

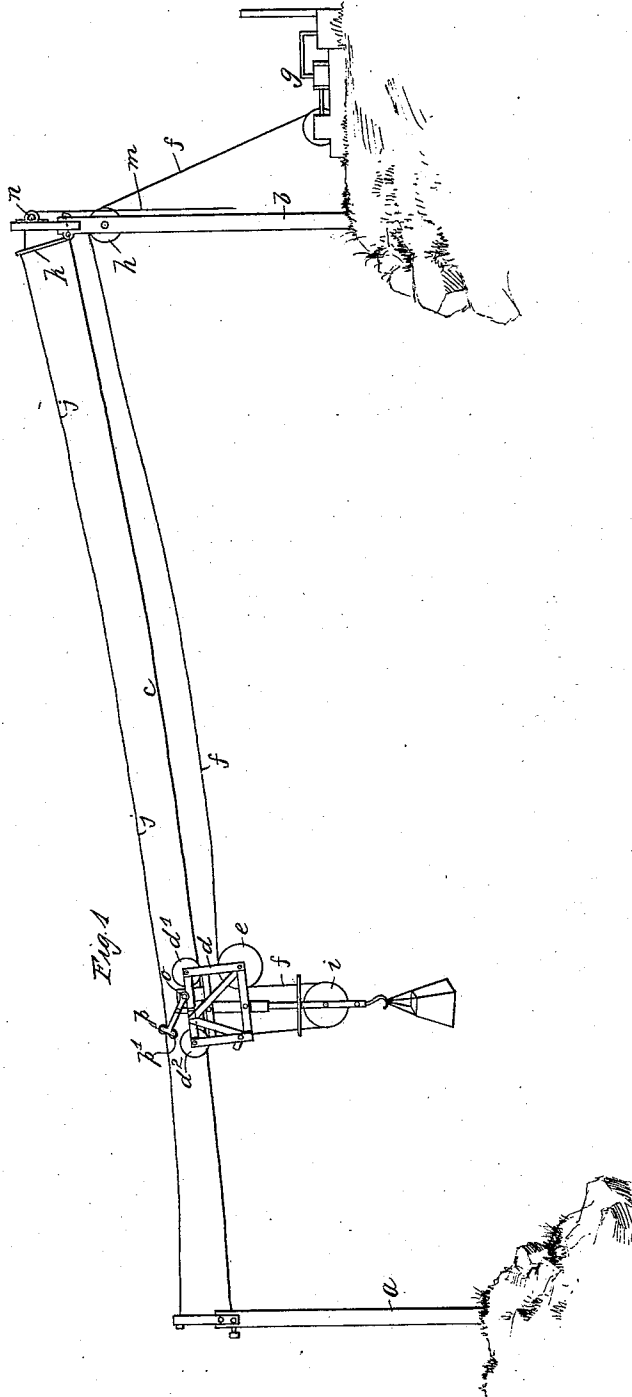
(No Model.)

2 Sheets—Sheet 1.

C. M. NORTH.
CONVEYING APPARATUS.

No. 466,279.

Patented Dec. 29, 1891.



Witnesses
V. T. Wilson
Fred Kemper.

Inventor
Charles M. North
By his Attorneys
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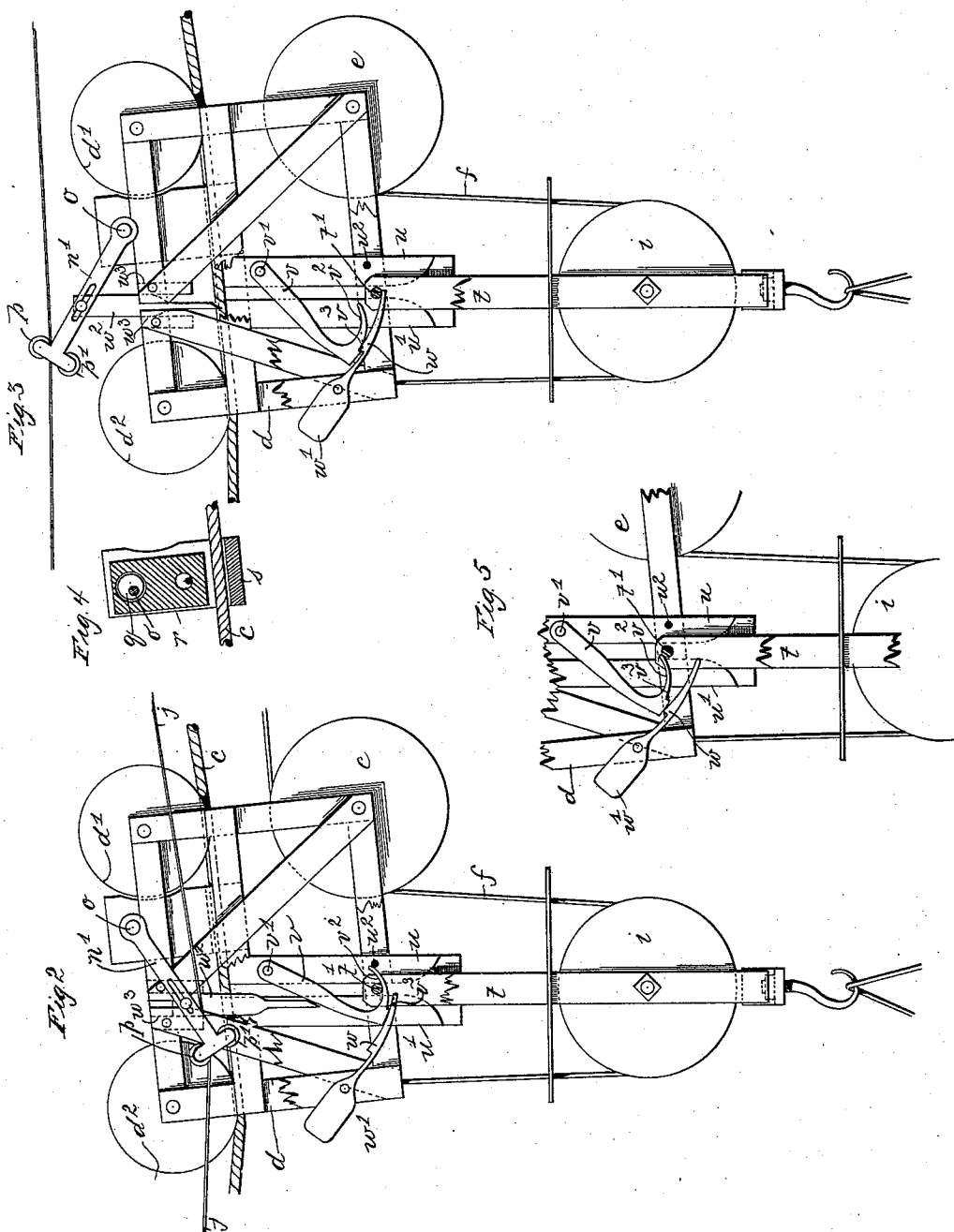
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Witnesses
V. P. Hale.
Fred Skemper.

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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. 466,279, dated December 29, 1891.

Application filed August 24, 1891. Serial No. 403,571. (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.

In the accompanying drawings, Figure 1 is a general side view of a form of apparatus embodying my invention. Fig. 2 is a side view of the carriage with the hook holding the fall-block. Fig. 3 is the same thing with the fall-block released by the hook. Fig. 4 is a sectional detail. Fig. 5 is a side view of a part of the carriage with the hook thrown back by the pin on the fall-block as the latter is raised.

a and *b* are the towers.

c is the cable or trackway, which should be at an angle of about ten degrees or more.

d is the carriage, having the wheels *d'* *d''* to run on the cable and a fall-rope sheave *e*.

f is the fall-rope, which runs from a rope-drum *g* over a sheave *h*, over the sheave *e*, under the fall-block sheave *i*, up to a point of attachment on the carriage.

Two principal objects of my improvement are to arrest the motion of the carriage at any point of the cable and to support the load as the carriage travels independently of the fall-rope.

The first object is accomplished as follows: *j* is a rope fastened at one end, as to the tower *a*, and at the other end to the free end of an arm *k*, pivoted to the tower *b* at *l* and adapted to be raised toward the vertical by the rope *m*, passing over the sheave *n*, and thence down to a point convenient for the operator. Obviously by tightening the rope *m* the rope *j* will be tightened and raised by the action of the arm *k*.

n' is an arm fixed upon the shaft *o*, which has bearings in the carriage. This arm carries at its free end the roller *p*, which is above rope *j*, and roller *p'*, which is below it. Thus the arm *n'* is raised or lowered as the rope *j* is tightened or slackened. On the shaft *o* is fixed the eccentric *q*, which engages with a vertically-sliding grip-block *r*, as shown in Fig. 4. This grip-block is mounted in guide-ways on the carriage, so as to be carried directly above the cable. Below the cable and

opposite to the grip-block is a piece *s*, stationary on the carriage, so that the cable will be clamped or released by *r* and *s* as *r* is lowered or raised by the eccentric *q* in response to the movements of the arm *n'*, and consequently of the rope *j*. Therefore the operator can arrest the motion of the carriage at any point of the cable by simply pulling on rope *m*, and release it again by slackening that rope. It is obvious that the arm *k* may be omitted and the rope *j* pass directly over the sheave *n*.

The second object is accomplished as follows: *t* is an upward vertical extension of the fall-block, provided with a horizontal pin *t'*.

u u' are two vertical pieces fixed on the carriage, arranged to provide a vertical slot between them to receive and guide the pin *t'*. The slot has diverging sides at the bottom, as shown, to center the pin.

v is a hook depending from a pivot *v'* on the carriage. The forward vibration of this hook is stayed by a stop *u''*. The nose *v''* of the hook is formed as shown, so that as the pin *t'* moves upward it will act against the bottom inclined surface of the hook and throw the latter back to make an upward passage for itself, as shown in Fig. 5. Then the hook drops back against stop *u''*, and when the pin attempts to return it is caught by the hook, as shown in Fig. 2, so that the carriage may run back and forth without exerting any strain on the fall-rope, excepting what is necessary to control the motions of the carriage; but if at any time it becomes necessary to lower the fall-block the motion of the carriage is by the grip *r s*. Then by hauling in on the fall-rope the pin will be raised until it strikes against the front inclined surface of the hook-shank *v*, so as to swing the hook backward until it occupies the position shown in Fig. 3, where the detent *w* engages with the notch *v''* on the hook. The detent is prolonged until it projects into the downward path of the pin, so that as the pin descends it will depress the detent sufficiently to cause it to release the hook and allow the latter to swing down against the stop *u''*. *w'* is a weighted arm of the detent, tending to press the detent against the hook and keep it in readiness to engage the latter.

Mechanism may, if necessary, be provided whereby the hook may not be caught by the detent *w*, excepting when the cable is clutched by *r* *s*, so as to arrest the motion of the carriage.

5 A form of such mechanism is shown in the drawings, consisting of a hanger *w*², secured to the arm *n*' by a pivot running in a slot and guided vertically by the pieces *w*³, secured to the frame. This hanger is located so as to project down against the back of the hook when the arm *n*' is down and to be raised out of the path of the hook when the arm *n*' is up.

10 I am aware of Letters Patent No. 393,643, granted November 27, 1883, to Harris, in which is shown a conveying apparatus having mechanism for holding the carriage when the load is being hoisted or lowered and mechanism to throw the holding mechanism out of engagement when the load is hoisted; but, besides other differences from mine, said Harris's apparatus had the holding mechanism fixed on the cable, so that the carriage had to be arrested at a predetermined point, whereas my holding apparatus travels with the carriage, so as to be always in readiness to operate at any point in the journey by the carriage.

I do not limit myself to the special form of grip for the stopping of the machine shown in the drawings, as obviously any of the numerous forms of cable-grips which are capable of being operated by a lever will answer.

I do not, however, claim, broadly, the use of a brake mounted upon a carriage and engaging with the cable, since I am aware that a construction of that kind is shown in Letters Patent of the United States No. 325,328.

In the construction which I have shown there is a running connection located between the clutching mechanism on the carriage and a fixed point at which the operator stands, which in this case is at one of the towers.

I do not desire to limit myself to the location of this running connection, although I have shown it as located at the point where the clutch-operating rope makes its connection with the clutch mechanism; nor do I desire to limit myself to having the clutch-operating rope stationary, since I am aware that if the running connection between the clutch mechanism and the fixed point at which the operator stands should be in some other location than where the rope joins the clutch mechanism the rope itself might not be stationary.

I claim—

1. In a conveying apparatus, in combination with the carriage, a device adapted to arrest the motion of the same, an arm by which said device is operated, and a rope stretched approximately parallel with the main cable or trackway and forming a running connection with said arm, substantially as described.

2. In a conveying apparatus, in combination with the carriage, a device adapted to

arrest the motion of the same, a member by which said device is operated, and a rope stretched approximately parallel with the main cable or trackway and forming a running connection intermediate said arresting mechanism and a fixed point convenient to the operator, substantially as described.

3. In a conveying apparatus, a cable or trackway, a carriage to travel thereon, mechanism mounted upon said carriage whereby the travel of the same on the cable or trackway is arrested, and a rope extending along the path of the carriage, with which said mechanism forms a running connection, substantially as described.

4. In a hoisting and conveying apparatus, a cable or trackway, a carriage to travel thereon, a fall-rope, a clutch mounted on said carriage and adapted to grip said cable, a lever whereby said clutch is operated, and a rope forming a running connection with said lever and extending approximately parallel with said cable or trackway, substantially as described.

5. In a hoisting and conveying apparatus, a cable or trackway, a carriage to travel thereon, mechanism mounted upon said carriage whereby its travel is arrested, a fall-block, a hook on the carriage, adapted to engage with said fall-block, and a member connected with said mechanism whereby the disengagement of the hook is prevented, excepting when the travel of the carriage is arrested by said mechanism, substantially as described.

6. In a conveying apparatus, a carriage, a cable or trackway for the same, a rope approximately parallel with said cable, an arm on the carriage, having a running connection with said rope, and means actuated by the movement of said arm, whereby said carriage is arrested, substantially as described.

7. In a hoisting and conveying apparatus, a carriage, a cable or trackway for the same, a fall-rope, a fall-block, a projection from the fall-block, a hook mounted on the carriage to engage with said projection, and a detent for said hook, said hook being so constructed that as the projection moves above the nose of the hook it impinges against the body of the hook until the hook is thrown into engagement with the detent, substantially as described.

8. In a hoisting and conveying apparatus, in combination, a cable or trackway, a carriage to travel thereon, a fall-rope, a fall-block, a projection from said fall-block, a hook mounted on the carriage to engage said projection, and a detent for said hook, said detent projecting into the path of said projection, whereby the downward movement of the projection disengages the detent from the hook, substantially as described.

CHAS. M. NORTH.

Witnesses:

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