

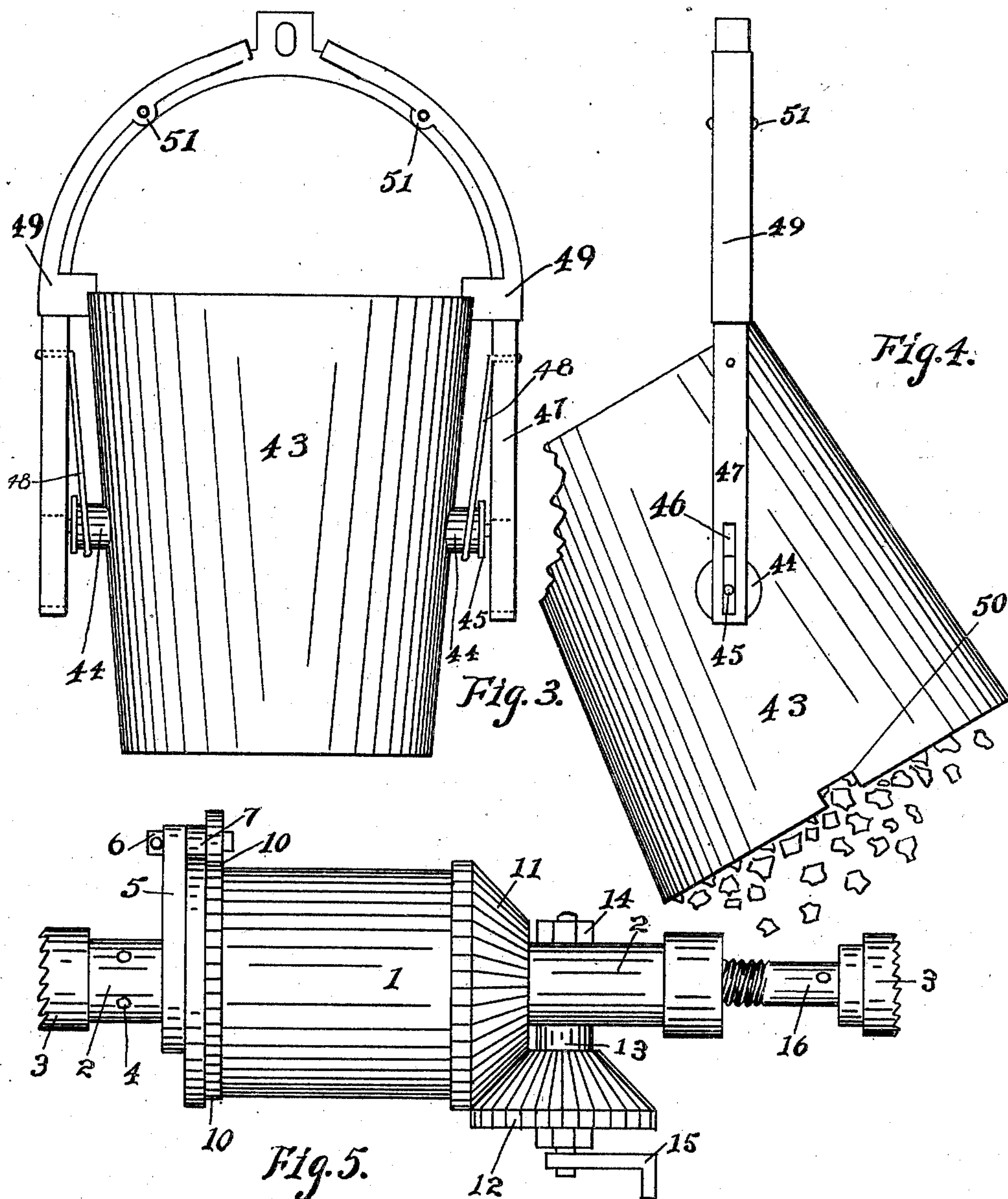


J. A. ECTON.  
HOISTING MACHINE.  
APPLICATION FILED JAN. 19, 1910.

967,353.

Patented Aug. 16, 1910.

4 SHEETS—SHEET 2.



Witnesses  
*W. Simpson*  
*W. Wood*

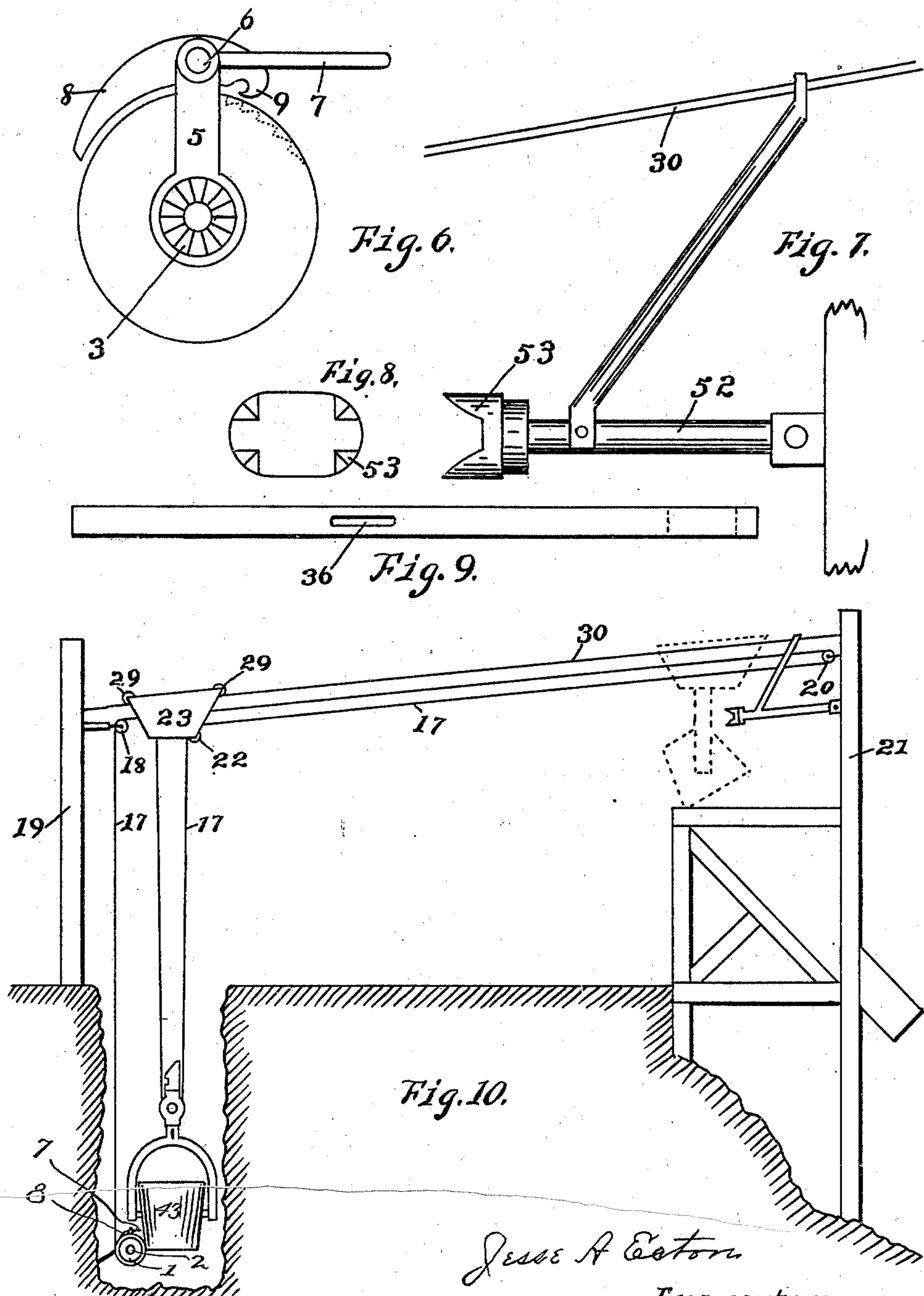
*Jesse A Ecton*  
 Inventor  
 by *J M Thomas*  
 Attorney

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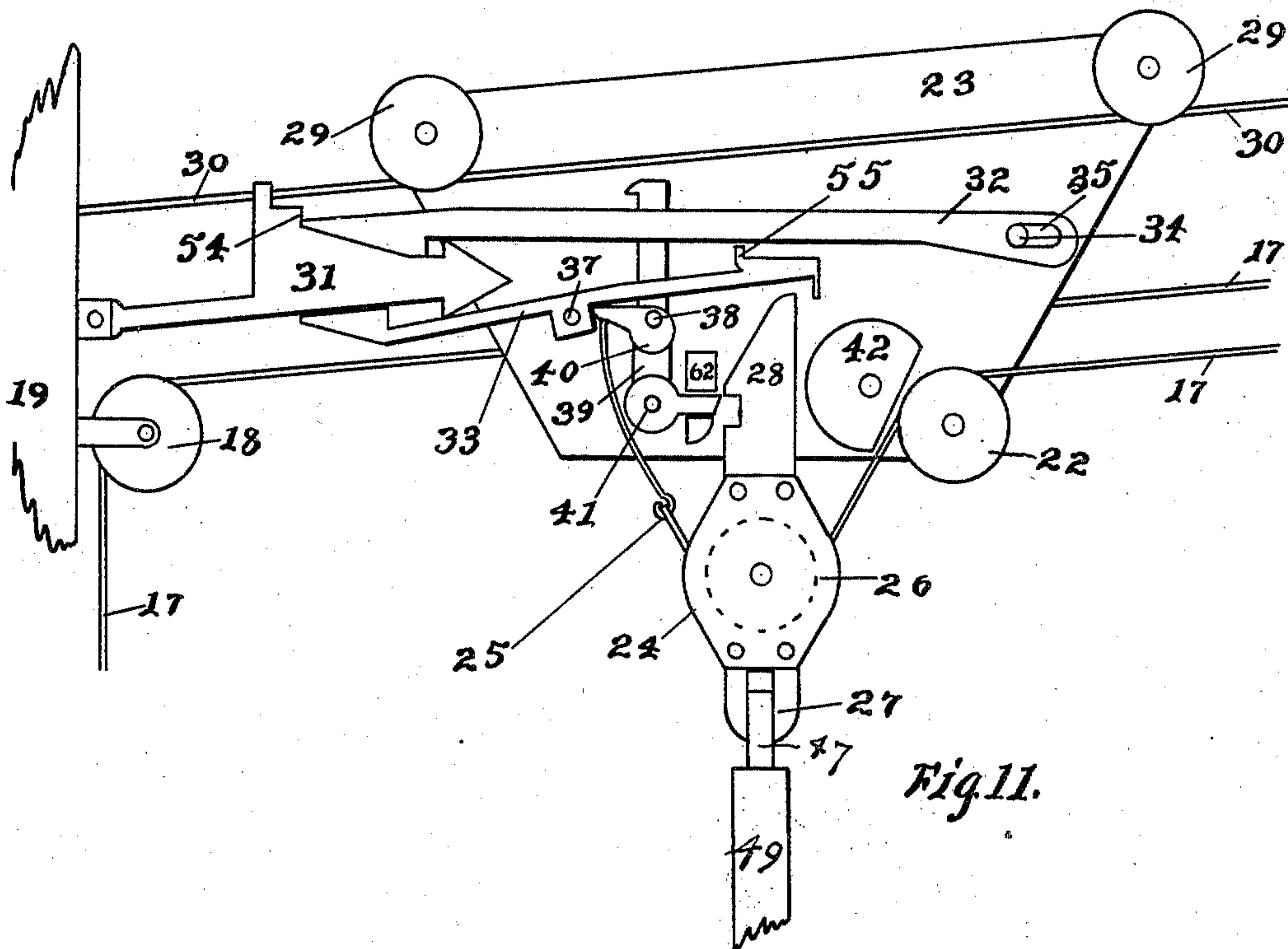


Fig. 11.

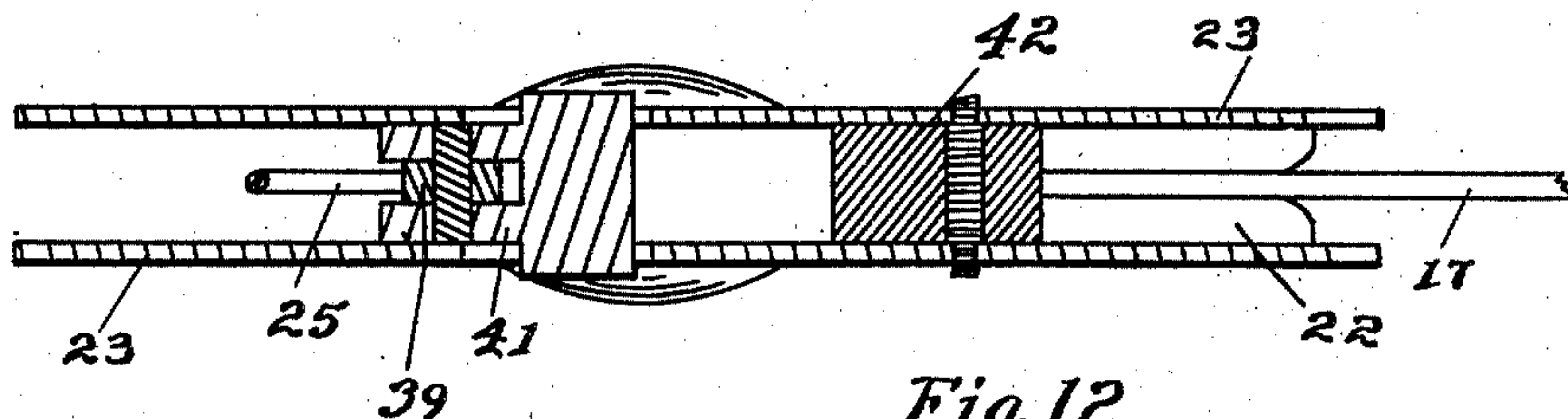


Fig. 12.

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Witnesses  
E. V. Simpson  
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# UNITED STATES PATENT OFFICE.

JESSE A. ECTON, OF SALT LAKE CITY, UTAH.

## HOISTING-MACHINE.

967,353.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Application filed January 19, 1910. Serial No. 538,897.

*To all whom it may concern:*

Be it known that I, JESSE A. ECTON, citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Hoisting-Machines, of which the following is a specification.

The purpose of my invention is to provide a hoist for raising ore and other material out of a shaft or other excavation, and removing and dumping the same without the presence of the operator other than at the place of loading the material. This I do by the machine illustrated in the accompanying drawings in which similar reference numerals indicate like parts throughout the several figures.

Figure 1, is a vertical elevation of the shifting device with one side removed, and showing said device in position to be moved to the dump. Fig. 2, is a vertical elevation of the same ready to descend into the shaft. Fig. 3, is a vertical elevation of the bucket and bail. Fig. 4, is a side view of the same with the bucket dumped. Fig. 5, is a plan of the windlass with the cable removed. Fig. 6, is a vertical elevation of one end of the windlass showing the brake and lever raised. Fig. 7, is a vertical elevation of the tripping device. Fig. 8, is an end view of the jaws of the tripping device. Fig. 9, is a plan in detail of one of the gripping levers. Fig. 10, is a vertical elevation,—reduced—of my machine in place. Fig. 11, is a vertical elevation of the shifting device in tripping position. Fig. 12, is a plan on line X X Fig. 2.

I have found that there are many places where the excavator wishes to load the material, hoist and dump it, and have the bucket return to him for reloading without his leaving the place of loading. This I have made possible and practicable by my hoisting machine in which a movable windlass drum 1, is carried by a shaft 2, which shaft has fitted on one end a friction cap 3, and through which shaft are bored holes 4. Within said holes a bar is inserted to prevent the said shaft from turning when the windlass is in place. Carried by said shaft 2 and firmly secured on one end thereof is a brake standard 5. Through the upper portion of said standard is fitted a brake shaft 6, on which shaft 6 is carried a lever 7 and a

friction brake-shoe 8. On the end of said brake-shoe is formed a click or pawl 9, which pawl 9 engages the teeth of the ratchet wheel 10, which is also secured to the said windlass drum 1. On the other end of the said windlass drum is rigidly secured a bevel pinion 11, the teeth of which mesh with the teeth of a gear 12. Said gear 12 is mounted on a shaft 13, which is secured on the said shaft 2, and at right angles thereto, by the nut 14. Said shaft 13 has fitted on the other end a handle 15.

Within one end of the shaft 2 is threadably fitted a jack-screw 16, which is provided with openings therein for turning the same. The end of said jack-screw is also fitted with a friction cap 3. When the windlass has been placed in a horizontal position in the shaft or excavation, the turning out of the said jack-screw will firmly set the windlass by bringing the ends of the caps in contact with the walls of the shaft and by placing a bar in one of the holes 4 the rotation of the windlass drum is prevented when the other end of the bar is in contact with the side of the shaft or excavation. One end of a cable 17 is secured to said windlass drum 1, and said cable is passed over a pulley 18 which is securely fastened to the upright or frame 19. Said cable is then passed over another pulley 20 secured beyond the point where the bucket is to be dumped to another upright or part of the frame 21. The cable is then brought back practically parallel to its reach from pulley 18 to pulley 20, where it is passed over pulley 22 which is mounted between the sides 23 of the shifting device. The cable is then passed over the bucket pulley 24, and fastened to the lower end of the trip 25. The bucket pulley 24 is mounted between two casings 26, between which casings is also secured the bucket link 27, and the trip member 28.

In the upper portion of the shifting device, mounted between the sides thereof, are the traveling pulleys 29, which are made to travel on the cable 30, which cable is tautly secured between the said frames 19 and 21.

Pivoted to the upright 19 is one end of the member 31, through the upper portion of which member is passed the said cable 30. The other end of said member is formed arrow shaped to engage the jaws of the gripping levers 32 and 33. The pivoting of one end and the suspending of said mem-



ber 31 on the cable 30 will permit it to adjust itself to the sway of the said cable 30 whether the cable carries a load or not.

Mounted between the sides 23 is the gripping lever 32, one end of which is pivoted by pin 34, in the slotted opening 35, which slotted opening allows the said lever a limited lateral motion. Said lever also has therethrough another slot 36 transverse in position to slot 35 and near the medial portion of said lever. The said lever 33 is pivoted near the medial portion by the pin 37, and has also a slotted opening therethrough similar to the slot 36 in the other lever 32. On the side of lever 33, adjacent to the lever 32 is provided a fulcrum 55. Within slot 36 and its counterpart in the other lever is made to operate the vertical lever 39, also pivoted near its medial portion by the pin 38 between the sides 23. Said vertical lever 39 has secured thereto or formed integral therewith the trip arm 40. And on the lower end of said lever is pivoted the detent 41, the other end of which detent engages in the catch of the said member 28, and the side portions of said detent extend beyond the said sides 23 through the slotted openings therein, see Fig. 12. Guide blocks 42 and 62 are also secured between the said sides 23, to guide the said trip member 28 and to hold it in engagement with the detent 41.

The bucket 43 is mounted on the rollers 44 and axially in each of said rollers 44 is the pin 45. Said pins are made to move vertically in the slotted openings 46 that are cut near the ends of the bail 47. On the lower side of each of said rollers 44, is secured one end of the ropes or cables 48. The other end of each of said cables 48 is firmly attached to the said bail 47. The bucket 43 is suspended by the cables 48 and so adjusted that when the said bucket is loaded it will turn over of its own accord, as the upper end will then be the heavier. When the bucket is empty the lower end is the heavier and the bucket will right itself, and in so righting itself will wind the said cables one half turn on the rollers 44, this winding and the fact that when loaded the upper end of the bucket will be the heavier will dump the bucket unless the catches 49 engage in the recesses 50 which are cut in the upper edge of the bucket. The said catches 49 are pivoted on the outer side of the bail by the pins 51, and when the loaded bucket is in a vertical position as shown in Fig. 3, the said catches will engage in the said recesses and retain the bucket in a vertical position until the bucket is carried to the tripper 52. Said tripper is pivotally secured to the frame 21, and has jaws 53 on its outer end, which jaws are formed to press down on the upper ends of said catches 49. The said pressure will release the said catches and allow the bucket to dump.

When dumped it will right itself and its weight and the inclination of cable 30 will return it to a position over the shaft. As it nears that position the members of the shifting device will be in the position as shown in Fig. 2. When near enough to engage with the arrow pointed end of the member 31 the said arrow end of said member will slide between the pointed ends of the levers 32 and 33 and they will be forced apart as shown in Fig. 1. When more directly over the shaft, the point of the lever 32 will strike the shoulder 54 on said member 31 and stop the lateral motion of the said lever 32. The other parts of the shifting device will move laterally on the pin 34. Said lateral movement will move the upper end of the lever 39 and withdraw the detent 41, from its engagement with the trip member 28 as shown in Fig. 11. The withdrawal of detent 41 will allow the said member 28 to assume the position as shown in Fig. 2. The weight of the bucket and said member will then be on the cable 17, the end of which being attached to lever arm 40 will throw said lever 39 in the position shown in Figs. 1 and 2. When the bucket has been filled again and windlassed up by the pull on cable 17 till the trip member has entered between the guide block 42 and detent 41, the upper point of said member 28 will raise one end of lever 33 and lower the other end, the fulcrum 55 will raise the gripping end of lever 32, which movement will free the engagement of the jaws on said lever from the arrow end of said member 31, and the continuance of the pull on cable 17 will move the loaded bucket and shifting device to the tripper 52, where the load will be dumped.

Having thus described my invention, I desire to secure by Letters Patent and claim:—

1. In a device of a class described an adjustable windlass, a cable adapted to be wound on said windlass, pulleys over which said cable travels, another cable tautly suspended over said windlass, gripping levers and pulleys adapted to operate on said last mentioned cable, a bucket carried by said cable, means to overturn said bucket and means to return said bucket to a vertical position as and for the purpose described.

2. In a hoisting machine, the combination of an adjustable windlass, a cable one end of which is attached to said windlass and the other end to a trip arm, pulleys over which said cable are made to travel, another cable horizontally suspended over said windlass, an arrow shaped member carried on said last cable and pivoted to the cable support, a tripper pivoted to the support at the other end of said cable, a bucket adapted to operate from said last mentioned cable, catches on the bail of said bucket and means for suspending said bucket from said last



mentioned cable, which means consist of side plates, traveling pulleys mounted therebetween, another pulley also mounted in said plates and over which said first mentioned cable travels, gripping levers pivoted between said plates, jaws on said gripping levers adapted to engage said arrow shaped member, another lever pivoted between said plates transverse in position to said gripping levers and made to operate in slotted openings in said gripping levers, a detent pivoted to the lower end of said last mentioned lever, a trip arm secured on the opposite side of said lever from said detent, a trip member adapted to move said levers.

3. In a hoisting device, a cable horizontally suspended between uprights, pulleys secured to said uprights, a tripper pivoted to one upright and an arrow shaped member pivoted to the other of said uprights, a bucket with recesses in its chime, means for suspending said bucket on said cable, means for causing said bucket to travel horizontally to and fro on said cable while suspended therefrom, means for securing the bail to said bucket, catches pivoted to said bail one end of which catches is adapted to engage in said recesses and the other end to be moved by said tripper, as and for the purposes described.

4. In a hoisting device, a cable horizontally suspended between uprights a pulley and a tripper pivoted to one of said uprights, another pulley and an arrow shaped member pivoted to the other of said up-

rights, a bucket having recesses in its chime, means for suspending said bucket on said cable, means for causing said bucket to travel horizontally to and fro under said cable while suspended therefrom, which means consists of two rollers, axially placed pins in said rollers which pins are adapted to rotate and move vertically in slotted openings near the end of said bail, one end of a cable being secured to the normally bottom side of each of said rollers and the other end of each of said cables being secured to said bail.

5. In a hoisting device, the combination of a cable horizontally suspended between uprights, a pulley and a tripper pivoted to one upright, a pulley and an arrow shaped member pivoted to the other of said uprights, a bucket having recesses in its chime, means for suspending said bucket on said cable, means for causing said bucket to travel horizontally to and fro under said cable while suspended therefrom, which means consists of a horizontally placed shaft, a drum revoluble thereon, a brake standard secured on said shaft, a jack-screw threadably secured in one end of said shaft, a brake shoe and lever mounted on said brake standard.

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

JESSE A. ECTON.

Witnesses:

G. B. BLAKELY,  
W. E. WOOD.