

(No Model.)

2 Sheets—Sheet 1.

J. H. DICKINSON.
AERIAL TRAMWAY.

No. 495,397.

Patented Apr. 11, 1893.

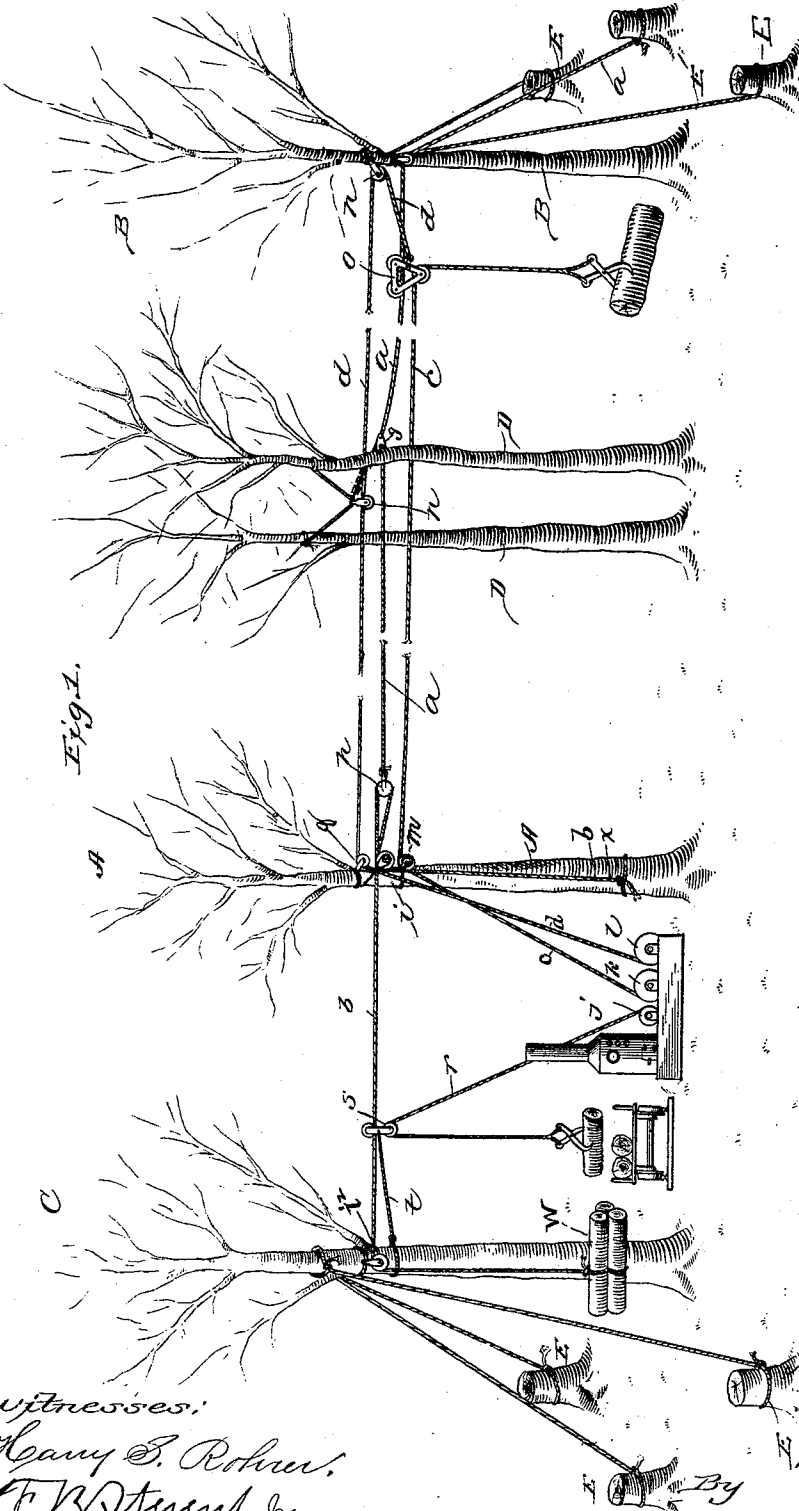


Fig. 1.

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Inventor:
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By
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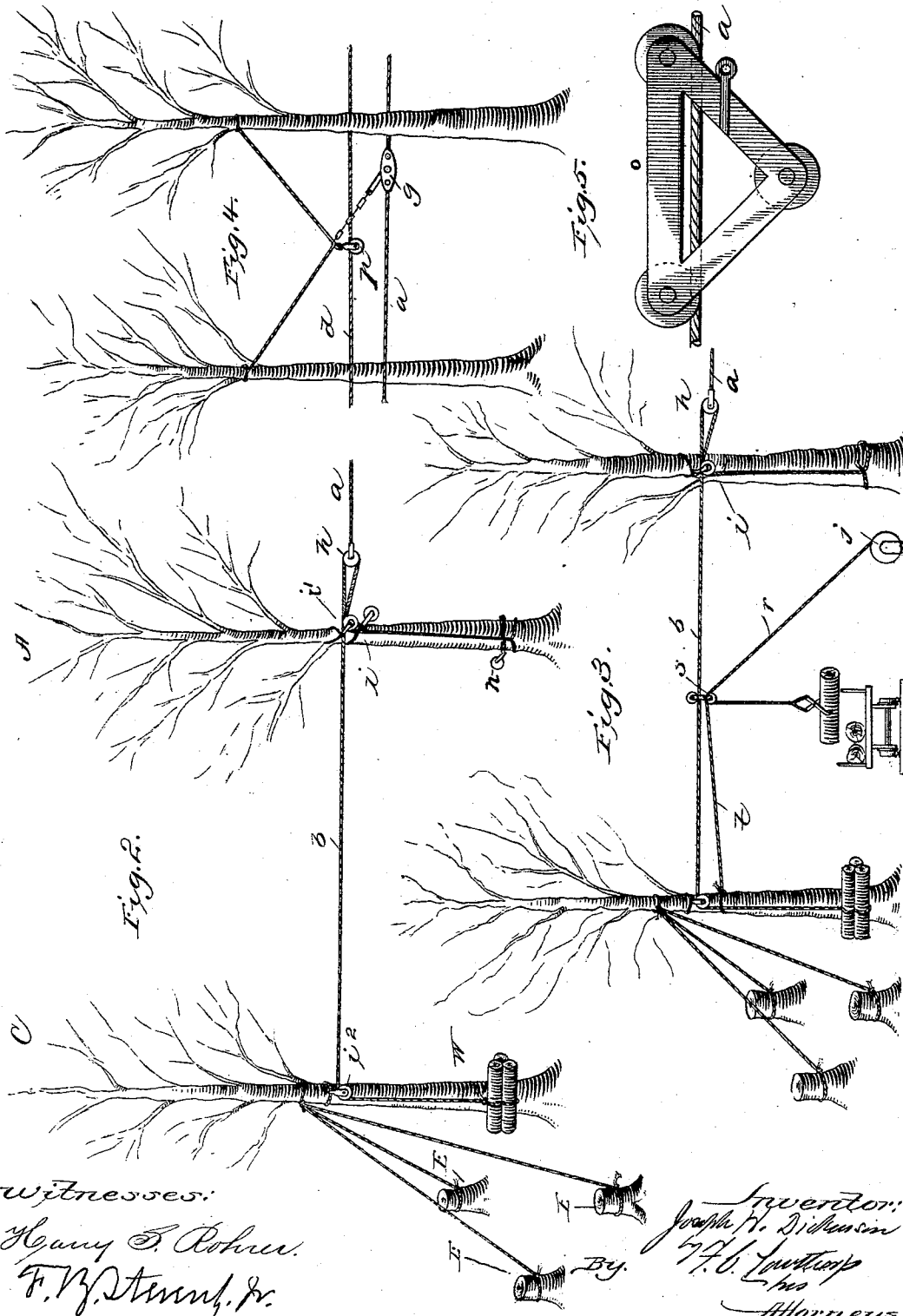
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UNITED STATES PATENT OFFICE.

JOSEPH H. DICKINSON, OF TRENTON, NEW JERSEY, ASSIGNOR TO THE
TRENTON IRON COMPANY, OF SAME PLACE.

AERIAL TRAMWAY.

SPECIFICATION forming part of Letters Patent No. 495,397, dated April 11, 1893.

Application filed August 31, 1892. Serial No. 444,631. (No model.)

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; and I do hereby declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of aerial tramways wherein a traveling carriage from which is suspended the load to be transported moves upon a tram-rope; and more particularly to that class of such tramways as is used in the moving or skidding of logs from point to point. Such tramways have heretofore been constructed in forests, and trees have been used as supports or standards for the tramway proper and its auxiliary cables, and as well for anchoring the same, but they have been limited to single spans owing to inherent limitations in their construction, and when the trees within a comparatively small area have been felled and shipped, it has been necessary to remove the structure to another location, and also to construct new railways or roads leading to the new location of the delivery end of the tramway.

The object of my invention is materially to increase the length and efficiency of such tramways by providing a cheap but substantial structure, comprising two or more spans, which may be quickly removed when necessary, and more readily re-erected and adjusted than those now in use, thus obviating such frequent removals and extensions of the railway or road upon which the logs are shipped when delivered at the delivery end of the rope tramway.

The principal features of my said invention are the multiplication of the spans between the terminal supports, means for passing the traveling carriage over the intermediate supports, the automatic adjustment of the tram-rope, and the improved means for adjusting the same when the plant is being set up.

I shall now describe my invention more fully, having reference to the accompanying drawings, in which—

Figure 1 represents a general view of my

improved tramway or skidding apparatus as shown in operation. Fig. 2 shows a side view of the delivery end of the apparatus showing the means for automatically adjusting the tram-rope or carrying cable. Fig. 3 presents a view of the same, showing the auxiliary shifting apparatus for loading the logs on cars, wagons, &c. Fig. 4 shows a pair of intermediate tramway supports sustaining a shifting saddle or joint supporting the tram-rope or carrying cable, and Fig. 5 shows a side elevation of the carrying device or carriage with its depending sheave.

In the drawings A and B are trees forming the terminal supports of the main tramway; the terminal support A and the support C forming the supports of the auxiliary system at the delivery end of the main cable way.

D, D are intermediate supports of the main system.

E, E, E are anchorages at the ends of the cable ways to which are attached cables connected with the end supports of the systems to prevent displacement. The tram-rope or carrying cable *a* is anchored to the middle stump E beyond the terminal support B, is carried upward and firmly attached in any appropriate manner to the support B at a sufficient height to cause the logs to be conveyed thereon to properly clear obstructions in their path under the cable, and is extended between the supports D, D, and preferably clamped in the swinging saddle *g*, and made fast to the sheave *h* near the support A, as shown in Figs. 2 and 3. The auxiliary cable *b* is attached at one end by a chain to the support A, as shown in Fig. 2, and passes up the support A over a sheave *i* to and through the sheave *h*, back over the sheave *i'*, beside the sheave *i* and not showing in the drawings, and across to the sheave *i''* upon the support C, where it ends, and where is attached to it a sufficient weight *w*. This weight *w* is used as a compensating balance to the loads carried upon the main cable *a* and auxiliary cable *b*, and is sufficiently heavy to hold the said cables taut when in use, and must, therefore, be duly proportioned to the load to be sustained by the cables. A weight of six tons would thus exert a tensile strain of twelve tons upon the main cable *a* by reason of the

cable passing through the sheave *h*, and would at the same time exert a strain of only six tons on the auxiliary cable *b*; the extra strain upon the cable *a* being utilized to support the long spans of the cable *a* as well as the load traversing the same.

Between the supports A and C is located a steam winch or engine operating drums for winding the cables in the usual manner. These drums *j*, *k* and *l*, shown in Fig. 1, are geared to the engine in the usual manner, and are capable of operating independently of each other. The drum *k* operates the skidding rope or hauling cable *c*. The cable *c* extends from the drum *k* over the sheave *m* on the support A, and at its other end farthest from the engine passes over the sheave depending from the carriage *o* which travels upon the cable *a*.

The carriage *o*, as shown in Fig. 5, is of simple construction, and consists of a frame work of iron connecting the two flanged wheels running upon the tram-rope *a*, and a depending sheave. The skidding cable *c* passing over the sheave depending from the carriage *o* has attached to its free end a pair of tongs of the ordinary pattern for gripping the logs to be conveyed. Attached to the carriage *o* is the rope or cable *d* which passes from the carriage around the sheave *n* on the support B, and back over the sheave *p* suspended between the supports D, D, and the sheave *q* on the support A to the drum *l* upon which it is wound. The auxiliary system between the supports A and C consists further of the short cable *r* which is passed through the sheave *s* suspended upon the auxiliary cable *b* and is wound upon the drum *j*, and has attached to its free end a pair of gripping tongs similar to those attached to the free end of the cable *c* of the main system. The sheave *s* is kept in its proper position on the cable *b* by the guy *t* fastened to the support C, and the tension of the cable *r* as shown in Fig. 3.

When in use my invention operates as follows: The vehicle to be loaded with logs is stationed between the supports A and C and under the sheave *s*. The support B being located within the forest where the trees are being felled, the traveling carriage *o* is run out from the support A on the tram-rope *a* to the point where lie the logs to be transported by operating the drum *l*, and thus hauling upon the tail rope or cable *d*. Simultaneously, by the traction of the cable *d* and carriage *o*, the hauling rope *c* is drawn out and unwound from the drum *k*. When the carriage is over the log to be transported, the tongs attached to the free end of the cable *c* are gripped upon the log, and the drum *k* is set in motion to wind the cable *c*, and the drum *l* is held under control by a brake to keep the tail rope *d* under sufficient tension to raise the log to the desired height. The first effect is to raise one end of the log being conveyed clear from the ground, and then the carriage with the log

suspended thereunder moves toward the support A. When it reaches the sheave *h* the log is detached from the tongs of the cable *c*, and the tongs attached to the auxiliary cable *r* are gripped upon it, and the drum *j* being set in motion, the log is quickly raised to a point above the car or wagon, and deposited thereon. This operation is repeated until all the trees on the line of the tramway are felled and the logs removed. It will be observed that the points of greatest deflection of the tram-rope *a* are midway the supports or at the middles of the spans, and when the carriage is at these points the weight *w* forming the compensating balance is slightly raised; but as the loaded carriage approaches the intermediate supports its weight is thrown more immediately thereon, and the weight *w* sinks slightly thus retracting the shifting saddle between the intermediate supports, and the deflection in the tram-rope *a* being thus materially reduced, the carriage is enabled to pass over the saddle onto the next span of the tram-rope without danger of derailment. When the trees along the line of the tramway are all removed, the tramway is shifted, the structure being moved around in circles having the supports A and C for their centers, until all the timber within those circles is removed, when it becomes necessary to locate a new center of operations, and extend the railway or wagon road to it. It will thus be seen that a great saving of time and labor is effected by securing a greater length of tramway than is practicable under the systems now in use for such purposes.

In construction the sheave *h* is secured to the tram-rope *a* at the desired point to give the correct length of span; and the tram-rope may, if desired, be made in as many sections as there are spans in the apparatus, these several sections being joined together in the several swinging saddles. In setting up the plant the cable *b* is passed about the sheaves *i*, *i'*, *i''* and *h* as shown in Fig. 2. The loading cable *r* wound upon the drum *j* is temporarily passed through a sheave *n* near the foot of the support A, and attached to the auxiliary cable *b* at or near the point marked *x* in any suitable temporary manner, and by starting the drum *j* the entire system of carrying cables is brought to the proper position and tension, and the auxiliary cable *b* while under tension from the drum *j* is attached to the support A at *m*. The loading cable *r* is then disengaged from the auxiliary cable *b* and passed over the sheave *s*, and the tongs are attached to its end as shown in Fig. 3, and it is ready for use in loading.

I make no claim at this time for the improved swinging saddle employed in the above described structure as I have previously made application for patent therefor in application Serial No. 415,728.

Having thus described my invention, what I claim as new is—

1. In an aerial tramway, a tram-rope in

combination with an automatically adjustable end support, and a movable intermediate support; substantially as shown and described.

- 5 2. In an aerial tramway, an automatically adjustable main tram-rope in combination with an automatically adjustable auxiliary supporting cable, substantially as shown and described.
- 10 3. In an aerial tramway, a tram-rope in

combination with a compensating balance to sustain the load to be carried on the tram-rope, movable intermediate support, a carriage running upon the tram-rope and cables to operate the same, substantially as shown 15 and described.

JOSEPH H. DICKINSON.

Witnesses:

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