No. 829,911. PATENTED AUG. 28, 1906.

J. G. DELANEY & A. LAMBERT.

FALL ROPE CARRIER.

APPLICATION FILED MAR. 20, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

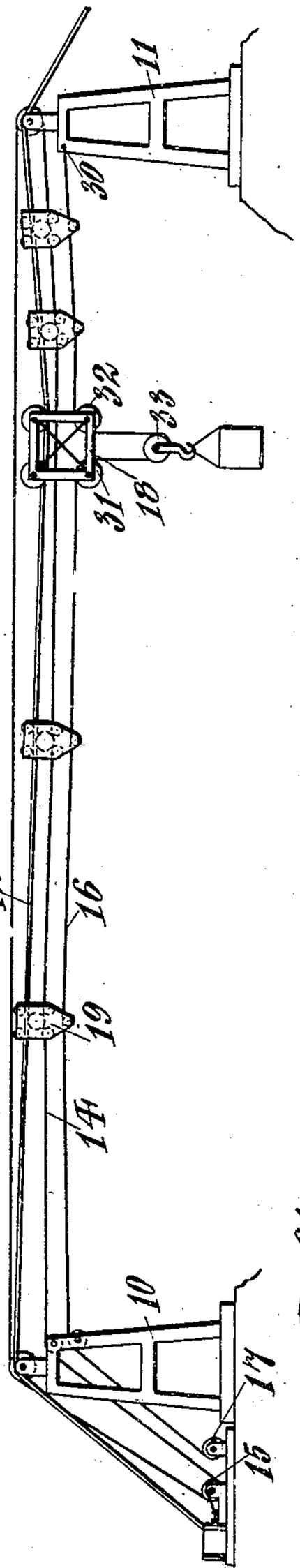


Fig. 4.

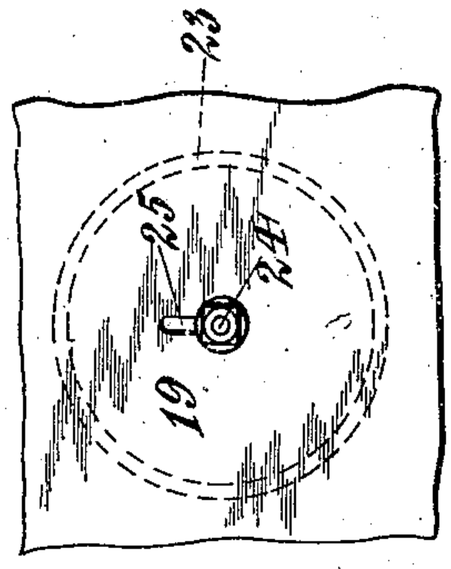


Fig. 3.

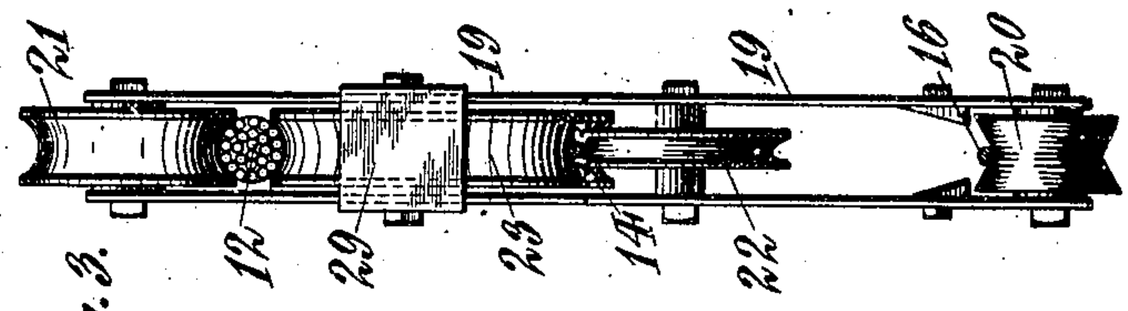
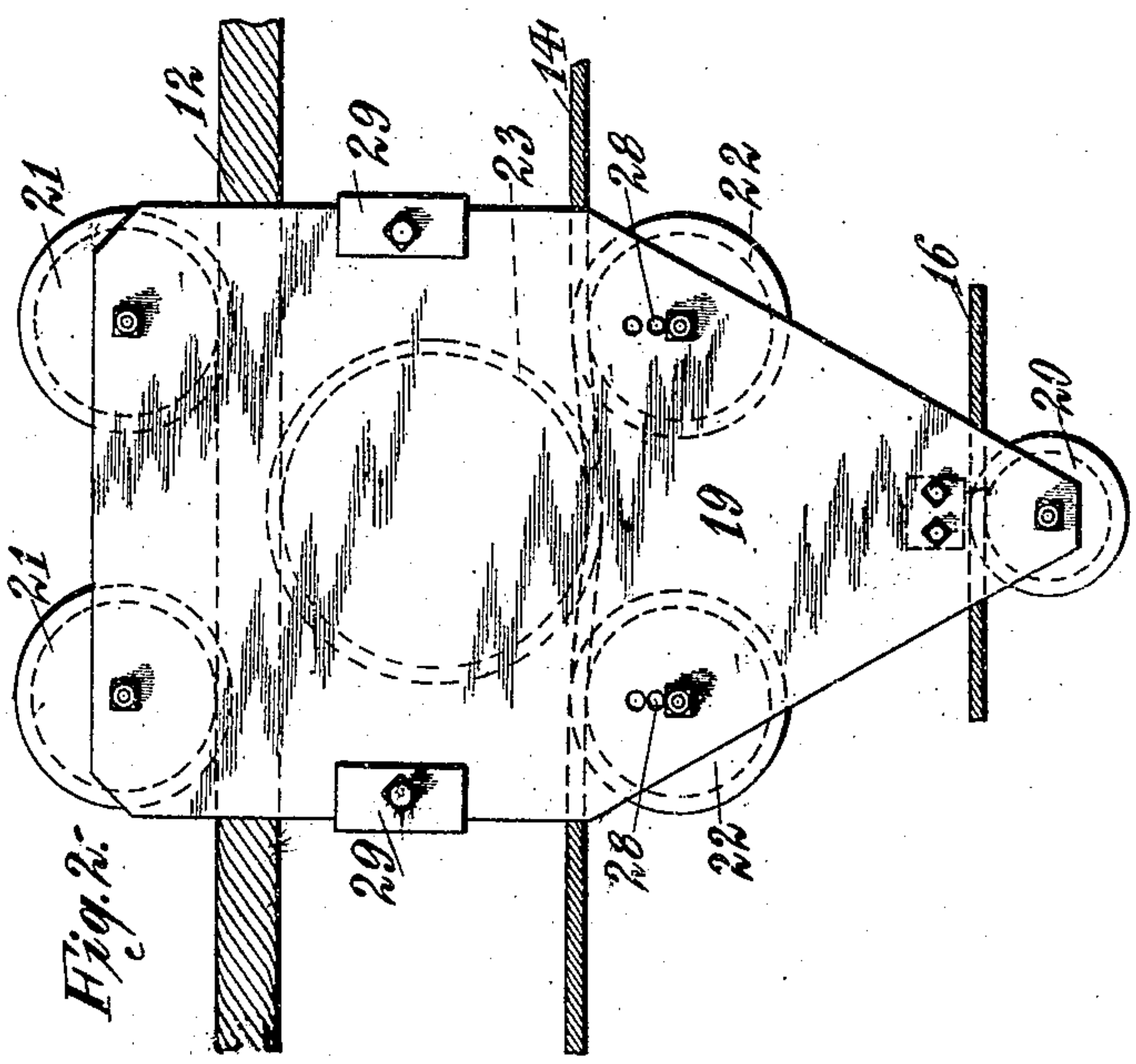


Fig. 2.



Witnesses
A. M. Dorley.
W. L. Bird

Inventors
James G. Delaney
Asher Lambert
By their Attorneys
Kenyon & Kenyon

No. 829,911. PATENTED AUG. 28, 1906.

J. G. DELANEY & A. LAMBERT.

FALL ROPE CARRIER.

APPLICATION FILED MAR. 20, 1906.

2 SHEETS--SHEET 2.

Fig. 6.

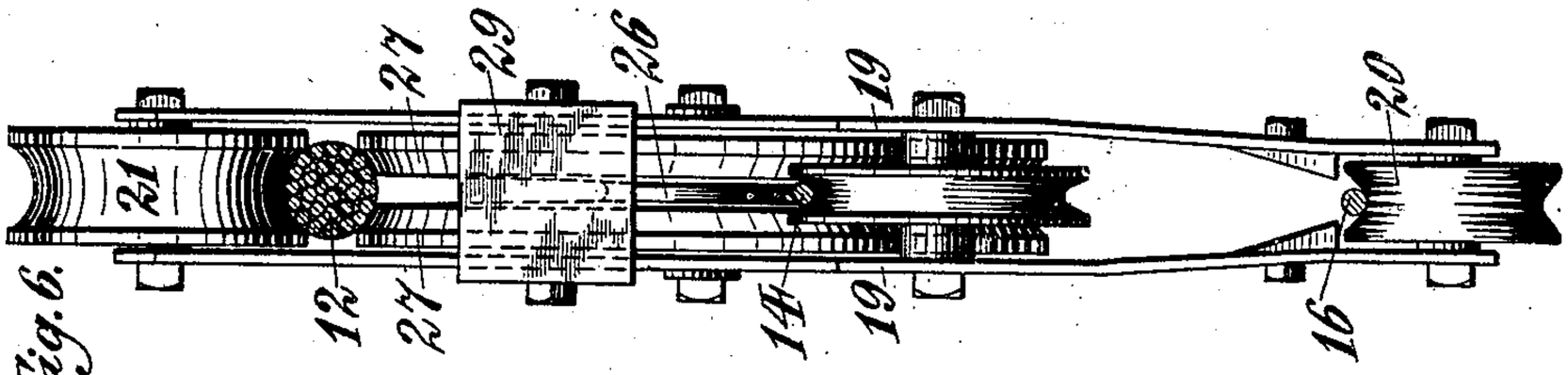
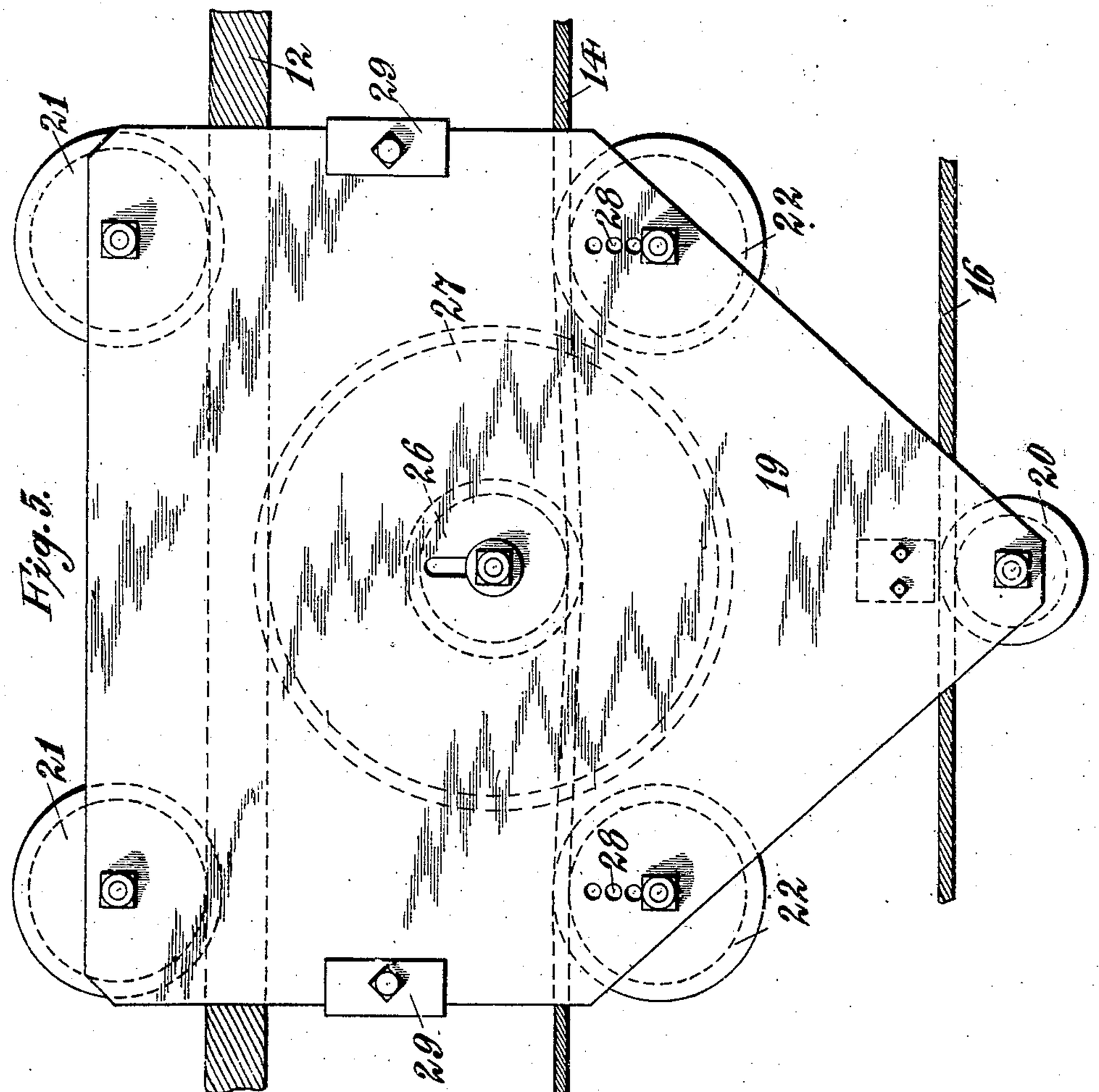


Fig. 5.



Witnesses
A. M. Donlevy.
M. L. Bird

Inventors
James G. Delaney
Asher Lambert
By their Attorneys
Kenyon & Kenyon

UNITED STATES PATENT OFFICE.

JAMES G. DELANEY AND ASHER LAMBERT, OF NEWARK, NEW JERSEY.

FALL-ROPE CARRIER.

No. 829,911. Specification of Letters Patent. Patented Aug. 28, 1906.

Original application filed March 18, 1904, Serial No. 198,768. Divided and this application filed March 20, 1906. Serial No. 306,970.

To all whom it may concern:

Be it known that we, JAMES G. DELANEY and ASHER LAMBERT, both citizens of the United States, and residents of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Rope-Carrier for Conveyers or Cableways, of which the following is a full, clear, and exact description.

This is a division of our application filed March 18, 1904, Serial No. 198,768.

This invention relates to conveyers or cableways for hoisting and conveying.

The object of this invention is to provide a rope-carrier which is simpler and less liable to derangement than any heretofore known or used. In conveyers of this character it is desirable and necessary to support some or all of the flexible ropes employed from the main cable or trackway, so as to prevent sagging and interruption to the successful movement of the load-carriage and so as to permit the raising and lowering of the load or bucket from the load-carriage at any point between the terminal stations. Each carrier is automatically movable at a predetermined and characteristic relative rate, so as to maintain the proper space or distance between successive carriers. To attain this object, each carrier is provided with a single propelling element, like a grooved wheel or pulley. This wheel or element preferably engages the under side of the main track or cable and the upper side of the endless haul-rope. The track, the wheel, and the haul-rope are in one and the same vertical plane, and the resultant thrust of the haul-rope forces the single wheel into engagement with the main track. This steadies the carrier and prevents wabbling. With a grooved wheel of any given diameter the rate of advance movement is one-half the speed of the haul-rope. To secure an increased speed of movement, the single wheel is provided with two peripheral contacts at different radial points. The haul-rope, of smaller diameter than the main track or cable, engages the wheel at the shorter radial distance, and the main cable engages the wheel at the greater radial distance. To provide these two peripheral contacts, a deeper groove bisects the circumferential groove, and in this deeper groove the haul-rope of less diameter engages the peripheral contact at the shorter radial distance.

This improvement also provides means to insure an effective yet a yielding engagement of the propelling-wheel of the carrier between the haul-rope and the main cable, thus increasing the certainty of action and avoiding destructive strains on the cable and sheaves.

This specification is a specific description of one form of the invention, while the claims are definitions of the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 shows in general elevation an overhead conveyer system having these improvements applied thereto. Fig. 2 is an enlarged side view of a cable-carrier. Fig. 3 is a corresponding end view thereof. Fig. 4 is a detail view showing one mounting for the traction-roller. Fig. 5 is an enlarged side view of a propelling-wheel having an increased speed of movement as compared with that shown in Fig. 2, and Fig. 6 is an end view of the device shown in Fig. 5.

In Fig. 1, 10 and 11, respectively, indicate the head and tail towers or supports for a main track or cable 12. The haul-rope or traverse-rope is shown at 14. It is, in effect, endless and has one or more turns round the winding-drum 15. The fall-rope 16, operated by the drum 17, supplies the means for raising and lowering the load with respect to the load-carriage 18. This fall-rope 16, as shown in Fig. 1, is fixed at one end 30 to the tail-tower 11. It passes over the carrying-sheaves in the fall-rope carriers and over two sheaves 31 32 in the load-carriage, taking in a movable sheave 33 between the two sheaves 31 and 32. The opposite end of the rope 16 passes round a small drum 17, driven by the engine. It results from this construction that a small drum 17 may be employed and that after a weight suspended on the sheave 33 is elevated the drum 17 may be locked at rest.

Referring to Figs. 2 and 3, the fall-rope carrier is constructed with a frame 19, which may be of any suitable material, preferably consisting of iron cheek-plates, between which pass the cable 12 and the lower run of the haul-rope 14. These cheek-plates are secured by angle-pieces 29 and each angle-piece held in position by a bolt. In the lower part of the rope-carrier is a sheave or guide 20 for the fall-rope 16, and mounted in the upper part are two carrier-wheels 21 21, that

run on the main cable 12 to support the rope-carrier. The haul-rope 14 runs over two sheaves 22 22, mounted in the frame and suitably spaced with respect to each other. The broad wheel-base, due to the location of the sheaves 21 21 in vertical planes separated a distance about equal to a diameter of the driving element 23 causes the carrier to maintain a vertical position. This is rendered still more stable by the similar location of the sheaves 22 22. The position of the rotary driving element 23 with respect to the two pairs of sheaves 21 and 22 is such that the track-cable 12 is pinched between the sheaves 21 and the driving element. This all contributes to the stability of vertical position.

Located within the frame of the rope-carrier is the free traction-roller, pulley, wheel, or driving member 23, which bears between the main cable on one side and the haul-rope on the other and lies in a vertical plane, in which are also the main track 12 and the haul-rope 14, engaging the wheel 23 at opposite ends of a diameter. The sheaves 21 and the sheaves 22 are also in the same plane and serve to pinch the cable 12 and the haul-rope 14 into engagement with the wheel 23. In the form shown in Fig. 2 the wheel 23 is free without pin or axle. The form and disposition of the parts 12, 14, 20, 21, 22, and 23 are so regulated that both cables will bear tightly against the roller 23, the haul-rope being sprung or bowed slightly at the opposite sides of the traction-roller. This causes the actuating-rope (in this instance the haul-rope) to press the traction-roller upward against the main cable, and thus maintain a firm yet thoroughly elastic engagement between the parts 12 and 23 and 14 and 23. In effect, the free roller or wheel 23 is gripped between two cables. By this arrangement it will be seen that the parts are engaged with that firmness essential to the most successful operation of the carrier, as will be hereinafter fully set forth; but we avoid that unyielding contact heretofore involved in this class of apparatus, which operates to waste power by the excessive friction and to cause the working parts to quickly wear away, and we also avoid spring-contacts. With this apparatus as the haul-rope moves at a certain rate of speed it imparts a rotary movement to the traction-roller or driving member 23, causing the roller to run along the stationary main cable, while the rope-carrier is advanced at a lower speed than that of the haul-rope 14.

As shown in Figs. 2 and 3, the rope-carrier will run on the main cable at one-half the speed of the haul-rope, because the same diameter contacts with both the stationary cable 12 and moving rope 14. The rope-carrier will be made to shift its position along the main track following the shifting position of the load-carriage, but at one-half the speed thereof. Fig. 2 shows the roller simply as a floating element without pin or axle confined endwise of the carrier by the bend of moving rope 14. In Fig. 4 wheel 23 is on a pin or axle 24, which plays in vertical slots 25, formed in the cheek-plates constituting the frame of the carrier. This allows the traction-roller to yield vertically toward and from the cables 12 or 14, so as to assume a position insuring that uniform engagement between the rollers and cable above explained. It leaves the roller free to move slightly upward, and this enables the haul-rope to press the roller more effectively into frictional engagement with the main track 12. It is clear that by varying the relative distances of the ropes 12 and 14 from the center of the traction-roller—that is, by providing peripheral contact points or surfaces at respectively different radial points—the speed at which the rope-carrier is propelled with respect to the movement of the haul-rope 14 may be varied at pleasure. Figs. 5 and 6 show an arrangement by which the rope-carrier is made to run at three-quarters the speed of the haul-rope. This is attained by providing a single traction wheel or roller having two peripheral contact-points at different radial distances, as shown at 26 and 27, respectively, the peripheral contact 26 being on the shorter radius and the peripheral contact 27 being on the greater radius. The haul-rope 14 engages the shorter radial periphery 26, while the main cable 12 engages the longer radial periphery 27. The sheaves 20 21 22 are disposed the same as before described, and the action of the parts is the same, except that by varying the radial distance of the peripheral contacts, as above explained, the speed is varied. In Fig. 5 openings 28 for the adjustment of the sheaves 22 are shown, as also in Fig. 2.

The traction-roller shown in Figs. 5 and 6 is best shown in detail in Fig. 6, the construction including the shorter radial periphery 26 between two annular flanges extending beyond the periphery 26 to form the greater radial periphery 27. The haul-rope 14 being smaller than the main cable runs between these flange-like portions and bears on the periphery 26, while the main cable 12 runs upon the outer edges of the said flanges.

In connection with the invention as above described it is pointed out that the employment of a single propelling-wheel 23 provides for maintaining the elements 12, 14, and 23 in the same vertical plane and accurately balancing the rope-carrier thereon, thus avoiding the side lash or wabbling of the carrier, since the pressure between the parts is in the same plane and central of the carrier.

Various changes in the form, proportion, and details of this invention may be resorted to without departing from the spirit and scope thereof.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a conveyer system a rope-carrier having a propelling-wheel or pulley engaging the stationary track and a moving rope at opposite ends of a diameter.

2. In a conveyer system a rope-carrier having a propelling-wheel engaging the stationary main track and a moving rope at opposite ends of a diameter combined with means whereby said track, rope and wheel are maintained in operative relation.

3. In a conveyer system a rope-carrier having a propelling wheel or pulley engaging the stationary track and a moving rope at opposite ends of a diameter, said track, wheel and rope being arranged in one and the same plane.

4. In a conveyer system a rope-carrier having a propelling wheel or pulley engaging the stationary track and a moving rope, said track, wheel and rope being arranged in one and the same plane.

5. A rope-carrier for conveyer systems comprising a frame, a driving means, antifriction devices connected with the frame between which devices and said driving means the main cable or trackway of the system is adapted to run, the driving means being adapted to be engaged by the haul-rope on the side opposite that engaged by the main cable and devices at each side of the driving means and engaging the haul-rope to bow the same against the driving means.

6. A rope-carrier for conveyer systems comprising a frame, a driving means, sheaves mounted on the frame between which sheaves and the driving means the conveyer trackway or main cable is adapted to run, said driving means being adapted also to be engaged by the conveyer haul-rope, and two sheaves mounted on the frame, one at each side of the driving means and engaging the haul-rope to bow the same against the driving means, the first-named sheaves being two in number and arranged one at each side of the driving means.

7. In a conveyer system a rope-carrier comprising a frame, a rotary driving element, a pair of sheaves running on the main track and mounted in said frame at or near opposite sides of the frame and a haul-rope engaging the under side of said driving element.

8. In a conveyer system a rope-carrier comprising a frame, a rotary driving element, a main cable engaging the upper side of said driving element, a haul-rope engaging the lower edge of said element, and two pairs of sheaves mounted in said frame in parallel vertical planes separated at a distance approximately equal to the diameter of the rotary driving element.

9. In a conveyer system the combination of a track, a haul-rope, and a carrier composed of a frame, a circular device having a grooved periphery floating in said frame and means for maintaining said device in contact with said track and haul-rope in one and the same plane.

J. G. DELANEY.
ASHER LAMBERT.

Witnesses:
M. G. BENFER,
M. F. MING.