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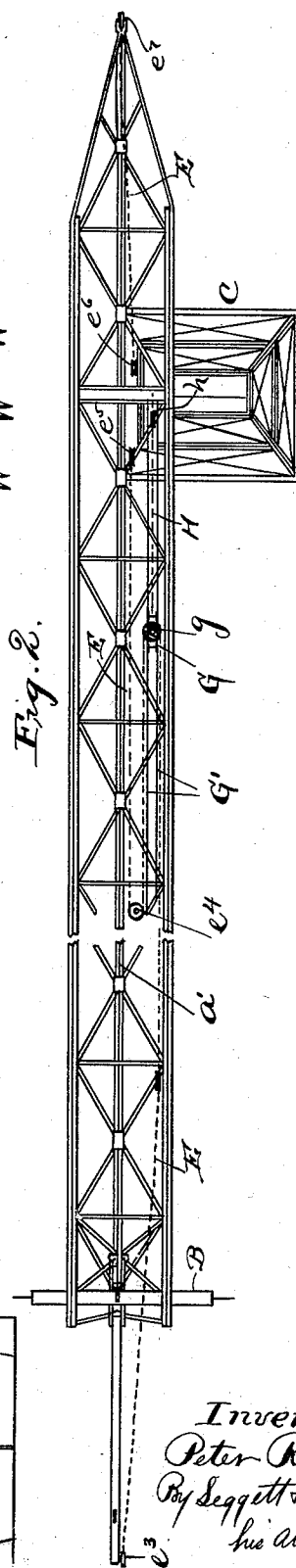
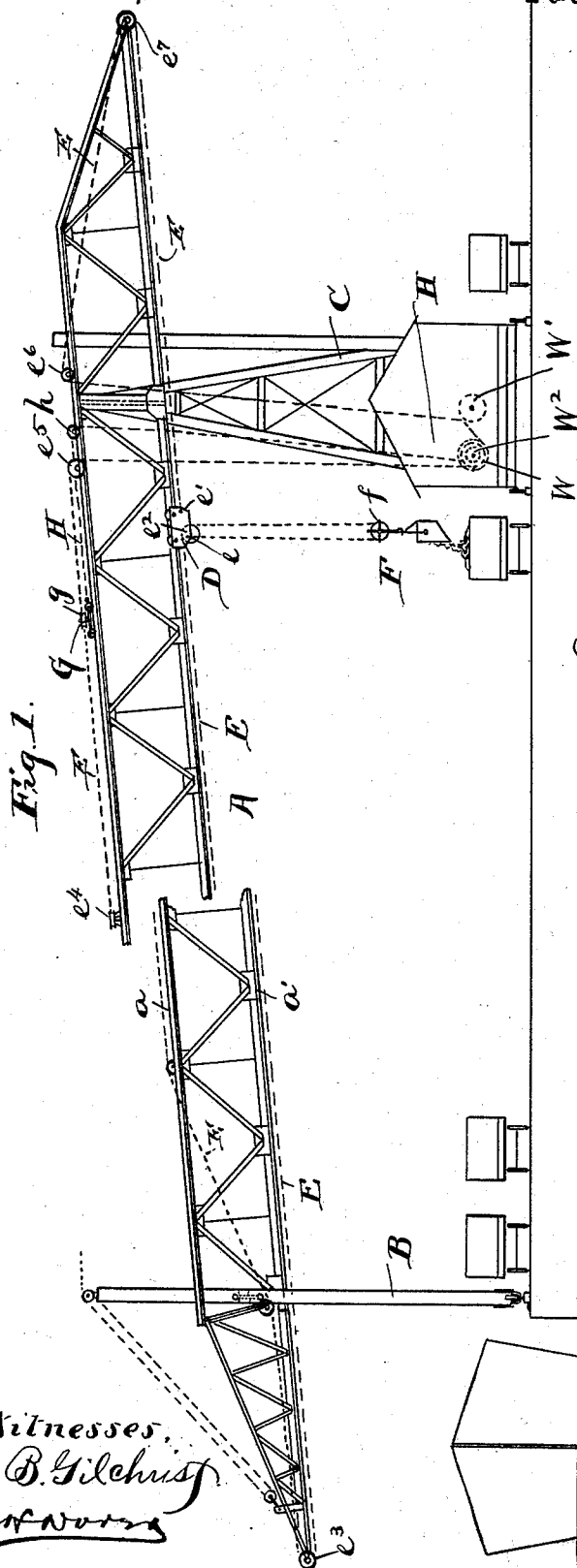
3 Sheets—Sheet 1.

P. RASCH.

HOISTING AND CONVEYING MACHINE.

No. 505,639.

Patented Sept. 26, 1893.



Witnesses,
E. B. Gilchrist
C. A. Norris

Inventor:
Peter Reech
By Siggett & Siggett
his attorneys.

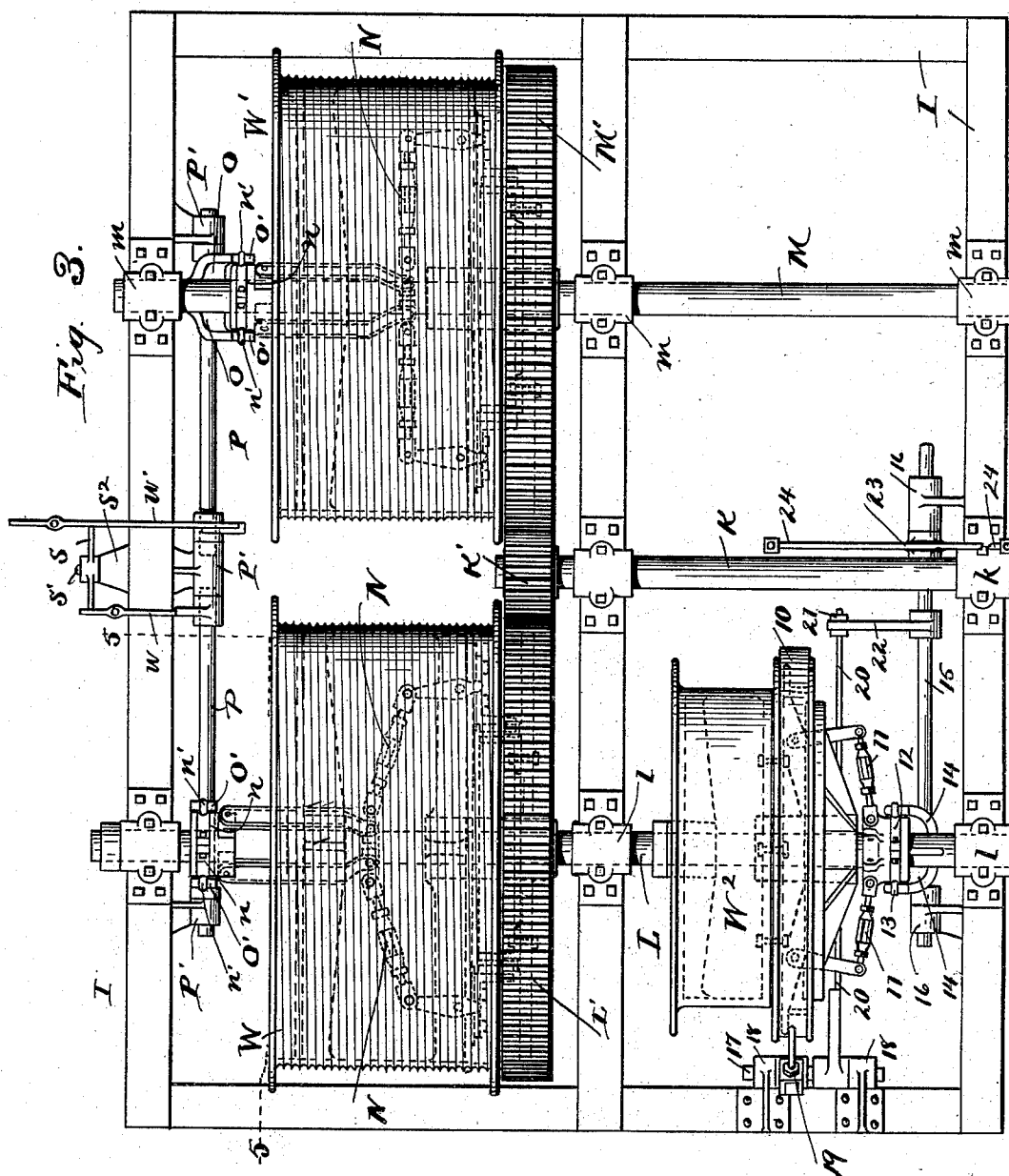
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Witnesses.
E. B. Gilchrist
C. W. [unclear]

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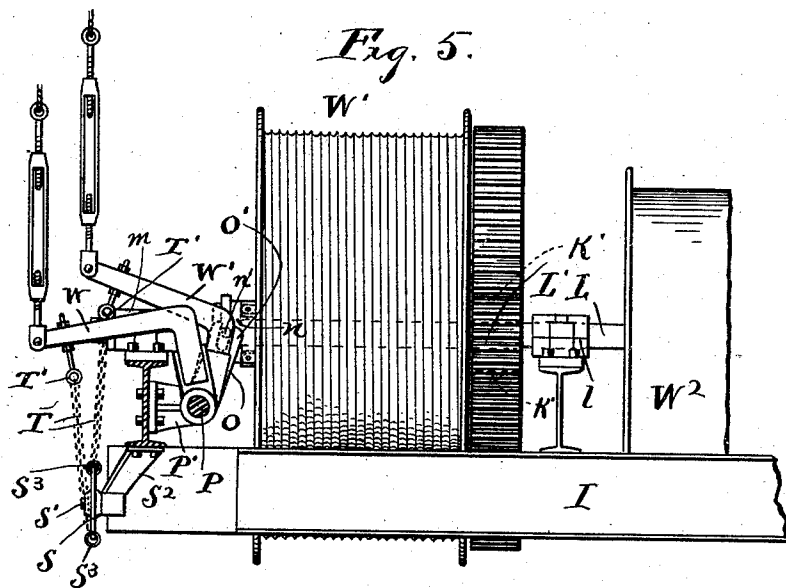
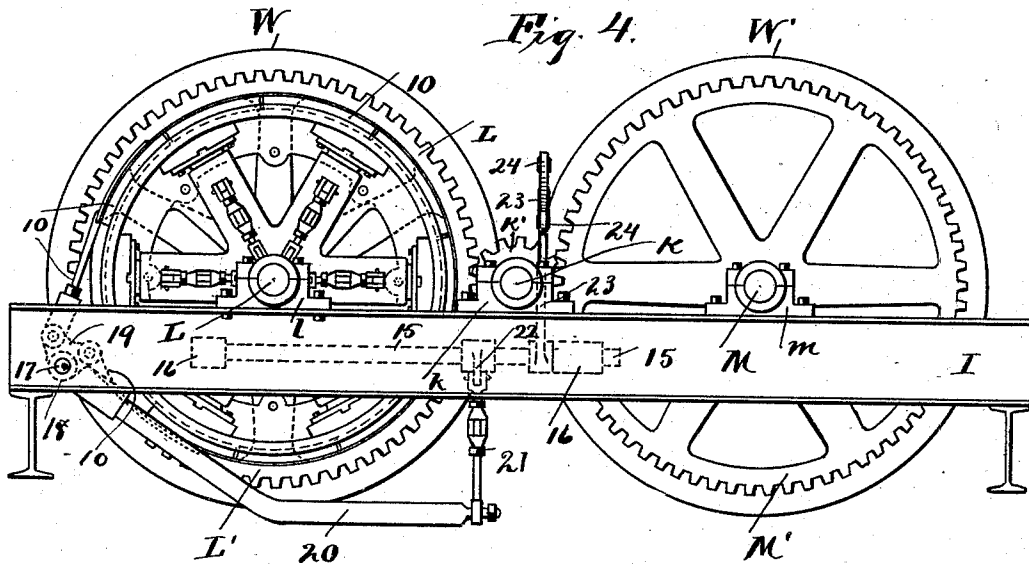
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HOISTING AND CONVEYING MACHINE.

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Witnesses.
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Inventor:
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UNITED STATES PATENT OFFICE.

PETER RASCH, OF CLEVELAND, OHIO, ASSIGNOR TO THE KING BRIDGE COMPANY, OF SAME PLACE.

HOISTING AND CONVEYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 505,639, dated September 26, 1893.

Application filed November 21, 1892. Serial No. 452,729. (No model.)

To all whom it may concern:

Be it known that I, PETER RASCH, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful
5 Improvements in Hoisting and Conveying Machines; and I do hereby 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 pertains to make
10 and use the same.

My invention relates to improvements in hoisting and conveying-machines, and it consists more especially in a machine of the variety indicated, wherein two winding-drums
15 are employed for actuating the hoisting and propelling rope or cable and wherein a third winding-drum is employed for actuating a separate and shorter rope or cable that is suitably connected with the hoisting and propelling cable in such a manner that when said
20 last-mentioned drum is rotated in the direction to wind said shorter cable upon it, a portion of the hoisting and propelling rope or cable will be taken up, thereby effecting the
25 hoist of the load, and when said drum is rotated in the opposite direction the hoisting-bucket will be lowered; wherein, none of said drums are mounted on the driving-shaft, but
30 wherein the hoisting and propelling rope or cable actuating-drums are loosely mounted on separate shafts, respectively, that are provided with gears meshing with a pinion operatively mounted on the driving-shaft, and
35 wherein the winding-drum for actuating the shorter rope or cable for taking up a portion of the hoisting and propelling cable, is loosely mounted on one of said separate shafts, and wherein suitable clutch-mechanism is provided for each winding-drum for effecting the
40 operative connection of the drum with the driving-shaft, whereby any one of said drums can be operatively connected with the driving-shaft without affecting the remaining drums; whereby the winding-drum for actuating the cable to take up a portion of the
45 hoisting and propelling cable and either one of the winding-drums for actuating said hoisting and propelling cable may be operatively connected with the driving-shaft at the same time, and my invention consists more particularly in the arrangement of parts where-

in the driving-shaft is located centrally midway of and arranged parallel and in the same horizontal plane with the shafts upon which the winding-drums are mounted and wherein
55 the drums for actuating the hoisting and propelling cable are mounted upon their respective shafts in the same vertical plane so that the hoisting and propelling rope or cable that winds upon said drums in opposite directions,
60 respectively, can wind from one drum directly onto the other, when in operation,—of course, unwinding from one drum while winding upon the other; wherein all the parts are as compact as practicable, and at the same
65 time form a machine that is exceedingly simple in construction and convenient, durable and well balanced.

My invention also consists in the means employed whereby when the clutch-mechanism of the one hoisting and propelling cable
70 winding-drum is actuated to operatively connect said drum with the driving-power, the clutch-mechanism of the other hoisting and propelling cable winding-drum will be simultaneously actuated to operatively disconnect
75 said drum from the driving-power.

My invention also consists in certain features of construction and in combination of parts hereinafter described and pointed out
80 in the claims.

In the accompanying drawings, Figure 1 is a side elevation of an elevated bridge tramway in connection with which my improved
85 hoisting and conveying machinery is adapted to be used, showing the location of the driving-machinery, and Fig. 2 is a plan of the same, portions being broken away in said figures to reduce the size of the drawings. Fig.
90 3 is a plan view exhibiting the driving-shaft, winding-drum for actuating the hoisting and propelling cable and winding-drum for actuating the cable or rope employed for taking up a portion of the hoisting and propelling
95 rope or cable, exhibiting also other parts and details hereinafter described. Fig. 4 is a front side elevation relative to Fig. 3, and Fig. 5 is a left hand side elevation relative to Fig. 3, partly in section on line 5—5, Fig. 3.

Referring first, to Figs. 1 and 2, A represents the truss or bridge of an elevated tramway, which bridge or truss is supported at

opposite ends by towers or piers, B, C. The lower chord a' of the truss or bridge constitutes a track for the load-carriage D. E represents the hoisting and propelling cable, the same comprising preferably a single continuous cable secured at opposite ends to the load-carriage, as at $e e'$, and provided at the load-carriage with fall and tackle F for elevating and lowering the hoisting-bucket, said cable leading from e downward over sheave f of the tackle and thence returning to the load-carriage where it leads over a sheave e^2 ; thence leading to a sheave e^3 at one end of the route; thence returning and leading to and over a sheave g of a carriage, G, mounted on a track, G', on top of and parallel with the truss or bridge. From sheave g the cable again returns a suitable distance to and over a sheave e^4 whence it passes to and over a sheave e^5 above the engine-house downward to and over the one actuating winding-drum W in the engine-house and after being coiled twice or thrice around said drum to give the necessary friction, leads from said winding-drum to and coils a few times around the adjacent winding-drum, W', but coiling around said last-mentioned drum in the opposite direction, and thence the cable leads upward to and over a sheave, e^6 , at the top of the truss or bridge whence the cable leads to and over a sheave, e^7 , at the opposite end of the route and thence returns to the load-carriage where it is secured at e' . The direction in which the load-carriage is propelled therefore depends upon the winding-drum actuated to wind up the hoisting and propelling rope or cable. H represents a rope or cable attached to carriage G on top of the truss or bridge and thence leading to and over a sheave h secured to the bridge or truss above the engine-house whence rope or cable H leads downward to and around a winding drum W² in the engine-house where it is secured. It is quite obvious that when said drum W² is actuated to wind upon or unwind the cable from said drum more or less of the hoisting and propelling rope or cable is taken up, to elevate or lower the load or hoisting-bucket, as required.

The arrangement of the winding-drums is very clearly shown in Figs. 3, 4, and 5, to which reference is now made, wherein I represents the supporting-frame and K represents the driving-shaft that is journaled in suitable boxes, k , rigid with said frame, said driving-shaft being located centrally of and extending transversely of the supporting-frame. Upon and centrally of the driving-shaft is operatively mounted a driving-pinion, K', that is in mesh with two spur-gears L' M' at opposite sides of the pinion, respectively, and operatively mounted on shafts, L, M, respectively, that are arranged parallel with and in the same horizontal plane with the driving-shaft and have bearing in suitable boxes, l, m , rigidly secured to the supporting-

frame, gears L' M' having the same diameter. The drums around which the hoisting and propelling cable winds, are loosely mounted at the same side of the respective gears L' M' upon their respective supporting-shafts L M, with which shafts they (the drums) or gears are adapted to be operatively connected by suitable clutch-mechanism N that may be of any well known construction. The clutch-mechanism shown comprises a sliding-sleeve or collar n (commonly had in clutches) on the respective winding-drum supporting-shaft, said sleeve having laterally projecting pins n' that are adapted to be embraced by the slotted or free extremities O' of the forked end of a rock-arm O that is operatively mounted on an oscillating-shaft P that is located below and extends at right angles to the driving-shaft and has bearing in suitable boxes P' rigid with the supporting-frame. An operating shaft P and rock-arm O are provided for each clutch-mechanism, and each of said oscillating-shafts is provided with a bent-lever that is operatively mounted in any suitable manner with a lever (not shown) in the operative or engineer's cage or stand. w represents the operating bent lever for drum W, and w' represents the operating bent lever for drum W'. The drawings illustrate the one lever w' in the position that it occupies when the clutch-mechanism, with which it is operatively connected, is performing its function, and the other lever w is shown in the position that it occupies when the clutch-mechanism, with which it is operatively connected is idle. Said levers are operatively connected with each other, preferably by the means shown in Fig. 5, wherein S represents a tilting release-lever that is fulcrumed at its central portion, as at S', to a bracket S² rigid with the supporting-frame. Said tilting-lever, at each end, terminates in an eye, S³, to which are attached chains T that, at their opposite ends, are attached by means of eye-bolts T' with the respective operating-levers at or near the outer ends of the latter. By the means just described it is quite obvious that the one winding-drum will be operatively disconnected from its rotating supporting shaft or driving-gear of the shaft simultaneously with the operative connection of the other winding-drum with its rotating supporting-shaft or gear for driving said shaft. It will also be observed that, supposing that the hoisting and propelling rope or cable winds around the one of said winding-drums and thence winds upon the other drum, in the opposite direction, however, on said last-mentioned drum, the rope or cable will wind upon the drum that is operatively connected with its supporting-shaft and will unwind from the other winding-drum that is operatively disconnected from its supporting-shaft, and that the hoisting and propelling rope or cable, and consequently the load-carriage will be actuated or propelled in the one direction or the

other according to the winding-drum that has been operatively connected with the driving-shaft. 10 and 11 represent the brake-band and clutch-mechanism respectively, for winding-drum W². Said brake-band and clutch-mechanism may be of any suitable construction. The clutch mechanism shown comprises, as usual, a sleeve or hub, 12, that at opposite sides has laterally-projecting pins 13 embraced by the slotted extremities of the forked end of a rock-arm 14 operatively mounted on an oscillating-shaft, 15, that extends at right angles to the winding-drum supporting-shaft and has bearing in suitable boxes, 16, rigid with the supporting-frame. 17 represents an oscillating shaft that is located at one side of drum W², extends parallel with the supporting-shaft of said drum, and has suitable bearing in boxes, 18, rigid with the supporting-frame. Upon said shaft is operatively mounted a bell-crank, 19, to each arm whereof is attached one end of the brake-band 10 of said drum so that said band will be tightened or loosened according as the bell-crank is actuated in the one direction or the other. Said shaft is also provided with an oscillating bent arm or lever, 20, that at its outer end, is operatively connected, by means of a link, 21, with a rock-arm, 22, operatively mounted on oscillating-shaft, 15. The latter is provided with a T-shaped lever, 23,—having two arms, 24, extending in opposite directions,—the outer ends of said arms being operatively connected by means of cables or in any suitable manner with levers (not shown) in the engineer's or operative's case or stand. It will, therefore, be observed that the brake-band and clutch-mechanism of winding-drum W², will be simultaneously operated, the one always being applied while the other is released.

What I claim is—

1. In a hoisting and conveying-machine, the combination with the driving-shaft and a pinion operatively mounted on said shaft, of two shafts arranged, respectively, at opposite sides of the driving-shaft, a gear mounted upon each of said outer shafts and in mesh with the aforesaid driving-pinion, a hoisting and propelling cable winding drum on each of said outer shafts and suitable means for operatively connecting and disconnecting said winding-drums with and from the respective gear on the drum-supporting-shaft, said winding-drums being so located relative to each other that the hoisting and propelling cable shall lead laterally from one drum onto the other, substantially as set forth.

2. In a hoisting and conveying-machine, the combination, with the driving-shaft and a pinion operatively mounted on said shaft, of two shafts arranged, respectively, at opposite sides of the driving-shaft, a gear mounted upon each of said outer shafts and in mesh with the aforesaid driving-pinion, a hoisting and propelling cable-winding-drum on

each of said outer shafts and suitable means for operatively connecting and disconnecting said winding drums with and from the respective gear on the drum-supporting shaft, said winding-drums being located in such position relative to each other that the hoisting and propelling cable shall lead laterally from one drum directly onto the other drum, a third winding-drum mounted on one of said outer shafts and adapted to actuate a rope or cable for taking up a portion of the hoisting and propelling cable, means for establishing operative connection or disconnection between said last-mentioned drum and the driving-power, the arrangement of parts being such that said last-mentioned drum may be operatively connected with the driving-power at the same time that either one of the hoisting and propelling cable winding drums is operatively connected with the driving-power, substantially as set forth.

3. In a hoisting and conveying machine, the combination with the driving-shaft, of two shafts arranged at opposite sides of and intergeared with said driving-shaft, respectively, of a winding-drum loosely mounted on each of said outer shafts and suitable means for establishing operative connection between the winding-drums and their respective supporting-shafts, whereby either drum may be operatively connected with the driving-shaft, independently of the other drum, substantially as set forth.

4. In hoisting and conveying machines, the combination with a driving-shaft, a shaft at either side of said driving-shaft extending parallel and intergeared with said driving-shaft, of a hoisting and propelling cable winding-drum loosely mounted on each of said outer shafts, in such position, relative to each other, that the hoisting and propelling cable shall pass laterally from one drum directly onto the other drum, a third winding-drum loosely mounted on one of said outer-shafts, separate means for establishing operative connection between the winding-drums and their respective supporting-shafts, whereby either one of the hoisting and propelling cable winding-drums and the other or third drum may be operatively connected with the driving-shaft independently of the other hoisting and propelling cable winding-drum, substantially as set forth.

5. In hoisting and conveying machines, the combination with the driving-shaft and a shaft at either side of and intergeared with the driving-shaft, of a winding-drum mounted on each of said outer shafts, said winding-drums being located in the same vertical plane, separate clutch-mechanism for each winding-drum for establishing operative connection or disconnection between said drum and the driving-power, an oscillating shaft at one end of each of said winding-drums at right angles with the driving-shaft, means operatively connected with each of said os-

oscillating shafts for actuating the respective clutch-mechanism, and suitable lever mechanism operatively connected with each of said oscillating-shafts for operating the latter
 5 to cause the respective clutch-mechanism to establish operative connection or disconnection between the respective winding-drums and driving-power, substantially as set forth.

6. In a hoisting and conveying machine,
 10 the combination with two rotating shafts arranged parallel with each other, a winding-drum loosely mounted on each of said shafts, said winding-drums being located in the same vertical plane, and separate clutch-mechanism for each winding-drum for establishing
 15 operative connection between said drum and the respective supporting-shaft, of an oscillating-shaft at one end of each of said winding-drums, suitable means operatively connected with each of said oscillating shafts for
 20 actuating the respective clutch-mechanism, suitable lever mechanism operatively connected with each of said oscillating shafts for operating the latter, substantially as set forth.

25 7. In a hoisting and conveying machine, the combination with two rotating shafts arranged parallel with each other, a winding-drum loosely mounted on each of said shafts, said winding-drums being located in the same
 30 vertical plane, and separate-clutch mechanism for each winding-drum for establishing operative connection between said drum and its supporting-shaft, of an oscillating-shaft at one end of each of said winding-drums, suitable means operatively connected with each
 35 of said oscillating shafts for actuating the respective clutch-mechanism, suitable lever-mechanism operatively connected with each of said oscillating-shafts for operating the
 40 latter, the two lever-mechanisms being operatively connected with each other in such a manner that upon operating either of said lever-mechanisms the one winding-drum shall be operatively connected with its supporting-shaft and the other winding-drum shall simultaneously be disconnected from its supporting-shaft, substantially as set forth.

8. In a hoisting and conveying machine, the combination with two rotating shafts arranged parallel with each other, a winding-drum loosely mounted on each of said shafts, said winding-drums being located in the same vertical plane, and separate clutch-mechanism for each winding-drum for establishing
 55 operative connection between said drum and the respective supporting-shaft, of an oscillating-shaft at one end of each of said winding-drums, suitable means operatively connected with said oscillating shafts for actuating the respective clutch-mechanism, suitable lever mechanism operatively connected with each of said oscillating-shafts for operating the latter, a tilting release lever fulcrumed at its central portion to any suitable support, a
 65 chain or suitable device connecting the one end of said lever with the one of said operat-

ing lever mechanisms, a chain or suitable device connecting the other end of said release-lever with the other operating lever-mechanism, the arrangement of parts being such
 70 that the actuation of either lever-mechanism will effect the operative connection of the one winding-drum with its supporting-shaft simultaneously with the operative disconnection of the other winding-drum from its supporting-shaft, substantially as set forth. 75

9. In a hoisting and conveying-machine, the combination with a rotating-shaft, a winding-drum loosely mounted on said shaft, a brake-band for said winding-drum, clutch-
 80 mechanism for establishing operative connection between said drum and its supporting shaft, of suitable means for actuating the clutch-mechanism and suitable means for applying the brake-band, said brake-band applying means being operatively connected with the clutch-mechanism actuating-means in such a manner that the brake-band and clutch-mechanism are operated simultaneously, one being applied when the other is
 90 rendered idle substantially as set forth.

10. In a hoisting and conveying machine, the combination with a rotating shaft, a winding-drum loosely mounted on said shaft, a brake-band for said drum, and clutch-mechanism for establishing operative connection
 95 between said drum and its supporting-shaft, of an oscillating shaft at one end of said drum, suitable means operatively connected with said shaft for actuating the clutch-mechanism, a second oscillating shaft at one side of said drum, a bell-crank operatively mounted upon said second oscillating shaft, each arm of said bell-crank having connected therewith an end of the aforesaid brake-band,
 105 an operating-lever fulcrumed upon one of said oscillating-shafts, and mechanism connecting said oscillating-shafts with each other in such a manner that they are actuated simultaneously and thereby are adapted to
 110 effect the simultaneous application of the brake-band and release of the clutch-mechanism, substantially as set forth.

11. In a hoisting and conveying-machine, the combination with a rotating-shaft, a drum
 115 loosely mounted on said shaft, a brake-band for said drum, and clutch-mechanism for establishing operative connection between the drum and its supporting-shaft, an oscillating shaft located at one end of and arranged at
 120 right angles with the drum, means operatively connected with said oscillating-shaft for actuating the clutch-mechanism, a second oscillating-shaft located at the side of and arranged parallel with said drum, a bell-
 125 crank operatively mounted on said second oscillating-shaft and having connected with each arm thereof at the end of the aforesaid brake-band a bent arm or lever operatively connected with said second oscillating-shaft,
 130 a link operatively connecting said rock-arm with said bent arm or lever and an operating

5 lever fulcrumed upon one of said oscillating-shafts, the arrangement of parts being such that the brake-band and clutch-mechanism shall be simultaneously the one applied and the other rendered idle according as the operating lever is actuated in the one direction or the other, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 22d day of October, 1892.

PETER RASCH.

Witnesses:

C. H. DORER,
WARD HOOVER.