

No. 701,887.

Patented June 10, 1902.

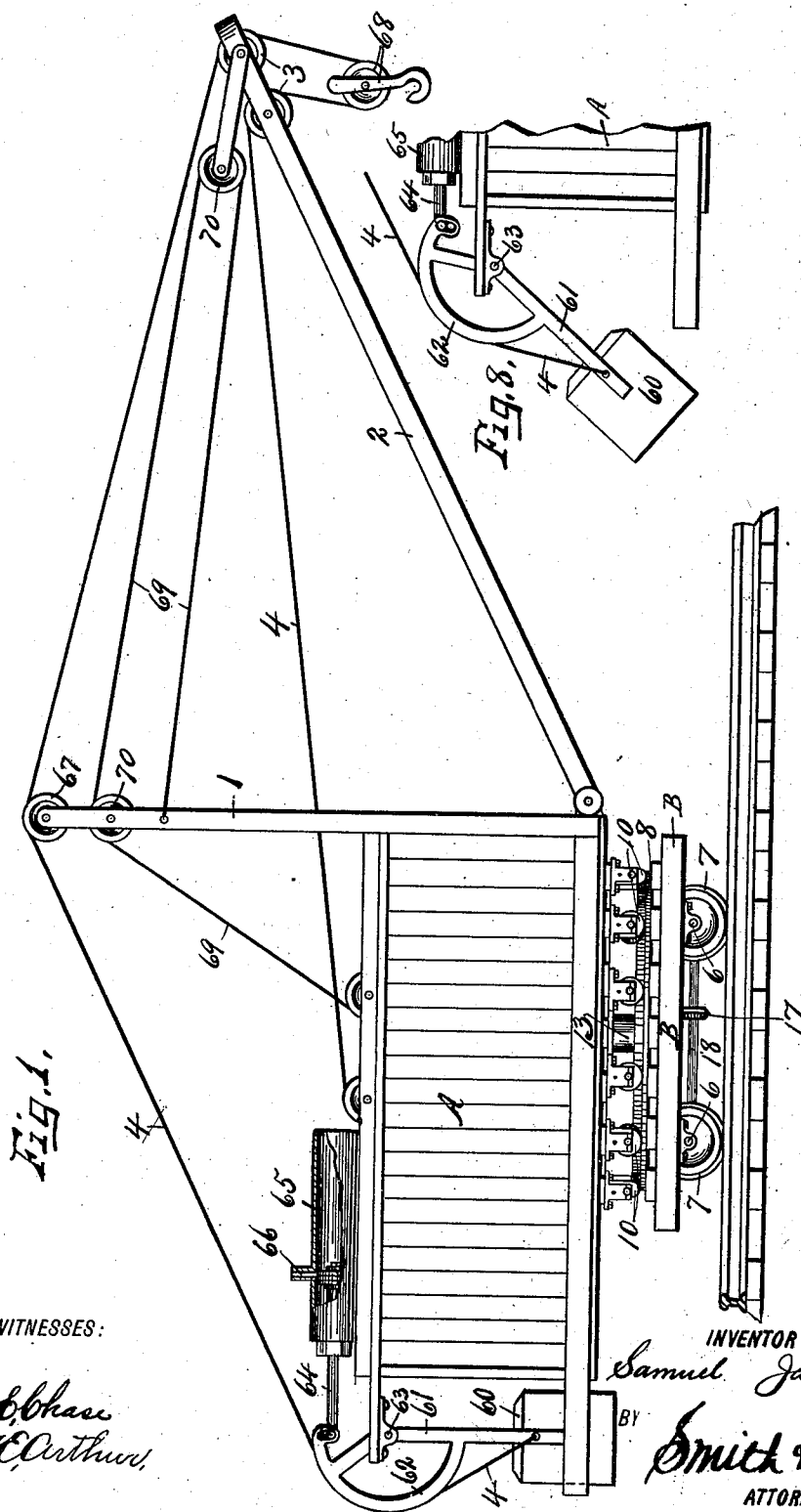
S. JACKSON.

HOISTING AND CONVEYING MACHINE.

(Application filed Sept. 24, 1901.)

(No Model.)

5 Sheets—Sheet 1.

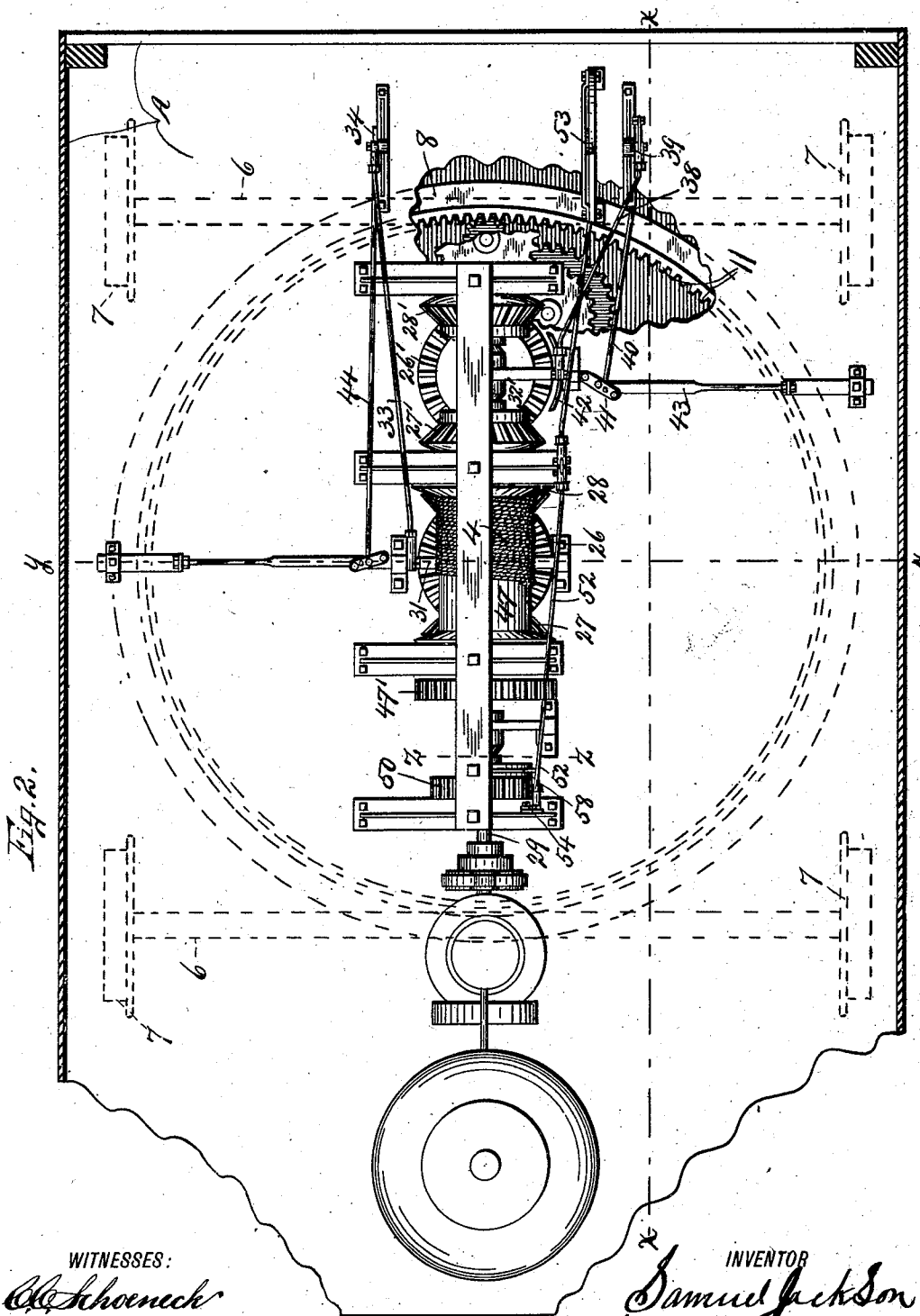


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(No Model.)

5 Sheets—Sheet 2.



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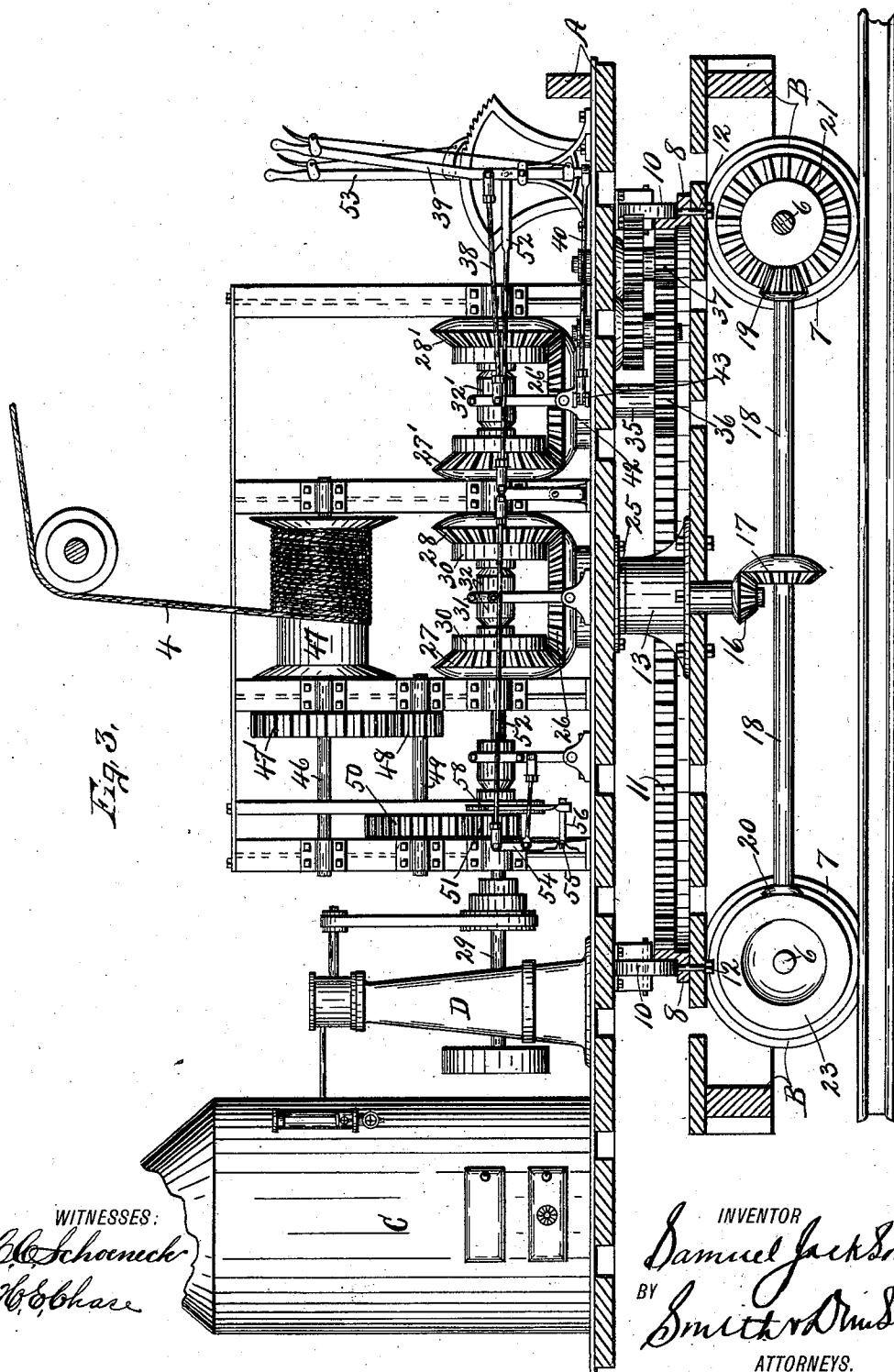
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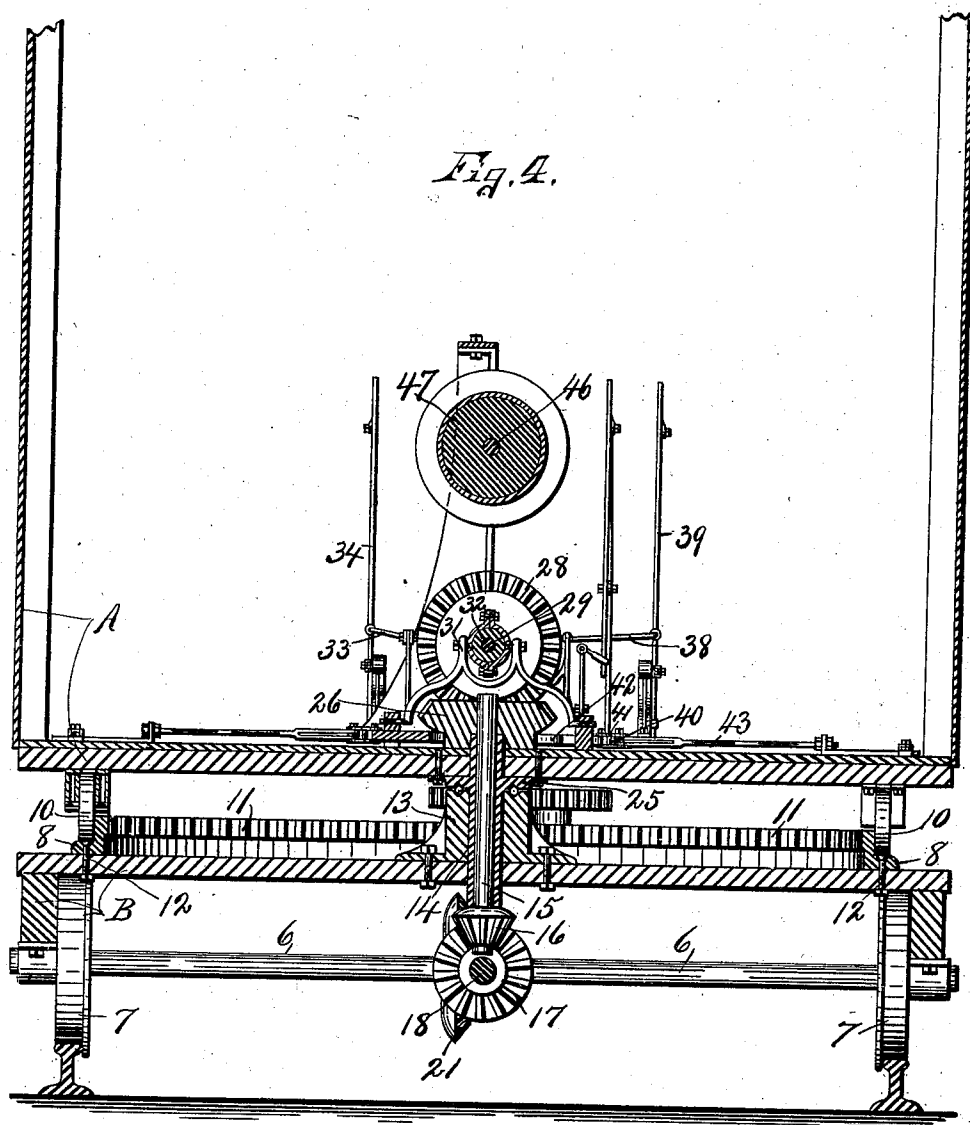
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(No Model.)

5 Sheets—Sheet 4.



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5 Sheets—Sheet 5.

Fig. 6.

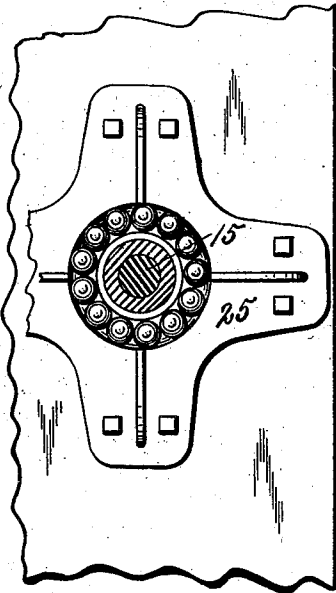


Fig. 7.

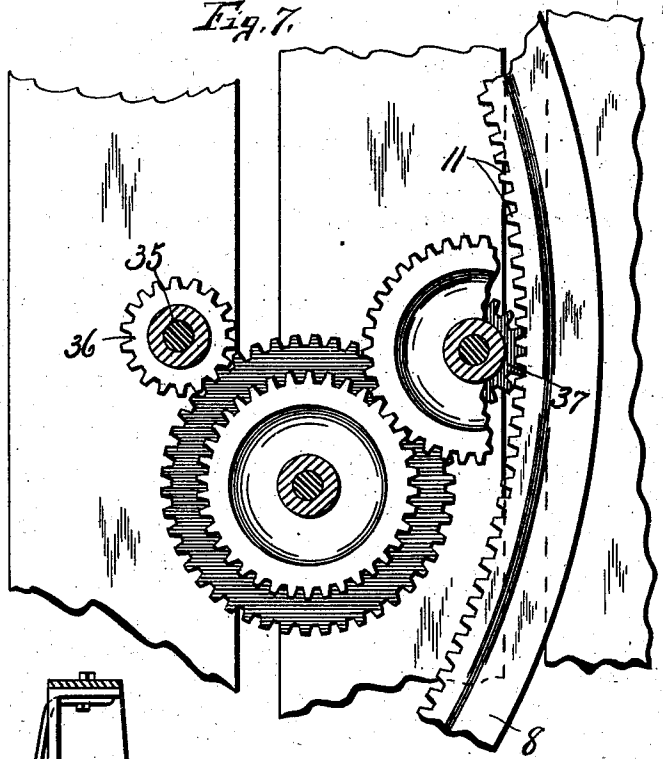
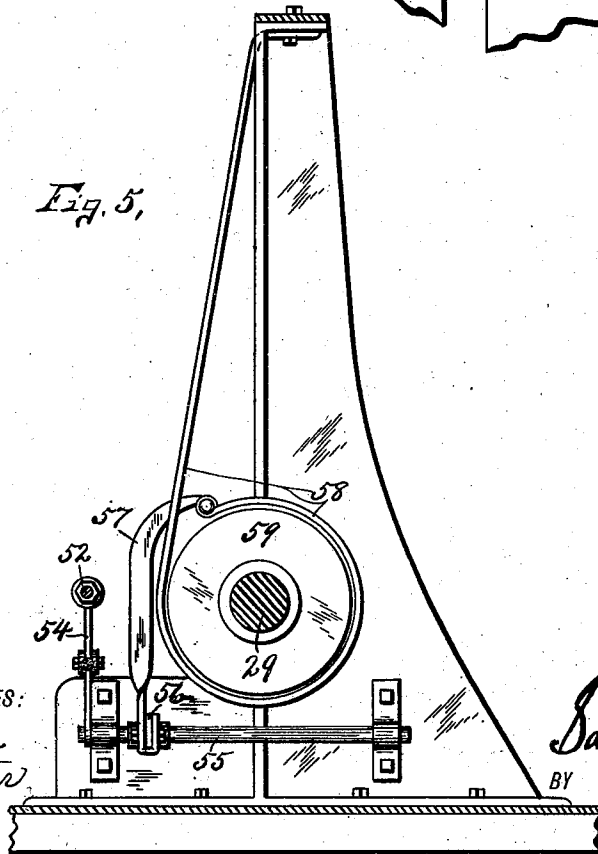


Fig. 5.



WITNESSES:
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UNITED STATES PATENT OFFICE.

SAMUEL JACKSON, OF FAYETTEVILLE, NEW YORK.

HOISTING AND CONVEYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 701,887, dated June 10, 1902.

Application filed September 24, 1901. Serial No. 76,359. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL JACKSON, of Fayetteville, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Hoisting and Conveying Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 This invention relates to bucket hoisting and conveying machines.

My object is to produce a machine by which the buckets containing earth used in dredging may be hoisted and conveyed to any point
15 desired.

My further object is to improve the detail construction and general utility of such machines; and to that end my invention consists in the several new and novel features of construction and operation hereinafter described and which are specifically set forth in the claims hereunto annexed.

It is constructed as follows, reference being had to the accompanying drawings, in which—

25 Figure 1 is a side view of my machine complete mounted upon a trackway upon which it is adapted to travel. Fig. 2 is a top plan view of the interior of the machine, showing the working parts and showing in dotted lines the axle and wheels which support the platform upon which the superstructure of the machine is mounted and also showing upon one side a portion of the floor broken away to show the operating-gears beneath.
30 Fig. 3 is a view on line *xx* of Fig. 2. Fig. 4 is a section on line *yy* of Fig. 2. Fig. 5 is a section on line *zz* of Fig. 2 looking at the rear or to the left of the machine, omitting to show the engine and boiler back of it. Fig. 6 is a top view of the central portion of the platform, showing a post having a ballway in its upper end and balls mounted therein, which forms the bearing for the central portion of the superstructure. Fig. 7 is a top plan view of the forward end of the platform, showing a portion of the circular rack and the gears which engage therewith and which gears are secured to the floor of the superstructure, the shafts of said gears being shown in section;
40 and Fig. 8 is a detail view of the counter-balance in its elevated position.

Similar characters of reference indicate corresponding parts in all the views.

A is the superstructure, comprising a frame having a floor and roof mounted upon the platform, as will hereinafter be more fully set forth. Upon one end of the superstructure I erect an upright 1, and 2 is a slotted arm pivoted, as shown, having a pulley-wheel 3 at its outer end, over which the hoisting-cable 4 passes in the ordinary way. The outer end of the arm 2 is adjustably supported in any ordinary and well-known manner, so arranged that the free end of the arm 2 may be raised or lowered, as desired.

65 B is a truck comprising ordinary frame-bars having a top 5, all mounted upon the axles 6, which carry the wheels 7. Upon the top of the platform or truck is a circular trackway 8, constructed L-shaped in cross-section, the extending foot or flange serving as a tread or bearing upon which the wheels 10 support the superstructure A in its travel. The inner face of said trackway is provided with gear-teeth 11 for the purposes hereinafter specified. The said trackway is secured to the top of the platform 5 by bolts 12 or in any other suitable manner. At the central point upon the platform and within the trackway 8 I mount a post 13, having a vertical opening 14 therein, and 15 is a shaft mounted and adapted to rotate therein, having a bevel-gear 16 at its lower end adapted to engage or mesh with the gear 17, fast to the shaft 18, suitably supported in the bearing beneath the track, and which in turn has upon its ends the gears 19 and 20, respectively. The gear 19 is adapted to mesh with the gear 21, which is mounted upon the axle 6, and the gear 20 is adapted to engage with a gear 23, mounted upon the axle 6, the wheels 7 being mounted upon the axles in the ordinary way, so that the rotation of the shaft 15 in one direction will turn the axles in one direction, so as to impart a forward movement to the wheels, and a reverse movement would impart a rearward movement to the wheels, thereby enabling me by the power within the superstructure to impart locomotion to the truck.

100 A series of rollers or wheels 10 are secured in a circular line to the bottom of the superstructure, which wheels bear upon the tread 9 of the trackway 8, and the bottom of the center of the superstructure is provided with a plate 25 and has a depending sleeve which

bears upon the balls in the top of the post 13 and rotatably supports the center of the superstructure.

The upper end of the shaft 15 is provided with a gear 26, adapted to engage with the gears 27 and 28, mounted upon the central main driving-shaft 29. The gears 27 and 28 are provided with flanges 30, in which are mounted frictional clutches, which clutches are operated by an arm 31, traveling upon a cone 32. The cone 32 is operated longitudinally upon the central shaft by a rod 33, which is operated by an ordinary lever 34 in front, so that by moving the cone forward the frictional clutch which is mounted on the shaft 29 will engage with the gear 28 and produce a rearward movement to the truck, whereas when the cone is moved rearward it engages with the gear 27 and causes a forward movement of the truck. I do not further describe this frictional clutch, for the reason that it forms the subject of another application.

In the forward portion of the superstructure and in the bottom or floor thereof I vertically mount a shaft 35, having the gear 36 upon its lower end, which is adapted to engage by intermediate gears with the gear 37, which in turn meshes with the teeth 11, so that by the rotary motion of the shaft 35 a rotary motion is imparted to the entire superstructure and from thence to the arm 2, which allows the bucket to be dumped upon either side of the track.

Secured to the upper end of the shaft 35 is a gear 26', which meshes with gears 27' and 28', placed upon the main driving-shaft 29 in reverse positions and between which upon the shaft 29 is placed the cone 32', which is operated by a rod 38, secured to an operating-lever 39. The inner end of the rod 38 is connected with the cone 32', and as this cone is moved back and forth upon the shaft it brings the frictional clutches (not shown) into operation with the wheels 27' and 28', according to the direction in which it is desired that the platform or superstructure shall turn.

To the lower end of the lever 39 I secure a rod 40, which has a short arm 41, one end of which is connected to a shoe or brake 42 and the other end to a strap 43, so that as the lever 39 is moved to and fro it will alternately grip and release the shaft 35 when it is adapted to reverse the movement thereof. It will be observed that when the handle 39 is in a vertical position the arm 41 will stand in alinement with the strap 43 and cause the shoes 42 to engage with the shaft, and thereby hold it frictionally from rotation; but a movement in either direction upon the lever 39 will release it and throw the gear 26' into engagement either with the gear 27' or 28'. A rod 44 is similarly connected to a shoe and similarly engages with the shaft 15 or, more properly speaking, with the hub of the gear 26 upon the shaft 15.

Within the superstructure and upon uprights 45 I mount a shaft 46, carrying a windlass 47, upon which the cable 4 is wound or unwound in hoisting or lowering the buckets. Upon the shaft 46 is a gear 47', engaging with a gear 48, mounted upon the shaft 49, which is likewise mounted in the uprights, and 50 is a gear mounted upon said shaft 49, adapted to engage with the gear 51, mounted upon the central shaft 29, and inasmuch as this gear 51 is operated by a frictional clutch, hereinbefore referred, to I will not describe it further.

52 is a rod connected with a handle-lever 53, by which the frictional clutch is operated in order to cause by the intermediate gear the windlass 47 to operate. When thrown out of gear, the weight of the bucket (not shown) is sufficient to cause it to unwind.

C is an ordinary boiler connected to the engine D, which operates the central shaft 29.

To the rod 52 a lever 54 is secured, the lower end of which is secured to a shaft 55 for the purpose of imparting a slight oscillatory movement to it, and upon this shaft 55 is an arm 56, adapted to engage with an arm 57, to the upper end of which is secured a shoe 58, adapted to be brought in frictional contact with a wheel 59, mounted upon the central shaft 29. This is for the purpose of regulating the speed of the windlass.

Upon the rear end of the superstructure A, I mount a vertically-adjustable counterbalance 60, providing any suitable means for allowing it to be raised or lowered upon an upright 61 and connected to the cable 4, passing over a segment 62, having a guide-groove. As seen in Figs. 1 and 8, the arm 61 and segment 62 are formed integral to each other, being pivoted at 63 to the upper frame-bars of the superstructure A, the counterbalance 60 being secured to the lower end of the upright 61. The segment 62 extends above the pivotal point 63 and is loosely connected to a piston-rod 64, the piston being movable in a suitable air-chamber 65, preferably mounted on the top of the superstructure A, said air-chamber being provided with an air outlet or vent 66 intermediate the opposite ends of the chamber. The end of the air-chamber 65 opposite to the connection of the piston-rod with the segment 62 is preferably open for preventing the compression of air during the elevation of the counterbalance 60, the purpose of the air-vent 66 being to permit a free movement of the piston within the chamber during a portion of the downward movement of the counterbalance 60 and for forming a cushion in said chamber when the piston is moved beyond the vent 66, thereby preventing any jar or strain to the apparatus should the weight descend rapidly. One end of the cord 4 is connected to the arms 61, being guided in the groove of a segment, and is then passed over suitable idlers 67 upon the upright 1 and around the idlers 3, the opposite end being secured to the reel 47. A suitable tackle-block

68 is suspended by the cord or cable 4 and is provided with means for engaging a hoisting-bucket or other load which it may be desired to elevate or lower.

5 The boom or arm 2 is mounted upon the end of the superstructure opposite to the counter-balance 60 and is adapted to be raised and lowered by a suitable cable 69, having one end secured to the upright 1 and its opposite end
10 passed over idlers 70, one being mounted upon the standard 1 and the other being connected to the arm 2.

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

1. The operating-lever 39, the rod 40 secured thereto at its lower end, the slotted arm 41 and the brake 42 to which the arm 41 is connected, and the strap 43 combined with
20 the shaft 35, the gear 26' secured thereto provided with the hub against which the brake bears, the pinion 36 secured to the lower end of the shaft 35, an intermediate train of wheels, a platform mounted upon a track, and
25 having a circular trackway with which one of the train of wheels is made to engage, substantially as shown.

2. A windlass, a suitable train of gears for operating it, the main operating-shaft 29, a
30 friction-clutch which operates with the last one of said train of gears, the rod 52, and the hand-lever 53 by which the frictional clutch is operated, a lever 54 secured to the rod 52, the shaft 55 to which the lower end of the lever 54 is secured, an arm 56 secured to the
35 shaft 55, an arm 57 pivoted to the outer end of the arm 56, a shoe 58 connected to and operated by the arm 57, and the wheel 59 mounted upon the central shaft 29, substantially as set forth.

3. In a hoisting and conveying machine, the combination with a truck and a rotary superstructure mounted thereon, a gear connected
45 to rotate the wheels of the truck, a friction-drum on one of the revoluble parts, a driving-shaft having loose gears meshing with the former gear at opposite sides of its axis for rotating said former gear in reverse directions, a clutch movable with the shaft and
50 arranged to lock either or neither of the latter gears to the driving-shaft, a brake-shoe normally engaged with the drum when the clutch is released from either of the gears, a clutch-operating member, and means connected to said member whereby the brake
55 engages the drum when the clutch is released from said gears and is disengaged from the drum when the clutch is locked to either of the gears.

4. In a hoisting and conveying machine, the combination with a truck, a vertical shaft connected to the wheels of the truck for propelling the same, said vertical shaft being provided with a gear, a main driving-shaft having loose gears meshing with the former gear
60 at opposite sides of its axis for rotating the said former gear in reverse directions, a

clutch arranged to lock either of the latter gears to the former gear, said clutch having a neutral position whereby both of the gears
70 are released, a lever for holding the clutch in either of its operative positions, and also for holding the same in its neutral position, a brake-shoe arranged to engage one of the revolving parts, a toggle connected to the
75 brake-shoe and to the clutch-operating lever, whereby the brake-shoe is forced into engagement with one of the revoluble parts when the clutch is moved to its neutral position.

5. In a hoisting and conveying machine, the combination with a truck and a rotary superstructure mounted thereon and provided with a circular rack, an upright shaft mounted on the superstructure and geared to the
85 rack, said upright shaft being provided with a gear, a main driving-shaft having gears meshing with the former gear at opposite sides of its axis, a clutch arranged to lock either of the latter gears to the former gear,
90 said clutch having a neutral position whereby both of the gears are released, a lever for holding the clutch in either of its operative positions, and also for holding the same in its neutral position, a brake-shoe arranged
95 to engage one of the revolving parts, a toggle connected to the brake-shoe and to the clutch-operating lever, whereby the brake-shoe is forced into engagement with one of the revoluble parts when the clutch is moved
100 to its neutral position.

6. In a hoisting and conveying machine, the combination with a truck and a rotary superstructure mounted thereon, of a main driving-shaft mounted on the superstructure, a pinion
105 loose on the shaft, a windlass mounted on the superstructure and geared to the pinion, a friction-drum on one of the revoluble parts of the driving mechanism for the windlass, a clutch for locking the pinion to the shaft, a
110 hand-lever connected to the clutch for moving the same into and out of operative position, a brake movable into and out of engagement with the drum for controlling the speed of movement of the windlass, and means connecting said hand-lever to the brake-shoe
115 whereby as the clutch is moved to its inoperative position, the brake is simultaneously forced into engagement with the drum.

7. In a hoisting and conveying machine, the combination with a truck and a rotary superstructure mounted thereon, of a driving-shaft mounted on the superstructure, a pinion
120 loosely mounted on the driving-shaft, a windlass mounted on the superstructure and geared to the pinion, a clutch for locking the pinion to the shaft and releasing the same therefrom, a drum secured to the pinion, a brake-band encircling the drum, a rock-arm connected to the clutch for moving the same
125 into and out of operative position, a hand-lever, a bell-crank having one arm connected to the brake-band and its other arm connected to the hand-lever and to the rock-arm
130

whereby the clutch is forced to its inoperative position and the brake-band is simultaneously drawn into engagement with the drum.

- 5 8. In a hoisting and conveying machine, the combination with a truck and a rotary super-
structure mounted thereon, an upright shaft
also mounted on the superstructure and
10 geared to the traction-wheels of the truck for rotating the same, a circular rack secured to
the truck and having its center coincident
with the axis of the upright shaft, a second
upright shaft mounted on the superstructure
and geared to said rack for rotating the super-
15 structure, said upright shafts being provided with gears at their upper ends, independent
pairs of gears loosely mounted on the main
driving-shaft, the gears of each pair being
engaged with the gears on the upright shafts
20 at opposite sides of their respective axes, the gears on the upright shafts being provided
with friction-drums, brake-shoes for engaging the drums, a pinion loosely mounted on
the main driving-shaft, a windlass mounted
25 on the superstructure and geared to said pin-

ion which is provided with a friction-drum, a clutch interposed between each pair of gears, rock-arms for actuating said clutches, a toggle connected to each of the brake-shoes, a hand-lever connected to each of the clutches 30
and connections between each of the hand-levers and their respective toggles whereby the brake-shoes are forced into engagement with the friction-drums of the upright shafts
as the clutches are released, an additional 35
clutch for locking the pinion to the main driving-shaft, a rock-arm for actuating said clutch, a hand-lever, a brake-band for engaging the drum on the pinion and a bell-crank
40 having one arm connected to the brake-band and its other arm connected to the latter hand-lever and to the latter rock-arm for the purpose described.

In witness whereof I have hereunto set my hand this 6th day of August, 1901.

SAMUEL JACKSON.

Witnesses:

H. E. CHASE,

HOWARD P. DENISON.