The carrier is moved along the track, as desired, by means of a rope 5, which may be controlled and operated by any suitable drum mechanism in a well-known manner. The fall-rope, as usual in this class of devices, supports a fall-block, from which the load is suspended and is controlled and operated by any suitable hoisting-drum. (Not shown.)

The parts thus far described are common in many elevating and carrying apparatus, and further description thereof is not necessary.

My improvement consists in providing mechanism whereby when it is desired to dump the load the movement of a portion of the fall-rope may be arrested while the re-

mainder of the fall-rope continues its movement. The differential movement between the supporting portions of the fall-rope results in tilting the fall-block to effect the discharge of the load.

As shown in Fig. 1, the carrier 2 is provided with two pulleys 9 and 10, over which the fall-rope runs, and the fall-block carries at one end a sheave 7 and at the other end suitable means, as clevis 8, for attaching the end of fall-rope 3 thereto. The fall-rope 3 is carried from its point of connection 8 with the fall-block over pulley 9 on the carrier 2, thence under sheave 7 on the fall-block, thence over pulley 10 on the carrier, and thence to the lifting-drum.

Adjustably secured on the fall-rope 3, at a suitable point between its point of attachment to the fall-block and the carrier 2, is any ordinary stop or button 11, which is adapted to engage with a suitable abutment 12 on the carrier 2 when the load is lifted, as will be hereinafter set forth.

The fall-block may have at each end suitable attaching means, as 13, to which are connected the chains 14 14' or other usual devices for carrying the skip 15, or it may have attached thereto in any suitable way a hook 16 for carrying either a bucket 17, as shown in Fig. 2, or any other article which it is desired to transport from one place to another.

Assuming that the skip has been loaded and transported to the dumping place, the operation of dumping is as follows: The fall-rope 3 is drawn in until the stop or button 11 strikes the abutment 12, thus arresting the further movement of that portion of the fall-rope between the button 11 and the fall-block, and consequently the further movement of that end of the fall-block which is attached to the end of the cable. As the hoisting-drum continues its operation the remainder of the fall-rope continues its movement, thus tilting the fall-block by lifting on the pulley 7, (see dotted lines in Fig. 1,) and consequently throwing the skip into position to discharge its load. A slackening of the fall-rope will obviously restore the load-carrier to the full-line position. When a bucket is used instead of a skip, the tilting of the fall-block operates to dump the bucket by the following means: The bucket is supported on



the hook 16 by means of a suitable link 22, to which its bail 19 is connected, and pivotally mounted on said link at 23 is a latch-lever 20, having in one end thereof a notch 26, which engages a lug 21 on the bucket to maintain said bucket in an upright position. The forward end of the latch projects, as at 25, beyond the pivot-point 23 and is in a position to be engaged by a horn or projection 18 on the fall-block when the latter is tilted. It will readily be understood that as the fall-block is tilted in the manner hereinbefore described the horn 18 will engage with the end 25 of the latch-lever 20, depress the same, and thereby elevate the opposite end, carrying the notch 26 out of engagement with the lug 21, thus allowing the bucket to dump its load.

In the modification illustrated in Fig. 3 the fall-block 1' is supported on the fall-rope by means of two sheaves 27 and 28, suitably carried at opposite ends of said fall-block. The fall-rope is attached in any well-known manner to the end of a boom 29 and passed around sheaves 28 27 and is thence carried up over a suitable sheave 30, supported on the boom, from which it goes to any suitable lifting-drum. The stop or button 11 is in this instance adjustably attached to the fall-rope between its end and the sheave 28 of the fall-block, and the abutment is located on the fall-block. This abutment consists of an arm 31, pivotally attached to the fall-block 1' and having its upper end offset and provided with a suitable aperture through which the fall-rope passes. As the fall-rope is drawn in to elevate the load-carrier the abutment 31 will strike the button 11, and thereby prevent the further elevation of this end of the fall-block. Continued taking up of the fall-rope will elevate the free end of the fall-block, and thereby tilt the same and dump the load, as heretofore described.

In Fig. 4 I have shown a modified form of my apparatus, wherein the end of the fall-rope is attached directly to the chain 14' of the skip and is then passed over sheave 9 on carrier 2, then under sheave 7', supported in yoke or block 32, which block is suitably connected to chain 14' of the skip and thence goes over sheave 10 to the hoisting-drum, as in the other modifications. The fall-rope 3 in this instance has adjustably secured thereon a button or stop 11, which coacts with the abutment 12 to effect the discharge of the load, as follows: When the hoisting-drum is operated, the load will be lifted until the button 11 strikes abutment 12, when that portion of the fall-rope between the abutment 12 and the forward end of the skip will be arrested in its movement, while the remainder of the rope will continue to be taken in, thus effecting the discharge of the skip and the consequent discharge of the load. When the construction shown in Fig. 4 is used, it is essential that the load be placed on the skip so that the major portion thereof

shall be supported by the block 32. This form of my invention is better illustrated in my copending application, Serial No. 93,124, filed February 8, 1902, wherein I have broadly claimed a dumping apparatus in which the load is discharged by causing a differential movement between the several supporting portions of the fall-rope.

Although I have herein described the stop as a button attached to the cable, such construction is not necessary, for the clevis 8 may act as a stop and the button be dispensed with. As shown in Fig. 1, the abutment 12 extends some distance below the lower edge of the carrier 2, so that when the clevis 8 is used as the stop there will be sufficient room for the fall-block to tilt without striking the carrier 2. It will be obvious also that other changes than those above suggested may be made without in any way departing from the spirit of my invention.

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

1. In an apparatus of the class described, a fall-block, from which a load is supported, a fall-rope supporting the fall-block, and means for tilting the fall-block to dump the load.

2. In an apparatus of the class described, a fall-rope, supporting means for the same, a fall-block supported at a plurality of points by the fall-rope, load-carrying means supported by said fall-block, and means to tilt the fall-block to discharge the load.

3. In an apparatus of the class described, a fall-block, and means to support the fall-block at its ends only, said fall-block having a receptacle supported thereby, and means to tilt the fall-block to effect the discharge of the load.

4. In a hoisting apparatus, a fall-block, means carried thereby to receive a load, supporting means for the fall-block, and having connection therewith at two points out of vertical alinement, and means to tilt said fall-block to effect the discharge of the load.

5. In an apparatus of the class described, a fall-block, means to support the fall-block at opposite ends, said fall-block being constructed so as to support the load, and means to tilt the said fall-block to dump the load.

6. In an apparatus of the class described, a fall-block, means connected thereto for supporting the load, a fall-rope, and automatic mechanism for tilting the fall-block to dump the load.

7. In an apparatus of the class described, a fall-block for supporting the load, a fall-rope and an adjustable stop to arrest the movement of one end of the fall-block to enable the same to be tilted for the discharge of the load.

8. In an apparatus of the class described, a fall-block having means connected thereto to receive the load, a fall-rope having connection with the fall-block at a plurality of points



and automatic means for tilting the fall-block to dump the load.

9. In an apparatus of the class described, a load-carrier, said load-carrier including a fall-block, a fall-rope connected to the said fall-block at opposite ends thereof, a stop, and an abutment adapted to engage the stop, whereby the load-carrier is tilted to dump the load.

10. In an apparatus of the class described, a fall-block means for supporting the load therefrom, a fall-rope, means for attaching the rope to the fall-block at two points, a suitable supporting-carrier for the fall-rope, a button on the fall-rope, and an abutment on the supporting-carrier, whereby as the load is lifted the fall-block is tilted to dump the load.

11. In an apparatus of the class described, a fall-block having a sheave at one end, a fall-rope connected to the opposite end and running over said sheave, and means to sustain said fall-rope, and means operated by the fall-rope to discharge the load.

12. In an apparatus of the class described, a fall-rope and supporting means therefor, a fall-block having at one end a sheave and at the other attaching means for the fall-rope, said sheave being supported in a bight in the fall-rope, and means connected to the rope for causing the fall-block to tilt for the discharge of the load.

13. In an apparatus of the class described,

a fall-block adapted to support the load, said fall-block having at one end a sheave, a fall-rope and a supporting-carrier therefor, said fall-block being connected at one end to the end of the fall-rope and having its sheave sustained in a bight in the said rope, a button secured to the rope, and an abutment on the supporting-carrier against which the button is adapted to engage, whereby when the load is lifted the fall-block will be tilted to dump the load.

14. In a hoisting apparatus, a fall-block adapted to support a load and having a sheave at one end, a fall-rope fast to the opposite end and running over said sheave, that portion of the fall-rope which is fast to the fall-block being outside the portions of the fall-rope which support the sheave, means to sustain said fall-rope, and means operated by the fall-rope to discharge the load.

15. In apparatus of the class described, a fall-block, from which the load is suspended, a fall-rope, a support therefor, and load-discharging devices comprising means to tilt the fall-block.

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

ALMON E. NORRIS.

Witnesses:

GEO. W. GREGORY,  
LOUIS C. SMITH.