

No. 612,851.

Patented Oct. 25, 1898.

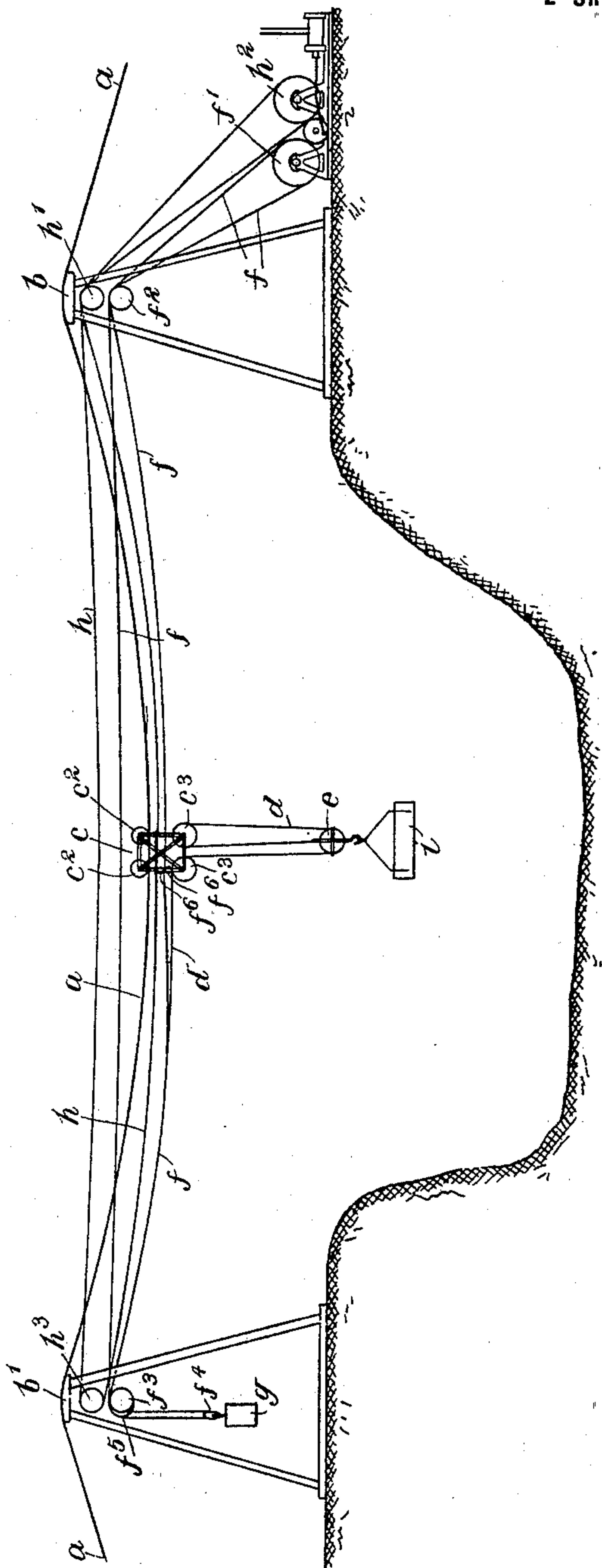
L. E. LAURENT & E. E. CHERRY.
CABLE HOISTING AND CONVEYING APPARATUS.

(Application filed Oct. 1, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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Fig. 2.

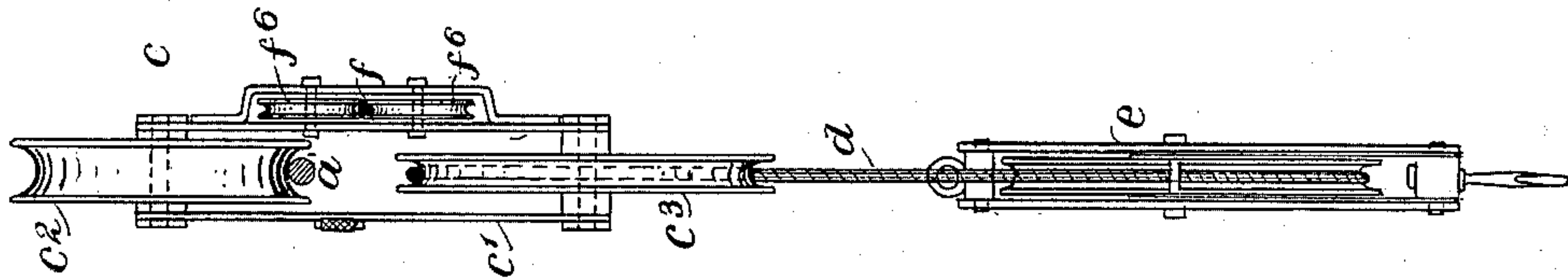
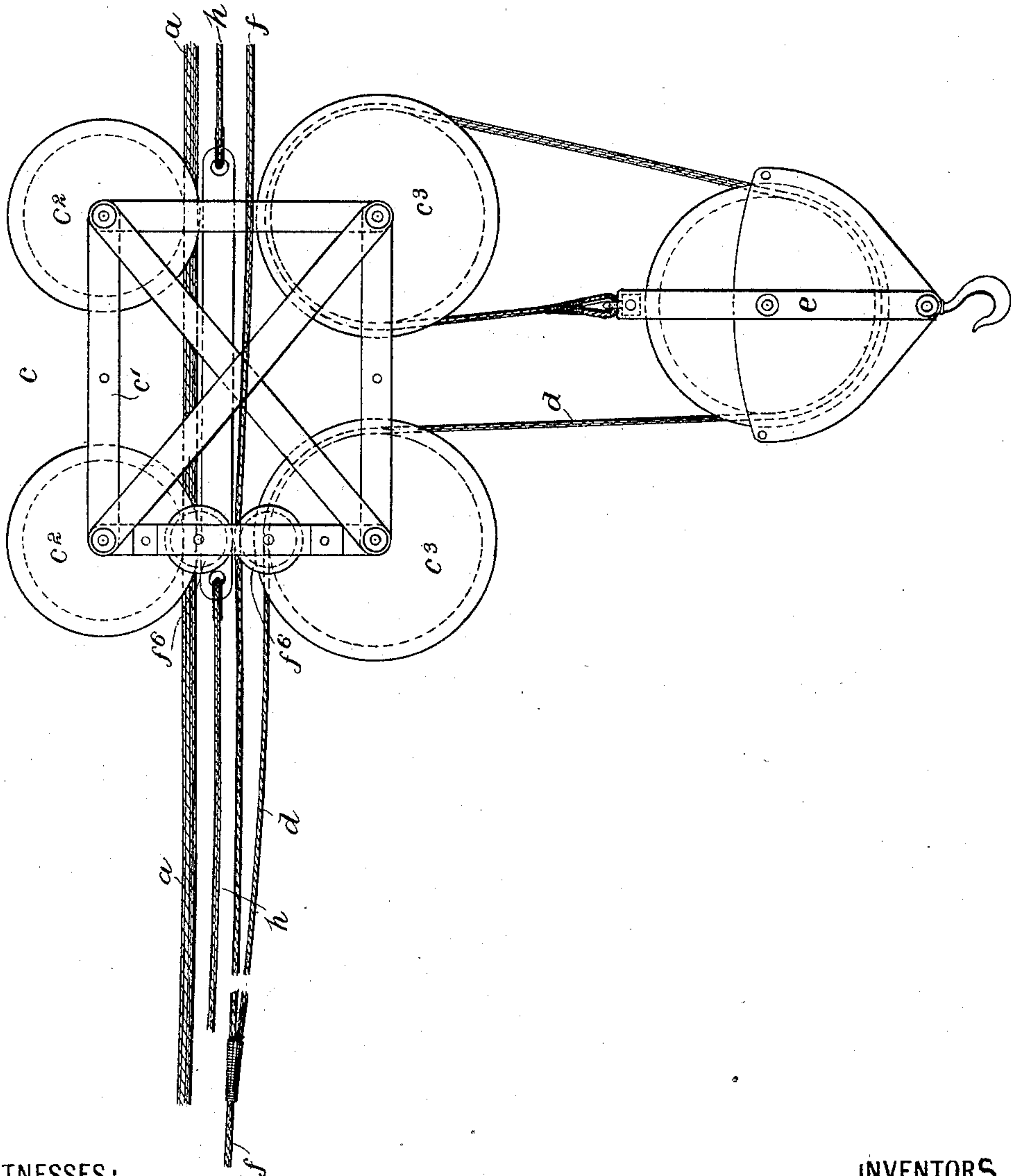


Fig. 2.



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UNITED STATES PATENT OFFICE.

LOUIS E. LAURENT AND EDWARD E. CHERRY, OF TRENTON, NEW JERSEY.

CABLE HOISTING AND CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 612,851, dated October 25, 1898.

Application filed October 1, 1897. Serial No. 653,698. (No model.)

To all whom it may concern:

Be it known that we, LOUIS E. LAURENT and EDWARD E. CHERRY, citizens of the United States, and residents of Trenton, Mercer county, State of New Jersey, have invented new and useful Improvements in Cable Hoisting and Conveying Apparatus, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

Our invention relates to that class of cable hoisting and conveying apparatus in which a carriage supported to travel upon a suspended carrying-cable is connected with an operating or hauling rope and provided with sheaves or pulleys over which another rope, known as the "hoisting-rope," operates. As this carriage travels out upon the carrying-cable when acted upon by the hauling-rope the hoisting-rope, as heretofore arranged, has also been drawn outwardly by the carriage in a slack condition, and in order to prevent undue sagging of such hoisting-rope and insure its free and easy running over its supporting-sheaves when the fall-block is being lowered it has been necessary to employ carriers for supporting such hoisting-rope. The use of these carriers, however, is objectionable for various reasons, and it has been one of the main objects of our present invention to provide a construction whereby the use of such carriers may be avoided.

Our invention also relates to other features of construction, as will hereinafter be referred to in detail, and pointed out in the claims.

Referring to the drawings, Figure 1 represents a general view of our invention in side elevation. Fig. 2 is a side elevation of the hoisting-carriage on an enlarged scale, and Fig. 3 is an end elevation of the construction shown in Fig. 2.

To explain in detail, a represents the main carrying-cable, which is suspended between two vertical supports b b' and anchored at its opposite ends in the usual manner. The carriage c , which travels upon this cable a , consists of a suitable frame c' , in the upper part of which are journaled grooved wheels c^2 c^2 , which are adapted to rest and run upon the cable a . Journaled in the frame, below these wheels c^2 c^2 , are two sheaves c^3 c^3 , over which the hoisting-rope d is passed. This hoisting-

rope d is secured at one end to the fall-block e , passes over one of the sheaves c^3 , down around the sheave in the fall-block, then up over the other sheave c^3 , and from thence, according to our invention, extends a short distance to what we term a "transmission-rope," (represented at f), to which latter it is securely spliced or otherwise connected. This said transmission-rope f is passed several times around an operating-drum f' to secure the required friction. From there it passes over a sheave f^2 on the support b , then over a sheave f^3 on the opposite support b' , down around a sheave f^4 , which is secured to a weight g , then up over a sheave f^5 on said support b' , thence back again between two guide-rollers f^6 f^6 on one side of the carriage c , over a sheave (not shown in the drawings) which is supported on the frame b at one side of the sheave f^2 , and from thence down again to the drum f' , thus forming an endless rope.

The hoisting-rope d being connected with the so-called "transmission-rope" f , as described, becomes practically a part of the latter, but is of sufficient length between the carriage and its point of connection with the transmission-rope as to allow for the proper operation or lowering of the fall-block and be held substantially taut by the latter, so as to prevent any undue sagging, such as would prevent or interfere with the proper and quick operation of the fall-block. The hoisting-rope d being of such shortened length, whereby the weight of the fall-block when being lowered will cause the rope to readily follow over the sheave c^3 , also makes it obvious how the use of fall or hoisting rope carriers is rendered unnecessary.

The transmission-rope f , which forms a part of the hoisting-rope by reason of its connection therewith, being an endless rope, it will be obvious that the same is liable to stretch more or less under the strain to which it is subjected in operating the fall-block, with its connected loads, and thus become unduly slack or loose. When the rope thus becomes unduly slack, it also becomes loose upon the operating-drum and does not properly respond to the action of the latter when revolved to operate the rope. To prevent liability of the rope f becoming thus unduly slack, we have provided the counterweight g ,

with which the rope connects in a manner as hereinbefore described. This weight will be of sufficient amount to overcome the resistance exerted by the bucket and its load upon the hoisting-rope d . It will be understood that this weight g does not interfere with the action of the rope in any manner and only serves to take up any undue slack and keep the rope in proper frictional contact with its operating-drum. A means for thus automatically taking up slack in a transmission or hoisting rope for the purpose described we believe to be entirely new with us, and therefore claim any other similar or equivalent means for performing the like function to be within the spirit of our invention.

The hauling-rope h for moving the carriage c back and forth upon the carrying-cable a connects at one end with the carriage and from there runs over sheave h' on the frame b down to a drum h^2 , around which it is wrapped several times to secure frictional contact therewith, then up over a sheave (not shown in the drawings) located at one side of the sheave h' , from there over to and around a sheave h^3 on the opposite support b' , and then back to the opposite side of the carriage c , to which it is secured, thus forming an endless rope which is operatively connected with the carriage and with an operating-drum, whereby said carriage may be moved back and forth upon the cable a at the will of the operator.

The operation of the apparatus as above set forth, in brief, is as follows: When the load (represented at i) is to be raised or lowered, the drum f' , around which the transmission-rope f is wrapped, is set in motion to move in the required direction and draw the connected hoisting-rope d in a direction to either raise or lower the load i . After the load has been raised and it is desired to carry the same toward either support b or b' both of the drums f' and h^2 are set in motion. This causes the rope h to haul or draw the carriage upon the cable a , and the transmission-rope f being moved at the same rate of speed as said hauling-rope the hoisting-rope d thereby becomes stationary relative to the carriage c , and thus holds the load in a raised vertically-stationary position while being moved along upon the carrying-cable by the hauling-rope. To lower the load, the haul-

ing-rope h is stopped or slowed up, while the transmission-rope is caused to pay out at a greater speed than the hauling-rope, in case the latter should still be in motion, and cause the hoisting-rope to pay out and thereby lower the load.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a cable hoisting and conveying apparatus, the combination with a carrying-cable, of a carriage supported to operate on said cable, means for moving said carriage back and forth upon the latter, an endless rope for raising or lowering a load, and means for preventing or taking up undue slack in said endless rope, substantially as set forth.

2. In a cable hoisting and conveying apparatus, the combination with a carrying-cable, of a carriage supported to operate on said cable, a hauling-rope for moving said carriage upon the latter, an endless rope for raising or lowering a load, running over supporting-sheaves and having connection with an operating-drum, and a counterweight loosely connected with said endless rope for taking up undue slack.

3. In a cable hoisting and conveying apparatus, the combination with a carrying-cable, of a carriage supported to operate on said cable, means for moving said carriage upon the latter, an endless operating-rope, and a hoisting-rope operating over bearings on said carriage, said hoisting-rope and operating-rope being united at a point at one side of the carriage, substantially as and for the purpose set forth.

4. In a cable hoisting and conveying apparatus, the combination with a carrying-cable, of a carriage supported to operate upon said cable, a hauling-rope for moving the carriage upon the latter, an endless "transmission" or operating rope passing between guide-pulleys on the carriage, and a fall or hoisting rope operating over sheaves on said carriage, said hoisting-rope and operating-rope being united at a point at one side of the carriage, substantially as and for the purpose set forth.

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Witnesses:

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