April 29, 1930. J. H. DICKINSON 1,756,732

SKIDDING CARRIAGE

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Fig. 1.

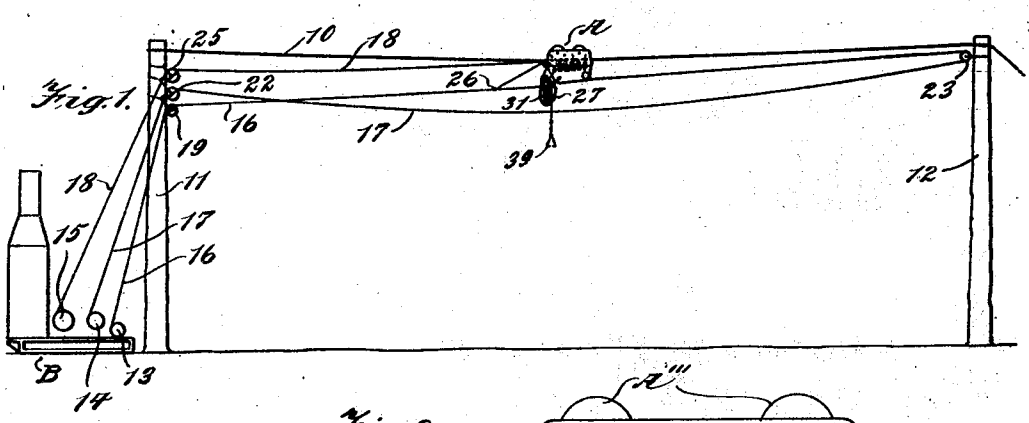


Fig. 2.

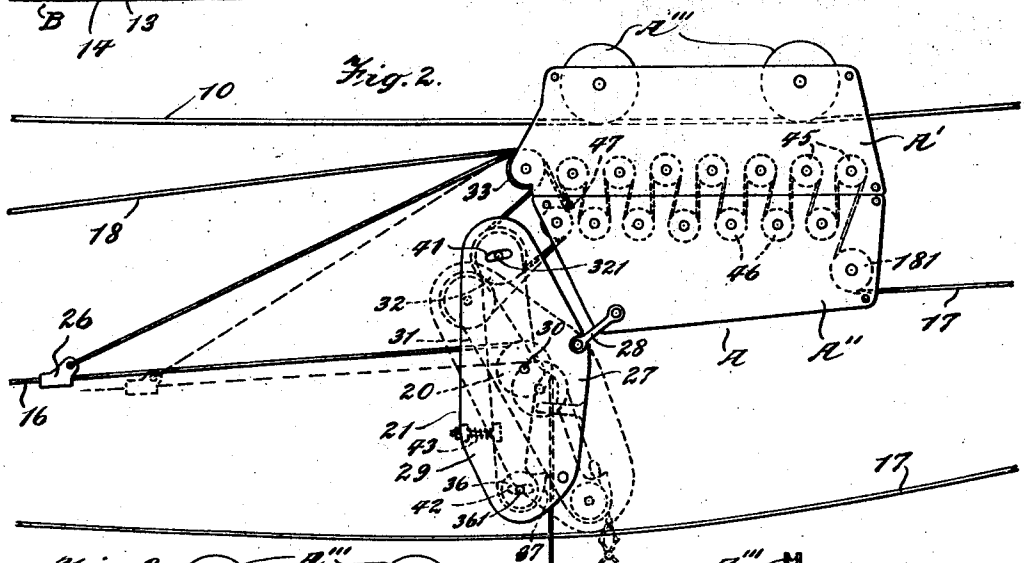


Fig. 3.

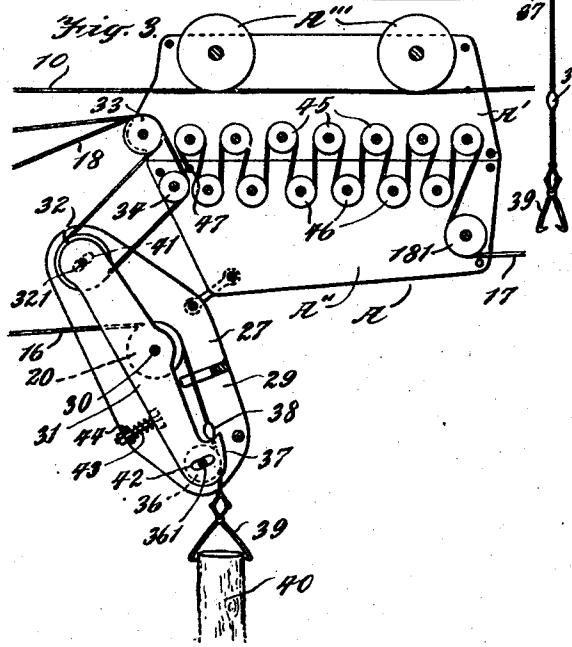
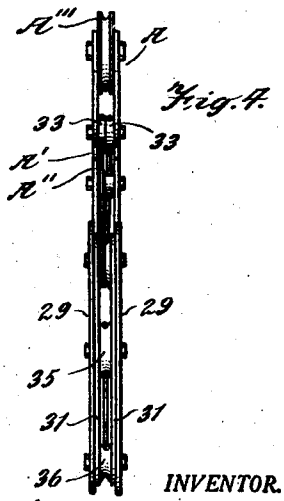


Fig. 4.



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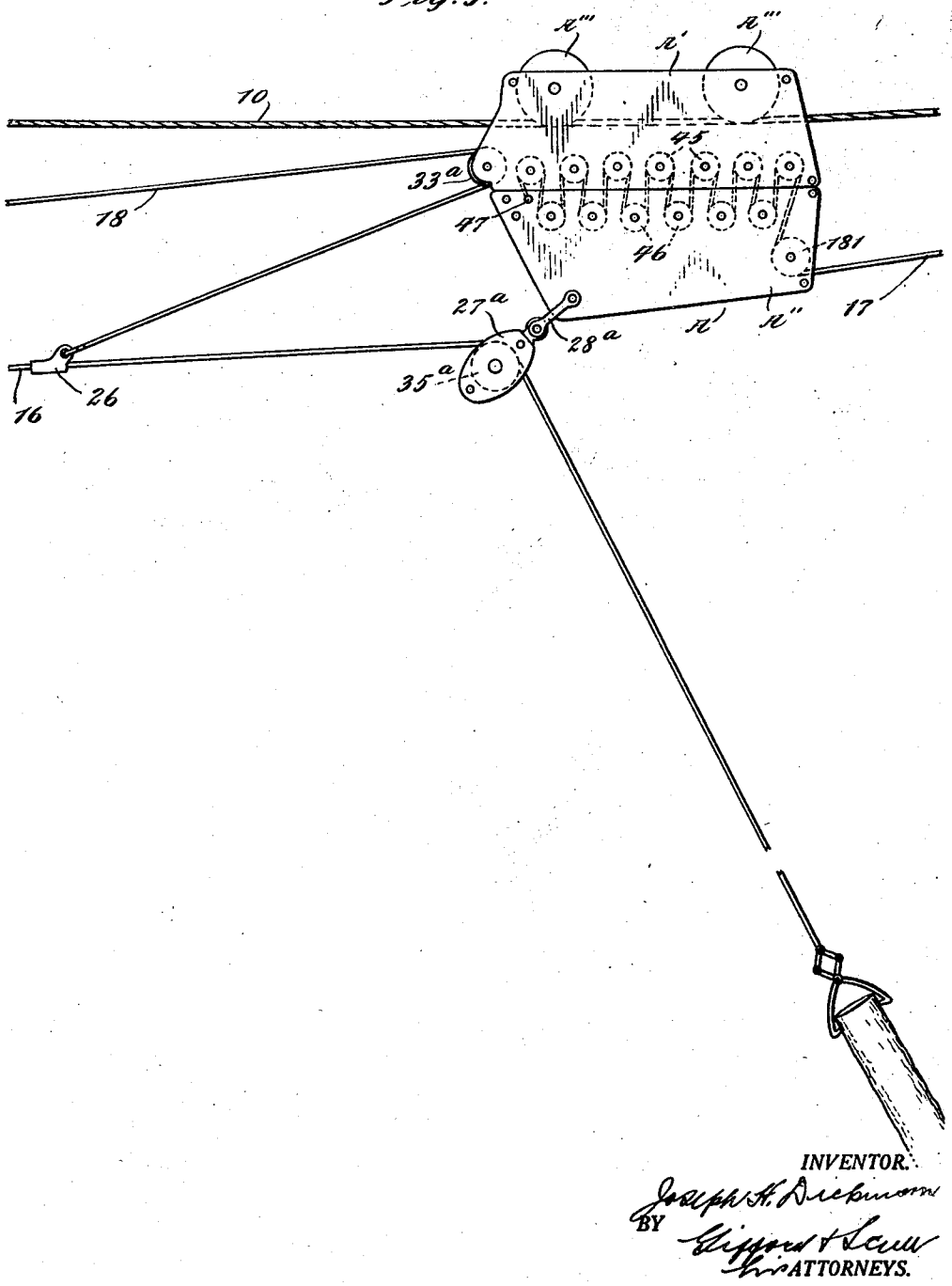
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Fig. 5.



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UNITED STATES PATENT OFFICE

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SKIDDING CARRIAGE

Application filed May 6, 1927. Serial No. 189,204.

My invention more particularly relates to a skidding carriage which is so arranged as to permit the load carried thereby to fall on the breaking of a cable, and particularly the outhaul cable.

While not limited thereto, my invention is particularly applicable to a down-hill skidding system, and one embodiment thereof is particularly applicable where the load is locked in raised position. In a system of this character, where the speed of movement of the carriage and its load towards the head-tower is controlled by the outhaul cable which is attached thereto, in case the outhaul cable should break, the carriage and its load would continue their travel to the head-tower at an increased rate of speed and might wreck the latter. In accordance with my invention, the load is lowered on breakage of the outhaul cable attached to the carriage.

My invention will best be understood by reference to the accompanying drawings in which I have illustrated certain embodiments thereof, and in which Fig. 1 is a diagrammatic view of a cableway embodying my invention; Fig. 2 is a side view on an enlarged scale of a carriage and associated parts embodying my invention, the carriage comprising a device for holding a load in raised position, the full line position of said device indicating the releasing position, and the dotted line position thereof indicating the position in which the load is held in raised position; Fig. 3 is a view generally similar to Fig. 2, but illustrating the load locked in raised position, and certain parts of the block which carries the load being shown in sections; Fig. 4 is an end view of the device shown in Fig. 3, and Fig. 5 is a side view generally similar to Fig. 1, but illustration an ordinary sheave attached to the lower section of the carriage and over which the hoisting and skidding line passes.

Like reference characters indicate like parts throughout the drawings.

Referring to the drawings, 10 is a main load-supporting cable suspended between a main tower or support 11, and a tail tower or support 12, the carriage, which I have indicated in general at A, being provided with wheels A''' supporting the carriage and adapted to traverse the main cable.

I have indicated generally at B, a winding engine comprising winding drums 13, 14 and 15 on which are wound the ends of a hoisting and skidding cable 16, an outhaul cable 17, and a slack pulling cable 18, respectively. The skidding line 16 passes over a sheave 19 at the head-tower and over a sheave 20 mounted in a block 27 supported by the carriage A. The outhaul line 17 passes over a sheave 22 at the head-tower, a sheave 23 at the tail-tower, and is attached, as at 47, to the carriage A. The slack pulling cable 18 passes over a sheave 25 on the head-tower, and after passing over sheaves in the carriage in the manner more fully hereinafter described, is attached, as at 26, to the hoisting and skidding line 16.

In the embodiment of my invention illustrated in Figs. 1 to 4, means are provided for locking the load in a raised position. When the load is so locked, it is important, in the case of down-hill skidding, that the travel of the carriage with its load should not be continued on the breaking of the outhaul cable, as this might result in the carriage with its load wrecking the head-tower.

In the embodiment of my invention illustrated, a tilting block 27 is suspended from the carriage A, preferably by means of a link or shackle 28. In the form illustrated, the tilting block 27 comprises spaced plates 29 between which is pivoted, as at 30, a lever 31 also comprising two spaced plates between the upper ends of which is mounted a sheave 32 on a shaft 321 mounted in the side plates of the lever. The slack pulling line 18 passes over one of two side by side sheaves 33 (Fig. 4) mounted on the carriage A, thence over the sheave 32, and then over a sheave 34 on the carriage A, and back over the other sheave 33 from which it leads to and is attached to the skidding line. The sheave 20 is also mounted between and at the central portion of the two spaced arms of the lever 31, preferably on the bolt or shaft 30, and the skidding line 16 passes over this sheave and thence over a sheave 36 located between the lower ends of the two spaced arms forming the lever 31,

on a shaft 361 mounted in the side plates of the block 27. The lower ends of the two plates forming the lever 31 are, in the embodiment illustrated, formed as a hook 37 which engages a button 38, secured to the skidding line 16 near the free end thereof. The free end of the skidding line is provided with any device for attachment to a load, here illustrated as tongs 39, capable of being adapted to be attached to a log 40.

When the block 27 occupies the tilted position illustrated in Fig. 3, then when the load is raised, the button 38 will ride over the lower hooked end of the lever 31, pushing the hook 37 to the left as viewed in Fig. 3, and the button then engages the hook 37, and the load will then be locked in its raised position. Preferably, the side plates 29 of the block 27 are provided with a transverse slot 41, through which the shaft on which the sheave 32 is mounted, passes. The lower end of the lever 31 is similarly provided with a slot 42 through which the shaft 361, on which the sheave 36 is mounted, passes. A spring 43 is preferably interposed between a spacing member 44 on the block 27, and the lever 31 as illustrated in Figs. 2 and 3, to hold hook 37 in position to receive and lock the load.

In accordance with my invention, means are provided for permitting the load to drop in the event that a cable, preferably the outhaul cable, is broken. In down-hill skidding, when the load is locked in raised position, the travel of the carriage with its load towards the head-tower is controlled by the outhaul cable, and in the event that this cable breaks, then there would be nothing to prevent the continued movement of the carriage to the head-tower, and consequently wrecking the same. To overcome this difficulty, I have provided a carriage A, divided into an upper section A′ and a lower section A″, laced together by a cable, the lower section being supported from the upper section by said cable.

In the embodiment of my invention illustrated, the two sections of the carriage are held together by the outer end of the outhaul cable 17 which passes over a sheave 181, preferably in the lower section of the carriage, and is then laced or wound over a plurality of sheaves 45 in the upper section of the carriage A, and sheaves 46 in the lower section of the carriage, the end of the outhaul cable preferably being attached to the lower section of the carriage as at 47. In case the outhaul cable breaks, then the lower section of the carriage drops away from the upper section and permits the load to drop to the ground without injury to the head-tower or other parts of the system. It is to be understood that in practice the button or attaching member 26 by which the slack pulling cable is connected to the skidding cable is bored for a loose fit on the skidding cable, and an enlargement is provided on the skidding cable between the button 26 and the carriage. The skidding cable, therefore, when the lower portion of the carriage drops, is free to slide through the button 26. Furthermore, even if the skidding cable should not slide freely through the button 26, the slack pulling cable would instantly pay off from the slack pulling drum, which is a slip friction drum, and even if it did not, the slack pulling cable is, in practice, a small one and would ordinarily be broken by the weight placed thereon. In any case, the log would soon hit the ground as the carriage runs forward towards the head tower under the conditions assumed.

The operation of the device illustrated in Figs. 1 to 4 will readily be understood from the foregoing description and is as follows:

Assuming that the carriage is over the load to be taken. In case the tongs are locked in raised position, in order to lower them, the skidding line is first put under tension to raise the button 38 away from the hook 37, and then by placing the slack pulling line under tension, the upper end of the block 27, as viewed in Figs. 2 and 3, is moved to the right about its pivotal attachment to the shackle 28, and the lower end thereof is moved to the left to the dotted line position indicated in Fig. 2, and the button is released from the hook 37, thereby permitting the tongs to drop. Then, when the load is attached, by winding up the skidding line and preventing movement of the carriage by the outhaul line, the load is raised and locked in a raised position as indicated in Fig. 2 in the manner heretofore described. Then the load may be brought to the desired position by gravity in the case of down-hill skidding, merely by controlling the speed of movement of the carriage and its load by the outhaul cable. Where gravity is insufficient to cause the carriage and its load to travel to the position where it is to be deposited, as in the case of up-hill skidding, then the load is brought in by the skidding cable in the usual manner. The load may be released in the same manner as are the tongs in the position above assumed, the skidding line first being placed under sufficient tension to raise the button 38 from the hooks 37, then by placing the slack pulling line under tension, the block is tilted sufficiently to release the button 38 from the hook 37.

In the embodiment of my invention illustrated in Figs. 1 to 4, there is no necessity for having the outhaul drum and the skidding drum interlocked, at least in the case of down-hill skidding.

In Fig. 5 I have illustrated an embodiment of my invention in which no provision is made for locking the load in raised position and which is particularly applicable where the skidding and outhaul drums are interlocked. In the embodiment of my invention here illustrated, the carriage A is divided into up-

per and lower sections A′ and A″, respectively, as in Figs. 1 to 4. Instead, however, of locking the load in elevated position, the skidding line 16 merely passes over the sheave 35ª in a block 27ª attached to the carriage A by a shackle 28ª. The slack pulling line 18 passes over a sheave 33ª and is attached to the skidding line 16 at 26.

The two sections, A′ and A″, of the carriage are laced together by the outhaul cable 17 in the same manner as in Figs. 1 to 4, and the description thereof need not, therefore, be repeated.

With the arrangement illustrated in Fig. 5, the lacing together of the two parts of the carriage is useful in compensating for the rise and fall of the load. In skidding logs with an overhead interlocking cableway system, in which the inhaul and outhaul or receding drums are locked together and rotated in unison when skidding the logs, the difficulty is present that the effective diameters of the drums carrying the inhaul or skidding cable and that carrying the outhaul or receding cable varies as the carriage is moved along the main cable. This difficulty is due to the piling up of the cable on the drum or the reverse as the cable is wound in or paid out, and this difficulty increases as the length of span increases. The result of this varying of the effective diameters of the inhaul and outhaul drums when the inhaul and outhaul drums are locked together, is that the load gradually rises and jams against the carriage, and to overcome this difficulty, it has been common either to slip the friction on the drum or drums, which is, of course, objectionable, and it has also been proposed to vary the speed ratio between the two drums.

In accordance with my invention illustrated in Fig. 5, for ordinary spans it is unnecessary to resort to any expedient for changing the vertical position of the load, since the rise of the load is only a fraction of what it is in the ordinary system, as the lacing together of the upper and lower sections of the carriage by the outhaul cable constitutes in effect a fall and tackle which reduces the rise, or fall, of the load to a fraction of what it otherwise would be, and to such an extent that, when the two sections of the carriage are separated when starting to bring in the load, the rise of the lower section of the carriage is sufficient to compensate for the relative change of the effective diameters of the inhaul and outhaul drums.

I claim:

1. In a hoisting and conveying device comprising a main supporting cable, a traveling carriage adapted to traverse said cable and divided into an upper and a lower section, an outhaul cable lacing together said sections and attached at one end to the lower section of said carriage.

2. In a hoisting and conveying device comprising a main supporting cable, a traveling carriage adapted to traverse said cable and divided into an upper and a lower section each provided with a plurality of sheaves, an engine comprising a skidding and an outhaul drum, an outhaul cable wound upon said outhaul drum for pulling said carriage away from said engine, said outhaul cable passing over said sheaves and being attached to said carriage, thereby lacing said sections together, said outhaul cable being adapted to move said carriage in one direction, and a skidding cable wound upon said skidding drum for moving said carriage in the opposite direction.

3. In a hoisting and conveying device comprising a main supporting cable, an outhaul cable, a traveling carriage adapted to traverse said main supporting cable and divided into an upper and a lower section laced together by said outhaul cable, means for producing tension in said outhaul cable, the lower section of said carriage being provided with a sheave, a hoisting and skidding cable passing over said sheave, means for attaching a load to the end of said cable, and means for locking said load to said carriage in raised position.

JOSEPH H. DICKINSON.