Feb. 19, 1924. 1,484,387

M. H. DICKINSON

CABLEWAY

Filed Nov. 6, 1920 2 Sheets-Sheet 1

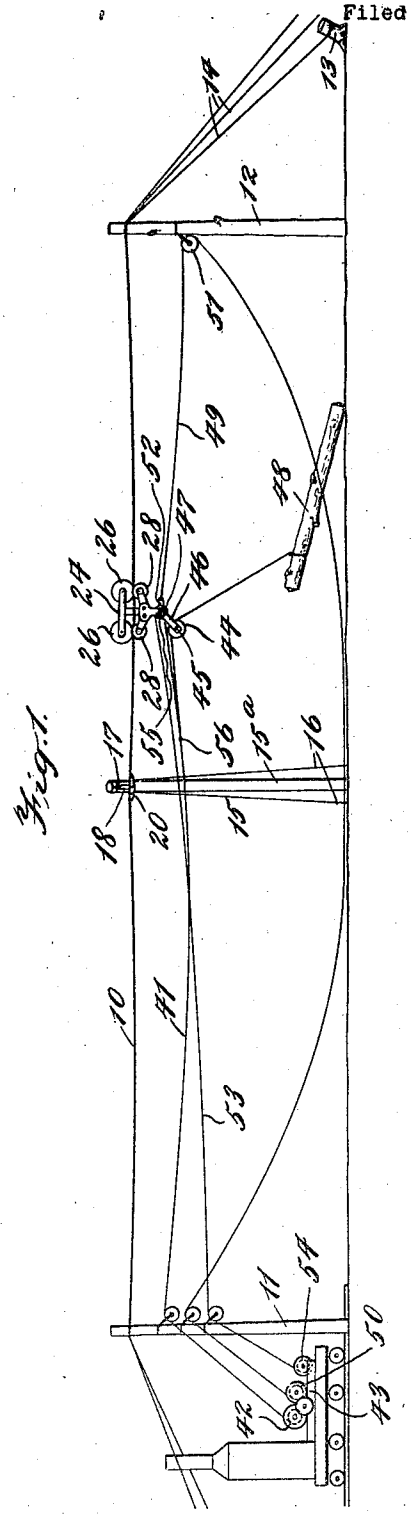


Fig. 1.

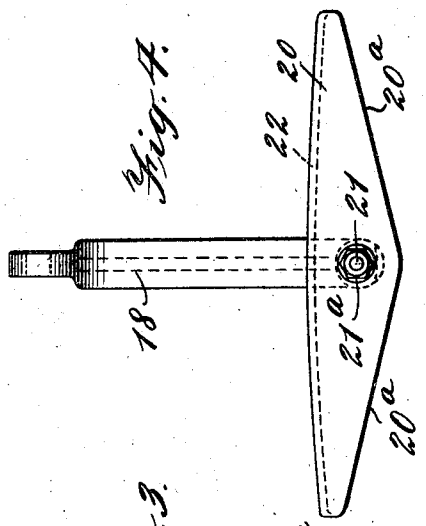


Fig. 4.

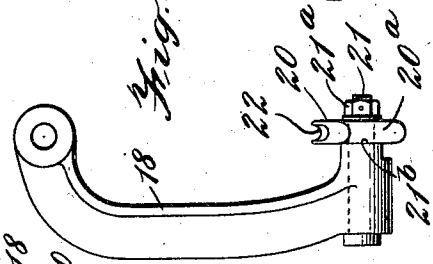


Fig. 3.

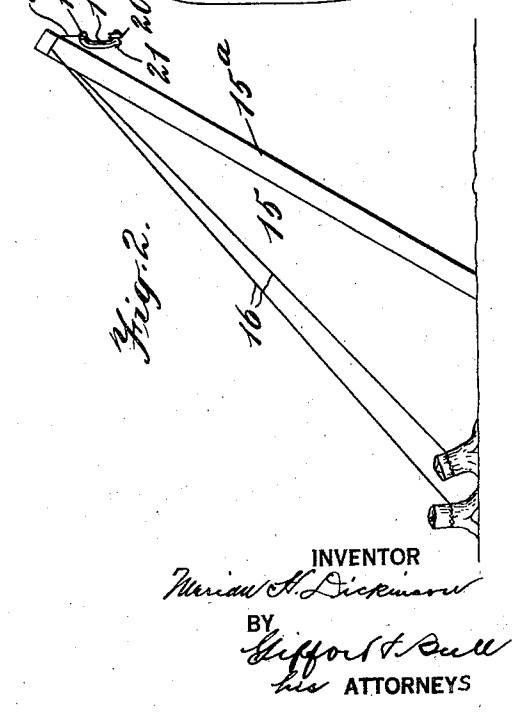


Fig. 2.

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Fig. 5.

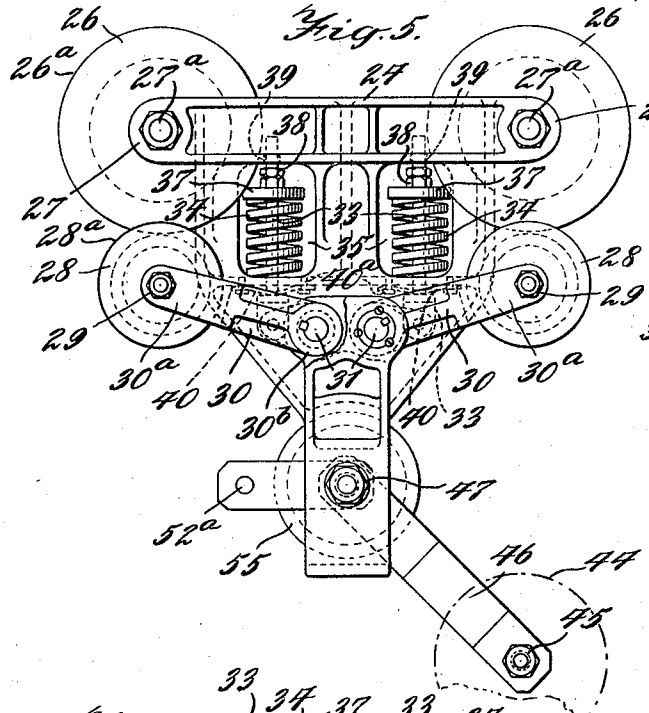


Fig. 6.

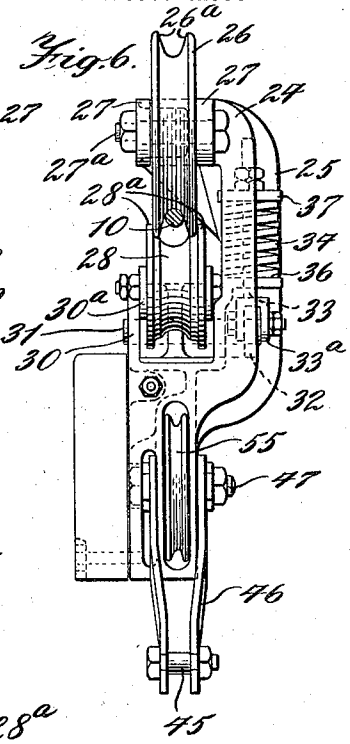


Fig. 7.

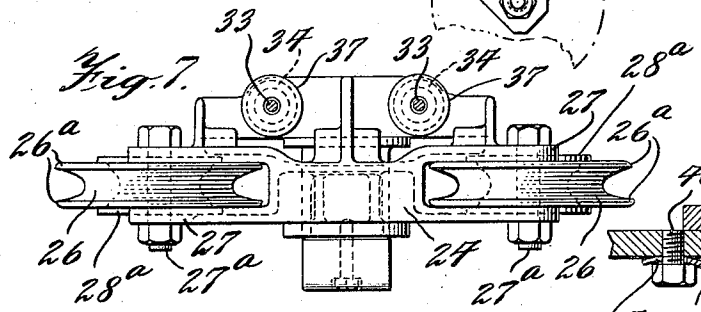


Fig. 9.

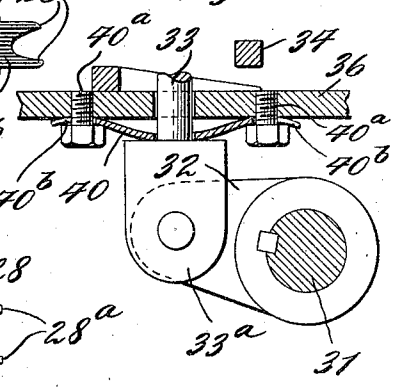
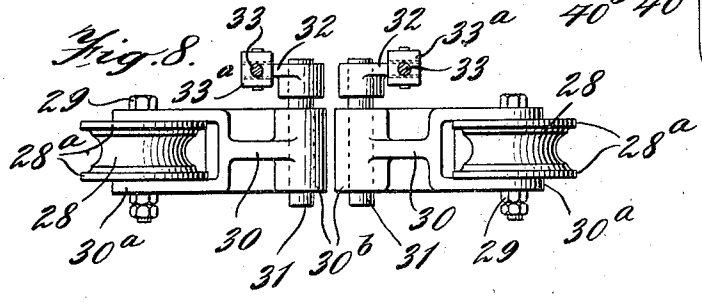


Fig. 8.



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UNITED STATES PATENT OFFICE.

MERIAN H. DICKINSON, OF SEATTLE, WASHINGTON, ASSIGNOR TO LIDGERWOOD MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CABLEWAY.

Application filed November 6, 1920. Serial No. 422,118.

To all whom it may concern:

Be it known that I, MERIAN H. DICKINSON, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Cableways, of which the following is a specification.

My invention relates to new and useful improvements in cableways of that general character or type wherein a cable is supported or held by suitable means at its ends and also by one or more supports intermediate its ends, and more particularly contemplates a novel carriage construction for use in connection with such cableways.

The invention consists in the improvements to be more fully described hereinafter and the novelty of which will be particularly pointed out and distinctly claimed.

I have fully and clearly illustrated a preferred embodiment of my invention in the accompanying drawings to be taken as a part of this specification and wherein—

Figure 1 is a side view, illustrating diagrammatically, a cableway embodying my invention;

Fig. 2 is an end view of the intermediate support of the cableway;

Fig. 3 is an end view of a saddle for the intermediate support;

Fig. 4 is a side view of the saddle;

Fig. 5 is a side view of a carriage embodying one form of my invention;

Fig. 6 is an end elevation of the carriage showing the main cable in cross-section;

Fig. 7 is a plan view of the carriage;

Fig. 8 is a plan view of the supporting arms for retainer sheaves and the associated parts, and

Fig. 9 is a sectional detail view of a portion of the mechanism by which the retainer sheave is held in position.

Referring to the drawings by characters of reference, 10 designates a main cable passing over a head tree or tower 11 and a tail tree or tower 12, respectively, and anchored suitably at its ends, the anchor at the tail tower being shown at 13. It will be understood that the cable may be held at its ends by any suitable well-known means, that shown being merely by way of example for purposes of illustration. The respective trees or towers are preferably held in position by suitable guys 14. The main cable is supported at an intermediate point by an intermediate support, indicated generally at 15, and comprising a mast or spar 15^a which is held in position by suitably anchored guys 16. From the intermediate support is suspended a saddle 17 comprising preferably a curved depending hanger arm 18 suspended flexibly from the top of the said mast by any suitable suspension, as at 19. The saddle also comprises a cable-supporting plate or member 20 on a bolt 21 in the lower end of the arm 18, said plate being arranged on the bolt between a vertical face 21^b on the arm 18 and a nut 21^a threaded on the end of said bolt. The plate 20 is provided at its upper edge with a longitudinal groove 22 in which the main cable is seated and rests by its weight. The upper face of the plate 20 is formed on a gradual or shallow convex curve, whereas the lower edge or face is oppositely tapered from an intermediate point adjacent its pivotal support toward its ends, as shown at 20^a, whereby the supporting plate is wedge-shaped at its ends.

The carriage embodying my present invention is constructed so as to travel freely on the cable 1, and to pass the said intermediate support without being displaced from the cable, and for this purpose includes an open-sided skeleton frame 24, the upper portion of which is offset to one side, as at 25, to provide an open space through which the main cable passes, and which permits the carriage to pass the saddle forming part of the intermediate support. The carriage is provided with suitable grooved running wheels or sheaves 26 adapted to rest and travel on the main cable, and whereby the carriage is supported on the main cable. The sheaves 26 are revolubly mounted on suitable bearings in the frame 24, said bearings preferably consisting of yokes 27 at the opposite ends of the frame within which yokes the said running sheaves are arranged to turn upon bearing shafts or bolts 27^a held in the arms of the yokes. According to my invention, I provide improved and efficient means for preventing displacement of the carriage from the cable during traversing movements of the carriage, which means is constructed not only to pass freely the intermediate support for the cable, but also acts when passing said support to prevent displacement of the carriage. This retaining means comprises one or more rollers, preferably grooved sheaves, arranged

with the axis thereof normally extending beneath the cable, and so located as to cooperate with the running sheaves as to enclose the cable so that the latter cannot pass from between said running and retaining sheaves. The retaining sheaves are so mounted that they normally cooperate with the running sheaves during the traversing movement of the cable between supports to enclose the cable, and when the carriage is in the act of passing the intermediate support to be moved away from the cable to permit the support for the latter to pass between the running and retaining sheaves, but in such manner that said retaining sheaves cooperate with the support to prevent displacement of the carriage from the cable. Also according to the preferred embodiment of my invention, I contemplate means for rotating or driving the retainer sheave or sheaves at or before the time of impact with the supporting member of the saddle so that the retainer sheave or sheaves will be rotating at the time of engagement with the saddle, and will, therefore, ride easily beneath said supporting member in rolling engagement therewith, said sheaves being preferably rotated at such speed that when they strike the said member, they ride the same without slippage. In the present embodiment, I have illustrated two retainer sheaves, one at either end of the carriage, and as both sheaves and associated parts are the same, I will describe but one of them. The retainer sheave 28 has its bearings at 29 in the bifurcated end 30[a] of an arm 30, the opposite end of which is provided with a hub 30[b] which is secured to a horizontal shaft 31 having its bearings in the frame 24 of the carriage. A second arm 32 is also secured on the shaft 31 (see Fig. 8) to the end of which arm is pivoted the lower end of an upwardly extending stem 33, the lower end of which is preferably bifurcated, as at 33[a]. A coiled expansion spring 34 surrounds the stem 33 and is located in an opening 35 of the frame and seated at its lower end on the frame, as at 36. The upper end of the spring 34 engages a follower plate 37 which is held in position on the stem 33 by a nut or nuts 38 by which the position of the plate may be adjusted to regulate the force of the spring. The upper end of the stem 33 is preferably received in an opening in the frame, as at 39, which forms a guide therefor. The spring 34 normally exerts its force to move the plate 37 and the stem 33 upwardly and thereby lifts the retainer sheave 28 into frictional driving engagement with the periphery of the main cable sheave 26. Preferably, the retainer sheave is made of a greater thickness than the main cable sheave 26, as shown in Fig. 6, and is preferably formed with annular shoulders 28[a] at either side of the center groove which shoulders frictionally engage the flanges 26[a] on the sides of the main cable sheave. By the described arrangement, it will be seen that the retainer sheave is rotatably driven by the main cable sheave in a direction to cause the same to ride easily beneath the supporting member 20 of the saddle, the retainer sheave being preferably rotated at such a speed that there will be no slippage when the retainer sheave strikes the supporting member. It will be apparent that the engagement of one sheave within the outer periphery of the other, as in the embodiment illustrated, the main cable sheave engaging the retainer sheave within the outer periphery of the latter, will maintain the two sheaves in alignment and close about the main cable and normally prevent the carriage from jumping the cable. Buffer springs 40 are preferably interposed between the web of the frame on which the springs 34 are seated and the bifurcated lower end of the stems 33 to prevent shock when the retainer sheaves are elevated by the springs 34 after leaving the supporting plate 20. The springs 40 may conveniently be secured to the frame by screws 40[a] passing through end slots 40[b] in said springs 40. In the preferred embodiment illustrated, the operation is as follows: When the carriage is located between one of the end supports and the intermediate support 15, the elements of the carriage are in the position and relation shown in Figs. 5 and 6 of the drawings, in which the springs 34 exert their forces to lift the arms 30 so as to place the retainer sheaves in position to contact the peripheries of the running sheaves 26, whereby the cable is enclosed between the peripheries of the sheaves, and the retainer sheaves are driven by the running sheaves. The relation just described is that maintained by the preferred embodiment during normal travel of the carriage between the intermediate and end supports. When the carriage approaches the member 20, the retainer sheave at the end of the carriage approaching said member will strike the end of the inclined face 20[a] and while rotatably driven will roll on said face, the latter acting by its wedging action to move the retainer sheave downwards against the force of its spring 34, so that the support may pass between the running and retainer sheaves, but at the same time the said spring serves to hold the retainer sheave in engagement with the under face of the member 20 and thereby prevents displacement of the carriage while passing the support. After travelling down one inclined face 20[a] the sheave runs upon the oppositely inclined face toward the tapering end of the member 20, all the time urged upward by the spring 34, so that when the sheave reaches the narrower end of the plate 20, said sheave

will be returned by the spring to its normal running position. It will be understood that the above operation takes place as to both retaining sheaves in succession as they pass the support no matter in which direction the carriage is travelling.

In the embodiment here illustrated, a hoisting and inhaul cable 41 is wound upon the drum 42 of an engine 43 at the head tower. The hoisting and inhaul cable passes over a sheave 44 having its bearings at 45 in the lower ends of the arms 46, the upper ends of which are pivoted to the frame of the carriage, as at 47. The end of the hoisting and inhaul cable is shown attached to a log 48 constituting the load. In the form shown, an outhaul cable 49 is wound upon the drum 50 on the engine, and passes over a sheave 50^a on the head tower and over a sheave 51 on the tail tower, the end of the outhaul cable being attached, at 52^a, to an arm 52 which may conveniently be pivoted at 47 to the carriage. It will be understood that in practice the sheave 51 is offset laterally from the tail tower in order to bring the outhaul cable out of alignment with the carriage and prevent its fouling the same. In the device here illustrated, a slack-pulling cable 53 is wound upon the drum 54 on the engine and passes over a sheave 55 having its bearings on the pin 47 of the carriage. The end of the slack-pulling cable is attached at 56 to the hoisting and inhaul cable 41. A counterweight 57 is preferably secured to the open side of the frame, as indicated in Figs. 6 and 7, for the purpose of holding the carriage plumb, but this weight may be omitted if desired.

By causing the flanges of the retainer sheave to engage the flanges of the main cable sheave, it is possible to make the flanges of the main cable sheave of considerable depth, so that when the device is used in logging operations for "side lining," that is, when logs are dragged from the sides of the cableway, the carriage, including the main running sheave, is tilted, thereby causing the side of the flange of the main cable sheave to engage the cable. Such an operation would not be possible if the parts were constructed and arranged so that the retainer sheave directly engaged the main cable.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A cableway carriage comprising a frame, a running sheave and a retainer sheave, the flanges of said retainer sheave engaging the flanges of said running sheave and rotatable solely thereby, whereby said retainer sheave is driven by said running sheave.

2. A cableway carriage comprising a main cable sheave, and a retainer sheave normally engaging and rotatable solely by said main cable sheave, the main cable sheave engaging the retainer sheave within the outer periphery of the latter.

3. In a cableway, a cable supported at its ends, an intermediate support for said cable comprising a saddle having a cable-supporting member, a carriage adapted to move along said cable and comprising a cable sheave and a retainer sheave yieldingly held in engagement with said cable sheave and rotatable solely thereby and adapted to ride beneath said cable-supporting member, whereby said retainer sheave is rotated during the normal movement of the carriage and at the time it strikes said cable-supporting member.

MERIAN H. DICKINSON.