T. S. MILLER.

CABLEWAY.

APPLICATION FILED MAR. 24, 1909.

982,737.

Patented Jan. 24, 1911.

4 SHEETS—SHEET 1.

Fig. 1.

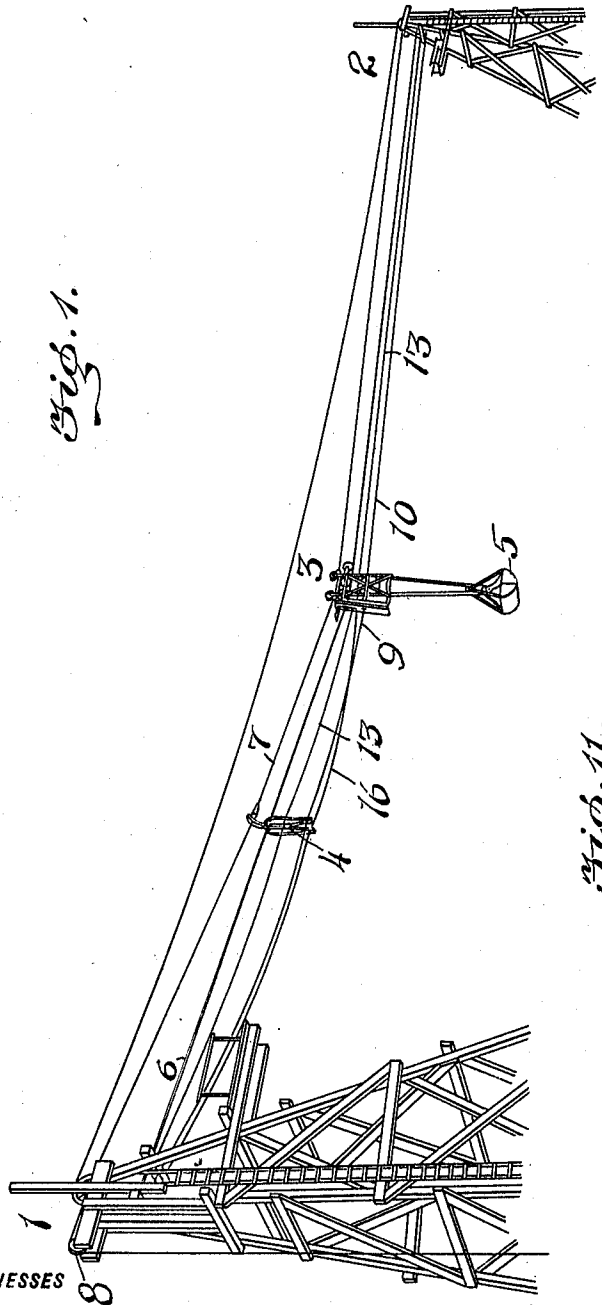
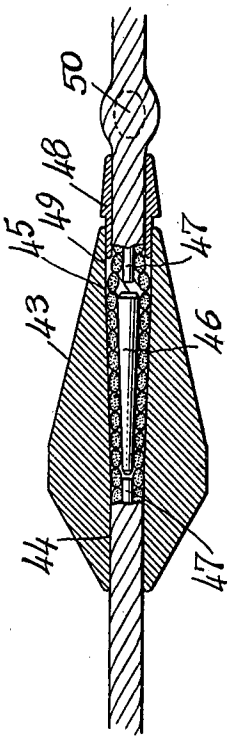



Fig. 11.




WITNESSES

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4 SHEETS—SHEET 2.

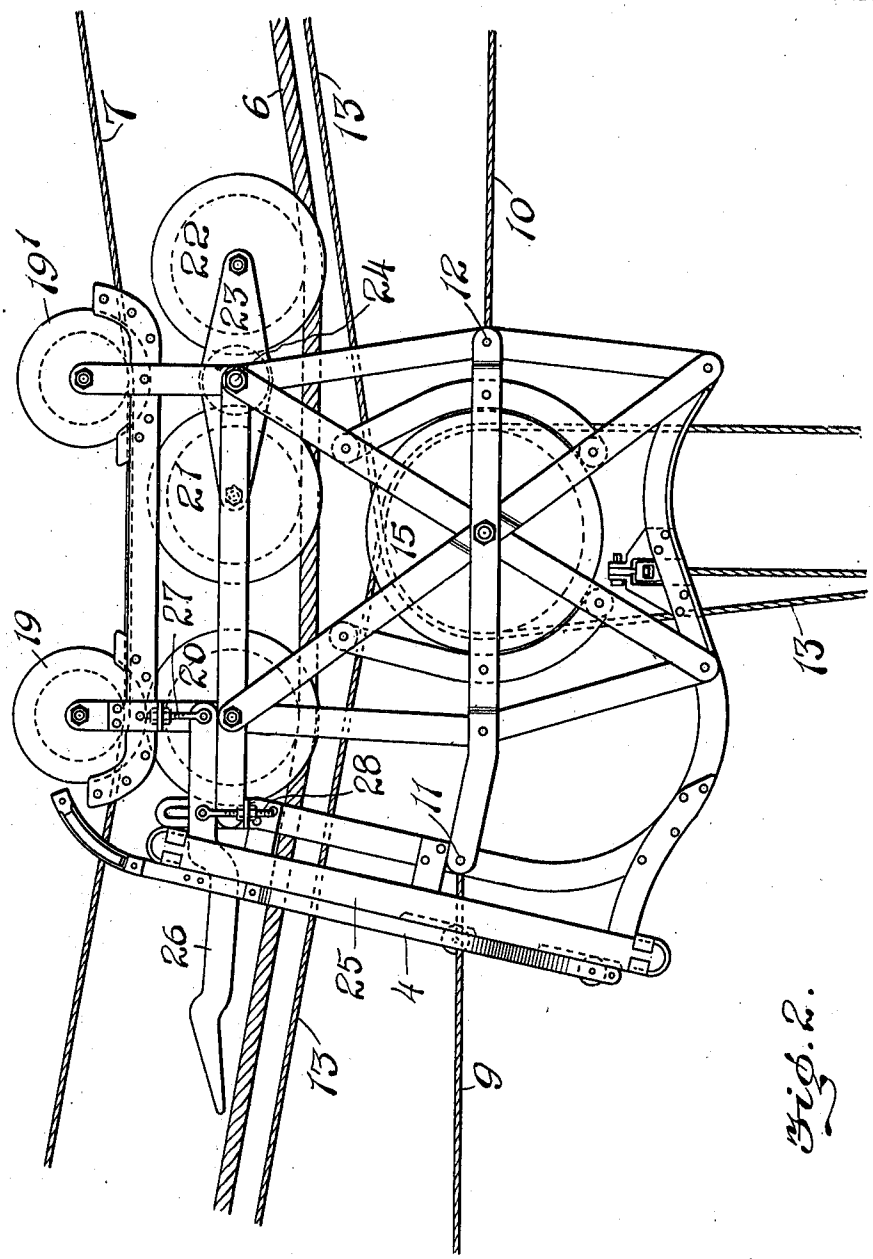


Fig. 2.

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4 SHEETS—SHEET 3.

Fig. 3.

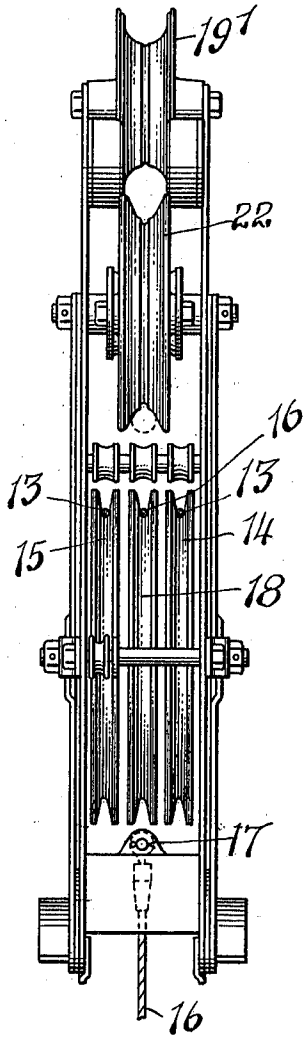



Fig. 4.

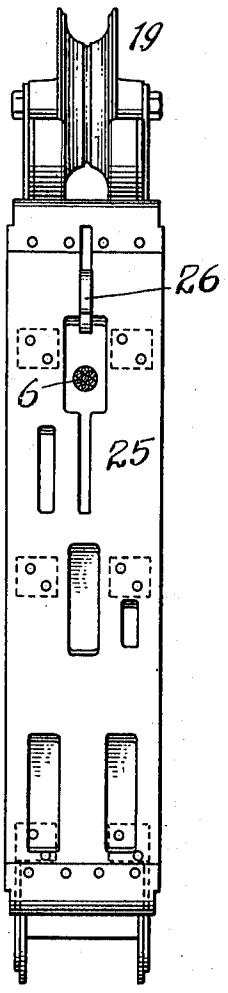
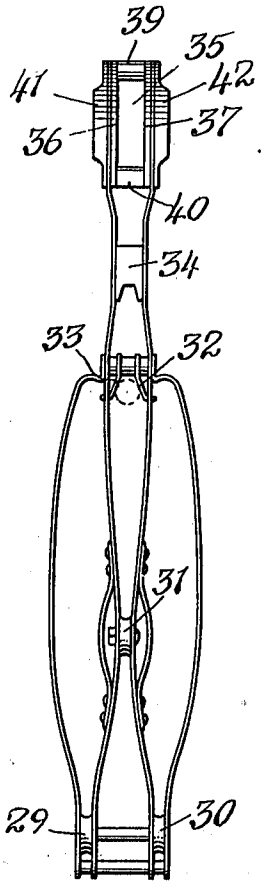



Fig. 5.

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4 SHEETS—SHEET 4.

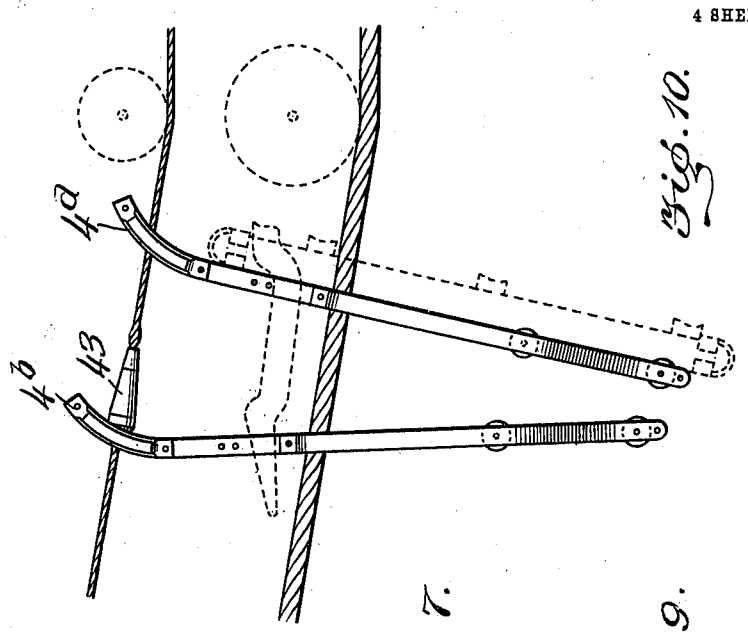


Fig. 7.

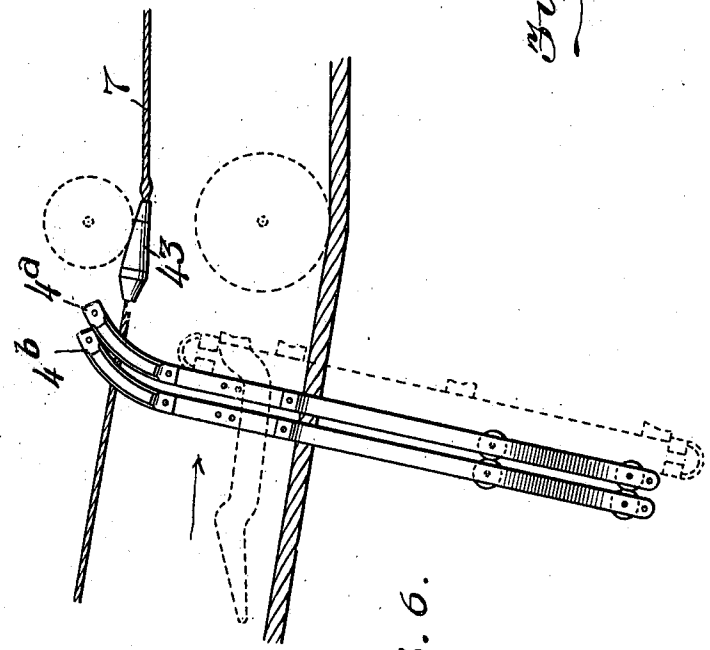


Fig. 6.

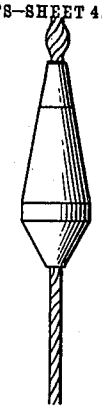

Fig. 10.

Fig. 9.

Fig. 8.

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# UNITED STATES PATENT OFFICE.

THOMAS SPENCER MILLER, OF SOUTH ORANGE, NEW JERSEY.

## CABLEWAY.

982,737. Specification of Letters Patent. **Patented Jan. 24, 1911.**

Application filed March 24, 1909. Serial No. 485,406.

*To all whom it may concern:*

Be it known that I, THOMAS SPENCER MILLER, a citizen of the United States, and a resident of South Orange, county of Essex, and State of New Jersey, have invented a new and useful Improvement in Cableways, of which the following is a specification.

The object of the present invention is to enable the cableway to run at high speed (say with a load carriage speed of 2,000 feet per minute) with durability.

In the accompanying drawing, Figure 1 is a perspective view of a cableway containing one form of my present invention. Fig. 2 is a side view of the load carriage with one fall rope carrier thereon. Fig. 3 is an edge or end view of the load carriage looking from the tail tower. Fig. 4 is an edge or end view looking from the head tower. Fig. 5 is an end or edge view of the fall rope carrier looking from the head tower. Figs. 6 and 7 are details of the operation of dismounting a fall rope carrier from the carriage. Figs. 8, 9, and 10 represent the rope button in graduated sizes adapted for dismounting different fall rope carriers from the carriage. Fig. 11 is a longitudinal section of the button shown in Fig. 10, showing, also, the internal construction of the other buttons.

1 is the head-tower. 2, the tail-tower. 3, the load carriage. 4, a fall rope carrier and 5 a clam-shell bucket.

6 is the main cable.

7 is the button rope fixed at one end to one of the towers extending over a sheave 8 at the other tower where it is under the tension of a suspended counterweight.

9 is the in-haul portion and 10, the out-haul portion of the traction rope secured to the load carriage at 11 and 12. This traction rope is operated by a suitable engine at the head-tower to propel the load carriage in the ordinary manner.

13 is the bucket holding rope one end of which is fixed to the tail-tower and which runs over the sheave 14 of the load carriage, thence under a sheave at the bucket, thence upward and over the sheave 15 of the load carriage, thence over a sheave on the head tower and down to its rope drum on the engine.

16 is the bucket closing rope, the tail end of which is fast to the load carriage at 17 and which extends thence downward around a sheave at the bucket and upward over the load carriage sheave 18 and thence over a sheave at the head-tower and down to the rope-drum at the engine.

The bucket is raised, lowered, closed and opened by the combined movement of the ropes 13 and 16 imparted by their drums at the engine in the ordinary manner. The sheaves 14, 15 and 18 are shown as being in axial alinement. The sheaves 19 and 19′ engage the button-rope 7 and maintain its proper position to coöperate with the load-carriage.

20, 21 and 22 are the load carriage wheels running on the main cable. The wheels 21 and 22 are mounted upon the extremities of a rocker 23 pivoted to the carriage frame at 24 so as to make the carriage ride more easily on the cable and also to distribute the load evenly upon the three cable wheels.

25 is an oak buffer secured to the load carriage in the position shown, and provided with suitable openings for the passage of the ropes and the horn.

26 is the horn whereon the rope carriers are carried by the load carriage. This horn is vertically adjustable by the screws 27 and 28, both with respect to its position vertically, and its angle of inclination.

Each of the rope-carriers 4 consists of a frame, as shown in Fig. 5, carrying a roller rest 29 for the bucket closing rope, another 30, for the in-haul rope and another 31 for the bucket holding rope. It also contains the diverging spring plates 32, 33, adapted to rest on the cable and slightly grip the same. It also contains the block 34 which constitutes a buffer to strike the horn and also a shoe to ride up and rest upon the horn. It also contains a button engaging head adapted to serve as a buffer against the button by which it is actuated, and to permit the passage of those buttons by which it is not actuated, and which is constructed as follows: The slot 35 through which the button-rope passes is bounded on opposite sides by the steel plates 36 and 37, the distance of which apart is regulated by the length of the thimbles 39 and 40 bolted in place by bolts extending through the side frames, and the steel plates 36 and 37. In order to strengthen the plates 36 and 37 against spreading under the blow of the tapering button, they are flanked on the outside of the frame by the channel irons 41 and 42. This button engaging head is bent at an angle, as shown in Figs. 6 and 7, so that the

blow of the button will be a glancing blow received at an angle of inclination by the steel plates 36, 37, instead of at right angles thereto. This is a feature of great importance when operating at high speed since it not only eases the blow of the button, but tends to ease the disengagement of the rope carrier from the horn. In this manner, the rope-carrier-head is enabled to endure the shock without destruction or distortion.

The button consists of a tapering sleeve 43 adapted to be threaded upon the button rope and held in any position. It is abruptly or bluntly tapered on the end against which its rope carrier strikes in being dismounted from the horn but is more gradually or sharply tapered on the opposite end. Interiorly, the button is bored cylindrically at 44, being adjacent to the end against which its rope carrier abuts. It is bored with a taper thence to the point 45, whence it is bored cylindrically again to the opposite end.

46 is a taper pin which tapers at an angle corresponding with the internal bore 45 so that when this taper pin is inserted within the strands of the rope, said strands will be bulged to conform to the internal taper 45 of the button, as shown. 47 is the hemp center which is usual in these steel ropes and which is removed at the point where the pin 46 is inserted.

48 is a thimble which by being forced into the cylindrical bore 49 closes the annular opening between the mouth of that bore and the surface of the rope. The tapered enlargement of the rope produced by the pin 46 within the tapering bore 45 prevents the button from being driven backward by any blow received from its rope carrier; each succeeding blow having a tendency to wedge the button more tightly in its position upon the rope. A spreader, shown in dotted lines at 50, is inserted in the rope to prevent displacement of the thimble 48.

The coöperation between the button and its rope carrier is illustrated in Figs. 6 and 7. In Fig. 6, two rope carriers are shown as resting on the horn and against the buffer of the carriage shown in dotted lines. The carriage is retreating in the direction of the arrow and the button 43 is about to pass through the rope carrier $4^a$ and strike the rope carrier $4^b$. The diameter of the button is less than the distance between the steel plates 36, 37, of the carrier $4^a$ and greater than the distance between the steel plates 36, 37 of the carrier $4^b$. In Fig. 7, the carriage has retreated far enough so that the button has passed through the rope carrier $4^a$ and struck against the inclined surfaces of the steel plates 36, 37, on the carrier $4^b$ and slightly lifted the carrier $4^b$ and is forcing it off of the horn. The carrier $4^b$ will rest in this position against the button 43 until on the advance of the carriage it is again picked up by the horn and returned to the position shown in Fig. 6.

I do not wish to be understood as limiting myself to a permanently or rigidly inclined head providing that the head inclines at the stage of the operation enabling it to perform its function.

Having thus described my invention, what I claim is:

1. In a rope carrier, in combination, the carrier body and an inclined impact head.

2. In a rope carrier, in combination, the carrier body and an inclined head flanked by the strengthening flanged pieces 41 and 42.

3. In a rope carrier, a carrier body having an inclined impact face.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS SPENCER MILLER.

Witnesses:

ERNEST PULSFORD,

LOUIS G. RUGGLES.