May 4, 1926. 1,582,962

O. B. BJORGE

TROLLEY CARRIAGE

Filed Dec. 9, 1924

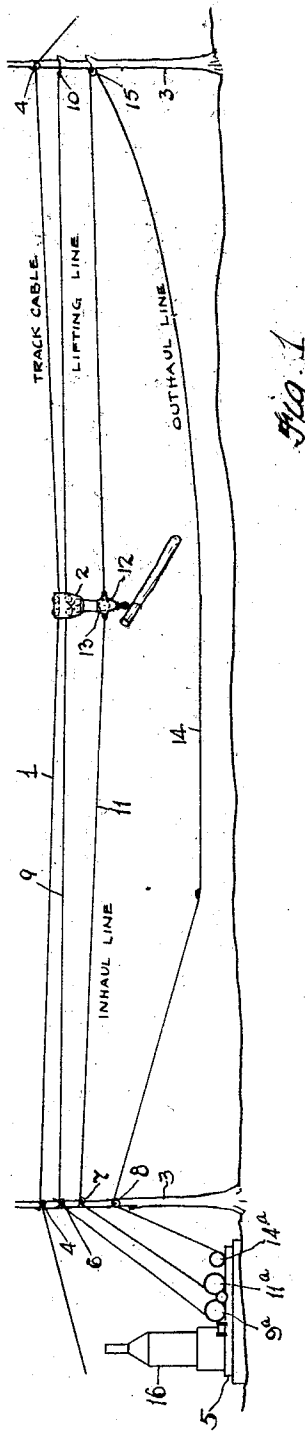


Fig. 1

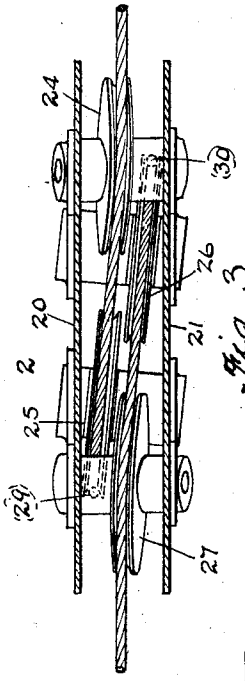


Fig. 3

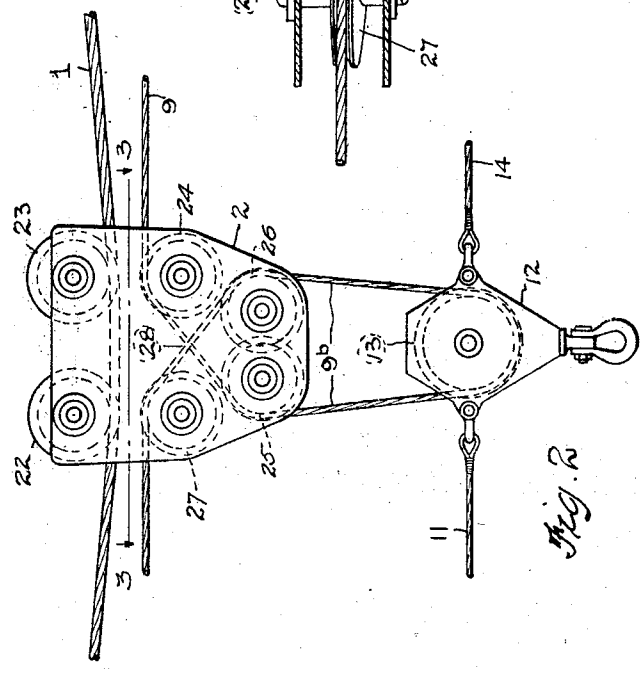


Fig. 2

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Patented May 4, 1926. 1,582,962

UNITED STATES PATENT OFFICE.

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TROLLEY CARRIAGE.

Application filed December 9, 1924. Serial No. 754,762.

To all whom it may concern:

Be it known that I, OSCAR B. BJORGE, a citizen of the United States, and a resident of Portland, county of Multnomah, and State of Oregon, have invented a new and useful Improvement in Trolley Carriages, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

In conveying systems known as cableway skidders, such as employed for example in transporting logs in logging operations and the like, it has been customary to use a trolley running back and forth on a tight line stretched between two elevated points of support, the log or like article being hauled up to such trolley and the latter being then drawn in to one end of such tight line. For the purpose of pulling the trolley out, a so-called out-haul cable or line is required in addition to the in-haul cable, the latter serving in some cases the dual purpose of elevating or lifting the log to the trolley and then pulling the trolley in after the fashion just described.

In other cases, a separate lifting line is employed and the in-haul line is limited in function to pulling the load in. In a skidder of this last mentioned type, a trolley or carriage of special construction is employed with a so-called lifting line that passes therethrough and connects the same with a fall block to which the load is attached. This lifting line is attached at one end to a fixed support, usually the same support to which the corresponding end of the tight line or track cable is attached, while the other end is connected with a suitable winding drum so that upon drawing in on said line, the fall block with attached load will be raised. Thereupon the load is moved to desired position beneath the track cable by winding up the in-haul line.

The object of the present invention is to provide an improved construction of carriage for use in a conveying system or cableway skidder of the type described whereby twisting effect on the carriage is eliminated and friction reduced to a minimum. Such twisting effect is extremely harmful in that when the carriage is traveling at a high rate of speed, the track cable or tight line is subjected to excessive wear.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a side elevation of a cableway skidding system of the type in question equipped with my present improved trolley carriage; Fig. 2 is a side elevation on a larger scale of such trolley carriage; and Fig. 3 is a horizontal section thereof taken on the plane indicated by the line 3—3, Fig. 2.

The arrangement of the lines or cables in the system illustrated in Fig. 1 is more or less typical. Thus, the tight line or track cable 1, on which the trolley carriage 2 is designed to run, is stretched at a suitable elevation between two trees 3, 3, or like elevated points of support, passing over sheaves 4, 4, on such trees to suitable securing means (not shown) therebeyond. For the purpose of guiding the several operating lines from the skidding machine 5 to the trolley, a series of sheaves 6, 7 and 8, is attached to the nearer support 3 directly below the sheave 4 thereon. The lifting line 9 passes over the first of these sheaves and thence through suitable sheaves, specially disposed in the carriage 2, as will be presently described, to the further end of the span where it is fixedly attached at point 10 to the corresponding support 3. The in-haul line 11 passes over sheave 7 and thence to a fall block 12, to which its outer end is fixedly attached, such block being connected with the carriage 2 by means of a loop in lifting line 9 that passes around the sheave 13 in said block. The out-haul line 14 passes over sheave 8 to the further end of the span, thence around a sheave 15, attached to support 3, and back to said fall block 12, to which its outer end is fixedly attached at the opposite side from the end of in-haul line 11.

The skidding machine 5 need not be described in detail other than to note that it is provided with a series of winding drums 9^a, 11^a and 14^a, to which the inner ends of the lines 9, 11 and 14, are respectively at-

tached, the engine 16 being connected with said drums to independently rotate them in proper direction either to pay out or draw in the appropriate line as may be desired.

The frame of carriage 2 consists principally of two parallel side plates 20 and 21 (see Fig. 3) which are suitably tied together in properly spaced relation. Mounted in the upper portion of the frame between such plates are two aligned sheaves 22 and 23 which serve movably to support the carriage on the track cable 1, as will be readily understood. Similarly mounted between the lower portions of plates 20 and 21 are four additional sheaves 24, 25, 26 and 27, around which passes the looped portion 9^b of in-haul cable 9 that serves in turn to support fall block 12.

It will be noted that the two parts of line 9 that form such loop portion 9^b cross each other at point 28 (see Fig. 2) and it is obviously necessary that they should thus pass each other without interference. It will also be noted that the upper edges of the two sheaves 24 and 27 are placed directly in line and furthermore are located midway between the respective side plates 20 and 21 of the frame so as to eliminate any twisting effect on the carriage, previously pointed out as desirable. However, said sheaves 24 and 27 are not placed parallel with the side plates of the frame, but have their bottoms tilted towards the respective side plates. The two lowermost sheaves 25 and 26 are then placed parallel to each other but at an angle so as to take the lead of the cable fairly from sheaves 24 and 27, respectively. The loop 9^b of the line in which the fall block 12 hangs suspended will be located between the points 29 and 30 (Fig. 3) where the cable passes downwardly from said sheaves 25 and 26, respectively. It will be noted that the reinforcing bearing plates for the several sheaves in the carriage frame are placed angularly with respect to the side plates comprising said frame.

It is believed that the general operation of the skidder as a whole has been sufficiently indicated not to require further description; in other words, it will be obvious that if the hoisting engine is made to pull in or pay out lifting line 9, the load suspended from the carriage will be correspondingly raised or lowered and that such load may be held stationary at a fixed height even though the carriage itself be traversed along the track cable by means of in-haul and out-haul lines 11 and 14. In logging practice with trolley carriages as heretofore constructed, it is not unusual that the eccentric pull of the incoming and the outgoing portions of the line 9 creates a side pressure between the flanges of the sheaves, whereby such carriage is supported from track cable 1, against the opposite sides of such cable of 2000 pounds or more, and when the carriage is traveling, as it frequently does, at a high rate of speed, this causes very rapid wear of said cable as well as of the sheaves. Running the lifting line in a continuous loop through the carriage is an advantage in that the line always bends in the same direction in passing over the sheaves in said carriage, but heretofore this advantage has been counteracted by the disadvantage of the eccentric wear on track cable and track sheaves just referred to. However, by the present improved construction and arrangement of sheaves and carriage, it is rendered possible to retain the advantage of the continuous loop feature and at the same time overcome the disadvantage of such track cable and track sheave wear.

It will be understood, of course, that while I have illustrated my improved trolley carriage in connection with a cableway skidder for transporting logs, it may be used in any similar conveying system irrespective of the particular character of the track, i. e. whether cable or not, on which the carriage runs, and irrespective of the character of the load which is to be lifted and transported by the carriage.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a trolley carriage of the type described adapted to traverse a suitable track and to support a fall block or the like by means of a looped lifting line, the combination of a frame, and two vertically spaced pairs of sheaves mounted therein and adapted to receive in crossed relation the two parts of the line that form the loop therein, the upper edges of the upper pair of sheaves being in alignment and the bottom edges thereof being tilted in opposite directions, and the corresponding sheaves of the lower pair being diagonally opposite to such upper sheaves, respectively.

2. In a trolley carriage of the type described adapted to traverse a suitable track and to support a fall block or the like by means of a looped lifting line, the combination of a frame, and two vertically spaced pairs of sheaves mounted therein and adapted to receive in crossed relation the two parts of the line that form the loop therein, the upper edges of the upper pair of sheaves being in alignment and the bottom edges thereof being tilted in opposite directions, and the corresponding sheaves of the lower pair being placed parallel with each other but at an angle so as to take the lead of the cable fairly from such upper sheaves, respectively.

3. In a trolley carriage of the type described adapted to traverse a suitable track and to support a fall block or the like by means of a looped lifting line, the combination of a frame comprising two transversely spaced, parallel plates, and two vertically spaced pairs of sheaves mounted between such plates and adapted to receive in crossed relation the two parts of the line that form the loop therein, the upper edges of the upper pair of sheaves being in alignment and located midway between the respective side plates and the bottom edges thereof being tilted in opposite directions, and the corresponding sheaves of the lower pair being diagonally opposite to such upper sheaves, respectively.

4. In a trolley carriage of the type described adapted to traverse a suitable track and to support a fall block or the like by means of a looped lifting line, the combination of a frame comprising two transversely spaced, parallel plates, and two vertically spaced pairs of sheaves mounted between such plates and adapted to receive in crossed relation the two parts of the line that form the loop therein, the upper edges of the upper pair of sheaves being in alignment and located midway between the respective side plates and the bottom edges thereof being tilted in opposite directions, and the corresponding sheaves of the lower pair being placed parallel with each other but at an angle so as to take the lead of the cable fairly from such upper sheaves, respectively.

Signed by me this 28th day of November, 1924.

OSCAR B. BJORGE.