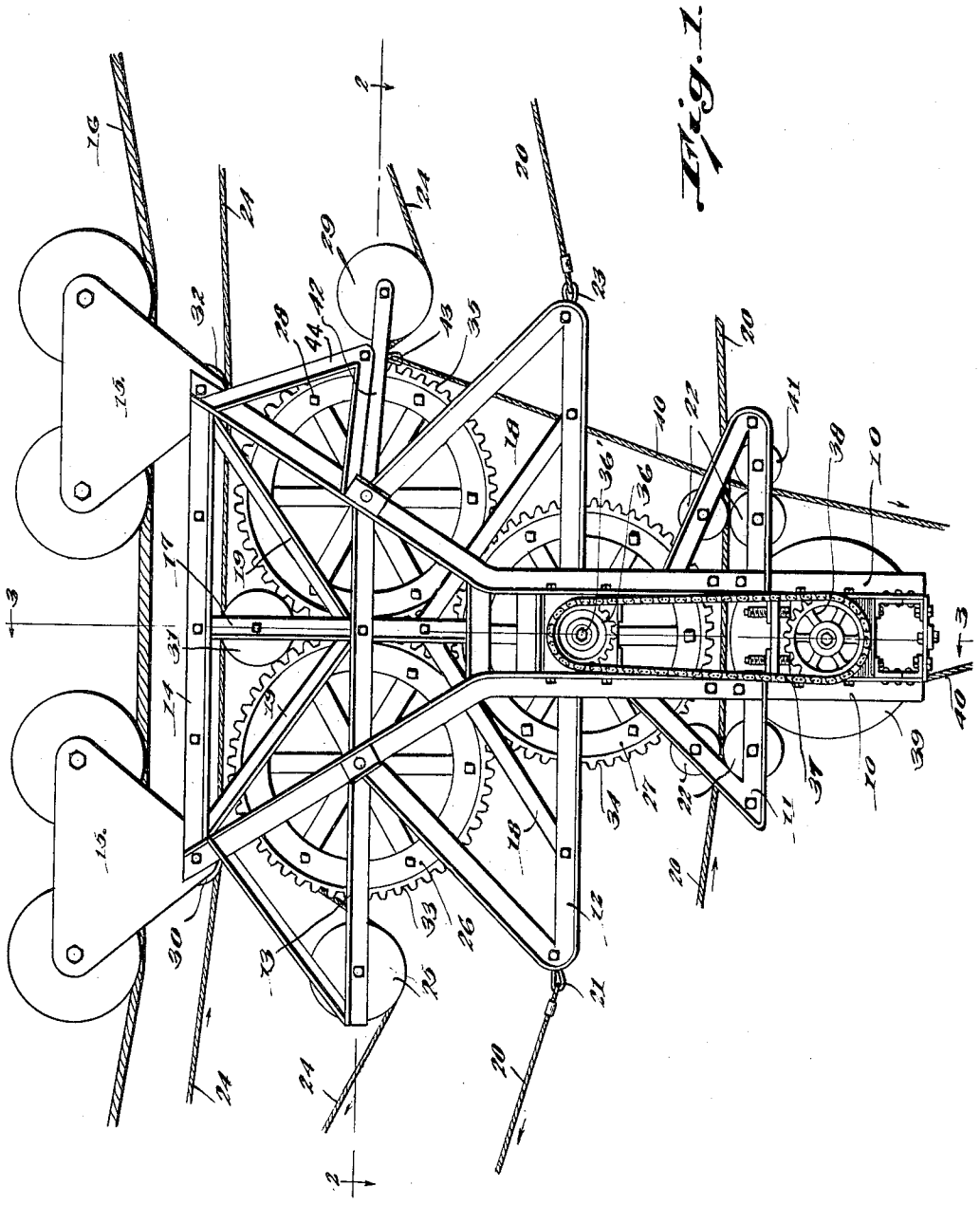
Nov. 7, 1933. N. S. BATEMAN 1,934,478

CABLEWAY

Original Filed July 30, 1930 2 Sheets-Sheet 1

Fig. 1.



WITNESSES

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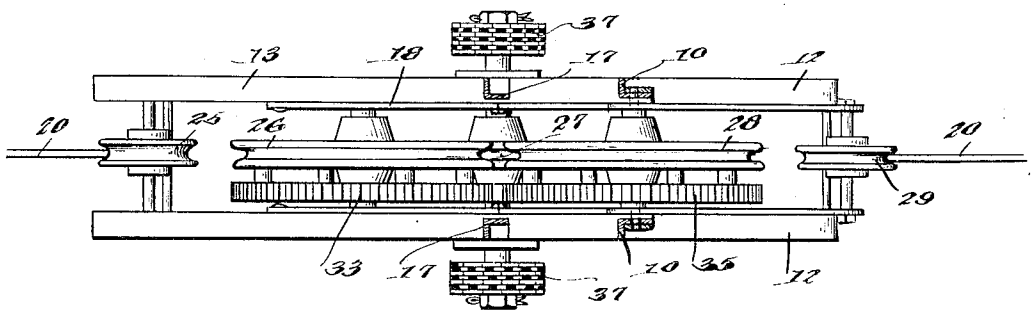


Fig. 2.

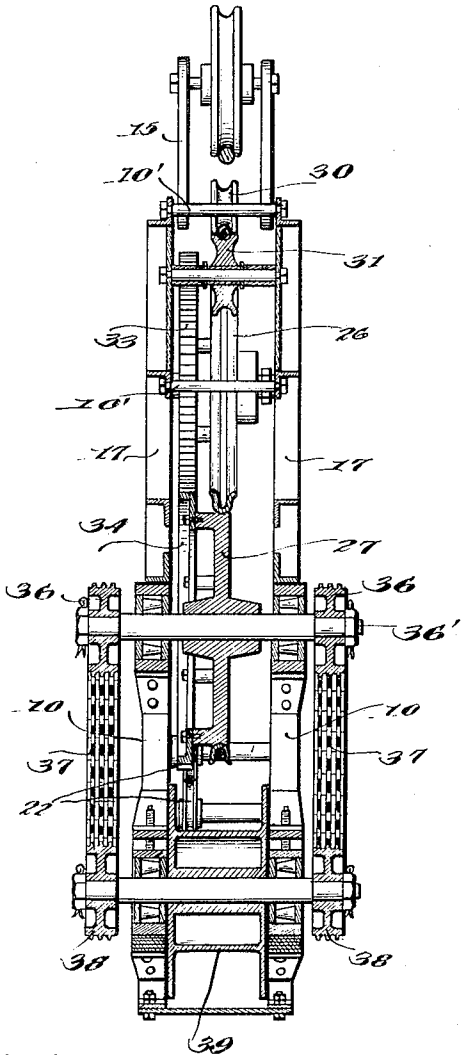


Fig. 3.

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UNITED STATES PATENT OFFICE

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CABLEWAY

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Renewed April 1, 1933

7 Claims. (Cl. 212—94)

This invention appertains to improvements in cableways generally and more particularly to a carrier structure which has for its main object to maintain a tension on the slack side of an endless transmission line employed for operating the hoisting drum on the carrier.

Another object of the invention has to do with an adjustment of the carrier structure whereby a position of a load being hoisted is utilized to increase the tension of the transmission line on the slack side thereof in order to provide any desired and constant ratio between the slack and the power sides of the transmission line.

A further object of the invention is to provide a cableway carrier of the class set forth which is so designed as to eliminate the use of the usual form of hoist rope and various attachments ordinarily employed to support this hoist rope between the carrier and the head tower of a cableway.

With the foregoing and other equally important objects and advantages in view, the invention resides in the certain new and useful combination construction and arrangement of parts, as will be hereinafter more fully described, set forth in the appended claims, and illustrated in the accompanying drawings in which:—

Figure 1 is a side elevation of the improved carrier.

Figure 2 is a horizontal section taken on the line 2—2 of Figure 1, and

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 1.

Referring to the drawings, wherein like characters of reference designate corresponding parts in the several views thereof, the embodiment of the invention, as shown therein by way of example only, is constituted in a frame, preferably formed of angle iron, made up of identical front and rear side portions, each consisting of a pair of vertically disposed members 10 which have their lower end portions arranged in spaced parallel relation and their upper end portions angularly bent to diverge uniformly in opposite directions one with respect to the other.

Each pair of frame members 10 are connected together by a series of vertically spaced horizontal members 11, 12, 13 and 14, the member 14 extending between the extreme upper ends of the companion members 10 and connecting the same at its ends, while the members 11, 12 and 13 have their opposite end portions projecting beyond their points of connection therewith.

As shown in Figure 1, the projected end portions of the members 11, 12 and 13 are bent angularly in an upward and inward direction and have their free ends connected to the members 10 substantially at the points of the connection of the adjacent horizontal portions therewith. The two frame portions, thus constructed, are coupled together by means of bolts or the like 10' in a properly spaced relation to house the cable mechanism between the same in somewhat of the usual manner, while the completed assembly is suspended from the opposite ends of its upper side from wheeled trucks 15 tractionally mounted on the track cable 16.

Each side portion of the frame is also provided with an upper vertical member 17 which is dependingly supported from the top member 14 and disposed in the plane of the vertical center thereof and to which the inner ends of pairs of oppositely inclined brace members 18 and 19 are attached, the outer ends thereof being connected to the horizontal members 12 and 14 respectively.

The trucks 15 and the frame suspended therefrom are moved back and forth over a length or span of the cableway or track cable 16 in the customary manner by a traction line 20 which is attached at one end of the carrier, as at 21, and from thence is trained over an idler sheave on the tail-tower (not shown) of the cableway; thence back through pairs of lead sheaves 22, to a reversible drum (not shown) of a hoist engine where it is passed about the drum a sufficient number of times to give it tractive friction; thence through a series of lead sheaves to the top of the head tower (not shown) of the cableway, and from thence for the connection of its opposite end to the end or side of the carrier facing the head tower, as at 23.

To accomplish the result for which this carrier is intended, a similar rope or cable 24 is employed. This cable 24, which will be hereinafter designated "transmission line", is endless and is passed around a drum (not shown) equal in diameter and speed of rotation to that from which the traction line 20 is driven.

This transmission line 24 has one leg lead from its driving drum through guide sheaves to the top of the head tower and from thence to the carrier where it is first passed under an idler sheave 25; thence over a transmission sheave 26; thence under and around a transmission pulley 27; thence over transmission sheave 28; thence under a tension sheave 29; thence to the tail tower of the cable-way and over an idler pulley and thence back to the carrier. Here, it is threaded through guide sheaves 30, 31 and 32 from whence it passes back through the lead

sheaves of the head tower and thence to the drum at the hoisting engine.

The transmission sheaves 26, 27 and 28 are geared together by gears 33, 34 and 35 which are all of equal size and disposed in intermeshing relation one with the other. Thus, the speed of rotation of the three gears, as well as that of the transmission sheaves 26, 27 and 28 is equal and each will assist in transmitting the power of the transmission line.

The power of the transmission line 24 is taken from the sheave 27 by a sprocket 36, which is keyed on the supporting shaft 36' of the sheave for the purpose, and is transmitted by a chain 37 to a sprocket 38 keyed on the shaft of hoisting drum 39 journalled in place between the lower end portions of the opposite sides of the carrier frame.

A load hoisting line 40 is passed around the drum 39 and from thence through a fall block (not shown) to and between a lead sheave 41 and the adjacent of the lower of the lead sheaves 22 and thence to an arm 42 to which its free end is attached, as at 43. This arm 42 is pivoted at its inner end on the shaft of the transmission sheave 28 and carries the tension sheave 29 at its outer end, substantially as is shown in Figure 1. A stop 44, in the form of an angled bracket supported from the adjacent of the upper diverging portions of the vertical frame members 10, is provided to limit the upward swinging movement of the arm 42 when the load strain on the line 40 is relieved.

In the operation of the carrier, as thus constructed and arranged, a tension is maintained at the pulley 29 on the slack side of the endless transmission line 24, and by adjusting the distance at which the fall block is positioned on the hoisting line 40 below the carrier to support a load; a proportionate pull of the load being hoisted is applied to increase the tension on the transmission line as aforesaid, which adjustment will give any desired ratio between the slack and the power sides of the transmission line, which ratio will remain constant for a given adjustment of fall and load with reference to the center of swing of the arm 42.

In picking up a load with this carrier, power is applied on the transmission line which is transmitted to the hoist drum 39 from the transmission sheaves 26, 27 and 28 and the intermeshing gears 33, 34 and 35 to the upper sprocket 36 and from thence to the lower sprocket 38 and the hoisting drum 39 by the chain 37, as will be readily apparent from Figure 1. After the load is lifted to a desired height, the carrier will be ready to traverse the track line 16. Now, as the drums of the hoist engine are of equal speeds, the transmission drum will revolve with the traction drum and the transmission sheaves 26, 27 and 28 will not be in motion, since both the traction line 20 and the transmission line 24 travel in the same direction and at the same speed.

By gearing the transmission sheaves 26, 27 and 28 together, in the manner provided for herein, each sheave will assist in transmitting the power of the transmission line 24. This power or motion is taken from the lower sprocket 38 keyed on the shaft of the hoist drum 39 and is transferred to the upper sprocket 36 by the chain 37, the latter sprocket being likewise keyed on the shaft 36' of the transmission sheave 27 along with the gear 34.

As shown in Figures 2 and 3, a chain and sprocket drive may be duplicated at and between the opposite ends of the shaft of the hoist drum 39 and the shaft 36, of the transmission sheave 27 and this is perhaps most desirable in the handling of heavy loads.

Without further description, it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention or its scope as claimed.

I claim:

1. A cableway carrier including a load hoisting drum, a traction line for the carrier, a power transmission line for operating said drum to hoist a load on the carrier, a load hoisting line for sustaining the load in suspended position from said carrier and drum when said transmission line is actuated in the same direction and at the same speed to that of said traction line, and means connected by said hoisting line for utilizing the weight of the load to tension the slack side of said transmission line to prevent any retrograde movement of the load during the travel of the carrier along the cableway, the last-mentioned means being cooperatively associated with the transmission line.

2. A cableway carrier including a load hoisting drum, a traction line for the carrier, a power transmission line for operating said drum to hoist a load on the carrier, a load hoisting line for sustaining the load in suspended position from said carrier and drum when said transmission line is actuated in the same direction and at the same speed to that of said traction line, and a pivoted member connected to said hoisting line for utilizing a portion of the weight of the load for tensioning the slack side of said transmission line to prevent any retrograde movement of the load during the travel of the carrier along the cableway, said pivoted member having means in engagement with the transmission line.

3. A cableway carrier including a load hoisting drum, a traction line for the carrier, a power transmission line for operating said drum to hoist a load on the carrier, a load hoisting line for sustaining the load in suspended position from said carrier and drum when said transmission line is actuated in the same direction and at the same speed to that of said traction line, and means on said carrier and controlled by said hoisting line for utilizing the weight of the load for tensioning the slack side of said transmission line to prevent any retrograde movement of the load during the travel of the carrier along the cableway, the tensioning effect of said means being adjusted by varying the distance of hoist of the load with reference to the means, the last mentioned means being cooperatively engaged with the transmission lines.

4. A cableway carrier including a load hoisting drum, a traction line for the carrier, a power transmission line for operating said drum to hoist a load on the carrier and to sustain the load in suspended position therefrom when actuated in the same direction and at the same speed to that of said traction line, and means pivoted on said carrier and adapted to be actuated by said load hoisting drum for utilizing the weight of the load for tensioning the slack side of the said transmission line to prevent any retrograde movement of the load during the travel of the carrier along the cableway, the tensioning effect of said means being adjusted by varying the distance of hoist

of the load with reference to the center of pivot of the means, the pivoted means being cooperatively engaged with the transmission line.

5. A cableway carrier comprising a frame, travelling means for suspending said frame, a traction line for the carrier, a hoisting drum at the lower side of said frame, a sheave train carried by said frame, means operatively connecting said sheave train to said hoisting drum, a transmission line operatively engaged with said sheave train for hoisting a load on the carrier when power driven, said sheave train and said drum being adapted to remain stationary when said transmission line is simultaneously operated with said traction line at the same speed therewith and in order to sustain the load in hoisted position, and means controlled by the load when hoisted for tensioning the slack side of said transmission line to prevent any retrograde movement of the load during the travel of the carrier, said tensioning means being cooperatively associated with the transmission line.

6. A cableway carrier comprising a frame, travelling means for suspending said frame, a traction line for the carrier, a hoisting drum at the lower side of said frame, a load hoisting line operatively connected with said drum, a sheave train carried by said frame, means operatively connecting said sheave train to said hoisting drum, a transmission line operatively engaged with said sheave train for hoisting a load on the carrier when power driven, said sheave train and said drum being adapted to remain stationary when said transmission line is simultaneously operated with said traction line at the same speed therewith and in order to sustain the load in selected hoisted position, and means connected by said hoisting line and controlled by the load for tensioning the slack side of said transmission line to prevent any retrograde movement of the load during the travel of the carrier, the last-mentioned means having operative engagement with the transmission line.

7. A cableway carrier comprising a frame, travelling means for suspending said frame, a traction line for the carrier, a hoisting drum at the lower side of said frame, a sheave train carried by said frame, means operatively connecting said sheave train to said hoisting drum, a transmission line operatively engaged with said sheave train for actuating said drum when power driven, said sheave train and said drum being adapted to remain stationary when said transmission line is simultaneously operated with said traction line at the same speed therewith and in order to sustain the load in selected hoisted position, means pivoted at one end to said carrier and having its outer end arranged to take up for tensioning the slack side of said transmission line to prevent any retrograde movement of the load during the travel of the carrier, and a hoist line engaged with said hoist drum at one end and attached to said means toward its outer end whereby the weight of the load is partly borne by the latter, the tensioning effect of said means being adjustable correspondingly with a variation in distance of the hoist of the load with reference to the center of pivot of said means, the pivoted means being cooperatively associated with the transmission line.

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