

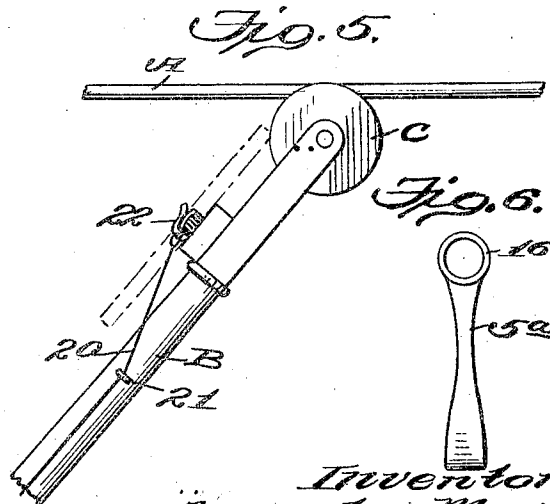
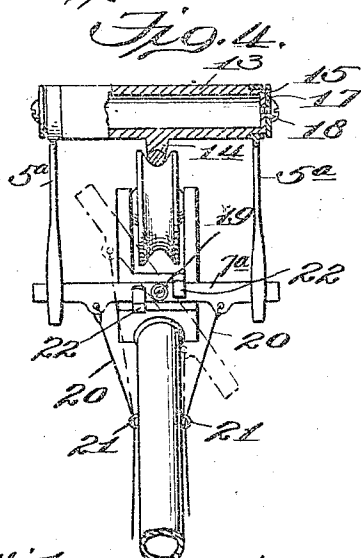
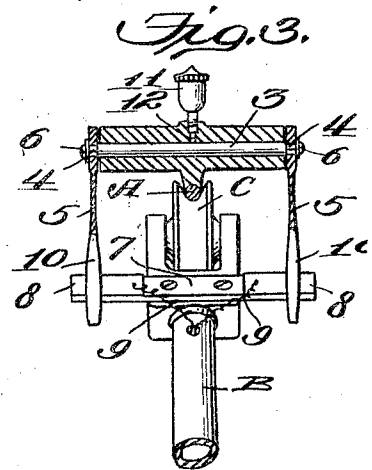
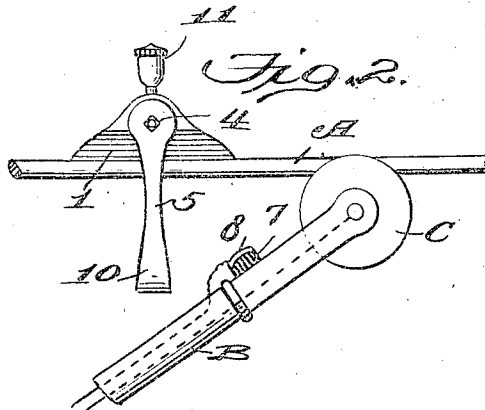
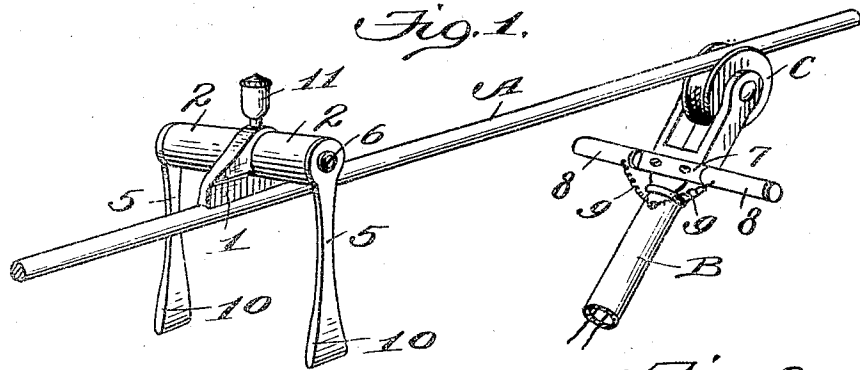
A. MAY.
CIRCUIT CLOSING AND BREAKING DEVICE FOR ELECTRICALLY OPERATED ANNUNCIATORS
AND THE LIKE.

APPLICATION FILED MAR. 25, 1909.

Patented Oct. 26, 1909.

2 SHEETS—SHEET 1.

938,394.



Witnesses:
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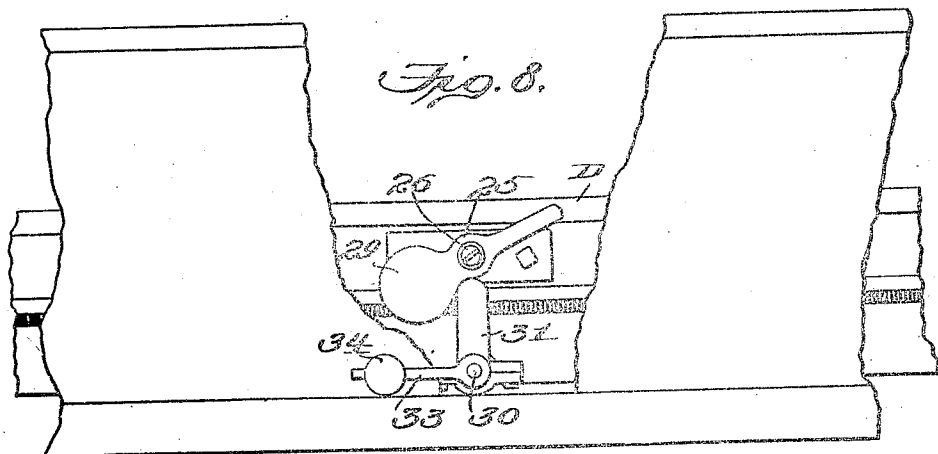
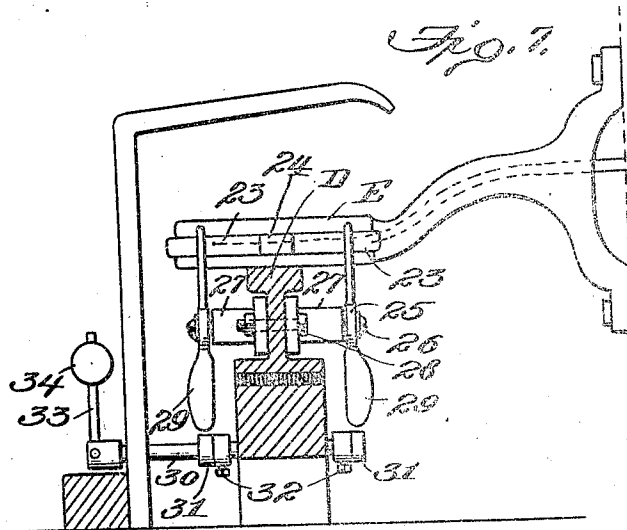
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UNITED STATES PATENT OFFICE.

AUGUSTUS MAY, OF NEW ORLEANS, LOUISIANA.

CIRCUIT CLOSING AND BREAKING DEVICE FOR ELECTRICALLY-OPERATED ANNUNCIATORS AND THE LIKE.

938,394.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed March 25, 1909. Serial No. 485,651.

To all whom it may concern:

Be it known that I, AUGUSTUS MAY, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Circuit Closing and Breaking Devices for Electrically-Operated Annunciators and the Like, of which the following is a specification.

This invention relates to new and useful improvements in circuit closing and breaking devices for electrically operated annunciators and the like and it has more particular reference to a device applicable to the annunciators of street cars, such device from a broad standpoint and with necessary structural modifications being adapted for use in connection with either trolley or third-rail systems.

The particular nature of the electrically controlled apparatus is immaterial in so far as the present invention is concerned and such apparatus, by way of example, may be either a station or street annunciator or an intermittently operated advertising device.

The primary object of the invention is to provide a circuit closing device for use in the connection stated, which shall be positive in its action and at all times certain and reliable and to accomplish this object the invention proposes the use of a pair of suspended pivoted circuit closing arms which are in effect weighted and which cooperate with the contact device carried by the car with a dragging action. The advantage of this dragging action, due to the weighting of the arms, is of a two-fold nature. In the first place it assures of the certain and reliable contact between the cooperating parts, beyond their pivotal centers being overcome by the weighted construction thereof. Consequently the action of the indicator will be efficiently controlled. In known devices of the general type in which suspended arms are employed, when such arms are engaged by the car contact with any material force they are thrown beyond their centers, hitting the contact on its opposite side and causing two operations of the indicator where only one is desired. Another objection is that the arms in the known devices are so light that their circuit closing function is oftentimes inefficiently carried out.

The second advantage of the weighted arms of the present invention, due to the dragging action thereof, is to cut through any deposit of ice or snow upon the car contact and in prior devices so far as I am aware, no means has been provided for accomplishing this action.

The invention aims as a further object to provide a device of the character stated for use in connection with trolley lines which shall be of such construction and assemblage that it may be readily supported by the trolley wire and when operated will not in any way interfere with the wire, as by causing a distortion or an undue sagging thereof.

The invention aims as a further object to provide means whereby the cooperating devices may be put into an inoperative relation. This means is employed where the devices are used in large cities in which the street cars have local and express services, the local cars having their annunciators operated at every street or station and the express cars having their annunciators operated at only determined streets or stations, the devices at the stations where the express cars do not stop being temporarily put out of operation by the manipulation of the means provided for this purpose.

The invention, while efficiently accomplishing the several objects stated, retains also the incidents of inexpensiveness, simplicity of structural details, durability and practicality.

In the accompanying drawings, preferred and advantageous embodiments of the invention have been shown in connection with both trolley and third-rail systems and the structural details of such embodiments are set forth at length in the following description, while the novel features by which the invention is distinguished from the prior art are described in language of the proper determinative scope in the appended claims.

In the said drawings: Figure 1 is a perspective view showing the application of the invention to a trolley system. Fig. 2 is a side elevation thereof. Fig. 3 is a transverse sectional view of the suspended trolley contact devices. Fig. 4 is a front elevation partly in section, illustrating a slightly modified arrangement. Fig. 5 is a side elevation of the arrangement shown in Fig. 4. Fig. 6 is a side elevation of one of the trolley

contact arms of the arrangement shown in Fig. 4. Fig. 7 is a sectional view showing the application of the invention to a third-rail system, the operating elements being shown in front elevation, and Fig. 8 is a side elevation of the construction shown in Fig. 7, the cover of the third rail being broken away to more clearly illustrate the relation of the parts.

Similar characters of reference refer to corresponding parts throughout the several views.

In Fig. 1 the trolley wire is shown at A and the trolley pole is shown at B, the said pole having the usual trolley wheel C which rides upon the wire A. Certain of the elements of the circuit closing device are supported upon the wire A and another element thereof is supported upon the pole B, as will be well understood. The device which is carried upon the wire A comprises a block, as 1, which is rigidly secured to the upper side of said wire in any suitable manner and which is formed at each side thereof with horizontal alined tubular projections, as 2. The projections 2 constitute a continuous bearing for a shaft, as 3, the latter having squared ends, as 4, upon which are carried the contact arms 5. The arms 5 at their upper ends are formed with squared openings which surround the squared ends of the shaft 3 and said arms are secured on said squared ends by screw or other suitable fastening devices, as 6.

The device which is carried upon the trolley pole B for coöperation with the arms 5 comprises a horizontally extended bar, as 7, which, in the embodiment of Fig. 1, is rigidly attached to said pole. The bar 7 is preferably of strong insulating material capable of withstanding shocks and blows and resisting the elements, such for example as vulcanized fiber. The bar 7 has portions projecting horizontally at each side of the pole B, each of the projecting portions having metallic contact pieces 8 secured to the upper or front faces thereof. The contact pieces 8 are each attached to a wire, as 9, the wires 9 being led through the trolley pole into a car and being connected with the electrical controlling mechanism of the annunciator or other electrically operated apparatus therein. The arms 5 are of similar construction and have their edge faces of inverse curvature. By virtue of such formation the central portions of said arms are of restricted width, and, the edge faces diverging downwardly, the lower portions of said arms are of enlarged width and consequently heavier than the restricted central portions. The width of the lower portions of the arms 5 may also be increased by forming said lower portions of greater cross section than the central portions, as shown at 10 in Fig. 3. Hereafter the portions of

the arms 5 designated by the numeral 10; shall for convenience be referred to as weighted end portions.

For the purpose of lubricating the shaft 3, an oil cup, as 11, may be employed, such oil cup being connected to the upper side of the block 1 and communicating with the interior of the extensions 2 through a duct, as 12, shown more particularly in Fig. 3.

In the use of the embodiment illustrated in Fig. 1, it will be apparent that the arms 5 will engage the contact pieces 8 with a dragging action which is progressively augmented by reason of the progressively increasing weight of the portions 10. The provision of the concavely curved edge faces of the arms 5 assures also of the certain and reliable engagement of said arms with the contact 8 and the provision of the weighted end portions 10, aside from the functions stated, serves to maintain the arms 5 in depending perpendicular positions and to prevent said arms from vibrating under the influence of the initial force with which they are engaged by the bar 7, it being understood that such vibration would be fatal to the efficient use of the indicator inasmuch as it would cause several contacts to be made where only a single contact is desired, each separate contact producing an operation of the annunciator. If for any reason, due to an unusual speed of the car in approaching a station or street or to some imperfection in the construction of the arrangement, the arms 5 should be swung beyond their centers, and engage the rear face of the bar 7, such engagement would be without result, owing to the fact that the bar 7 is constructed of insulating material.

In the embodiment shown in Fig. 4 instead of the block 1 and the tubular extensions 2 and the shaft 3, a hollow cylindrical body, as 13, is employed, such body having an extension, as 14, which is permanently connected to the wire A. The body 13 is materially lighter in weight than the structure disclosed in Fig. 1 and under certain circumstances its use may be found more advantageous. The end portions of the body 13 are of reduced diameter, as at 15, and serve in effect as bearing trunnions for the contact arms which in this embodiment of the invention are designated 5^a and are generally similar to the arms 5. Each arm 5^a has at its inner end a ring shaped portion, as 16, the portions 16 fitting over the bearing trunnions 15 and being rotatable thereon, as shown more particularly in Fig. 4. In order to hold the arms 5^a against endwise displacement, retaining disks, as 17, of the same diameter as the body 13, are employed, such disks being secured to said body by screws or other fastening devices, as 18. In Fig. 4 I have also illustrated a modified construction of trolley contact bar. Such bar

is indicated by the numeral 7^a and is pivotally mounted at its center, as at 19, upon the trolley harp. The bar 7^a thus mounted has two positions, the one being a position transverse to said harp, as shown in the full lines in Fig. 4 and being the operative position of the bar 7^a, and the other being an oblique position, as shown in dotted lines in Fig. 4 and being the inoperative position of the bar 7^a. For the purpose of moving the bar 7^a to either of its positions, pull wires, as 20, are employed, the said wires 20 being connected to lugs on the said bar and being passed through eyes, as 21, which are attached to the trolley pole. The bar 7^a is held against movement beyond its horizontal position by stop devices, as 22, of which a pair are employed, one of said devices being arranged on the trolley harp to engage the upper side of the bar 7^a and the other of said devices being arranged on the trolley harp to engage the under side of said bar. The bar 7^a is retained in its horizontal position by securing the end of the left hand cord 20, and as a further means for retaining said bar in a horizontal position, the devices 22 may be constructed as spring clips which frictionally engage the bar.

The arrangement shown in Fig. 4 is applicable to both local and express cars and when the car is passing streets or stations at which it does not stop the bar 7^a is drawn into the oblique dotted line position, at which position it will not engage the arms 5^a but when the car approaches a station at which it stops the bar 7^a is swung into the full line transverse position, in which position it engages the arms 5^a in the manner above set forth.

In Figs. 7 and 8 I have illustrated an embodiment showing the application of the invention to third-rail systems, the third rail being indicated at D and a shoe carried by the car for cooperation with the third rail being indicated at E. The said shoe is constructed with forwardly extended contact pieces, as 23, which are insulated therefrom by suitable means (not shown) and also from one another by central insulating blocks, as 24. The wiring which connects the contacts 23 to the annunciator is illustrated conventionally and further disclosure is deemed unnecessary. The pivoted contact arms in the present instance are designated as 25 and are pivoted at their centers, as at 26, to attachment blocks 27, the latter being secured by bolts, as 28, to the third rail D. The arms 25 have their lower end portions constructed as weights, as 29, the upper end portions of said arms being materially lighter than the weights 29, the latter thereby causing the arms to always assume perpendicular positions in the path of the contacts 23. The arms 25 have the same dragging action on the contacts 23 as the arms 5^a

and 5^a have in the embodiments described. In the present embodiment the arms 25 are set at inoperative positions when it is desired that the annunciator within the car shall not be operated and the means which is employed preferably comprises a rock shaft, as 30, upon which are secured projecting arms, as 31, the arms 31 being adjustable axially of the shaft 30 and being held fast thereon by set screws, as 32. The shaft 30 projects at one end beyond the cover of the third rail and carries an arm, as 33, which is disposed at a right angle to the arms 31 and which is provided with a weight, as 34. Ordinarily the shaft 30 is so positioned that its arm 33 occupies a vertical position and its arms 31 occupy a horizontal position. However, when it is desired to bring the arms 25 to inoperative position the shaft 30 is rocked to the position shown in Fig. 8 in which the arm 33 extends horizontally and the arms 31 extend vertically, engaging the arms 25 just below their centers and causing the movement of said arms 25 forwardly to an oblique position out of the path of the contacts 23. The weight 34 of course maintains the shaft 30 in its operative position.

It will be understood that the weighted construction of the arms 7 and 7^a in the one form and of the arms 25 in the other form assures of the certain and reliable engagement of said arms with the cooperating contacts, such engagement being of sufficient duration and with sufficient force to insure the operation of the annunciator. In each instance the weighted construction of the arms assures of their assuming the proper operative position and this advantage is more particularly apparent in connection with the trolley system in which light arms would be blown about by heavy winds and might be swung to an inoperative position at the very time the car was passing. The weighted end portions 10 efficiently guard against this tendency.

Having fully described my invention, I claim:

1. The combination with a conductor of pivotally mounted weighted arms electrically connected to the conductor, and a device carried by the car and having insulated contact means associated therewith which engage the respective arms during the travel of the car.

2. The combination with a conductor of freely movable pivotally mounted arms having weighted lower end portions which maintain said arms in a perpendicular position, means for establishing electrical connection between said arms and said conductor and a device carried by the car and having insulated contact means associated therewith which engage the respective arms during the travel of the car.

3. The combination with a conductor wire

- of a block permanently secured thereto, a pair of pendent pivoted arms having weighted lower end portions, means mechanically and electrically connecting the block and the arms, and a bar carried by the trolley pole of a car and having contact means thereon, insulated from one another and arranged to engage the respective arms during the travel of the car.
4. The combination with a conductor wire of a block permanently secured thereto, a pair of pivoted pendent arms having weighted lower end portions and having edge faces of inverse curvature, means mechanically and electrically connecting the block and the arms, and a bar carried by the trolley pole of a car and having contact means thereon, insulated from one another and arranged to engage the inversely curved edge faces of the respective arms during the travel of the car.
5. The combination with a conductor wire of a block permanently secured thereto, a pair of pivoted pendent arms having weighted lower end portions, means mechanically and electrically connecting the block and the arms, and a bar carried by the trolley pole and having a non-conductive rear face and having insulated contact means on its front face arranged to engage the respective arms during the travel of the car.
6. The combination with a conductor wire of a block permanently secured to the upper side thereof, and having at each side a projecting horizontal extension, a depending arm pivotally secured at the end of each extension, a weighted portion at the lower end of each arm, and a bar carried upon the trolley pole of a car and having contact means thereon, insulated from one another and arranged to engage the respective arms during the travel of the car.
7. The combination with a conductor wire of a block secured thereto, a pair of pivoted pendent arms, means mechanically and electrically connecting the arms and the block, and a centrally pivoted bar carried upon the trolley pole of the car and having contact means on each side of its pivot for engagement with said arms.
8. The combination with a conductor element and a car element having a contact device for engagement with the conductor element, of weighted pivoted contact means associated with one of said elements and contact means associated with the other element for engagement with said first named means.
9. The combination with a conductor element and a car element having a contact device for engagement with the conductor element, of weighted pivoted contact means associated with one of said elements, contact means associated with the other element for engagement with said first named means and means for relatively positioning the contact means to avoid the engagement thereof.
- In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.
- AUGUSTUS MAY.
- Witnesses:
 ANDREW HERO,
 W. S. HERO.