

J. L. POTTER.
 AERIAL CABLE HOISTER AND CONVEYER.
 APPLICATION FILED APR. 15, 1911.

1,018,360.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.

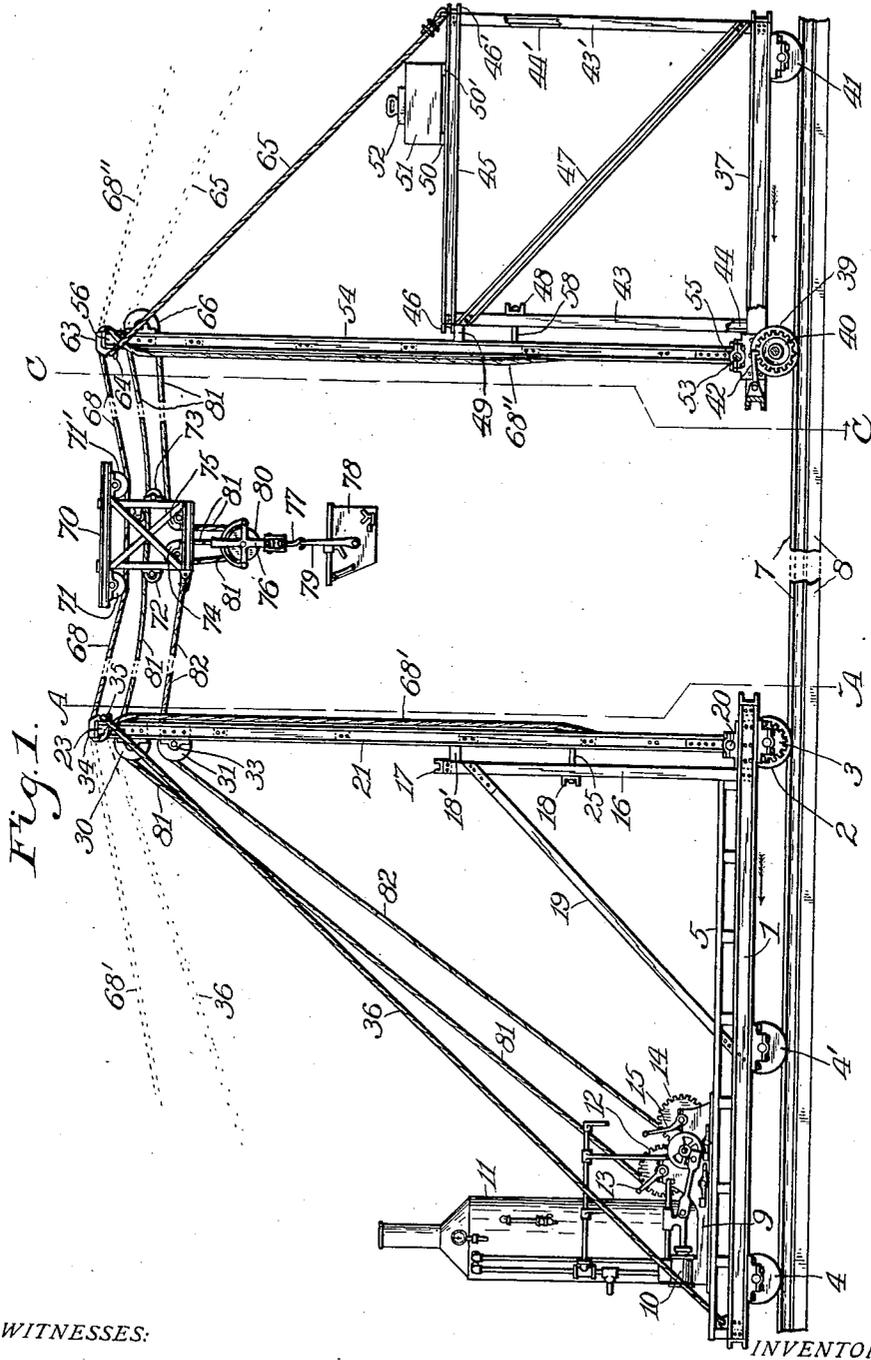


Fig. 1.

WITNESSES:

J. H. Gardner.
 K. R. Woddell.

INVENTOR:

Joseph L. Potter,
 BY
 E. T. Silvius,
 ATTORNEY.

J. L. POTTER.
 AERIAL CABLE HOISTER AND CONVEYER.
 APPLICATION FILED APR. 15, 1911.

1,018,360.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 2.

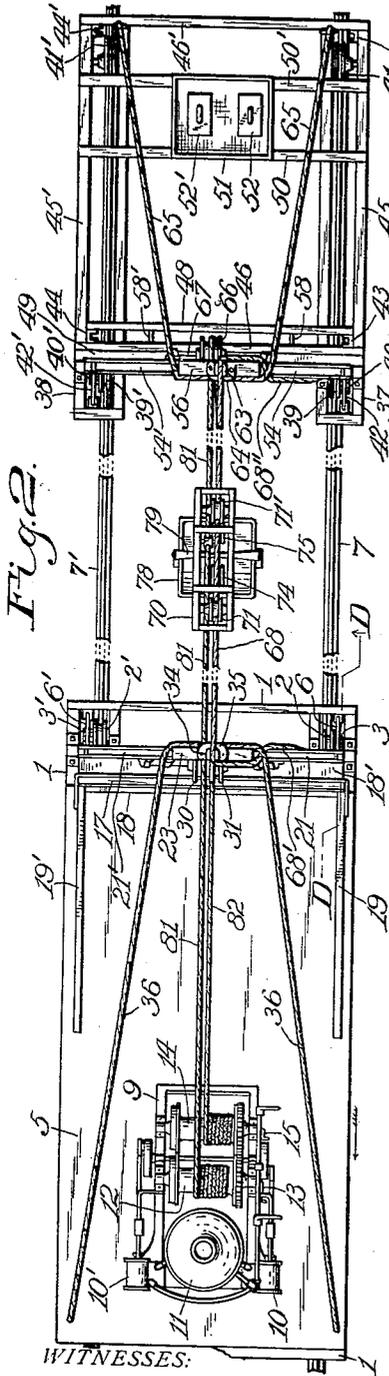


Fig. 2.

Fig. 6.

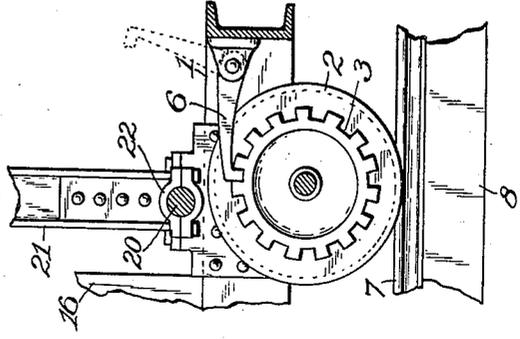


Fig. 5.

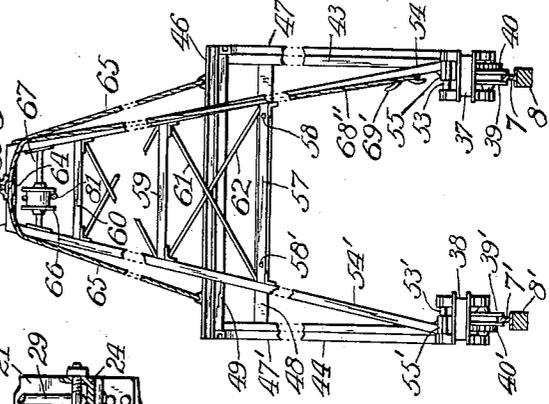


Fig. 4.

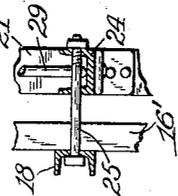
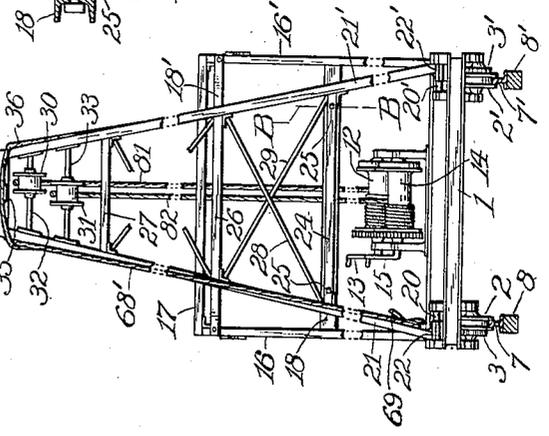


Fig. 3.



WITNESSES:

J. H. Gardner.
 H. R. Wooddell.

INVENTOR:

Joseph L. Potter,
 BY
 C. J. Silvius,
 ATTORNEY.

UNITED STATES PATENT OFFICE.

JOSEPH L. POTTER, OF INDIANAPOLIS, INDIANA.

AERIAL-CABLE HOISTER AND CONVEYER.

1,018,360.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed April 15, 1911. Serial No. 621,226.

To all whom it may concern:

Be it known that I, JOSEPH L. POTTER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Aerial-Cable Hoister and Conveyer, of which the following is a specification, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

This invention relates to movable apparatus adapted for hoisting and conveying and adaptable for excavating and conveying operations, the invention having reference particularly to apparatus of the above-mentioned character that is designed to be shipped "knock-down" and to be readily set up for use wherever required.

The object of the invention primarily is to provide improved hoisting and conveying apparatus that will be adapted to be moved as the work progresses and capable of conveying the earth from trenches relatively long distances and dumping the earth back into the trenches; a further object being to provide apparatus of the above-mentioned character that will be adapted to be constructed at relatively small cost and in a compact and substantial manner, and which will be durable and economical in use, minor objects being apparent from a perusal of the description of the invention.

The invention comprises essentially two frames provided with wheels to constitute cars, each car having a tower mounted thereon, means for locking or anchoring the cars to prevent movement thereof during operations, an overhead or aerial cable supported by the towers, and a carrier having wheels mounted movably on the cable; and the invention consists further in the novel parts, and in the combinations and arrangements of parts, as hereinafter particularly described and claimed.

Referring to the drawings, Figure 1 is a side elevation of the improved hoister and conveyer adapted for excavating and filling sewer trenches; Fig. 2, a top plan of the improved apparatus; Fig. 3, a vertical sectional elevation on the line A A in Fig. 1; Fig. 4, a fragmentary sectional elevation on the line B B in Fig. 3; Fig. 5, a vertical sectional elevation on the line C C in Fig. 1; and Fig. 6, a fragmentary sectional elevation on the line D D in Fig. 2.

Similar reference characters throughout

the different figures of the drawings indicate corresponding elements or features of construction herein referred to.

In practically carrying out the objects of the invention a suitable rectangular car frame 1 to constitute a part of a head frame or car is provided and its normally rear end is mounted on a pair of wheels 2 and 2' having toothed wheels 3 and 3' thereon or so connected that both must move together, the toothed wheels preferably being of the spur-tooth type. The forward end of the frame is mounted on similar carrying wheels 4, and preferably additional wheels 4' support the middle portion of the car frame. The frame has a floor 5 built thereon which, preferably, does not extend entirely to the rear end of the frame. Two locking dogs 6 and 6' are mounted on the opposite side portions of the rear end of the frame and normally engage the toothed wheels 3 and 3', respectively, for preventing movement of the car, the dogs being so mounted that they may be disconnected from the toothed wheels to permit the car to move. The carrying wheels of the car are preferably flanged, and when the car is set up for operation the wheels are supported and guided on rails 7 and 7' arranged at opposite sides of the plane in which the excavating is to be done, the rails usually resting upon stringers 8 and 8'. A suitable hoisting engine is mounted upon the forward end portion of the car frame and comprises a frame 9, engine cylinders 10 and 10', a boiler 11, a winding drum 12 provided with a brake operating arm 13 and a winding drum 14 provided with a brake operating arm 15. Engines of this character being well known require no further description. A suitable frame is erected upon the opposite end portion of the car frame at a suitable distance from the rear end to constitute a part of the head frame or car and preferably comprises two vertical posts 16 and 16' on the top of which a cap beam 17 is secured, a beam 18 being secured to the posts at a suitable height above the car frame, the beam being arranged horizontally at the forward sides of the posts. The rear side of the upper portion of the upright frame is provided with a stop block 18'. A pair of angle braces 19 and 19' are secured to the opposite side portions of the frame 1 and also to the upper portions of the posts 16 and 16'. The horizontal frame 1 and the upright

frame thereon constitute a unitary movable head frame or forward frame which in practical use is moved as occasionally required in the direction indicated by arrows thereat.

5 A forward tower is arranged at the rear end portion of the frame 1 and is preferably supported on pivots 20 and 20' suitably mounted upon the frame adjacently to the rear side of the posts 16 and 16'. The tower preferably comprises two standards 10 21 and 21' provided with journal boxes 22 and 22' embracing the pivots so as to afford conveniences for permitting the tower to be lowered or raised. The standards are inclined 15 each toward the other, and a cap-beam 23 is secured to their upper ends. A beam 24 is secured to the standards and is secured to the beam 18 by means of bolts 25 which hold the standards against the stop-block 18'. Preferably other beams 26 and 20 27 are secured to the standards, the tower structure preferably having cross-braces 28 and 29. Two sheaves 30 and 31 are mounted in the upper portion of the tower, preferably 25 on shafts 32 and 33 mounted on the standards. A saddle 34 is mounted on the top and another saddle 35 is mounted on the rear side of the cap beam 23, the saddles being on the middle portion of the beam 30 and preferably are formed on a single casting. A guy rope or cable 36 is seated at its 35 middle portion in the saddle 35, and its end portions are secured to the forward end portion of the frame 1, or if desired may extend forwardly as indicated by dotted lines in Fig. 1, so that it may be anchored 40 to the ground beyond the movable forward frame, the latter arrangement being desirable in some cases if the towers or masts are spaced apart an extremely great distance. The forward tower may readily be detached 45 from the forward frame after disconnecting the cable 36 from its anchorage and removing the bolts 25 to permit the tower to be lowered to the ground.

An open base rearward or tail frame is provided which preferably comprises two 50 sills 37 and 38, preferably of compound construction, and the forward ends thereof are mounted on carrying wheels 39 and 39' 55 provided with toothed wheels 40 and 40' connected thereto so that each carrying wheel and a toothed wheel must move together, the rear end portions of the sills being mounted on carrying wheels 41 and 60 41'. The carrying wheels are preferably flanged, so as to be guided on the rails 7 and 7'. Dogs 42 and 42' are mounted movably on the sills so as to normally engage the toothed wheels 40 and 40' removably. A post 43 is secured upon the sill 37 somewhat rearward of the forward end thereof, and a post 43' is secured upon the rear end 65 portion of the sill, similar posts 44 and 44' being similarly secured upon the sill 38.

A rectangular top frame comprising beams 45 and 45' extending longitudinally, and transverse beams 46 and 46' extending 70 transversely are secured to the upper ends of the four posts. A diagonal brace 47 is secured to the upper portion of the post 43 and to the lower portion of the post 43', a similar brace 47' being likewise connected to the posts 44 and 44'. A beam 48 is secured to the rear side of the upper portions 75 of the posts 43 and 44, and a stop block 49 is secured to the forward side of the posts at the upper portion thereof. It will be seen from the foregoing that there is clear space between the two sills of the rear or tail 80 frame and from the ground up to the beam 48, so that the frame may span the trench and also span the ridge of earth resulting after filling the trench. Suitable provision is made for loading the rear end of the 85 rear or tail frame, and preferably two beams 50 and 50' are placed upon the beams 45 and 45' and support a box 51 in which a suitable number of weights as 52, 52' are placed, any suitable character of weighting material obviously being permissible. An open 90 base rear tower is provided which is somewhat similar to the other tower and preferably is supported upon pivots 53 and 53' mounted on the forward end portions of the 95 two sills, the tower preferably comprising two standards 54 and 54' provided with journal boxes 55 and 55' embracing the pivots detachably, the standards converging upwardly and having a cap-beam 56 secured 100 to the upper ends thereof. A beam 57 is secured to the standards opposite the beam 48 and is secured thereto by means of bolts 58 and 58' so that the standards are held tightly against the stop block 49. 105 Horizontal beams 59 and 60 are secured to the upper portions of the standards, and preferably the tower is braced by means of crossed rods 61 and 62. A saddle 63 is mounted upon the beam 56, and another saddle 110 64 is mounted on the forward side of the beam, the two saddles preferably being formed as a single casting. A guy rope or cable 65 is seated at its middle portion in the saddle 64 and its ends are secured to the rear upward portion of the rear or tail 115 frame, or as illustrated by broken lines in Fig. 1 it may extend outward beyond the rear frame to be anchored to the ground. A sheave 66 is mounted in the upper portion 120 of the rear tower preferably on a shaft 67 supported by the standards 54 and 54'. It will be seen from the foregoing that the rear or tail frame may be moved to a suitable or desired position and then locked against 125 movement by means of the dogs 42 and 42'.

A cable 68 is seated in the saddle 34 and also in the saddle 63, one end portion 68' of the cable being brought down alongside 130 of one of the standards of the forward tower

and secured preferably to a cleat 69 secured to the standard, the opposite end portion 68' being brought down adjacently to one of the standards of the rear tower and secured to a cleat 69' mounted on the standard. A carrier is employed which comprises a frame 70 provided with supporting wheels 71 and 71' which are mounted on the cable 68, the frame having guide rollers 72 and 73 mounted thereon and also a pair of sheaves 74 and 75 mounted on the lower portion of the frame. A pulley block 76 is employed which is provided with a hook 77. Any suitable excavating implement or hoisting device may be connected to the hook, in the present case a scooping bucket 78 provided with a bail 79 being shown for the purpose of illustration of the invention, the bail being connected to the hook. The pulley-block has a suitable pulley 80 mounted therein. A cable 81 is connected with the winding-drum 12 and extends over the sheave 30, thence over the guide-pulleys 72 and 73 and around the sheave 66, thence over the sheave 75, around the sheave 80 and thence over the sheave 74 and connected at its end to the pulley block 76. Another cable 82 is connected to the winding drum 14 and extends over the sheave 31 to the frame 70 to which it is connected. When the winding drum 12 is operated it is evident that the carrier may be drawn toward the rear tower if the winding drum 14 be allowed to run loose, or if prevented from turning the load may be lifted. If the winding drum 14 be operated the cable 82 will draw the carrier toward the forward tower.

In practical use the two towers are arranged oppositely each to the other at a suitable distance apart, and the distance may be varied as occasion may require by merely readjusting the cable 68 and moving one or the other of the movable frames. The excavating and the sewer construction work may be accomplished conveniently between the two towers, the earth being usually removed near the forward tower and then conveyed and dumped upon the finished work near the rear tower, the earth being piled up to form a ridge which may be passed over by the rearward tower and its supporting frame. In some cases the excavating implement may require to be worked rearward of the rear tower below its supporting frame and dragged forwardly, which operations may be conveniently performed with the present construction. It will be understood that the movements of the hoisting or excavating implement are quickly controlled by the operator at the hoisting engine.

Having thus described the invention, what is claimed as new, is—

1. An aerial cable machine including two independently movable frames having each

a tower removably mounted thereon, one of the frames having also a winding-drum thereon, a cable extending from one to the other one of the towers, a carrier movably mounted on the cable, and a cable connected with the winding-drum and the carrier. 70

2. An aerial cable conveyer including two movable frames, one of the frames having a forward tower and also a winding-drum mounted thereon, the other one of the frames having a rearward tower mounted thereon, means for fixedly holding the frames relatively one to another, a cable extending from one to the other one of the towers, a sheave mounted on the forward tower, a carrier movably mounted on the cable, and a cable connected to the carrier and extending over the sheave to the winding-drum. 75

3. An aerial cable machine including a head frame provided with carrying wheels, one of the wheels being provided with a toothed wheel, a dog mounted on the frame and normally engaging the toothed wheel, a tower secured detachably to the head frame on one end portion thereof, a hoisting engine mounted on the opposite end portion of the head frame, a cable connected to the tower, another tower partially supporting the cable, a carrier movable on the cable, operating cables connected with the hoisting engine and the carrier, and guide sheaves on the towers for the operating cables. 80

4. An aerial cable machine including two movable frames, two towers removably mounted on the two frames respectively, a cable removably mounted on the two towers, a carrier movably mounted on the cable, a hoisting engine mounted on one of the frames, operating cables connected to the hoisting engine and operatively connected with the carrier, one of the cables being adapted for hoisting, sheaves on the towers guiding the operating cables, a cable secured to one of the frames and connected to the tower thereon, and a cable secured to the other one of the frames and connected to the tower thereon. 85

5. An aerial cable machine including a horizontal frame, wheels supporting the frame, two of the wheels being at one end portion of the frame and having each a toothed wheel connected thereto, dogs mounted movably on the frame to or from the toothed wheels, an upright frame fixedly mounted upon the horizontal frame, a tower supported on the horizontal frame and secured detachably to the upright frame, an oppositely arranged movable tower, a cable supported upon the two towers, a carrier movable on the cable, and a hoisting appliance supported by the carrier. 90

6. An aerial cable machine including a movable head frame, a tower mounted on the head frame, a movable tail frame comprising two sills, four posts secured upon 130

the sills, two posts to each sill, a rectangular top frame secured to the tops of all the posts, and a beam secured horizontally to two of the posts on different sills; a
 5 tower comprising two standards removably mounted on the two sills respectively, a horizontal beam secured to the standards, and diagonal braces connected to the standards; bolts connecting the horizontal beam
 10 of the tower to the frame beam, a cable supported on the two towers, and a carrier movable on the cable.

7. An aerial cable hoisting and conveying machine including a movable head frame, a
 15 movable tail frame, a tower pivotally supported on one end portion of the head frame and detachably secured to the upper portion thereof, a hoisting engine mounted on the opposite end portion of the head frame, a
 20 tower pivotally supported on one end portion of the tail frame and secured detachably to the upper portion thereof, an overhead cable supported upon the two towers, each end of the cable being detachably an-
 25 chored, a guy cable connected to the head frame and also to the tower thereon, a guy cable connected to the tail frame and also to the tower thereon, a carrier movable on the overhead cable, a hoisting appliance
 30 supported by the carrier, and weights on the tail frame.

8. An aerial cable hoister and conveyer including two movably supported frames, one of the frames having a forward tower
 35 and also a plurality of winding-drums mounted thereon, the other one of the frames having a rearward tower mounted thereon, a cable extending from one to the other one of the towers, a carrier mounted
 40 movably on the cable, a sheave mounted on the carrier, a tail sheave mounted on the rearward tower, two sheaves mounted on the forward tower, a cable connected to one of the winding-drums and extending over
 45 one of the two sheaves to the carrier and connected thereto, a pulley block, and a cable connected to the other one of the winding-drums and extending over the other one of the two sheaves to and about
 50 the tail sheave and thence over the sheave that is on the carrier to the pulley block and connected therewith.

9. In an aerial cable hoisting and conveying machine, the combination of a head frame,
 55 a plurality of wheels supporting the frame, a toothed wheel connected to one of the wheels, a dog movably mounted on the head frame and normally engaging the toothed wheel, a hoisting engine mounted on one
 60 end portion of the frame, a tower supported removably on the opposite end portion of the frame, a tail frame, a plurality of wheels supporting the tail frame, a cable

supported on the towers, a carrier movable on the cable, and cables operatively con- 65 nected with the hoisting engine and the carrier.

10. In an aerial cable hoisting and conveying machine, the combination with a mov- 70 able head frame, and a tower mounted on the head frame, of a tail frame comprising two sills, each sill having two supporting wheels, a toothed wheel connected to one of said wheels, a dog movably mounted on one of said sills and normally engaging the 75 toothed wheel, an open frame spanning space between the two sills and having opposite side parts secured to the sills, a tower supported on the two sills adjacent the open frame and secured to the latter, a cable sup- 80 ported upon the two towers, and a carrier movable on the cable.

11. In an aerial hoisting and conveying machine, the combination with a movable head frame, a tower and a winding-drum 85 mounted on the head frame, and a sheave mounted on the tower, of a tail frame provided with carrying wheels, one of the carrying wheels having a toothed wheel connected substantially therewith, a dog mount- 90 ed on the tail frame and normally engaging the toothed wheel, a tower mounted on the tail frame, a cable supported on the towers, a carrier movable on the cable, and a cable operatively connected with the winding- 95 drum and the carrier and extending over the sheave.

12. In an aerial cable hoisting and conveying machine, the combination with a movable head frame, and a tower mounted 100 on the head frame, of an open base tail frame, wheels supporting the tail frame, an open base tower mounted on the base portions of the tail frame in proximity to two of the wheels and secured to the upper por- 105 tion of the tail frame, a cable supported on the towers, a carrier movable on the cable, and a hoisting or conveying device supported by the carrier.

13. In an aerial cable hoisting and con- 110 veying machine, the combination with a movable head frame, and a tower mounted on the head frame, of a movable open base tail frame having a tower mounted thereon opposite the tower on the head frame, a 115 cable supported on the towers, a carrier movable on the cable, and a device supported by the carrier adapted for hoisting or conveying.

In testimony whereof, I affix my signature 120 in presence of two witnesses.

JOSEPH L. POTTER.

Witnesses:

P. A. HAVELICK,
 E. T. SILVIUS.