

[54] **DETACHABLE GRIPPING MEANS FOR MONOCABLE AERIAL TRAMWAYS**

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[57] **ABSTRACT**

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[58] Field of Search.....104/202, 204, 205, 206, 209

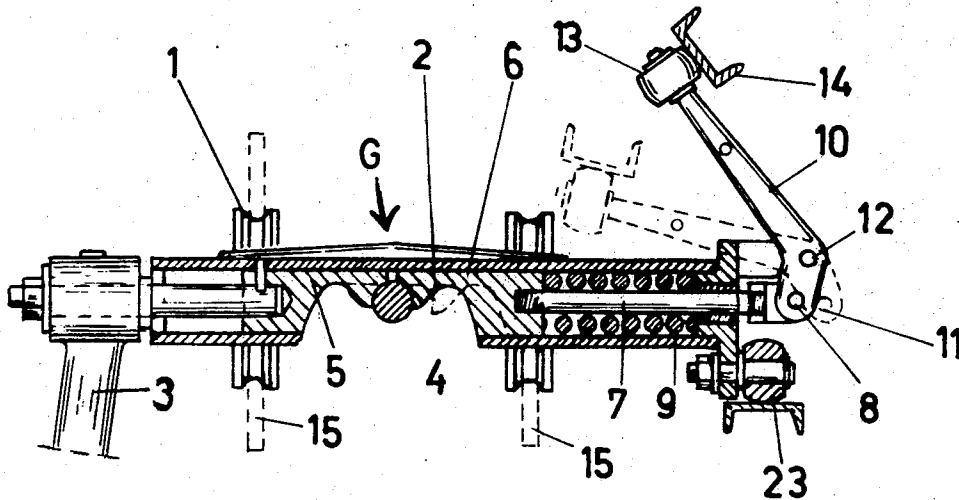
A detachable gripping unit for the endless traction cable of a monocable aerial tramway in which a stationary jaw and two movable jaws are mounted in a common frame, with a hanger for a car being connected to the stationary jaw, spring means for urging each movable jaw towards the stationary jaw for gripping the traction cable therebetween and a lever operably coupled to each spring means for displacing the movable jaw away from the stationary jaw by the coaction of a roller on each lever with a guide rail in the station.

[56] **References Cited**

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3 Claims, 4 Drawing Figures



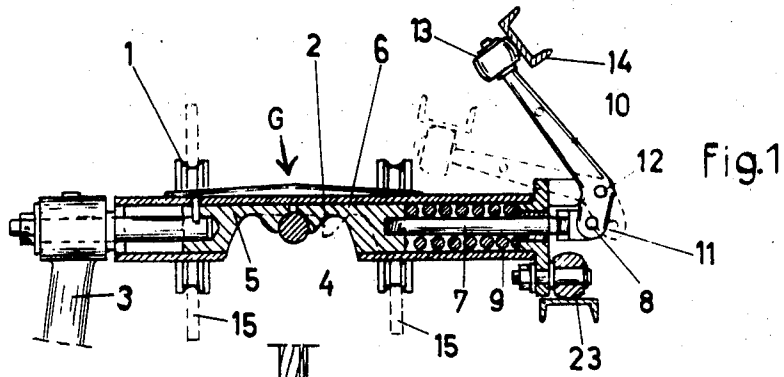


Fig. 1

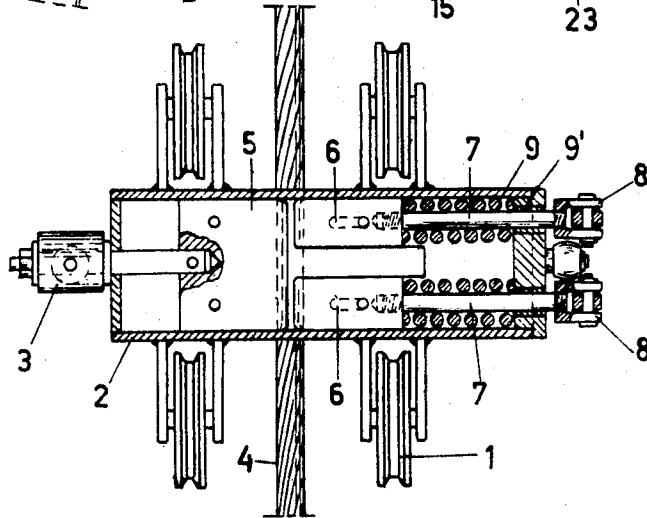


Fig. 2

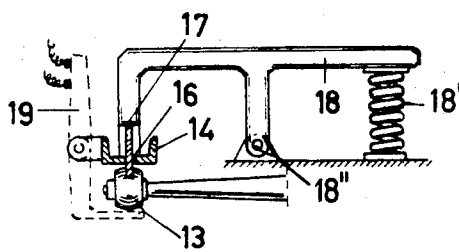


Fig. 3

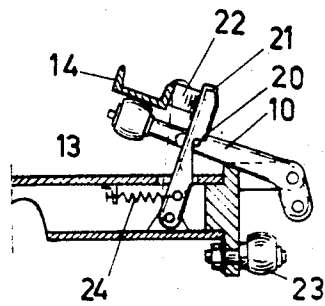


Fig. 4

DETACHABLE GRIPPING MEANS FOR MONOCABLE AERIAL TRAMWAYS

BACKGROUND OF THE INVENTION

The present invention relates to detachable gripping means for the traction cable or rope of an aerial tramway provided with chairs or gondolas.

In an aerial cableway or ropeway of the endless monocable type it is important that the attachment and detachment of the car or gondola to the continuously moving traction cable or rope in the stations be executed, secured and checked by means requiring special appliances. It is essential that the gripping means can travel over all supporting sheaves or pulleys free from pushes and also pass the various hold-down-sheaves or pulleys free from shocks in the line. Also, it is quite important to be able to ascertain the pressure of the closed grip at the time a car or gondola is left in the station.

SUMMARY OF THE INVENTION

Generally, the present invention is directed to detachable gripping means for the traction cable of a monocable aerial tramway which comprises a frame, a stationary jaw in the frame, a hanger for a car secured to the stationary jaw, two independent jaws mounted in the frame in parallelism and movable toward and away from the stationary jaw to grip and release the cable respectively, independent spring means in the frame for each movable jaw urging said movable jaws towards the stationary jaw, a lever operably related with each spring means, means pivotally connecting each lever to the frame, and a roller for each lever cooperable with a guide rail in a station to move each lever about its pivotal connection against the action of the spring means to move each movable jaw away from the stationary jaw to enable entry of the cable, the arrangement being such that if one movable jaw and its related spring means is rendered ineffective, the other movable jaw and its related spring means is effective to grip and release the cable, respectively.

The invention further includes means for testing or checking each gripping assemblage to determine if the assemblage has the required pressure while the car leaves the station and to stop the main drive if the pressure is insufficient.

Moreover, means are provided to enable each gripping assemblage of an entering car to rest open in the station so that the same car can leave the station without the usual labor to release the clamp against the spring pressure.

Further objects and advantages of the invention will become more readily apparent to persons skilled in the art from the following detailed specification and annexed drawings.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 is a view partly in side elevation and partly in cross section of a detachable gripping assemblage embodying the present invention.

FIG. 2 is a plan view of the assemblage illustrated in FIG. 1.

FIG. 3 is an elevational view partly in cross section of means for testing or checking each gripping assemblage, and

FIG. 4 is a view partly in side elevation and partly in cross section of means enabling the opened gripping assemblage to be arrested and later closed with essential pressure labor.

DETAILED DESCRIPTION OF THE INVENTION

As clearly illustrated in FIGS. 1 and 2, the gripping assemblage includes a closed frame 2 which is equipped with two pairs of diametrically opposed wheels 1 which are adapted to ride on tracks 15 into a station. An endless traction cable or rope 4 is adapted to be gripped and released by a gripping mechanism denoted generally G.

More specifically, the gripping mechanism G includes a fluid jaw or clamp 5 mounted in the frame 2 and two movable jaws or clamps 6 which, when in the position illustrated in FIG. 1, coact with the stationary jaw 5 to grip the cable 4. A hanger 3 for a chair, gondola or the like (not shown) is suitably secured to the stationary jaw 5.

In order to provide the necessary pressure to maintain the jaws 6 in the position illustrated in FIGS. 1 and 2, it will be noted that spring means 9 is associated with each jaw 6. The spring means 9 is guided by a rod 7 secured at one end to the jaw 6 with the opposite end passing through an aperture in the end of the frame 2 provided with a bearing 9'. The outer end of the rod 7 is provided with a U-shaped fitting 11 and a bolt 8 pivotally connects one end of a pilot lever 10 to the fitting 11. Each pilot lever 10 is pivotally connected to the frame 2 as indicated at 12. The upper end of the lever 10 supports a roller 13 which travels along a guide rail 14 of channel section located within a station. It will be appreciated that when the arm 10 is moved to the dotted line position (FIG. 1), the jaw 6 associated therewith will be moved to the right against the action of the spring means 9 thereby releasing the gripping assemblage from the cable 4.

In order to eliminate any turning moment, it will be seen that a roller 23 is located at the lower part of the frame 2.

As previously mentioned, means are provided for testing or checking the existing spring pressure of the gripping assemblage and a device for achieving such ends is illustrated in FIG. 3. More specifically, the testing or checking device includes a balance beam 18 provided with a spring 18' at one side of pivot point 18'' and a pattern 17 on the other side of the pivot point. The pattern 17 is adapted to pass through an elongated slit or slot 16 provided in the guide rail 14 and if the pressure of the spring means 9 is sufficient, the pattern 17 will be lifted by a passing roller 13 and the checked car can travel out of the station. On the other hand, if the pressure of the spring means 9 is insufficient, then the roll 13 cannot lift the pattern 17 against the action of the spring 18' and consequently the roller must pass at a lower level. In such situations, the roller 13 will actuate a switch lever 19 for the electrical supply and thereby interrupt the main drive.

In FIG. 4, there is illustrated means to prevent the opened grip assemblage to be reclosed during the drive in the station thereby resulting in substantial savings in labor for the following coupling sequence. Of course, the problem involved is to block the spring pressure while uncoupling during the entrance of the car into

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the station. While the roller 13 is moved downwardly by the guide rail 14, the lever 10 is prevented by a lever 21 pivoted by a guide rail 22 to be again loosened since the lever is arrested by a bolt or pin 20. When the car is ready to leave the station, the lever 21 can be loosened without the guide rail 22 and a slight pressing down of the roller 13 via the guide rail 14 is sufficient to turn aside the lever 21 by means of a spring 24 connected to the lever 21 and the frame 2.

The invention further comprehends a double disposition of the gripping assemblage in each car for greater cable speed or car capacity.

The invention is not to be confined to any strict conformity to the showings in the drawings and also permit the use of such double gripping means for each car by a connecting frame to each gripping body but changes or modifications may be made therein so long as such changes or modifications mark no material departure from the spirit and scope of the appended claims.

I claim:

1. A detachable gripping assemblage for a monocabable aerial tramway comprising a frame, a stationary jaw in the frame, a hanger for a car secured to the stationary jaw, two independent jaws mounted in the frame in spaced apart parallel relationship, said independent jaws being opposite the stationary jaw and movable rectilinearly toward and away from the stationary jaw to grip and release the cable respectively, a rod secured at one end to each movable jaw and each other end passing through an aperture in the frame, a spring means surrounding each rod with one end bearing against each movable jaw and the other end against the frame for urging the movable jaws towards the stationary jaw, a lever pivotally connected to the other end of each rod, means pivotally connecting each lever to the

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frame at a point spaced above its pivotal connection to the rod, and a roller supported by the free end of each lever for travel along a guide rail in a station to move each lever about its pivotal connection to the frame against the action of the spring means to move the movable jaws away from the stationary jaw, the arrangement being such that if one movable jaw and its related spring means is rendered ineffective, the other movable jaw and its related spring means remains effective to grip and release the cable.

2. The gripping assemblage as claimed in claim 1 including means for testing the pressure of the jaws during the departure of each car from the station, such means including a balance beam pivotally mounted intermediate the ends thereof, said balance beam including spring means biasing the beam on one side of the pivotal mounting and a pattern on the beam on the other side of the pivotal mounting passing through the guide rail operable to hold the roller of each lever in turn away from the guide rail if the pressure of the spring means is insufficient and switching means for the main drive of the traction cable being actuated to arrest such drive when one of the rollers is in the latter position.

3. The detachable gripping assemblage as claimed in claim 1 including means for arresting the movable jaws in their position away from the stationary jaws including a pair of second levers pivoted to the frame and engageable with each lever operably connected to the spring means, and a spring connected to each second lever and the frame whereby a slight downward pressing of either roller by the guide rail enables the spring to turn aside the second lever with respect to the first lever.

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