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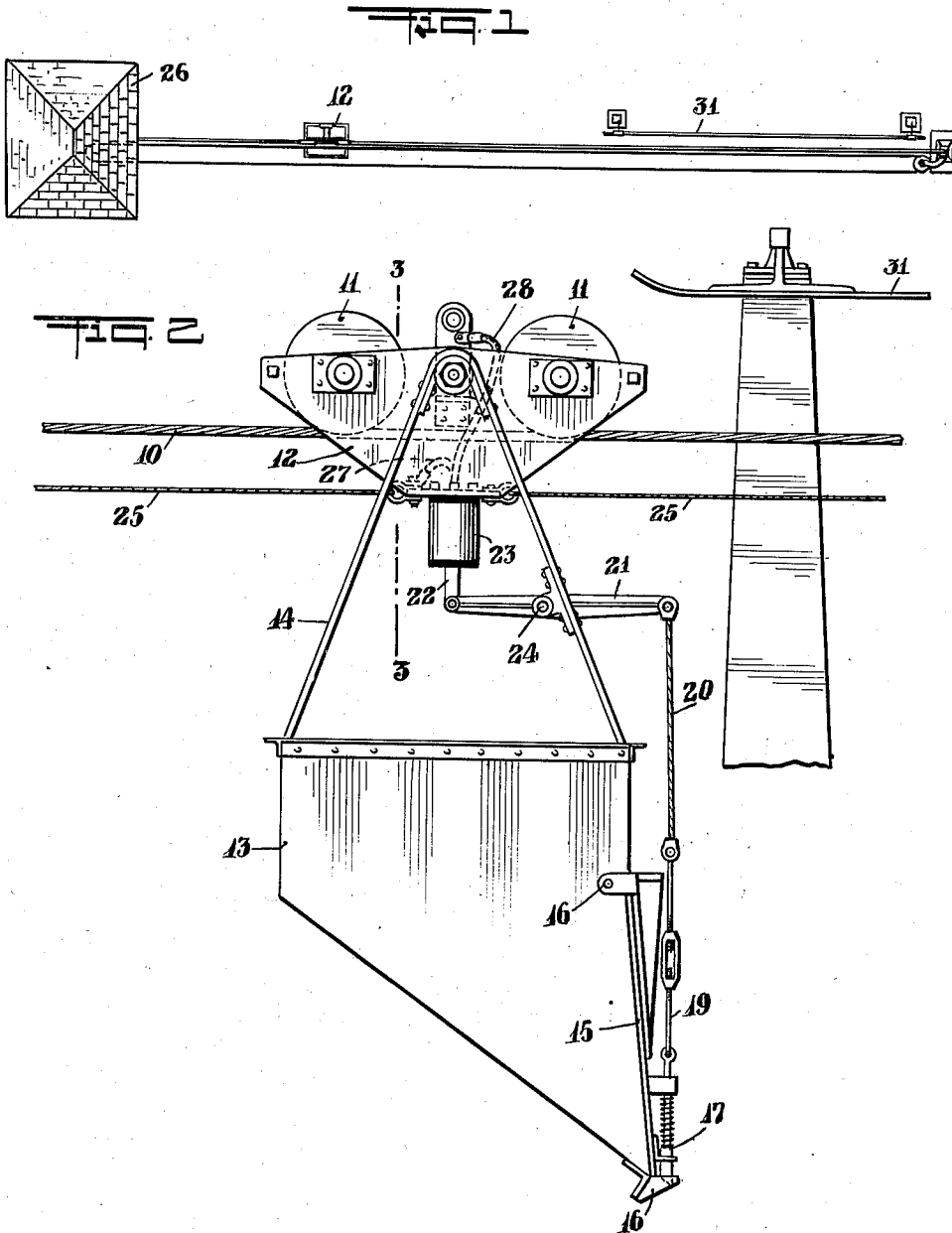
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2,095,552

AERIAL TRAMWAY CARRIER DUMPING DEVICE

Filed Dec. 28, 1934

2 Sheets-Sheet 1



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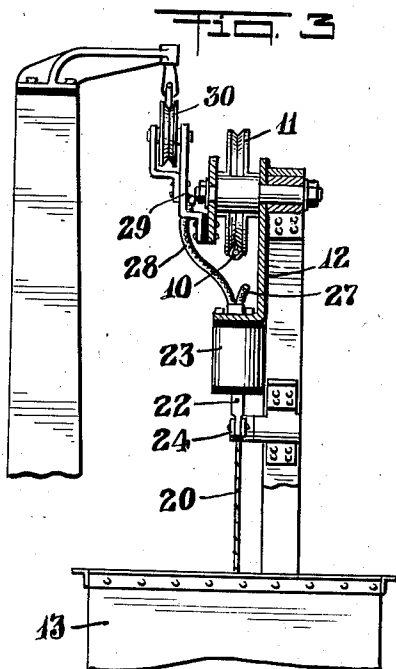
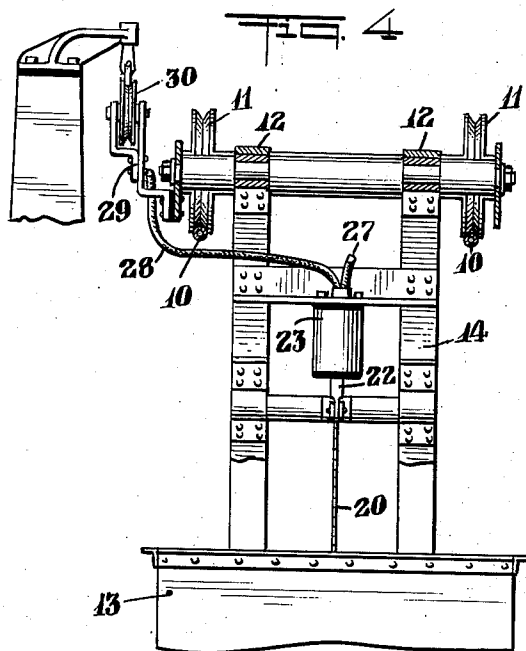
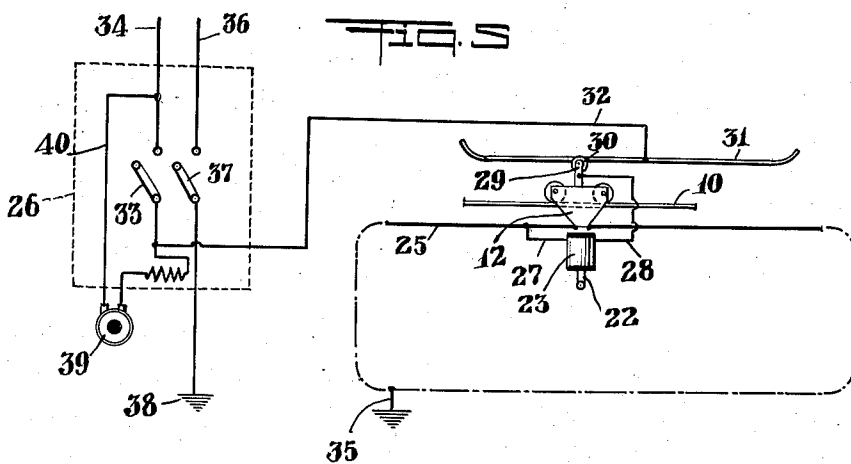
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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,095,552

AERIAL TRAMWAY CARRIER DUMPING  
DEVICEGilbert M. Kilcarr, Hillside, N. J., assignor to  
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Application December 28, 1934, Serial No. 759,513

## 1 Claim. (Cl. 214—60)

This invention relates to a system for controlling the unloading of movable carriers, and more particularly, carries of the suspended tramway type.

It is among the objects of the present invention to provide novel and improved electrical means for controlling the door of a carrier, so as to empty the carrier.

The invention is particularly designed for use in connection with cars of the tramway bucket type, and provides means whereby the releasing of the latch devices of such carriers may be electrically operated from a remote point.

A further object of the present invention is to provide a combination with aerial tramway cables, a conductor cable associated with a particular portion of the tramway cables, whereby energy may be received by the tramway bucket or buckets from the conductor cable when it has reached that portion of the carrier cable at which the carrier is to be unloaded.

A further object of the present invention is to provide a conductor whereby a conductor cable associated with the tramway cable may be connected by a tramway car support to a control circuit when a carrier has reached that portion of the cable with which the conductor cable is associated.

A further object of the present invention is to provide a remote control whereby a conductor cable associated with a tramway cable may be connected to the control circuit at the will of the operator, to provide for the release of a tramway carrier latching means at any desired position of a tramway carrier, while it is in contact with the conductor cable.

A further object of the present invention is to provide a tramway carrier with electrical controlling means for releasing the latches thereof, or for causing the unloading of the car in any manner.

Other and more general objects of the present invention are to provide a novel and improved tramway system and tramway carrier, the arrangement being such that electrical means are utilized for tripping the carrier to release material therefrom, whereby an economy in the electrical energy which is employed is secured, by energizing the electrical circuit which is involved from a remote point at the will of the operator, and this prevents accidental tripping of a carrier in an undesirable position in the path of travel of the carrier, thus insuring the discharge of material from a carrier within a predetermined area in its path of travel. By the structure herein

provided to attain the above objects, it will be seen that the necessity for use of chucks or trippers mounted in the path of a tramway carrier is avoided.

Other objects and features of the present invention will be apparent from a consideration of the following specification taken in conjunction with the accompanying drawings, in which

Figure 1 is a plan view diagrammatically illustrating a tramway system embodying the present invention;

Fig. 2 is a side elevation showing a two-wheel tramway carrier formed in accordance with the present invention; and in conjunction with the conducting track;

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view similar to Fig. 3, showing the present invention in connection with a two-cable type car tramway, and a tramway car of corresponding type.

Fig. 5 is a circuit diagram of one form of electrical circuit which may be used in connection with the present invention.

In connection with the present invention, the system includes a supporting cable 10, on which the wheels 11 of the tramway carriers ride, whereby a carrier is movably suspended from the cable 10. The wheels 11 are mounted in suitable manner within a housing 12 from which the body of a tramway carrier 13 is suspended by the supporting structure 14.

The tramway carrier is here shown as including a side door 15, pivoted as at 16 to the body. The door is held in closed position by a spring-urged bolt 17 receivable within an apertured keeper 18 at the bottom of the body. For tripping the door, in order to permit it to open under the influence of the weight of the material within the body, a vertically movable tripping rod 19 is provided, which is operated by a cable 20.

In connection with the present invention, it will be understood that the invention is not confined to the specific structural features of the car, its suspending structure, the door, or its latch-tripping assembly. The invention is clearly applicable to various types of carriers with various types of doors and trippers, and is in no way limited to the structural features herein presented by way of illustration. In connection with Fig. 4, it will be seen that the invention can be used with a four-wheel, two-cable car. The numerals for the wheels, cables, car body and supporting structure, as well as for the tripping cable 20, are used throughout, in order to indicate that the inven-

tion is applicable to various modifications of the structure presented.

For operating the cable 20, in order to withdraw the bolt 17 from the keeper 18 and to permit the opening of the door, a movable lever 21 is provided, one end of which is associated with the cable 20, while in the form of lever herein shown, the opposite end is associated with the armature or solenoid core 22 of an electromagnet or solenoid 23, the lever 21 being intermediately pivoted as at 24, to the supporting structure 14 of the bucket 13. It is obvious that this assembly may be modified in accordance with the structural details of the specific types of carriers used, and the electromagnet 23 and core 22 may be substituted by motors or equivalent electrical means for moving the bolt 17. Any suitable motor may be used for operating lever 21.

In accordance with conventional practice, the carrier is moved by the conventional actuating cable 25, which is attached to the housing 12 and which is operated from a suitable source of power from a central station, the station being indicated in Figs. 1 and 5, by the numeral 26. This station is of the usual type, having driving equipment such as drums to which the cable 25 is connected. By turning said driving equipment or drums, the cable 25 can be moved. The return run of cable 25 is not shown, as this part of the apparatus is of conventional design. The cable 25 is electrically associated, by means of a conductor 27, with one terminal of the coil of the magnet 23, while the other terminal of the coil is connected through a conductor 28, to a trolley assembly which is generally indicated by the numeral 29, and which includes a trolley wheel 30. As indicated in Figs. 3 and 4, the trolley assembly is suitably insulated from the housing 12 by which it is supported. However, cable 25 and cable 10 are electrically connected to housing 12, and cable 10 may be grounded, if desired, and conductor 27 may be connected directly to housing 12, if desired.

For providing an electrical connection for the trolley wheel 30 over a predetermined zone in the path of travel of the car, a conductor 31 is provided, with which the wheel 30 contacts when the carrier is moving in the predetermined zone. The conductor 31 is connected, as illustrated in Fig. 5, by a conductor 32 to a switch 33, the arrangement being such that when the switch 33 is closed, energy is supplied from one side of a suitable source of current (not shown), through a conductor 34, through the switch 33 and conductor 32 to the track 31. The return circuit is provided through the cable 25 or cable 10, one or both of which are preferably grounded as indicated at 35. Whenever it is specified in the claim that the supporting cable forms part of the control circuit, the use of the traction cable 25 is to be considered as an equivalent. The opposite side of the source is connected to conductor 36, which is controlled through a switch 37, which can be grounded as at 38, in order to complete the circuit through the ground.

With both the switches 33 and 37 closed, it will be seen that the circuit of conductors 34 and 36 is closed through cable 25 and conductor 31, or through cable 10 and conductor 31, whereby a carrier in its travel will cause the trolley 30 to complete the release circuit and thus automatically operate lever 21, release the door 15 and permit the discharge of the load from the bucket 13 when the track 31 is reached.

If it is desired manually to control the energization of the electromagnet or solenoid 23 at any desired position of the car within the length of the conductor 31, the switch 37 is closed while the switch 33 is left open and a push-button circuit controller 39 may be used, which connects the conductor 34 with the conductor 32 by a conductor 40. The arrangement is such that the conductor 31 will be connected to the control circuit only upon closing of the control circuit by the button 39, and the tripper will be operated only in accordance with manual control and during the time that the bucket is within the length of the track 31.

From the foregoing, it will readily be seen that the present invention provides a novel discharge system and an electrically controlled circuit therefor. The invention obviously is not confined to the structural details herein disclosed, nor is it confined to the specific electrical wiring connections or circuits as herein shown, as numerous changes, modifications and the full use of equivalents may obviously be resorted to without departing from the spirit or scope of the invention. Likewise, the invention is not limited to an electrical control system, or to any means of actuating the carriers.

The control system disclosed herein may be designated as a "remote control system", since the control station is not on the carrier or carriers. Said remote control station may be at station 26, or at any other desired location.

In the specific embodiment shown herein, the door of the carrier is of the self-opening type, in which the door opens automatically under the weight of the load, when the latch 17 is released. Any suitable counterweight can be mounted upon the door, in order to close the door automatically after the load has been discharged, and the latch 17 descends automatically after the control circuit has been opened, so that the door is automatically relatched. The electro-magnet or solenoid which has been disclosed in the embodiments herein, may be considered as constituting one type of electric motor. The source of current which is connected to the control circuit may be direct current, or alternating current. If alternating current is utilized, the solenoid may be of the type which is energized so as to provide a magnetic field which has a constant direction, when said solenoid is energized by means of an alternating current.

The door may be of the slide type, which does not open automatically under the action of the load. In such case, the door can be actuated to and fro by means of a suitable electric motor. The control circuit for said motor can be provided with a reversing switch, so that said motor can be operated in either direction, in order to move said door positively to the open position, and then to move said door in the reverse direction, so that it closes the outlet of the carrier. A device of this type would not require a latch.

I have shown a preferred embodiment of my invention, but it is clear that numerous changes and omissions can be made without departing from its spirit.

I claim:

A remote-control unloading system for a tramway carrier system, said tramway carrier system having a supporting cable on which the tramway carriers are movably supported and also having a grounded pull-cable which is connected to said carriers in order to move said carriers along on the supporting cable, said carriers having electri-

cal dump-controlling means for controlling the dumping of the loads of the carriers, the circuit of said dump-controlling means including a fixed control conductor located at the dumping point and which is spaced from said cables, said circuit also including electrical connecting devices on

said carriers and adapted to connect said fixed conductor electrically to said pull-cable when said carriers are in dumping position, said pull-cable constituting part of the circuit.

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