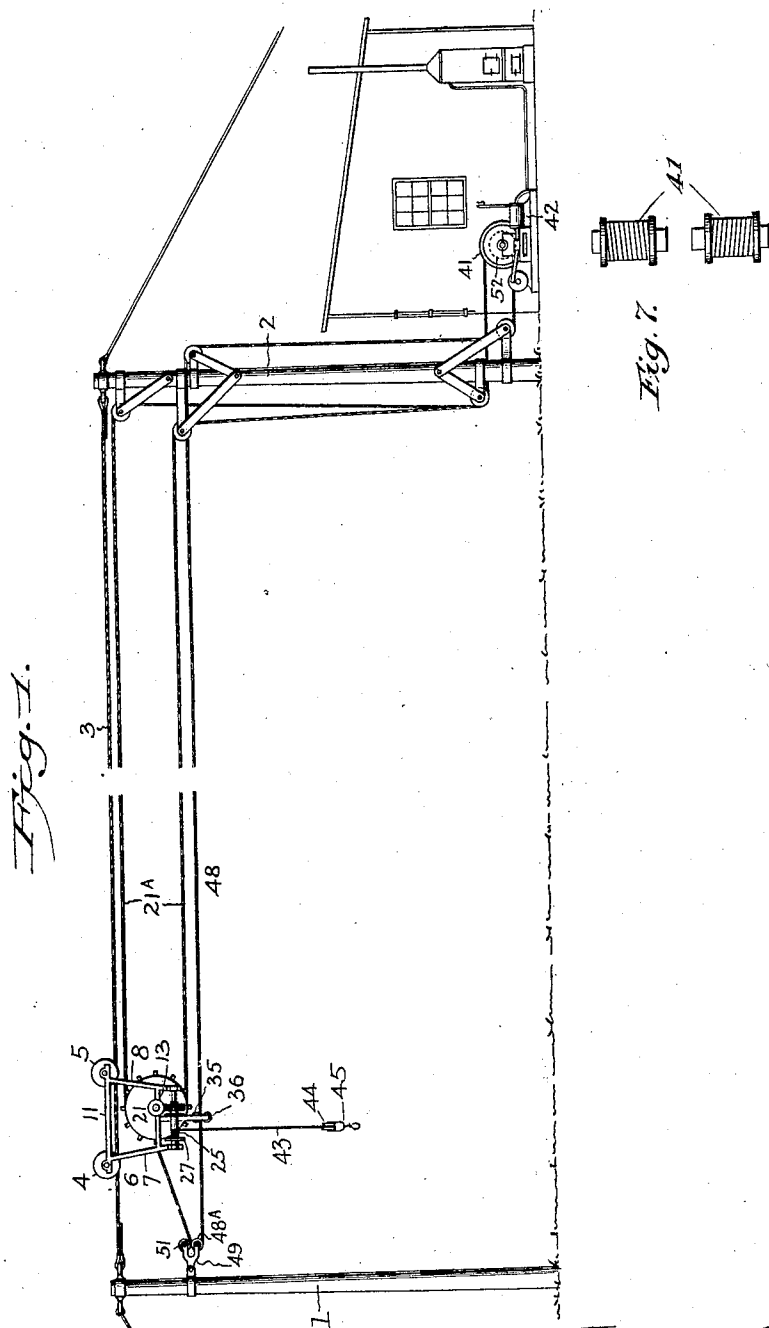


No. 878,157.

PATENTED FEB. 4, 1908.

B. C. RIBLET.
CABLE HOIST CONVEYER.
APPLICATION FILED NOV. 23, 1904.

3 SHEETS—SHEET 1.



Witnesses:
G. Sargent Elliott,
Bevil Thompson

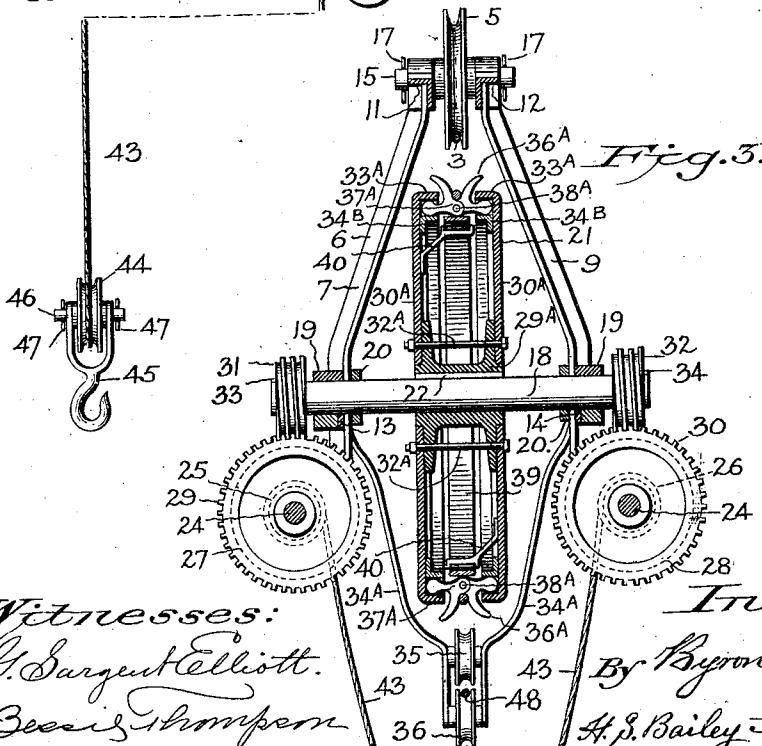
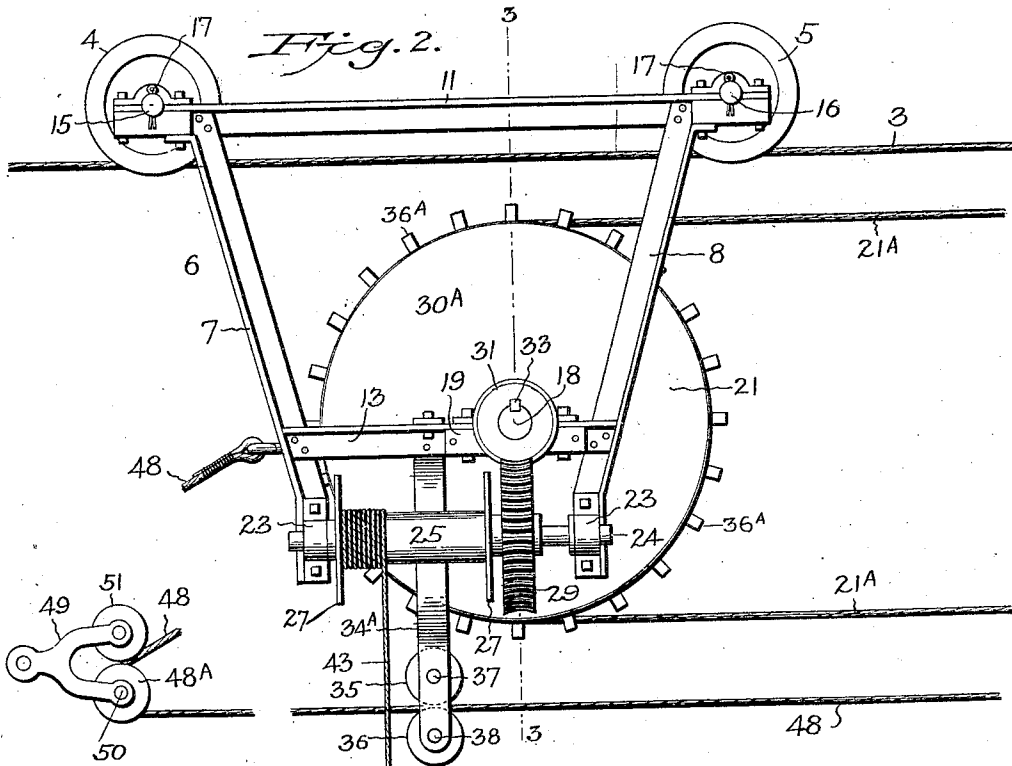
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3 SHEETS—SHEET 2.



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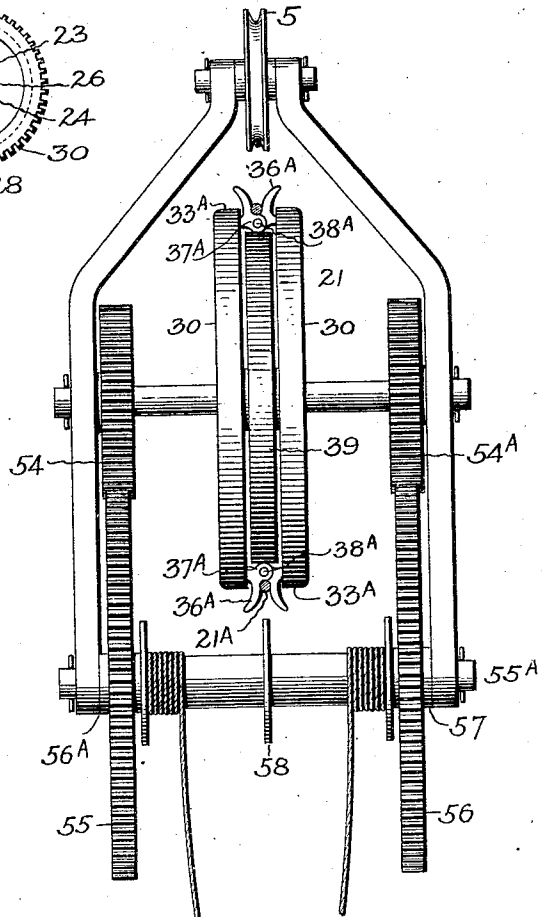
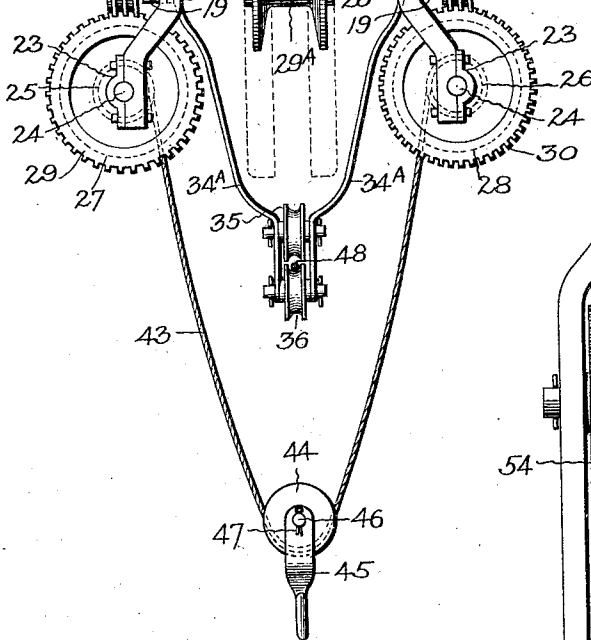
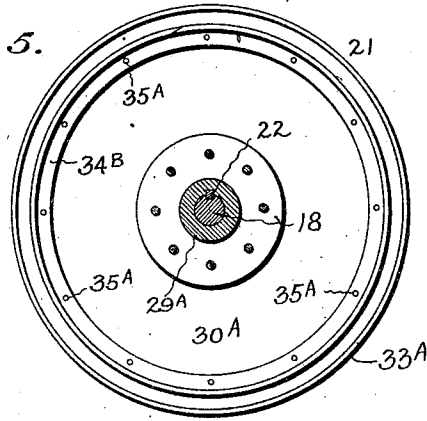
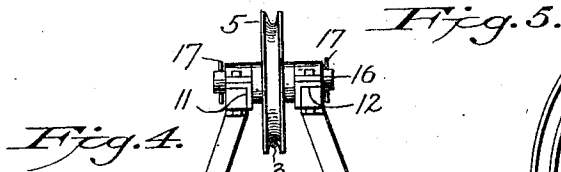
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B. C. RIBLET.

CABLE HOIST CONVEYER.

APPLICATION FILED NOV. 23, 1904.

3 SHEETS—SHEET 3.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

BYRON C. RIBLET, OF SPOKANE, WASHINGTON.

CABLE-HOIST CONVEYER.

No. 878,157.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed November 23, 1904. Serial No. 234,030.

To all whom it may concern:

Be it known that I, BYRON C. RIBLET, citizen of the United States of America, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Cable-Hoist Conveyers; 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 improvements in cable hoist conveyer, and the objects of my invention are: First; to provide an indirectly operated double drum cable hoist conveyer. Second; to provide a simple, positive and easily operated cable hoist conveyer. I attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Figure 1, is a side elevation, illustrating the construction of my improved cable hoist conveyer and the manner of its operation. Fig. 2, is an enlarged side elevation of the hoist conveyer. Fig. 3, is a vertical sectional view through the same, on the line 3—3 of Fig. 2. Fig. 4, is an end elevation of the same. Fig. 5, is a vertical longitudinal sectional view of the improved rope gripping sheave forming a part of my invention; and, Fig. 6, is a front elevation, illustrating a modified form of the hoist conveyer. Fig. 7 is a diagrammatic plan view of winding drums.

Similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings: The numerals 1, and 2, designate two towers of any suitable metal or timber construction. The tower 1, I term the loading or dumping tower, and I term the tower 2, the trolley operating tower. These two towers are erected at predetermined distances apart, depending upon the requirements of the work to be done, and they are connected together by a cable 3, which I term a track cable and which is secured at its opposite ends in any suitable manner to the towers.

Upon the track cable I mount a trolley pendant which consists of two sheave wheels 4 and 5, rotatably mounted in a frame 6, which depends from them. This pendant frame consists of the substantially vertically

arranged standards, 7, 8, 9 and 10 and the cross-bars 11 and 12, and 13 and 14.

The upper ends of the standards and cross-bars are rigidly connected together and shafts 15 and 16 are journaled in them and are secured to them by split pins 17. The trolley sheaves are revolubly mounted on these shafts. From the cross brace rods the standards diverge outwards and downwards and at a sufficient distance below the trolley wheels support a cable grip wheel. A horizontal shaft 18 is journaled in boxes 19, which are secured to or formed on the cross-bars 13 and 14.

The shaft is revolubly mounted in the boxes 19 and collars 20 are placed on it against the inside of the boxes. Upon the central portion of this shaft I mount a cable grip wheel 21 which is preferably keyed to the shaft by a key 22.

The standards extend below the boxes a short distance and at their lower ends journal boxes 23 are formed, in which are journaled horizontal shafts 24, which are journaled in the standards at right angles to the main shaft 18 and substantially parallel to the track rope. Upon these shafts I mount cable mechanism, which comprises the drums 25 and 26, having the outer flanges 27 and 28, and the worm wheels 29 and 30. These worm wheels mesh with two worms 31 and 32 which are secured to the ends of the main shaft preferably by keys 33 and 34. From the inside of the main standards auxiliary pendant standards 34^A converge towards and depend below the grip wheel 21, and two cable sheaves 35 and 36 are mounted one above the other on shafts 37 and 38 which are secured in the ends of the standards.

The cable grip wheel consists of the hub portion 29^A and the sheet steel side flanges 30^A, which are secured to the hub portion 29^A at their central portion by bolts 32^A, which pass loosely through both sides and bolt them together. The outer ends of the side flanges of the sheave are introverted towards each other, and form a marginal flat rim 33^A, and to the inside of each flange at a short distance from the terminal band, right angled rings 34^B are secured to each flange. These right angled rings are preferably made of sheet iron or steel and the limbs of both rings are short, and one limb is placed against the side of the flanges and is riveted there by rivets 35^A. The other limb of these right

angled rings forms an annular bearing surface. Just immediately below the rim 33^A of the flanges and between these two band portions I place the round heel end of commonly used form of cable rope grip jaws 36^A, the jaw end portions of which are provided with lugs 37^A, which are pivoted together by a rivet 38^A. Enough of these cable grips are placed in the recesses of the flanges of the sheave grip wheel, to stand close together round its periphery. A loose ended ring shaped flat band steel spring 39, which is made with outward expanding resilient pressure is placed under the center of the jaws of the grips and normally holds them open by its resilient pressure, while the pressure of a cable under a strain causes the grips to move radially inwardly and against the ring spring and close their jaws against the cable, thereby gripping and holding fast to it.

The spring ring is held in place by two sets of brackets 40 which project inwardly from the inside of the flanges to which they are secured.

There is a set of depending standards on each side of the trolley wheels and brace rods may be used if desired or deemed necessary to strengthen the pendant frame.

Upon the grip wheel I place a cable 21^A, the two ends of which extend to, and are secured to, and wound on two winding drums 41, see Fig. 7, which are operatively connected to or form an integral part of an operative cable winding draw engine 42 which is housed at or near the base of the trolley operating tower 2, the drums of which are arranged to rotate in the same direction or in opposite directions, so that both ends of the cable may be either wound or unwound, when desired, or one may be wound and the other unwound at the same time.

The two loose ends of a hoisting cable 43 are each secured to and wound on one of the two hoisting drums, and on the loop end depending therefrom is a sheave 44 which is rotatably mounted. This sheave is mounted between the slotted ends of the upper part of a hook 45, on a pin 46, which is secured to the ends of the hook, preferably by split pins 47, and the pinions and gears of the drums are arranged to either wind up, or to lower the cable at the same time.

To the front end of the trolley pendant frame I secure one end of a haul back cable 48 which extends from the trolley pendant to the tower 1, where it is passed around a sheave wheel 48^A, which is rotatably mounted in a yoke 49 on a pin 50 that is secured to the yoke. The opposite end of the yoke is preferably pivotally secured to the tower, a guide sheave 51 is mounted above the sheave 48 with its flange registering close enough to the flanges of the sheave 48 to hold the cable from accidental displacement from the guide sheave. From these two sheaves the haul

back cable extends to and passes between the sheaves 35 and 36 from which the opposite end extends to a winding drum 52, which is attached to or forms a part of the operative winding drum engine 42, which is housed at the trolley operating tower. 2.

In Fig. 6, I illustrate a slight modification of the arrangement shown in other figures. In this modification I place upon the opposite ends of the main shaft, spur pinions 54 and 54^A instead of worm pinions, and upon the outer ends of the drums I place spur gears 55 and 56, instead of worm gears.

The two drums are mounted on one shaft 55^A which is extended across the trolley pendant parallel with the grip wheel shaft and is journaled in boxes 56^A and 57 secured to the side members of the trolley frame. Both drums in this modification have a common central separating flange 58 and the drums are preferably made integral, and the ends of the hoisting cable are secured to each drum the same as in the other construction.

The operation of my improved indirect operating cable conveyer hoist is as follows: When it is desired to move the hoist towards the tower 1, the ends of the grip rope are both let out from both drums 41 at the same time, while the haul back rope is wound up on the drum 52 and pulls the hoist along the track rope in the direction of the tower 1. To move the hoist in the opposite direction, the two drums are made to wind the grip wheel cable and the drum 52 is made to unwind the haul back cable. The winding and unwinding of the hoisting rope is effected by the rotation of the grip wheel, which, when rotating in an anti-clockwise direction, winds the load hoisting cable up on both drums and raises the load, and when rotated in the opposite direction unwinds and lowers the load. In case it is desired to hold the hoist in a fixed position, and raise or lower a load, one of the drums 41 is rotated to wind and the other drum to unwind, which actions will rotate the grip wheel to hoist a load. The hoist will stand in the sag of the track rope due to the weight of the load without movement when the hoist is moved towards the tower 1, and the haul back rope will hold the hoist from moving in the direction of the pull of the grip rope, with the hoist in a stationary position.

Another feature of the hoist is that loads at the tower 1 can be picked up and either hoisted or lowered along the track rope by proper manipulation of both the grip wheel and haul back ropes.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a hoist conveyer, a track, a trolley on said track, a wheel carried by said trolley, hoisting mechanism disposed laterally of said wheel and actuated thereby, a cable

passing over said wheel, independent winding drums receiving the ends of said cable, and a separate back-haul cable connected to said trolley, substantially as described.

2. In a hoist conveyer, a track, a trolley on said track, a wheel carried by said trolley, a pair of hoisting drums actuated by said wheel, a cable passing over said wheel, independent winding drums receiving the ends of said cable, and a separate back-haul cable connected to said trolley, substantially as described.

3. In a hoist conveyer, a track, a trolley on said track, a wheel carried by said trolley, a pair of hoisting drums actuated by said wheel and oppositely disposed with respect thereto, a hoisting rope connected to said drums, a cable passing over said wheel, independent winding drums receiving the ends of said cable, and a separate back-haul cable connected to said trolley, substantially as described.

4. In a hoist conveyer, a track, a trolley on said track, a wheel carried by said trolley, a pair of hoisting drums geared with said wheel and mounted on shafts extending at right angles to the shaft of said wheel, a cable passing over said wheel, independent winding drums receiving the ends of said cable, and a separate back-haul cable connected to said trolley, substantially as described.

5. In a cable hoist conveyer, the combination with the towers, and the track rope, of the pendant frames, the trolley wheels rotatably mounted in said pendant frames, a shaft journaled in said pendants, gears on said shaft, hoisting drums and cables operatively connected to said gears and a cable grip-wheel secured to said shaft, a cable mounted on said grip wheel, having its opposite ends operatively attached to and wound on suitable power driven cable drums, substantially as described.

6. In a cable hoist conveyer, the combination with the towers and the track rope supported thereby, of the pendant frames, the trolley wheels rotatably mounted in said pendant frames and on said track rope, a shaft journaled in said pendant frames, a cable grip wheel secured to said shaft, gears secured on said shaft; two hoisting drums arranged in operative engagement with said gears, a cable mounted on said cable grip wheel, a pair of cable winding, power-driven drums operatively secured to the ends of said grip wheel cable, a hoisting cable secured at its ends to said hoisting drums and operatively supporting a material lifting hook, a haul back cable secured at one end to said pendants and movably supported by suitable sheaves attached to one of said towers, and extending back to and supported by said pendant, and having its opposite end extending from its support on said pendant and se-

cured to and wound on a power driven winding drum, substantially as described.

7. In a cable hoist conveyer, the combination with the towers and the track rope, of the trolley pendant mounted on said track rope, the shaft journaled in said trolley pendant, the cable grip wheel and cable mounted on said shaft, two gears mounted on the ends of said shaft, two hoisting drums supported by said pendant, a gear wheel on each hoisting drum in mesh with said gears, a cable having its opposite ends connected to said drums and a hoisting hook at its looped end, the cable guide sheaves rotatably journaled in said pendants below said grip wheel, the guide sheaves rotatably secured to one of said towers and the haul back cable secure at one end to said pendants, and extending from said pendants through the guide sheaves of said tower and from the guide sheaves of said tower through the guide sheaves of said pendant, and secured at its opposite end to a cable operating power drum, substantially as described.

8. In a cable hoist conveyer, the combination with the towers and the track cable supported thereby, of the frame formed by the standards and cross bars, a trolley sheave rotatably mounted at each of the upper ends of said frame and mounted on said track rope, a shaft journaled on said frame, a gear mounted on each end of said shaft, a cable grip wheel secured on said shaft, the haul back cable supporting sheaves journaled to said frame and a shaft supported by said frame at each end of said grip wheel shaft and at right angles to it, a cable winding drum secured on each of said shafts, a worm wheel secured to each winding drum and arranged in mesh with each of said gears, and a hoisting cable having its free ends secured one to each winding drum, a hook secured to the looped end of said hoisting cable, means including a cable for operating said grip wheel and hoisting drums and means including a cable for moving said hoist on said track cable, substantially as described.

9. In a cable hoist conveyer, the combination with the towers and the track rope, of the pendant trolley frame mounted on said track rope, the three shafts, the cable grip wheel and the hoisting drums on said shafts, the hoisting cable on said hoisting drums, the pull back cable secured at one end to said frame and extending to one of said towers and back to said pendant frame and from said pendant to a power operated winding drum, the sheaves secured to said tower to support said pull back cable and sheaves secured to said pendant frame to support said pull back cable, substantially as described.

10. In a cable hoist conveyer, the combination of two towers erected at predetermined distances apart, a track cable rope

secured at its opposite ends to said towers, a pendant mounted on said cable track rope, hoisting drums operatively supported by said pendant trolley, a hoisting cable operatively mounted on said drums, a haul back cable operatively secured to said pendant and extending to and supported on a sheave rotatably secured to said tower, and extending back and supported by a sheave on said pendant and having its opposite end attached to a cable operating power winding drum, and means including a gearing and a cable and suitable power operated winding drums, for operating said hoisting drums, substantially as described.

11. In a cable hoist conveyer, the combination with the towers and the track cable supported thereby, of a pendant trolley mounted on said track cable, a haul back cable arranged to move said pendant trolley in one direction of its movement on said track cable, operative material lifting, hoisting drums mounted in said pendant trolley and provided with gears at their ends, gears operatively mounted on said pendant frames in operative mesh with the gears on said hoisting drums, and means including a cable and cable winding power operated drums for manipulating said cables to operate said hoisting drums and said pendant trolley on said track cable, substantially as described.

12. In a cable hoist conveyer, the combination with the towers and the track cable, of a pendant trolley mounted on said track cable, a cable grip wheel mounted in said pendant in vertical alinement with the trolley of said pendant, a hoisting drum rotatably mounted in said pendant trolley on each side of said cable grip wheel, a looped hoisting cable operatively secured to said hoisting drums, a haul back cable operatively secured to said pendant and one tower to move said pendant trolley in one direction of its movement, and a grip wheel cable oper-

atively arranged to operate said hoisting drums and to move said pendant trolley in the opposite direction of its movement on said cable track, and a gear wheel connection between said grip wheel and said hoisting drums, substantially as described.

13. In a cable hoist conveyer, the combination with the towers and the track rope of the pendant trolley mounted on said track rope, a shaft journaled in said pendant trolley, a worm mounted on each end portion of said shaft, two shafts journaled in said pendants at right angles to said first named shaft, a hoisting drum mounted on each of the said two shafts, a worm gear secured to each hoisting drum and arranged in operative mesh with said worms and means including cables and power operating winding drums for operating said hoisting drums and for operating said pendant trolley on said track rope to hoist, convey and lower material, substantially as described.

14. In a cable hoist, the combination of the towers the track rope secured to each tower, the pendant trolley mounted on said track cable, the driving shaft journaled in said pendant trolley, the cable grip wheel secured on said shaft, the two drum shafts journaled in said pendant trolley at right angles to said main driving shaft, the hoisting drums secured to said shafts, the gears arranged to operatively connect said hoisting drums to said main driving shaft and means including cables for operating said grip wheel and hoisting drums and pendant trolley to hoist, convey and lower material along said track cable, substantially as described.

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

BYRON C. RIBLET.

Witnesses:

G. SARGENT ELLIOTT,
BESSIE THOMPSON.