T. A. BAILEY.

CABLE CONVEYING APPARATUS.

APPLICATION FILED AUG. 14, 1912.

1,187,698.

Patented June 20, 1916.

5 SHEETS—SHEET 1.

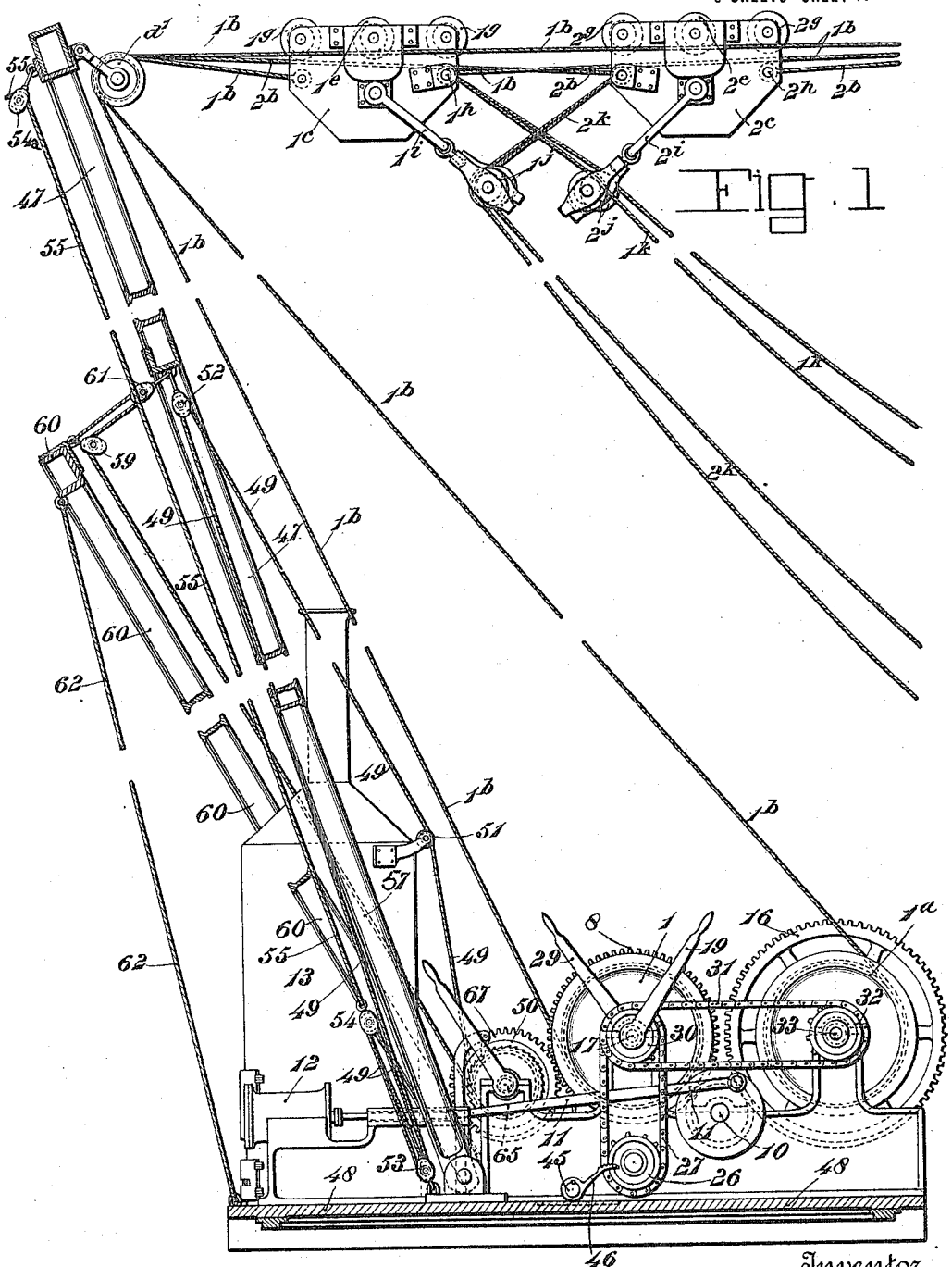


Fig. 1

Witnesses

Harry King

S. J. Henderson

Inventor

Theodore A. Bailey

by P. G. Edmonds

Attorney

T. A. BAILEY.

CABLE CONVEYING APPARATUS.

APPLICATION FILED AUG. 14, 1912.

1,187,698.

Patented June 20, 1916.

5 SHEETS—SHEET 2.

Fig. 2.

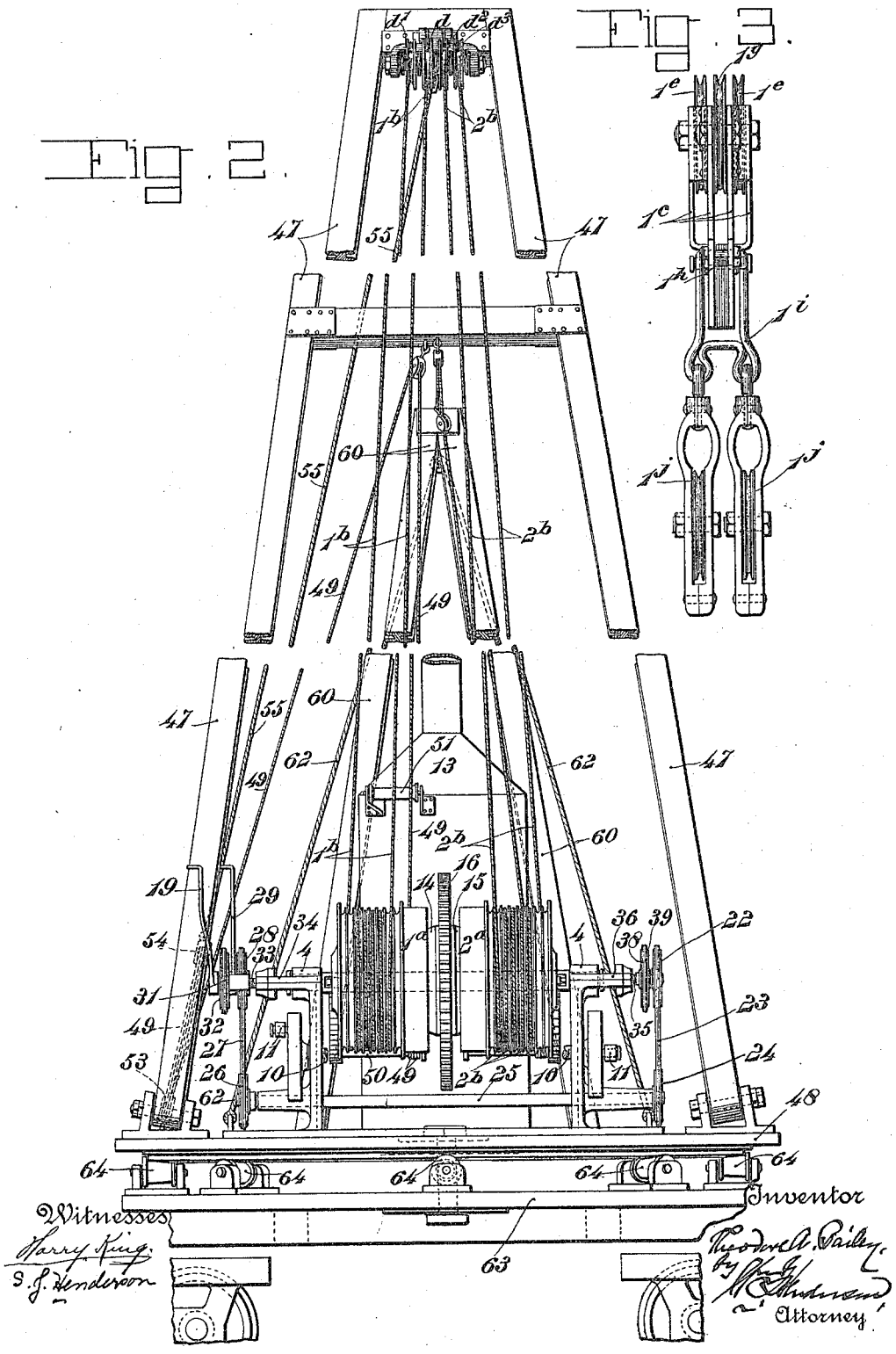


Fig. 3.

Witnesses

Harry King.

S. J. Henderson

Inventor

Theodore A. Bailey.

by R. G. Henderson

Attorney.

T. A. BAILEY.

CABLE CONVEYING APPARATUS.

APPLICATION FILED AUG. 14, 1912.

1,187,698.

Patented June 20, 1916.

5 SHEETS—SHEET 3.

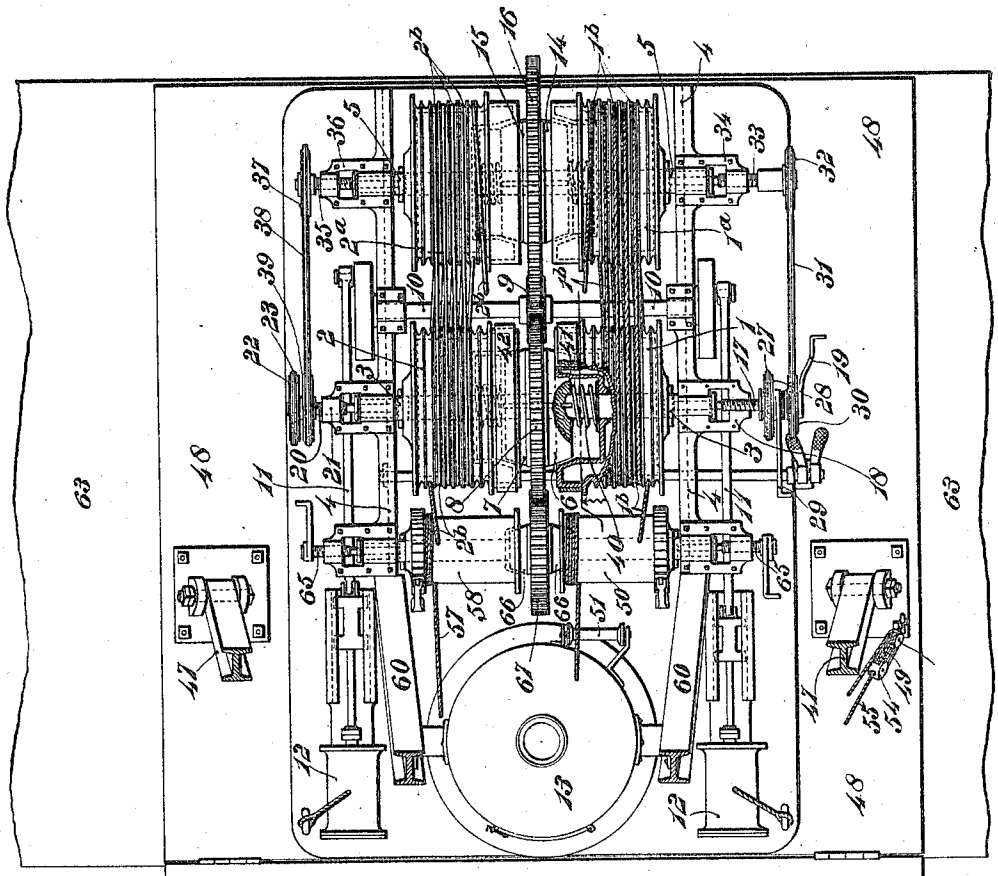


FIG. 4.

Witnesses

Harry King.

S. J. Henderson

Inventor

Theodore A. Bailey,

by A. E. Henderson,

Attorney

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

T. A. BAILEY.

CABLE CONVEYING APPARATUS.

APPLICATION FILED AUG. 14, 1912.

1,187,698.

Patented June 20, 1916.

5 SHEETS—SHEET 4.

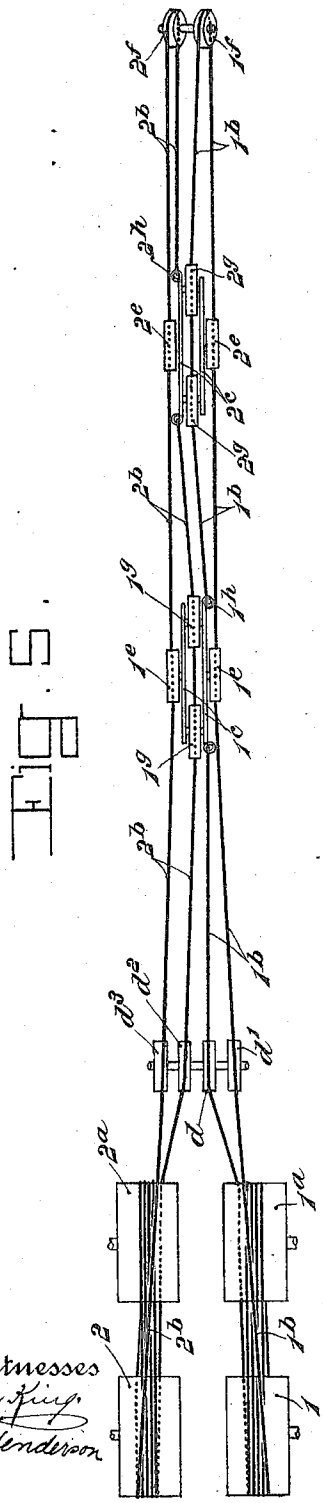


Fig. 5.

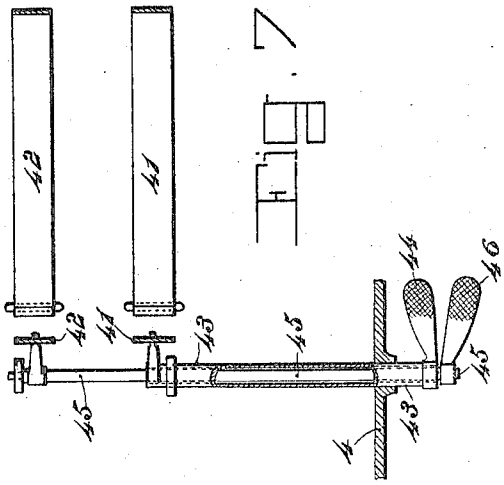


Fig. 7.

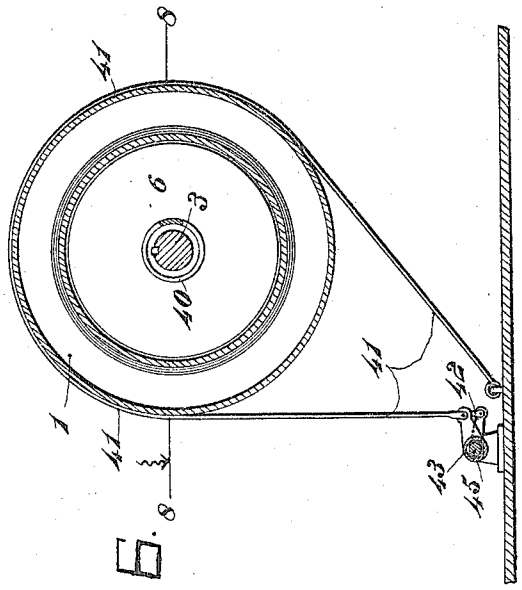


Fig. 6.

Witnesses

Harry King.

S. J. Henderson

Inventor

Theodore A. Bailey,

by R. S. Henderson,

Attorney

T. A. BAILEY.

CABLE CONVEYING APPARATUS.

APPLICATION FILED AUG. 14, 1912.

1,187,698.

Patented June 20, 1916.

5 SHEETS—SHEET 5.

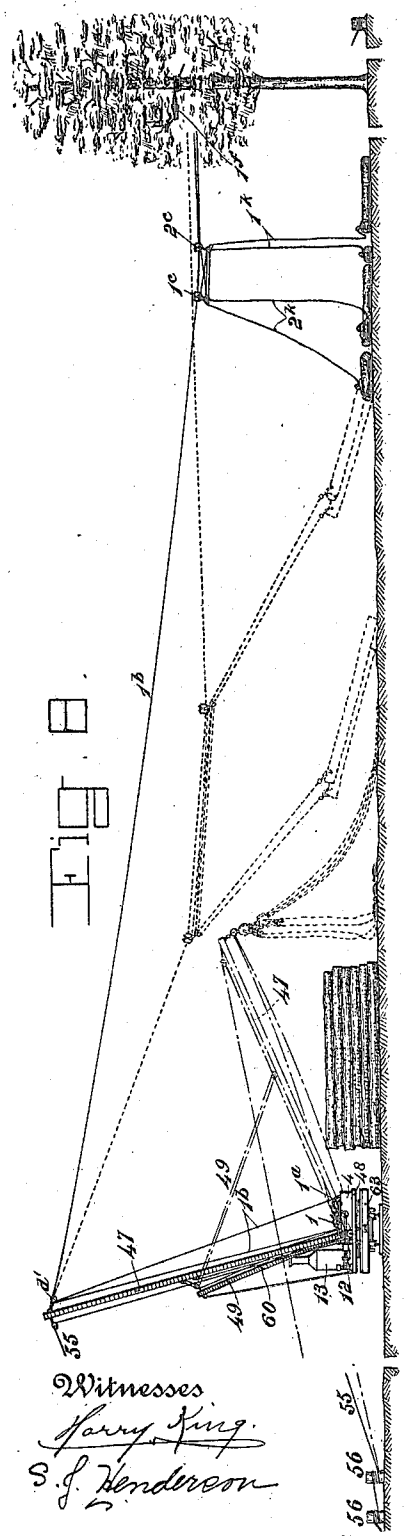


Fig. 8.

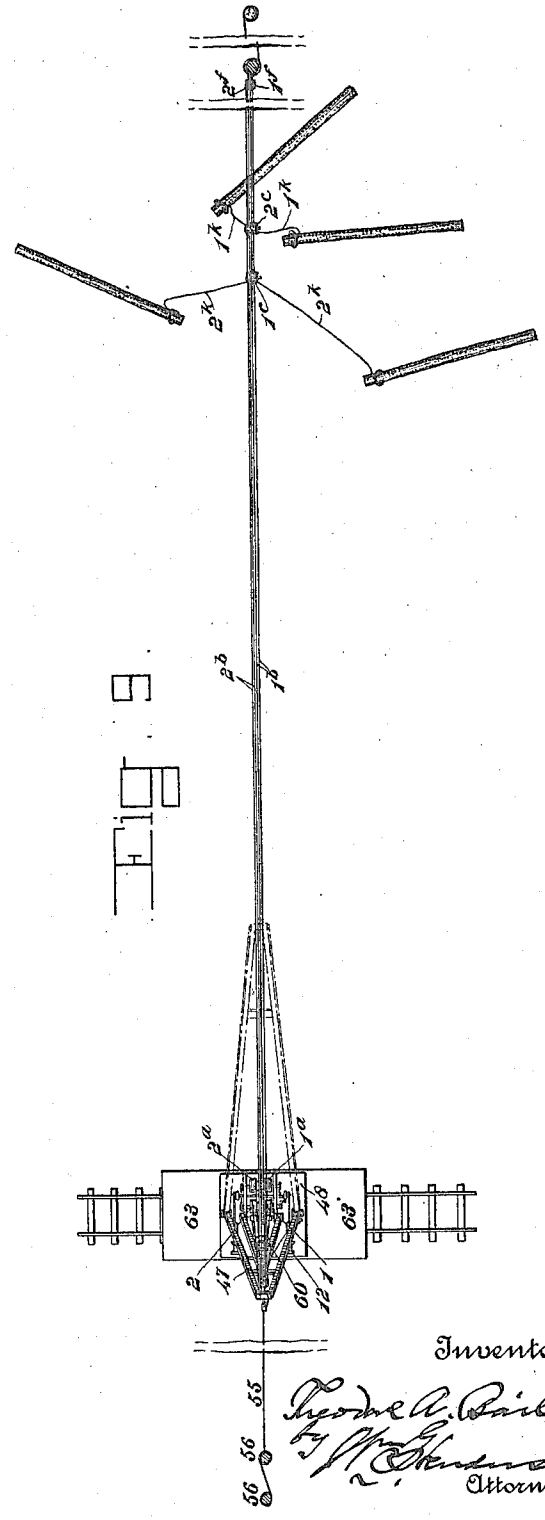


Fig. 9.

Witnesses

Harry King.

S. J. Henderson

Inventor

Theodore A. Bailey,

By W. G. Henderson and

Attorney.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THEODORE A. BAILEY, OF LIVE OAK, FLORIDA.

CABLE CONVEYING APPARATUS.

1,187,698. Specification of Letters Patent. Patented June 20, 1916.

Application filed August 14, 1912. Serial No. 715,103.

To all whom it may concern:

Be it known that I, THEODORE A. BAILEY, a citizen of the United States, residing at Live Oak, in the county of Suwanee and State of Florida, have invented certain new and useful Improvements in Cable Conveying Apparatus; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to hoisting and conveying apparatus of the cable type, and it has for its object to provide a construction in which the hoisting and carrying capacity of the carrier will be increased; also in which the traveling carriers may be caused to automatically let out and take up the slack in the ropes or cables which have the load or log holding or engaging devices connected thereto; also in which the load carriers or carriages may be moved each independently of the other either toward or from each other, for the purpose of letting out or taking up the slack to engage and then to lift the load at any point desired in the length of travel of the carriers or carriages; also in which the carriages may travel simultaneously to the point where the load is to be engaged and lifted and then moved simultaneously to the point where the load is to be deposited; also to provide a construction in which the carriages may be moved at a relatively high speed to the point where the load is to be engaged and then in a relatively lower speed in elevating the load and then again in a relatively higher speed for carrying the load to the point of deposit; and also to provide improved features of construction in the derrick and improved means for manipulating the same giving greater capacity in range of movement in the derrick and cables connected therewith.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, the invention consists in features of construction, and arrangement and combination of parts hereinafter particularly described and then sought to be clearly defined by the claims, reference being had to the accompanying drawings forming a part hereof and illustrating the preferred construction for the purposes in view, and in which:

Figure 1 is a side elevation of the apparatus, with portions broken away; Fig. 2 a front elevation of Fig. 1 with the carriages and associated cables omitted; Fig. 3 an end view of one of the carriages; Fig. 4 a plan view of the portion of the apparatus carrying the operating drums, engine and derricks, with portions broken away; Fig. 5 is a diagrammatic view of the operating drums, pulley blocks of the derrick, carriages and cables or ropes associated therewith; Fig. 6 an end view showing one method of applying brake-bands to the operating drums; Fig. 7 a detail view in plan, with parts broken away, of the drum brake-bands; Fig. 8 a side view illustrating in outline the apparatus set up for operation; the full lines showing the carriages out from the derrick with the slack lowered for its grapples to grip the logs; the intermediate dotted lines representing the carriages in their inward travel carrying the logs; and the lowest dotted lines representing the carriages at the limit of their inner travel and the derrick-portion lowered so as to change the location or direction of working the carriages and their cables; Fig. 9 is a plan view of Fig. 8.

In the drawings the numerals 1 and 1^a designate one pair of co-acting drums and 2 and 2^a another pair of co-acting drums, each pair of co-acting drums being designed to operate a separate set of cables and separate carriages, the drums 1 and 2 being loosely mounted upon a rotatable shaft 3 mounted in a suitable frame 4 and adapted to slide thereon toward and from each other, and the drums 1^a and 2^a being loosely mounted and adapted to slide upon a shaft 5 supported in the frame 4. Keyed upon the shaft 3 so as to rotate therewith are friction cones 6 and 7 with which the drums 1 and 2 may be brought into frictional engagement so as to rotate with the shaft 3, said shaft also being provided with a gear wheel 8 to which motion is transmitted from a pinion 9 on a shaft 10 which derives rotation through pitmen rods 11 connecting with the cylinders 12 of an engine 13 which may be of any approved type but prefer-

ably is of the reversible engine type. The shaft 5 of the drums 1^a and 2^a is likewise provided with frictional cones 14 and 15 and with a gear 16 of larger diameter than gear 8 and which derives motion from the pinion 9 so that the drums will rotate in the same direction. The drum 1 is moved toward its frictional cone 6 by means of a thrust-screw 17, having say right hand threads, supported in a suitable boxing 18 and actuated by a hand lever 19, and the drum 2 is moved toward its friction cone by means of say a left hand screw 20 having its bearing in a suitable boxing 21 and provided with a sprocket wheel 22 connected by a chain 23 with a sprocket 24 on a shaft 25 which has at its opposite end a sprocket 26 which is connected by a chain 27 with a sprocket 28 mounted loosely on the thrust screw 17 and provided with a hand operating lever 29. The thrust screw 17 is provided with a sprocket wheel 30 rigidly secured to it and connected by a chain 31 with a sprocket 32 rigidly attached to say a left hand screw 33 journaled in a suitable bearing 34 and bearing against the end drum 1^a so as to move that drum toward its friction cone 14, and the drum 2^a is moved toward its friction cone by means say of a right hand thread thrust screw 35 mounted in a suitable bearing 36 and having a sprocket wheel 37 connected by a chain 38 with a sprocket 39 rigidly connected with the sprocket 22.

It will be observed from the foregoing that as the drum 1 is moved into engagement with its friction cone, the drum 1^a will be moved away from its friction cone so that the first-mentioned drum will be positively rotated from its friction cone while its companion drum will act as a loose or idle drum, and that as the drum 2 is moved into engagement with its friction cone so as to be positively rotated its companion drum 2^a will act as an idle drum. It will also be observed that if by the same means, turned however in the opposite direction, the drums 1^a and 2^a are made live drums by being thrown into engagement with their friction cones, their co-acting drums 1 and 2 will be moved out of engagement with their cones and made to serve as idle drums. One purpose of this construction is to make it possible to shift from a high to a relatively low speed so as to move the carriages which will be connected to the drums by suitable cables at either a high or a low speed, thus making it possible to move the carriages at a low speed from the low geared drums 1^a and 2^a when it is desired to let out or take up slack in the load lifting cables, and by shifting from the low to the high speed make it possible to cause the carriers to travel relatively fast in moving them to the point where the load is to be lifted and also in moving them in the opposite direction to the point where the load is to be deposited. Each drum is moved away from its frictional cone, when its thrust screw is retracted, by means of a spring 40, a separate spring being provided for each one of the drums.

A cable 1^b is connected at one end to a carriage 1^c and is passed over a pulley d and a sufficient number of times around the co-acting drums 1 and 1^a to prevent slip of the cable and to provide for the length of cable desired and finally passes from the drum 1 over a pulley d^1 in a suitable block and thence under a pulley 1^e on the carriage 1^c and from there under a pulley 2^e on another carriage 2^c and thence to a pulley 1^f in a pulley block suspended from a suitable support and thence back and under pulleys 2^g mounted in the carriage 2^c and thence to the carriage 1^c to which it is connected at the point 1^h.

A cable 2^b is connected at one end to the carriage 2^c and passes thence under pulleys 1^g attached to the carriage 1^c and thence over pulley d^2 and thence a sufficient number of times around the drums 2 and 2^e and from the drum 2 over a pulley d^3 to and under a second pulley 1^e mounted on the carriage 1^c and thence under a second pulley 2^e mounted on the carriage 2^c and thence around a pulley 2^f connected to a suitable support and forward again from that pulley to the carriage 2^c where it is attached at the point 2^h.

To the carriage 1^c is attached a swinging bail 1^i carrying two block-sheaves 1^j around which pass two lift cables 2^k attached at one end to the carriage 2^c and at their other ends carrying grapple irons or load holding devices. The carriage 2^c likewise has a swinging bail 2^i attached thereto carrying block-sheaves 2^j around which pass two lift cables 1^k attached at one end to the carriage 1^c and having grapple irons or load holding devices at their other ends. These lift cables are the cables in which the slack is let out and taken up for the purpose of engaging the load and then lifting the load. The slack is let out by moving either one of the carriages toward the other, and the slack is taken up by moving either carriage away from the other as will be obvious from an inspection of Fig. 1 of the drawing.

From the foregoing it will be apparent that when the drums 1 and 2 are locked to their shaft and rotated to the right, the carriages 1^c and 2^c will be drawn by the pull ropes 1^b and 2^b to the left, and that if the drums 1 and 2 be rotated to the left the carriages 1^c and 2^c will be drawn out to the right or away from the drums by the pull ropes 1^b and 2^b and thus the two carriages

would be moved in the same direction. If it is desired to move the carriages either in or out by relatively lower speed, the drums 1 and 2 are disengaged from their friction cones and the drums 1^a and 2^a are engaged with their friction cones, and in that event the pull ropes are actuated by the live low speed drums so that the carriages will be moved at a relatively low rate of speed. This relatively low speed however is employed ordinarily only when it is desired to either let out or take up slack in the load lifting cables. For instance the two carriages are run out to the point where the load is situated under the relatively high speed by the drums 1 and 2. When that point is reached the high speed drums are released from their friction cones and one of the low speed drums thrown into locking engagement with its friction cone so that its associated cable may move its carriage toward the other carriage so as to let out slack in the lifting cables of the two carriages, one carriage at such time being held in a fixed relation by the application of a brake to its high speed drum thus locking that and its companion drum so as to hold the carriage connected therewith stationary while the other carriage is moved as described to let out the slack. In taking up the slack for lifting the load preparatory to carrying it to the point of deposit the engine is reversed so as to move the carriage away from the other carriage so that the slack in the lift cables will be taken up by the connection of the swinging blocks of the carriages engaging the lift cables so as to take up the slack in one carriage moving away from the other. The brake on the high speed drum is now released and the two high speed drums locked to their friction cones and the engine run in the proper direction to carry the load to the point of deposit at or near to the derrick and drums, and when such point is reached the drums are manipulated so that one carriage may be moved toward the other in order to let out slack in the lift cables so as to deposit the load at the point desired for instance as illustrated in Fig. 9 at the point to the left of that figure near to the derrick.

Any form of suitable brake may be employed for braking either of the drums 1 and 2 according as it is desired to move either one of the carriages one toward the other, or one away from the other, a suitable brake for the purpose being indicated by the numerals 41 and 42 which represent two bands passing around the drums 1 and 2 respectively, the band 41 being connected to a hollow rotatable shaft 43 having an operating foot pedal 44, and the band 42 represented as connected to a rotatable shaft 45 passing through the hollow shaft 43 and having a foot pedal 46, so that either one of the drums, as desired, may be braked under the circumstances mentioned. Any other form of brake, however, might be employed.

From the foregoing it will be appreciated that more than one carriage may be employed, each carriage adapted to carry its load and the several carriages adapted to move together in the same direction in carrying the load or traveling to the point of location of the load, and that each carriage may carry as many loads or objects as it has lifting cables. It will also be appreciated that one carriage may be moved toward the other to the extent desired for giving the amount of slack needed to reach the load and without the pull cables dropping low down which when allowed tends to entanglement of the cables and carriages. It will further be appreciated that the slack in the lift cables is taken up by the movement of one carriage from the other without hand manipulation of the lift cables either in letting out or taking up the slack. It will further be appreciated that the carriages may be run out and be brought back at a relatively high speed, and that a shift can be made easily to a relatively low speed for letting out the slack and for taking up the slack in lifting the load and then immediately shift may be made from a low to a relatively high speed for moving the load. These are advantages resulting from the features of construction mentioned.

The numeral 47 designates a derrick with which the cables are connected by the block of pulleys d to d^3. This derrick is hinged at its lower end to the rotating table 48 upon which the drums and engine are supported. This derrick is adapted to be swung forward or backward to the positions illustrated in Fig. 9 and is sustained in its elevated position illustrated in Fig. 1 by a cable 49 passing from a drum 50 over a guide roller 51 and through a pulley block 52 connected to the upper part of the derrick and passing downward through a pulley block 53 at the base of the derrick and through another pulley block 54, which block is connected by a cable 55 passing through a pulley block 54^a and connected to a suitable support or supports 56 as illustrated in Figs. 9 and 10 so as to serve as a guy rope or cable for the derrick. Another cable 57 passes from a drum 58 through a pulley block 59 connected to the upper end of a stationary guy frame 60 and also passing through a pulley block 61 attached to the derrick and having its end connected to the top of the guy frame 60 as illustrated in Fig. 1, said guy frame being further braced by a guy rope or cable 62. By rotating the drum 58 the derrick is drawn toward the guy frame 60, and by rotation of the

drum 50 the cable 49 is drawn taut so as to afford a strong support for the derrick in its upright operating position. When the location of the conveying apparatus is to be changed so as to lift logs or a load from a different part of the area being worked, the cable leading from drum 50 is let out or slacked and the cable leading from the drum 58 is likewise slacked so that the derrick may be swung or dropped down into the position illustrated by dotted lines in Fig. 9 of the drawing. This lowers and slackens the cables upon which the carriages travel and makes it possible to turn the apparatus and to extend the cable lines to the point or new position in which it is operated.

The table 48 may be rotatably supported upon the body 63 of a car by means of rollers 64, thus making it possible for the entire device to be transported on the car, and by rotating the table to shift the carriages and their cables from one side of the car to the other.

The drums 50 and 58 are adapted to be thrown into and out of operation by thrust screws 65 for forcing the drums into engagement with frictional cones 66 attached to opposite faces of a gear 67 which meshes with the gear 8 of the drums 1 and 2.

It is to be understood that I am not limited to the pull ropes constituting the tracks for the carriages, nor am I limited to any particular number of lifting cables connected with each carriage, as it is obvious that changes in such features may be made within the skill of the ordinary mechanic and without departing from the spirit of the invention.

It is also obvious that various changes can be made in specific details without departing from the essential features as they may be defined in the appended claims.

Having described my invention and set forth its merits, what I claim is:—

1. In a hoisting and conveying device, two independently operable carriages, means for operating both carriages to travel in unison in either of two directions, means for operating either carriage toward or from the other, a lift cable for each carriage and means coöperatively connecting the lift cable of one carriage with the other carriage so that slack in the lift cables will be obtained by one carriage approaching the other and slack will be taken up in the lift cables by one carriage departing from the other.

2. In a hoisting device, in combination, a plurality of traveling carriages, a lift cable connected to each carriage, means suspended beneath the carriage and connecting the lift cable of one carriage with the other carriage, and means for moving one carriage toward the other for giving slack to the cables and one carriage away from the other to take up slack in the cables.

3. In a hoisting and conveying device, in combination, a plurality of independently operable carriages, means for moving the carriages in unison in either of two directions, a lift cable connecting one carriage with the other, and means for moving either carriage toward or from the other to make the lift cable taut or slack as desired.

4. In a hoisting and conveying device, in combination, a plurality of carriages, cooperating drums and cables connecting them to the carriages, there being a pair of cooperating drums for each carriage, each carriage having its own cable which passes around its coöperating drums, one of which drums is adapted to serve as an idler, and means for throwing the active drums into and out of action for operating the cables to move the carriages.

5. In a hoisting and conveying device, in combination, a plurality of carriages, cooperating drums and cables connecting them to the carriages, there being a pair of cooperating drums for each carriage, each carriage having its own cable which passes around its coöperating drums, one of which drums is adapted to serve as an idler, differential gears for the drums, and means for changing the active drums from a relatively high to low speed, or vice versa, to move the carriages at varying speeds.

6. In a hoisting and conveying device, in combination, a plurality of carriages, cooperating drums and cables connecting them to the carriages, there being a pair of cooperating drums for each carriage, each carriage having its own cable which passes around its coöperating drums, one of which drums is adapted to serve as an idler, means for rendering the coöperating drums of one carriage inactive, and means for rendering one of the coöperative drums of the other carriage active, to move one carriage to or from the other carriage.

7. In a hoisting and conveying device, in combination, a plurality of carriages, cooperating drums and cables connecting them to the carriages, each carriage having its own cable which passes around its coöperating drums, one of which drums serves as an idler, a lift cable attached to each carriage and having a slack and take up connection with the other carriage, differential gears for the drums, means for changing the active drums from a relatively high to low speed, means for rendering the coöperating drums of one carriage inactive and one of the coöperating drums of the other carriage active in moving one carriage to or from the other in changing the slack of the lift cables, and means for changing the active drums from a low to relatively high speed in mov-

ing the carriages to the points for receiving and depositing the load.

8. In a hoisting and conveying device, in combination, a plurality of carriages, co-operating drums and cables connecting them to the carriages, means for actuating the drums to operate the cables to move the carriages back and forth, a swinging derrick from which the cables are suspended, and means for swinging the derrick between upright and lowered positions.

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

THEODORE A. BAILEY.

Witnesses:
CHAS. S. HYER,
WM. G. HENDERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."