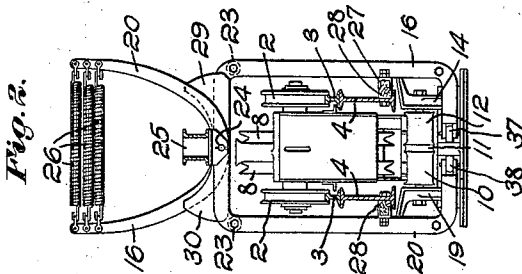
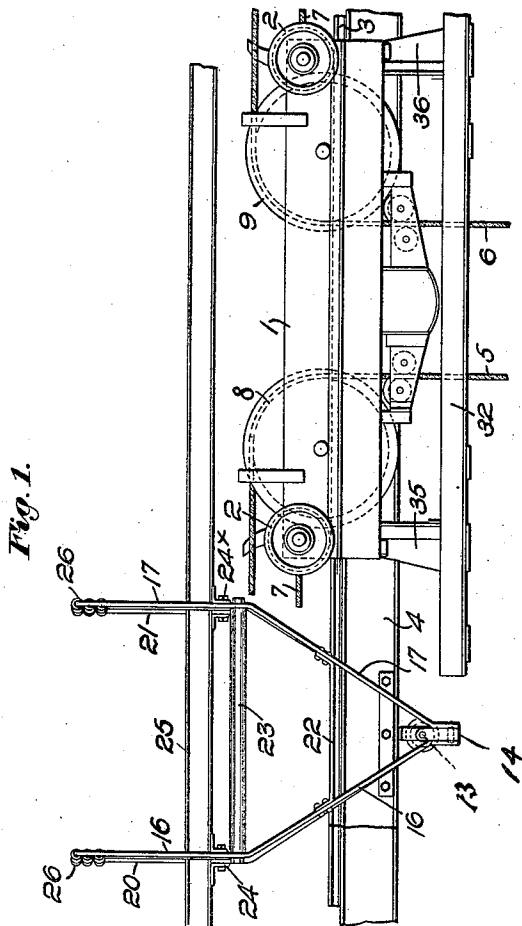
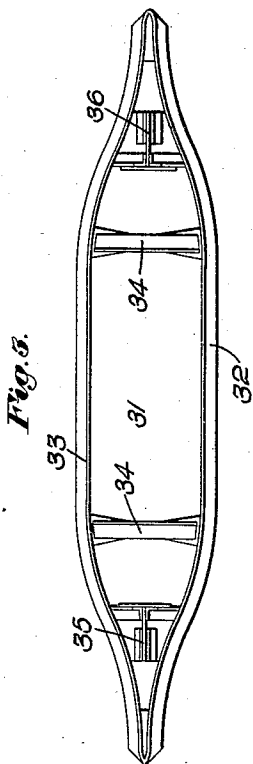


1,057,660.

A. E. NORRIS.
CABLE SUPPORT.
APPLICATION FILED JUNE 8, 1911.

Patented Apr. 1, 1913.

2 SHEETS—SHEET 1.



Witnesses:

Carl L. Choate.
Horace A. Croseman

Inventor:

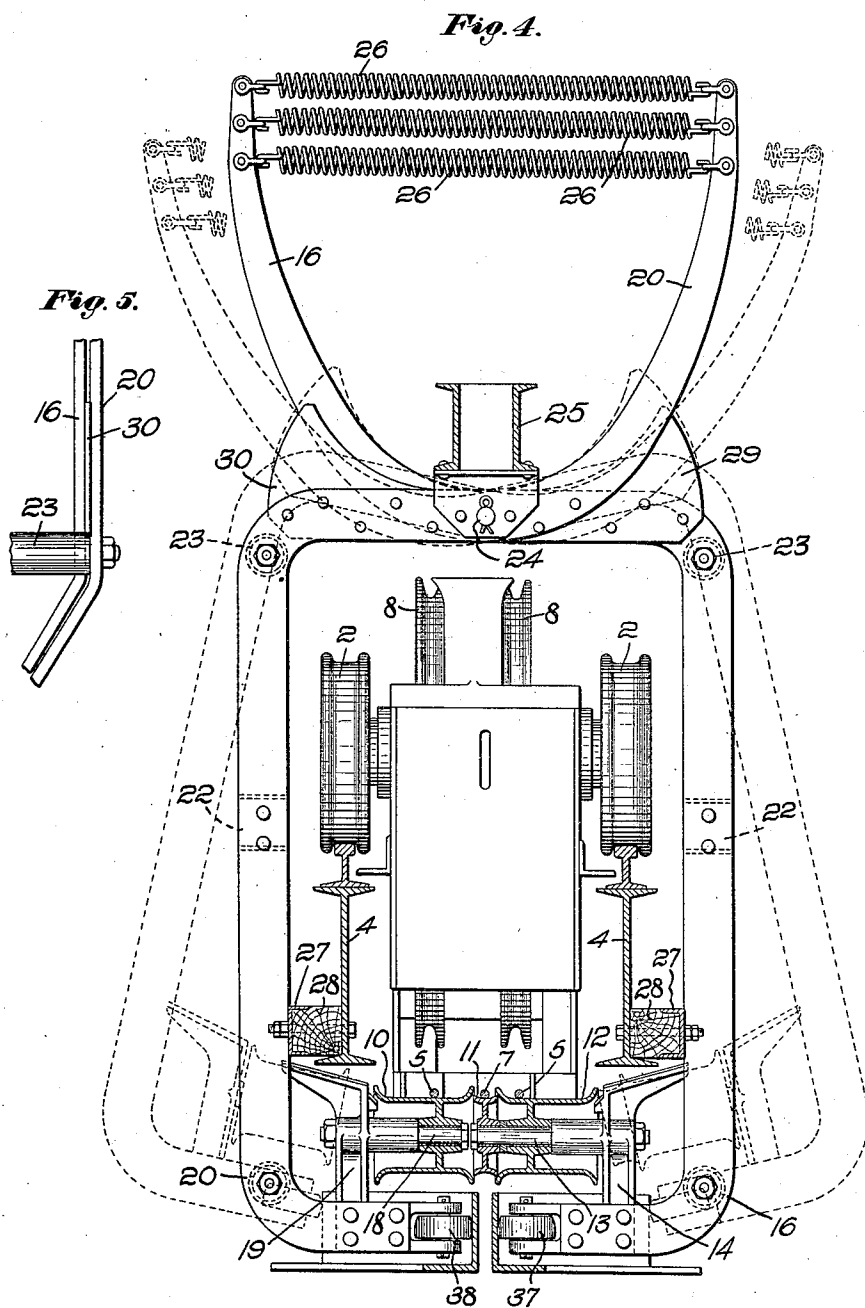
Almon E. Norris.
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2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALMON E. NORRIS, OF CAMBRIDGE, MASSACHUSETTS.

CABLE-SUPPORT.

1,057,660.

Specification of Letters Patent.

Patented Apr. 1, 1913.

Application filed June 8, 1911. Serial No. 631,950.

To all whom it may concern:

Be it known that I, ALMON E. NORRIS, a citizen of the United States, and a resident of Cambridge, county of Middlesex, State of Massachusetts, (whose post-office address is 31 Main street, Cambridgeport, Massachusetts,) have invented an Improvement in Cable-Supports, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to cable supports and more particularly though not exclusively to devices for supporting the fall ropes or other operating cables of a trolley carriage.

The invention will be best understood by reference to the following description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings: Figure 1 is a side elevation showing a portion of the superstructure of an elevated trackway together with a trolley carriage and showing the relation of the latter to a fall rope carrier; Fig. 2 is an end view of the principal parts shown in Fig. 1; Fig. 3 is a plan view of the spreader or opening frame carried by the trolley carriage; Fig. 4 is an end elevation partly in section on an enlarged scale showing the trolley carriage and the fall rope carrier; and Fig. 5 is a detail in side elevation showing the carrier arms.

Referring to the drawings and to the embodiment of the invention employed to illustrate the same, I have herein shown a trolley carriage 1 having the truck wheels 2 on which it is adapted to travel along the trackway 3, the latter being provided upon an elevated or other structure part of which is shown at 4 and which structure is intended to typify any bridge or other elevated carrier to which the cable support, herein utilized for supporting the fall ropes and operating cables, may be applicable.

My invention is not concerned with the particular type of trolley employed, the form herein shown being for illustrative purposes and being equipped with the fall ropes or cables 5 and 6 which, in the illustrative embodiment, are intended to control a grab or clam shell bucket depending from the trolley. The trolley is also provided with a trolley or traversing rope 7, the ends of

which are connected to the trolley carriage and by which the latter is hauled along the trackway. The cables 5 and 6 are each duplicated on opposite sides of the trolley carriage passing over their respective double sets of sheaves 8 and 9, so that from each end of the trolley carriage there extend three cables, on one side the cables 5, 5, 7 and on the other side 6, 6, 7. To support these ropes or cables lengthwise the trackway, fall rope carriers are provided at suitable intervals along the trackway, these being adapted to present to the trolley-connected cable guide sheaves (herein three in number) which are normally positioned below the space between the tracks, each sheave beneath its respective cable, but are capable of being moved out of the way of the depending bucket ropes 5 and 6 as the trolley passes by.

Herein for purposes of illustration but one such carrier is illustrated, but it will be readily understood that these are arranged as many as may be necessary at such intervals as may be required by the conditions of any given installation.

Referring more particularly to Figs. 1, 2, 4 and 5, each fall rope carrier is provided with three guide sheaves 10, 11 and 12 adapted to support the cables 5, 7, 5, or 6, 7, 6, according to the position of the trolley. Any number of sheaves may be employed according to the number of cables to be supported.

The sheaves 12 and 11 are both mounted for free rotation upon the pintle 13, the latter being fixedly clamped to the upright bracket 14 riveted or otherwise fixedly held between the arms 16 and 17. The remaining guide sheave 10 is mounted for rotation upon a similar pintle 18 carried by the bracket 19 riveted to the arms 20 and 21.

The arms 16 and 17 branch into the form of a V just above their attachment to the bracket 14 (see Fig. 1) being united by the brace members 22 and 23 to give them rigidity. The arms 20 and 21 are similarly spread or branched and similarly braced. Just above the brace members 23 both sets of arms follow a horizontal turn, opposite arms crossing each other at a central, pivotal point and terminating in upwardly curved extensions. The arms 16 and 20 which are in close approximation one to the other are pivoted upon the pin 24, the latter supported by angle irons which are riveted to a portion of the superstructure,

herein the parallel channel irons 25, centrally and longitudinally arranged just above the trackway. The arms 17 and 21 are similarly pivoted upon the pin 24* so that the two sets of arms constitute a structure resembling a pair of tongs pivoted at 24 and 24* so that they may be swung from the full line position shown in Figs. 2 and 4 to the dotted line position and, when in the dotted line position, withdraw the guide sheaves laterally out of the path of the fall ropes.

To hold the arms and the sheaves normally in a cable sustaining position beneath the cables, the opposite upper curved projecting ends of the arms are connected by coiled springs 26 which draw the curved ends together and hold the sheaves in the full line position shown in Figs. 2 and 4. The arms are positively located in this position by abutments comprising the channel irons 27 fastened to the wooden blocks 28 and riveted to the superstructure 4.

Additional rigidity is given to the structure by means of the segmental guide plates 29 and 30 which are riveted to the arms 16 and 17 respectively where they lie across or in proximity to the arms 19 and 20, respectively, so that the arm 20 is at all times in sliding contact with the guide plate 29 and the arm 21 in contact with the guide plate 30 the former being rigidly secured to the arm 16 and the latter to the arm 17.

When the trolley with its depending cables approaches near the carrier sheaves, the latter are swung into the dotted line position shown so as to be out of the way of the fall rope. To accomplish this means are provided preferably upon the trolley itself so that a suitable movement of the arms will be had with the approach of the trolley. For this purpose the trolley carrier has a depending spreader or opening frame 31 (Fig. 3) which comprises angle irons 32 and 33 curved and united at their ends so as to form a wedge-shaped shoe, the nose or point of which at either end is adapted to be inserted between the depending ends of the arms and wedge them apart. The angle irons are united by the cross pieces 34 and the opener is supported immediately beneath the trolley carriage by the hangers 35 and 36, the frame projecting a sufficient distance beyond either end of the trolley to initiate the required separation of the guide sheaves before the fall ropes reach them.

To engage the angle irons of the spreader, the brackets 14 and 19 which carry the sheaves are prolonged below the guide sheaves as shown in Fig. 4 and carry on upright pintles the rollers 37 and 38 which are engaged by the spreader frame when the trolley carriage approaches. When engaged by the spreader frame they are wedged apart, moving from the full line po-

sition shown in Fig. 4 to the dotted line position there shown as the middle portion of the frame is brought between them. The rollers are beveled on their upper edges so that a good rolling contact is preserved between them and the angle irons in all positions.

The shape of the spreader is preferably so selected as to impart harmonic motion to the arms when, with the trolley traveling at a uniform speed, the nose of the spreader is interposed between the rollers 37 and 38. That is to say that portion of each angle iron which effects the guiding movement of the arm has such a curvature that, when it meets its roller it moves the arm aside very slightly and then with a gradual acceleration or increase in the rate of movement. As the spreader advances the rate of movement increases until the arm swings past its mid-position. From that time its rate of movement decreases and it is gradually retarded until it comes to rest in the dotted line position shown in Fig. 4. In this position of the arm the trolley carriage is passing between the guide sheaves. As the trolley passes on and the depending ropes move past the position occupied by the carrier sheaves, the rollers meet the reverse curvature of the spreader and the springs 26 cause them to move inward and back to their normal position. The return movement also takes place harmonically starting with a gradually accelerating motion and attended with a gradually retarded motion, this being due to the curvature selected for the angle irons. The length of the spread is such that the carrier sheaves are swung out of the way of the depending cable in good season on the approach of the trolley and, this movement being executed harmonically, the parts are subjected to no unusual strains.

It will be observed that the suspension of the carrier sheaves on their supporting arms is such that the weight of the parts or the weight of the cables tends to close the arms, that is to say, tends to swing them toward a normal or cable supporting position. The arms themselves therefore through their suspension are automatically self closing, the springs 26 being relied upon more especially to accelerate the closing movement of the arms.

While I have herein shown and described one embodiment of my invention, it is to be understood that the same is applicable to other uses than the one herein shown and that extensive deviations may be made from the detailed construction and the relative arrangement of parts without departing from the spirit of the invention.

Claims—

1. In a hoisting apparatus, the combination with a trackway of a trolley, a fall rope carrier, means dependent upon the

operation of the trolley for moving the fall rope carrier in a direction at right angles to the trackway, and means on the trackway to limit the motion of the carrier.

5 2. In a hoisting apparatus, the combination with a trackway of a trolley, one or more cables extending to the trolley lengthwise of the trackway, one or more fall rope carriers for sustaining said cable or cables, 10 said carriers being adapted to swing transversely the trackway, devices operated by the trolley for swinging said carriers out of the way of the depending ropes on the approach of the trolley, and means on the 15 trackway to limit the swinging movement of said carriers.

3. In a hoisting apparatus, the combination with a trackway of a swinging support secured thereto, one or more sheaves carried 20 by said support beneath the trackway, and means adapted to be engaged by the trolley for swinging said support, said means providing for harmonic motion in the movement of the support.

25 4. In a hoisting apparatus the combination with a trackway of a trolley, fall rope carrier comprising two crossed pivoted levers, a spring connecting said levers together above their fulcrum, and wedging 30 means carried by the trolley for wedging aside the fall rope carrier.

5. In a hoisting apparatus, the combination with a trackway of a trolley, a pair of

oppositely disposed pivoted arms adapted to swing transversely the trackway, guide 35 sheaves carried by said arms beneath the trackway and means carried by the trolley below said sheaves for swinging said arms and said sheaves outwardly on approach of the trolley.

6. In a hoisting apparatus, the combination with a trackway of a trolley, a pair of pivotally supported arms adapted to swing transversely the trolley, guide sheaves carried by said arms beneath the trackway, and 45 a wedge-shaped spreading device carried by the trolley below said sheaves adapted to swing said arms outwardly on approach of the trolley.

7. In a hoisting apparatus, the combination with a trackway of a trolley, a pair of cable guide sheaves supported beneath said trackway and means located below said sheaves for moving said guide sheaves in opposite directions on approach of the trolley. 55

8. In a hoisting apparatus, the combination with a trackway of a trolley, a fall rope carrier, and a harmonic displacement device carried by the trolley.

In testimony whereof, I have signed my 60 name to this specification, in the presence of two subscribing witnesses.

ALMON E. NORRIS.

Witnesses:

THOMAS B. BOOTH,
ROBERT H. KAMMLER.