

(No Model.)

A. J. FRITH.
CONVEYING APPARATUS.

No. 557,574.

Patented Apr. 7, 1896.

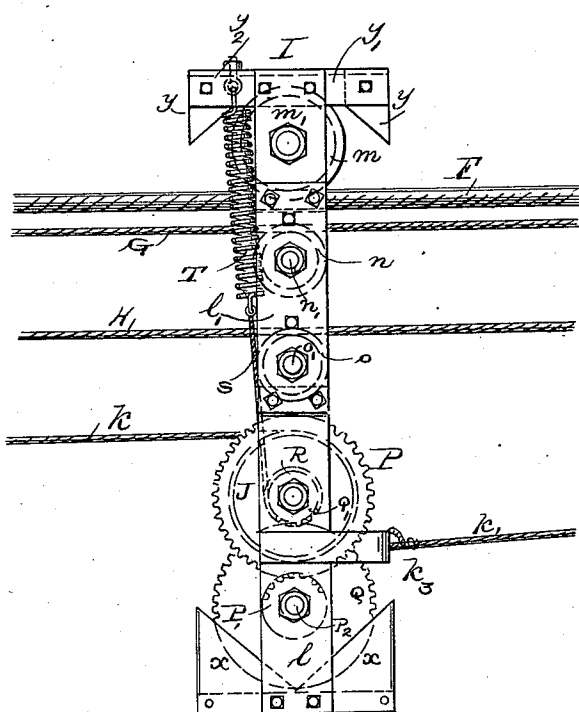
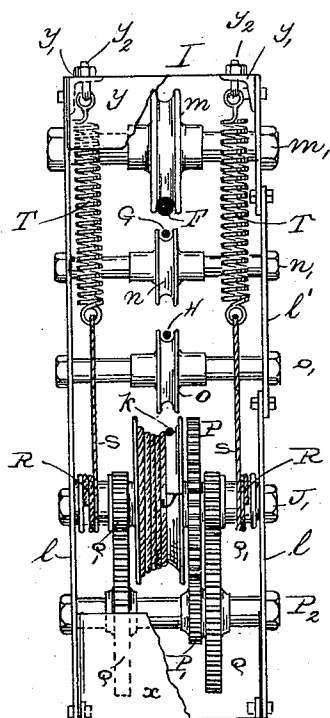
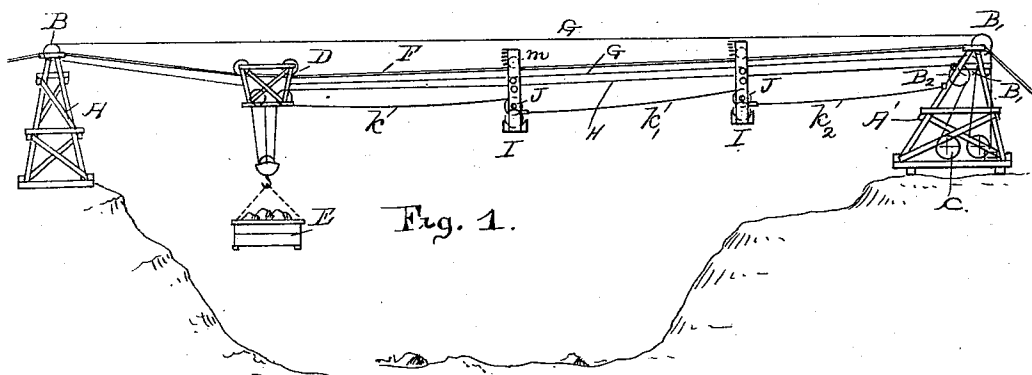


Fig. 2

Fig. 3

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WITNESSES:

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CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 557,574, dated April 7, 1896.

Application filed December 6, 1895. Serial No. 571,226. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR J. FRITH, of the city of New York, in the State of New York, have invented a new and useful Improvement in Conveying Apparatus, of which the following is a specification.

In a load-supporting carriage traveling on a wire rope or track way with a rope to traverse it and a hoisting-rope to raise the load it has been customary to support this fall-line by fall-rope carriers. These carriers have been spaced between the carriage and the engine-tower by stops arranged along the line of travel or by flexibly connecting them one to the other. When thus connected and the carriage approaches the tower, the slack has hung pendent and by tangling has rendered the device ineffective.

My invention has for its object to provide new means, whereby while the carriers are flexibly connected, the slack of the connections as it forms is coiled on a spool in each carrier, as will be herein set forth.

In the accompanying drawings, Figure 1 is a side view of a conveying apparatus containing my invention. Fig. 2 is an end elevation of one of my carriers, and Fig. 3 is a side view of the same carrier.

Similar letters refer to similar parts in the different views.

A A' are the towers; B B' B², the sheaves carried therein; C, the double-drum engine; E, the load to be hoisted and conveyed; D, the carriage; F, the main cable or track way; G, the line to traverse the carriage back and forth; H, the fall-rope or hoisting-line to raise the load; I I', two fall-rope carriers; K K' K², the flexible connection between the carriage and a carrier, between the two carriers, and between a carrier and the tower; J J, the spools in the carriers upon which the slack of the connections K K are coiled.

In Figs. 2 and 3 the carrier I has side plates l l', connected by guards x x and y y' and supported by the shaft m' and wheel m upon the cable or track way F, and by shaft n' and wheel n it supports the line G and by the shaft O' and the wheel O it supports the fall-rope H.

On the shaft J' turns freely the spool J, to which is fastened the gear P. P gears into a pinion P', rigidly connected to the gears Q

Q all turning by means of the shaft P². Q Q gear into the pinions Q' Q', each rigidly connected to a small spool R and turning freely on the shaft J'.

Flexible connections S S coil on and are fastened to the spools R R and connected with one end of long springs T T, whose other ends are connected to the frame of I.

The plate l' is a removable part of the side l, by which the cable F and the lines G and H may be inserted in the carrier without being unreaved from their connections.

The connection K is fastened to and coiled upon the spool J, while K', by means of K², connects I to I' and is attached to I' in the same manner as K is attached to I.

It is apparent that as D in its movement drags it will uncoil K and revolve J, and, through the gearing P P' Q Q', revolve more slowly the spools R R, coiling up S S and extending the springs T T. When D returns, the elasticity of T T will reverse the motion and coil up the slack in K. It is also apparent that the drag of D upon K will be transmitted to K' and from it to K², and will be balanced in amount by the tension of T T as transmitted through the gearing. This tension will be approximately the same in both carriers, and will correspond to the uncoiling of equal lengths of K and K'. Hence whatsoever the position of D the carriers I and I' will be about equally spaced. K² may be coiled up similarly to K. By this means each of the series of rope-carriers will space itself along the cable at proper intervals for all positions of the carriage, and when slack occurs in the connections it is coiled up and cannot tangle.

Believing that I am the first one to suggest the coiling up of the connections by practical means, and being aware that cases might arise where the springs could be replaced by other forms of balancing, such as weights, or where the coiling-spool might be carried either on the carriage or the tower, or the springs be in compression instead of tension, as shown, and it being also evident that it is not necessary to carry the line G in the carrier,

I claim—

1. In a conveying apparatus, in combination, a cable or track way, a load-carriage, a carrier, a flexible connection between the car-

rier, the carriage and a fixed support, which flexible connection coils upon a spool by means of a less movement of a balance, substantially as described.

5 2. In a conveying apparatus, in combination, a cable or track way, a hoisting-line, a load-carriage, a series of carriers, flexible connections between the carriage, the carriers
10 coils upon a spool by means of a less movement of a balance substantially as described.

3. In a conveying apparatus in combination a cable or track way, a hoisting-line; a load-carriage, a carrier, a flexible connection
15 between them and a fixed support, which flexible connection coils upon a spool by means of a lessened movement of a spring substantially as described.

4. In a conveying apparatus, in combination, a cable or track way, a hoisting-line, a load-carriage, a series of carriers, flexible connections between the carriage and the carriers, which flexible connection coils upon a
20 spool by the lessened movement of a spring, substantially as described.

5. In a conveying apparatus, in combination, a cable or track way, a hoisting-line, a load-carriage, a series of carriers, flexible connections between the carriage and the carriers, which flexible connection coils upon a
25 spool by the movement of a spring, acting through gearing substantially as described.

6. In a conveying apparatus, in combination,

a cable or track way, a hoisting-line, a load-carriage, a carrier with a removable side, 35 connection between the carriage, the carrier and a fixed support, which flexible connection coils upon a spool by means of a balancing mechanism, having a less movement than the spool. 40

7. In a conveying apparatus, in combination a cable or track way, a hoisting-line, a load-carriage, a carrier with guards, a flexible connection between the carriage, the carrier and a fixed support, part of which flexible
45 connection coils upon a spool by the movement of a balancing mechanism, substantially as described.

8. In a conveying apparatus, in combination, a cable or track way, a hoisting-line, a load-carriage, a series of carriers with supporting-wheels *m*, flexible connections between the carriage, the carriers and a fixed support, part of which flexible connection coils on and uncoils from a spool supported
50 by a carrier, the tension of the flexible connection being balanced by the springs *T T* acting through the spools *R R* the pinions *Q' Q'*, the gears *Q Q*, the pinion *P'* and the gear *P*, rigid with the spool *J*, substantially
55 as described. 60

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Witnesses:

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