

UNITED STATES PATENT OFFICE.

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AERIAL TRAMWAY.

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To all whom it may concern:

Be it known that I, JOSEPH H. DICKINSON, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Aerial Tramways, of which the following is a specification.

My invention relates to that class of aerial tramways in which a hoisting-rope passing over a traveling carriage or support thereon is operated to elevate the load to be transported and sustain it during transfer.

In operating this kind of apparatus it is necessary to provide means for bringing the carrying device (be it car, bucket, or tongs) attached to the free end of the hoisting-rope down to the load to be transported. If the hoisting-rope is unsupported between the traveling carriage and the terminal standard of the tramway near the drum on which the hoisting-rope is wound, the weight of the rope between those points causes it to sag and drag upon the ground and raises the free end of the rope to the sheave on the traveling carriage, where it is held by the carrying device attached to the end of the rope contacting with the carriage or the sheave thereon. To overcome this difficulty, supports for the hoisting-rope have sometimes been fixed upon the intermediate standards of the tramway, and in other instances have been hung or placed upon an independent parallel supporting-cable extending from end to end of the tramway; but these supports are cumbersome and expensive and require much extra labor to place in position, and are more or less numerous as the tramway is long or short. In temporary structures of this kind, such, for instance, as are used in logging-work and which are often of considerable length, these intermediate supports for the hoisting-rope are not commonly used, owing to the expense, time, and labor required to procure and place them in position. In such cases it requires the united efforts of three or four men to take up sufficient of the slack in the hoisting-rope to bring the carrying device at its free end down to the load to be transported.

The object of my invention is to obviate

these difficulties by the simple, convenient, and inexpensive means hereinafter described.

In this specification I have shown and described a log-skidding tramway embodying my invention, but as will be readily understood the invention is equally applicable to that class of cable-hoists in which the traveling carriage is propelled by means of a cable or cables wound upon drums and independent of the hoisting-rope itself, which in the tramway described in this specification operates to draw the carriage to the point of discharge as well as to elevate and sustain the load thereof.

In the drawings forming a part of this specification, Figure 1 is a general view of a tramway embodying my invention. Fig. 2 is a side view of the traveling carriage and its depending frames and connected cables, showing the relative positions of the hoisting-rope, hoisting-rope supports, and branch rope when the carrying device is lowered to receive its freight. Fig. 3 is a side view of one of the slack-carriers employed in my device, and Fig. 4 is a front view of one of the said slack-carriers.

In the drawings, the operating-engine and its connections with the operating-drums of the tramway are not shown, their form, location, and use being well understood by those cognizant with the art; but A and B are terminal standards supporting the tramway. C is the main or tram cable thereof. D is the carriage which travels on the cable C. E is the tail-rope by means of which the carriage is drawn out to any designated point on the tramway to receive its load. F is the hoisting-rope by means of which the load to be transported is raised to and maintained in an elevated position during transfer, and in the construction shown is used to draw the carriage along its path, and G is the branch rope.

One end of the tail-rope E is attached to the frame *d*, depending from the carriage D, and thence the rope passes around the sheave *f* on the terminal standard B and returns thence to the other end of the tramway, passing between the sheaves *d'* and *d''* in the frame *d* and over the sheave *g* on the terminal standard A to the drum *a*, on which it is wound.

The hoisting-rope F is wound upon the drum *b*, and passes thence over the sheave *h* on the terminal standard A to and over the sheave *e*² in the frame *e*, depending from the frame *d*, where it terminates in a free end, to which is connected a bucket, car, or pair of gripping-tongs, as the use of the apparatus may require. At a point on the hoisting-rope F, preferably about one hundred feet from its free end, one end of the branch-rope G is attached to the rope F, and passes thence over the sheave *e*' in the frame *e* and thence back over the sheave *i* on the standard A to the drum *c*, on which it is wound. Between the point of its attachment to the hoisting-rope F and the depending frame *e* the branch rope G sustains a number of supports *k k k*. Each of these supports *k k k* consists of a metal frame containing two small sheaves *l m*. Attached to the lower ends of the frames *k k k* is a light rope or chain *o*, one end of which is attached to the hoisting-rope F, and the other end thereof is attached to the frame *e*, as is shown in Fig. 1. This connection *o* serves to keep the supports *k k k* properly separated and spaced and in position to sustain the weight of the hoisting-rope F between the point of attachment thereto of the rope G and the frame *e*, the hoisting-rope running upon the small sheaves *m m m* in the frames *k k k*.

In operating the tramway the drum *a* is revolved to wind the tail-rope E and draw the carriage D to the point on the line over the load to be transported. At the same time the drums *b* and *c* are revolved to unwind the hoisting-rope F and the branch rope G. When the carriage D has reached its destination, the drums are stopped, and the drum *c* is then revolved to wind the branch rope G. The pull of the branch rope overcomes the slack in the hoisting-rope and sustains the chief portion of the weight of that rope, and thus makes the weight of the carrying device, attached to the free end of the hoisting-rope, sufficient to draw the end of the rope to the ground, while the supports *k k k* assist in guiding the hoisting-rope to the sheave *e*², through which it is forced.

As will be readily understood, as the slack is drawn out of the rope F the supports *k k k* are collected together at or near the depending frame *e* in the manner shown in Fig. 2. The free end of the hoisting-rope being thus brought to the ground the load to be transported is deposited in or attached to the carrying device, the drum *b* is revolved to draw upon the hoisting-rope F and to raise the load from the ground and draw the carriage D toward the terminal standard A to the point of discharge, and the drums *a* and *c* are revolved to unwind the tail-rope E and the branch rope G, the drum *a* being braked

in order to sustain the load in an elevated position until it is dropped at the point of discharge.

I do not consider the addition of the supports *k k k* and their flexible connection essential in constructions in which the branch rope is attached to the hoisting-rope at a point not greatly exceeding one hundred feet from the carriage and where there is any considerable weight at the free end of the hoisting-rope, but they are useful in assisting the passage of the hoisting-rope over the sheave *e*² in cases where the carrying device is of light weight or there is any obstruction to the easy passage of the hoisting-rope over said sheave. These supports are also useful and indeed essential when the point of connection between the hoisting-rope and the branch rope is at any great distance from the carriage or the weight at the free end of the hoisting-rope is inconsiderable.

Having thus described my invention, what I claim is—

1. In an aerial tramway, a way, a carriage mounted to travel on said way, a tail-rope attached at one end to said carriage and having its other end wound upon an operating-drum, a frame flexibly attached to the lower end of said carriage, said frame embodying two sheaves, a hoisting-rope operated by a drum and passing over one of said sheaves in said frame, a branch rope attached to said hoisting-rope at a point thereon between the said frame and the drum operating said hoisting-rope and passing over the other sheave in said frame and having a free end, and one or more supports sustained on the branch rope and on which said hoisting-rope travels; substantially as shown and described.

2. In an aerial tramway, a way, a carriage mounted to travel on said way, a tail-rope attached at one end to said carriage and having its other end wound upon an operating-drum, a frame flexibly attached to the lower end of said carriage, said frame embodying two sheaves, a hoisting-rope operative by a drum and passing over one of said sheaves in said frame, a branch rope attached to said hoisting-rope at a point thereon between the said frame and the drum operating said hoisting-rope and passing over the other sheave in said frame and having a free end, one or more supports sustained on the branch rope and on which said hoisting-rope travels, and a flexible connection between said supports and said frame; substantially as shown and described.

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Witnesses:

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