

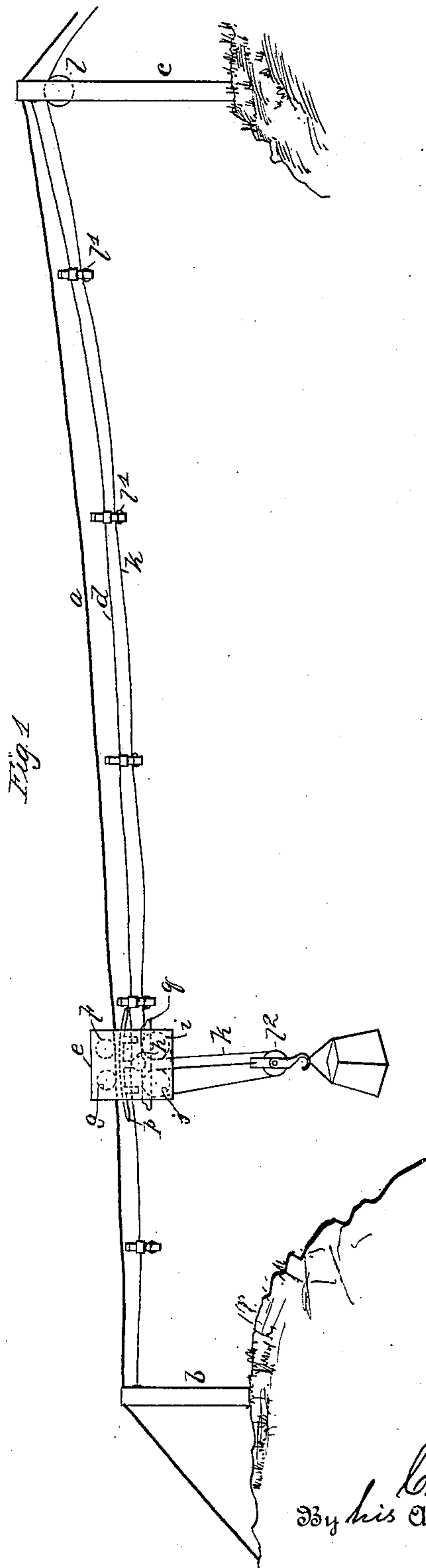
(No Model.)

2 Sheets—Sheet 1.

C. M. NORTH.
CONVEYING APPARATUS.

No. 470,948.

Patented Mar. 15, 1892.



Witnesses
Fred S. Kemper
V. P. Wilson

Inventor
Charles M. North
By his Attorneys
Gifford & Sew

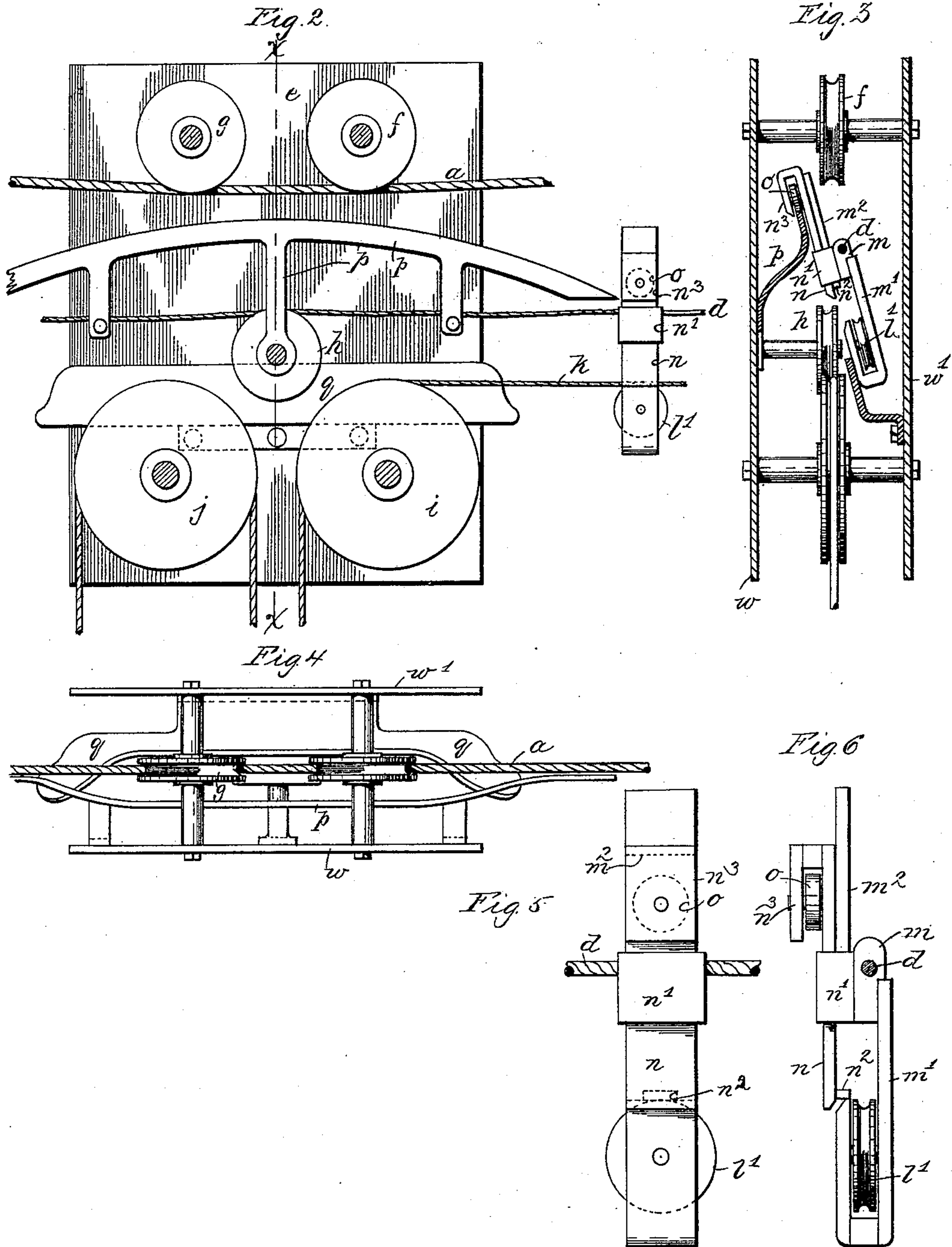
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C. M. NORTH.
CONVEYING APPARATUS.

No. 470,948.

Patented Mar. 15, 1892.



Witnesses
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V. T. Wilson.

Inventor
Charles M. North
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UNITED STATES PATENT OFFICE.

CHARLES M. NORTH, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO THE
LIDGERWOOD MANUFACTURING COMPANY, OF NEW YORK, N. Y.

CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 470,948, dated March 15, 1892.

Application filed July 13, 1891. Serial No. 399,280: (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. NORTH, of Montclair, in the State of New Jersey, have invented a new and useful Improvement in Conveying Apparatus, of which the following is a specification.

Figure 1 is a general view of the whole structure. Fig. 2 is a larger side view of the carriage with one of its sideplates *w* removed and of one rope-carrier. Fig. 3 is a cross-section on the line *xx* of Fig. 2, with a rope-carrier shown in the act of passing the carriage. Fig. 4 is a plan of the carriage. Fig. 5 is a side view, and Fig. 6 is an end view, of the rope-carrier.

a is the cable or trackway on which the carriage runs and which extends between the towers *b* and *c*.

d is an additional rope or trackway, upon which the rope-carriers are fixed at stated distances apart.

e is the carriage, provided with the sheaves *f* and *g* to run on *a*; also with the sheave *h* to support *d*, and also with the fall-rope sheaves *i* and *j*.

k is the rope, which may perform the double function of a fall-rope and an inward-hauling rope, extending over the sheave *l*, over the sheaves *l'* of whatever rope-carriers are between the carriage and the tower *c*, over the sheave *i*, under the sheave *l''* of the fall-block, over the sheave *j*, and down to a point of attachment on the fall-block. It is desirable that the several rope-carriers should each be provided with a latch, so arranged as to close an opening, through which the rope *k* may move into or out of engagement with the sheave *l'*, such latch to remain closed, excepting as the carriage is passing the rope-carrier, but to be then opened and the carrier disposed so as to disengage the carrier from the rope and avoid conflict between the carrier and the sheaves *j* and *i*. A form of such rope-carrier is illustrated in Figs. 2, 3, 5, and 6. It consists of a part *m*, fixed upon the rope *d*. This part may be clamped to the cable, so as to have neither longitudinal nor circumferential motion thereon, or it may be mounted out longitudinal movement. From this part

extends downwardly the hanger *m'*, which, after extending downward a proper distance, is bent and turned upwardly, so as to provide for the bearings of the roller *l'* in its vertical parts on each side, as shown.

m'' is an upwardly-extending plate, and *n* is the latch. This latch rests against the plate *m''* as a guide and is held against the same, so as to be capable of being reciprocated by any suitable device, such as the strap *n'*. When in its downward position, as shown in Fig. 6, the extremity of the latch overlaps the extremity of the hanger *m'* and the flange *n''* on the latch rests on top of the extremity of *m'*. When the latch is raised, as in Fig. 3, the flange *n''* rests against the lower end of the plate *m''*. Thus the range of movement of the latch is limited by the flange *n''*, its upward movement being sufficient, so that when the latch is raised there is ample room for the rope *k* to pass between the lower extremity of the latch and the extremity of the hanger *m'*. The upper extremity of the latch is bent laterally and downward, so as to produce a part *n'''*, in which is one bearing of the roller *o*, the other bearing being in the body of the latch, as shown. Now so long as the rope-carrier is supported entirely by the rope *d* the weight of the latch will hold it down in its closed position, Fig. 6, and there will be no chance for the rope *k* to become disengaged from the roller *l''*; but by providing a proper guideway as the carriage passes, so that the latch receives a support independently of the rope *d*, it may be raised or opened, so as to permit the disengagement of the rope-carrier from the rope *k*. This is accomplished by the guide-track *p*, connected with the carriage and curving from a point nearly level with the rope *d*, as the same is supported by the sheave *h* to a point sufficiently above the sheave *h*, raise the latch and transfer the support of the rope *d* and of the rope-carrier to the sheave *o*, which runs on the track *p*. Then the track *p* curves downwardly again, so that after the carriage is passed the support is returned to the rope *d*.

Having thus provided for the opening of the latch, it is still necessary to provide for so disposing the other parts of the rope-carrier

that they will not collide with any part of the carriage as the latter is passing. To this end a wing or deflector q is provided at one side of the sheaves h , i , and j , which, commencing at each end of the carriage at one side of the path of the rope-carrier, bows outwardly toward its middle across the path of the rope-carrier, so as to shove the rope-carrier laterally toward the side plate w' , and thus guide it between that side plate on the one side and the sheave h and upper parts of the sheaves i and j on the other side, the sheave h being provided with a bearing only on the side plate w of the carriage. This side shoving of the carrier requires that the guide-track p should have a lateral curvature corresponding with the curvature of the wing q , but in the opposite direction, so that while the carriage is passing the rope-carrier the lateral shoving of the bottom of the rope-carrier swings it on the rope d as a center, as shown in Fig. 3. Thus while the top of the rope-carrier misses the sheaves f and g by swinging to the left and between them and the side plate w the bottom of the carrier misses the sheaves h , i , and j by swinging to the right or between them and the side plate w' . While the carriage is passing the spaces between the rope-carriers the rope d will be supported by the sheave h ; but while passing the carriers it will be supported on the track p , so that the rope d is always supported on the carriage either by the sheave h or by one of the sheaves i , running on the guide-track p . Just before the rope-carrier is shoved laterally the upward bend of the guide-track p has opened the latch, so that the lateral movement of the carrier moves the rope k out through the unlatched opening. This is when the carriage is running toward the tower c . When, however, it is running toward the tower b , the operation will be reversed, and as it passes each of the rope-carriers the latch of that rope-carrier will be opened, and it will be shoved laterally, so as not to collide with the parts of the carriage, and as it returns to its normal position with the latch still open the rope k will pass into the unlatched opening, so that when the latch is closed the rope k will be in engagement with the sheave h' .

I do not desire to limit myself to the details of the apparatus which I have described for the purpose of illustrating one form of my invention, since I am aware that the same may be varied to a large extent and some of the elements eliminated without departing from the scope of my invention.

I claim—

1. In a conveying apparatus, the combination, with a load-carriage, of a rope-carrier comprising a rope-supporter, means for suspending the same having an opening for the passage of the rope into and out of engagement with the supporter, means whereby said opening is closed, and mechanism connected with

said means and adapted to bear against mechanism connected with the carriage, whereby said latch may be opened as the carriage passes, substantially as described.

2. In a conveying apparatus rope-carrier, in combination, a piece adapted for engagement with the supporting-cable, a hanger depending from one side of said piece and provided with an upward bend near its opposite end, a sheave having its bearings in said hanger, latch-guideways located upon the opposite side of said first-named piece, and a latch, substantially as described.

3. In a conveying apparatus, the combination of a load-carriage with a rope-carrier comprising a piece adapted for engagement with the supporting-cable, a hanger depending therefrom and provided with a rope-rest, and a latch adapted to close the opening to said rope-rest below said first-named piece and extending above said first-named piece and provided above with means for engagement with an unlatching device, substantially as described.

4. In a conveying apparatus, in combination, a rope-carrier provided with a latch for closing an opening to the rope-rest on said carrier, a load-carriage, and means located on said load-carriage whereby said latch is opened as the carriage passes the rope-carrier, substantially as described.

5. In a conveying apparatus, in combination, a rope-carrier provided with a latch for closing an opening to the rope-rest on said carrier, a load-carriage, means located on said load-carriage whereby said latch is opened as the carriage passes, and means located on said carriage whereby said rope-carrier is deflected to avoid collision with said carriage, substantially as described.

6. In a conveying apparatus, the combination, with a load-carriage and a guide thereon, of a rope-carrier and a support for the same, said carrier comprising a latch controlling an opening to the rope-rest of said carrier, and a sheave mounted in said latch and adapted to be engaged by said guide, whereto the support of said latch is transferred as the carriage passes the carrier, substantially as described.

7. In a conveying apparatus, the combination of a rope-carrier and a support for the same, said carrier provided with a latch controlling an opening to the rope-rest thereof, a sheave mounted in the latch with a load-carriage, a guide thereon whereto the support of said latch is transferred as the carriage passes the carrier, and a deflector whereby the carrier is shoved laterally as the carriage passes the same, substantially as described.

8. In a conveying apparatus, in combination, a cable or trackway, a carriage to travel thereon, a rope-carrier and means whereby said carrier is moved laterally as the carriage

passes, and separate means whereby the entire carrier-frame is elevated bodily, substantially as described.

5 9. In a conveying apparatus, the combination of a rope-carrier provided with a rope-supporter, means for suspending the same having an opening for the passage of the rope into and out of engagement with the supporter, and means whereby said opening

is closed and a member supported independently of said carrier by contact with which said closing means is operated as the load-carriage and rope-supporter pass each other, substantially as described.

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