

No. 606,828.

Patented July 5, 1898.

G. WESTINGHOUSE.

TRAVELING CONTACT DEVICE FOR ELECTRIC RAILWAYS.

(Application filed Apr. 6, 1896. Renewed Mar. 16, 1897.)

(No Model.)

2 Sheets—Sheet 1.

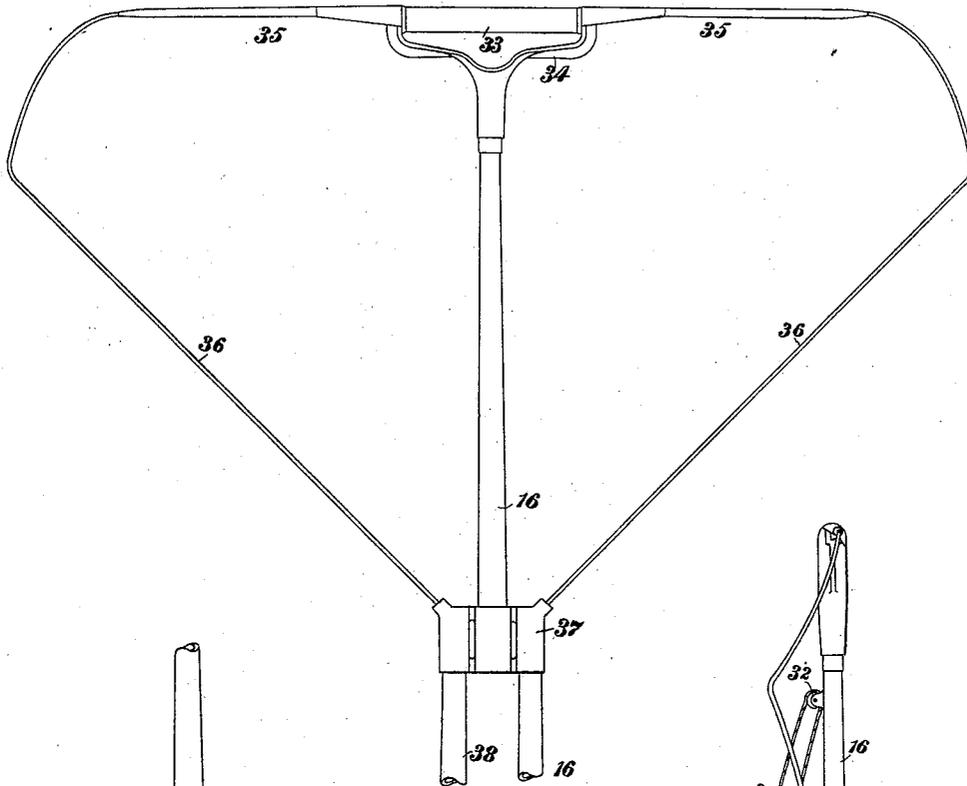


Fig. 1.

Fig. 2.

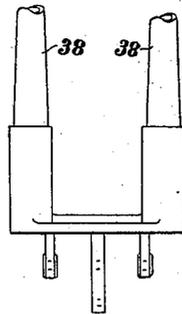


Fig. 3.

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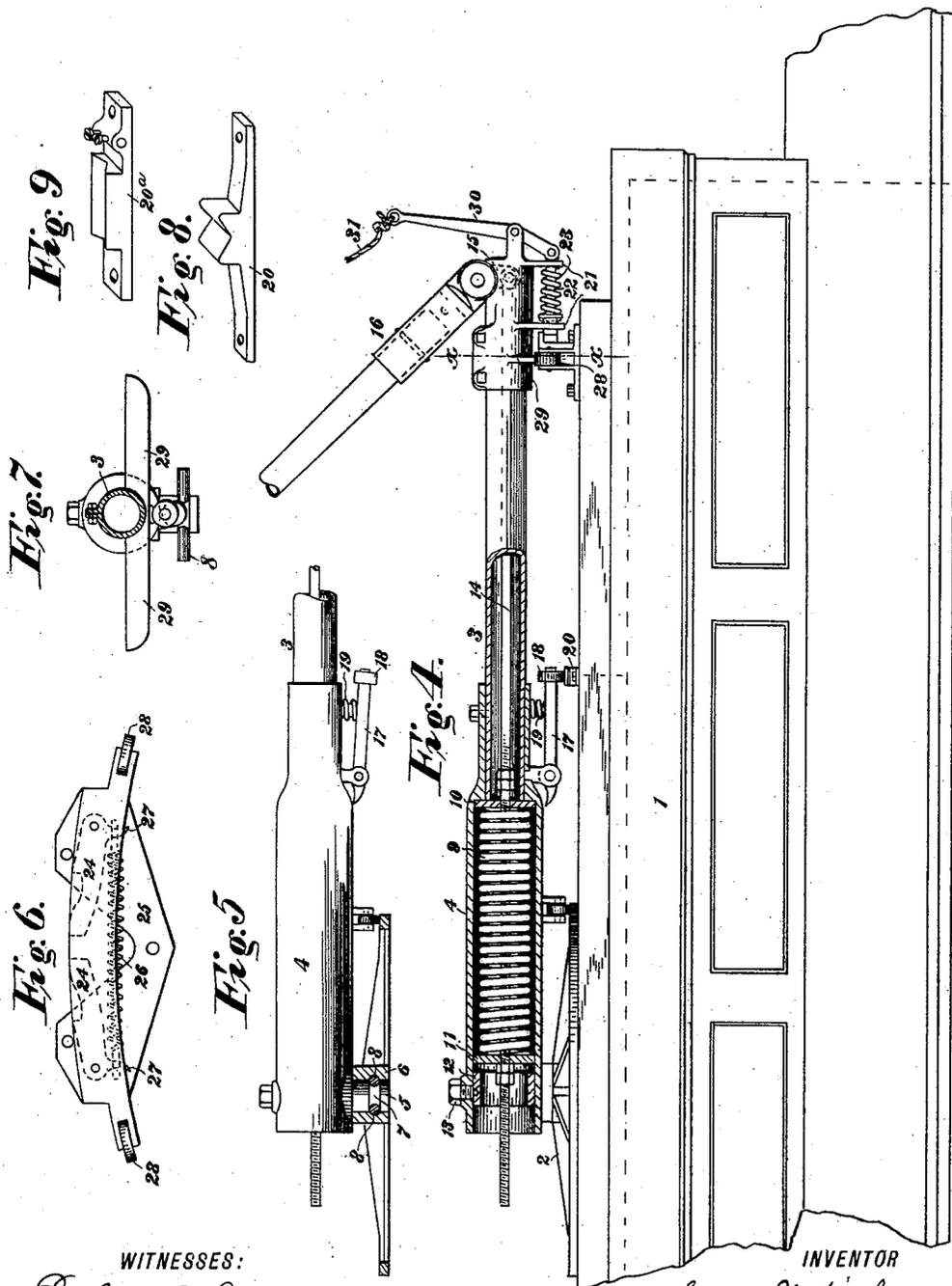
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2 Sheets—Sheet 2.



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GEORGE WESTINGHOUSE, OF PITTSBURG, PENNSYLVANIA.

TRAVELING CONTACT DEVICE FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 606,828, dated July 5, 1898.

Application filed April 6, 1896. Renewed March 16, 1897. Serial No. 627,895. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, a citizen of the United States, residing in Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Traveling Contact Devices for Electric Railways, (Case No. 697,) of which the following is a specification.

My invention relates to apparatus employed in connection with electrically-propelled vehicles for making contact with overhead conductors supplying the current thereto, and particularly to that class of apparatus embodying contact devices having an extended contact-surface as distinguished from grooved contact-wheels which have a lateral movement with reference to the vehicle in order to maintain contact at all times with the overhead conductor.

The object of my invention is to provide an apparatus of the character specified which shall be simple and durable in construction and efficient in operation.

In the accompanying drawings, Figure 1 is a front elevation of a contact device and its supporting-arm, a portion of the latter being broken away. Fig. 2 is a side elevation of the lower portion of the supporting-arm, and Fig. 3 is a corresponding view of the upper portion of the arm and the contact device or head. Fig. 4 is a view, partially in side elevation and partially in section, of a boom and the lower portion of a contact-supporting arm mounted on a car and provided with my improvements. Fig. 5 is a similar view of a portion of the boom and its supporting-base. Fig. 6 is a plan view of one of the stationary locking devices. Fig. 7 is a vertical section through the outer end of the boom, taken on line *xx* of Fig. 4; and Figs. 8 and 9 are perspective views of two forms of stationary contact device.

Reference being now had to the drawings in detail, 1 is a portion of the top of a car, and 2 is a supporting base-plate suitably fastened thereto midway of its ends.

3 is a tubular boom, the inner enlarged end 4 of which is provided with a stud 5, which fits into the bearing-socket 6 in the supporting-base 2. This stud is provided with a circumferential groove 7 for the reception of two pins 8, which are inserted through suit-

able openings in the bearing-socket 6, which register tangentially with the groove 7. A coiled spring 9 is located in the part 4 of the boom and bears at one end against a stationary plate 10. The other end of the spring bears against a movable plate or head 11.

12 is a short piece of tubing which is inserted in the end of the part 4 and held in fixed position by means of a set-screw 13 in order to serve as a stop for the plate or head 11. A rod 14 extends through the boom 3 and is screw-threaded for a portion of its length and provided with nuts bearing against the plate 11, which may be adjusted in position in order to vary the pressure exerted by the spring 9. This rod is also provided with nuts which impinge against the plate or head 10 when the contact-supporting arm is in its highest position. The outer end of the rod 14 is pivoted to a short arm 15, projecting downwardly from the contact-supporting arm 16.

Pivotaly mounted on a projecting lug or lugs at the lower side of the boom 3 is an arm 17, provided at one end with a contact-roller 18, which is pressed downwardly by a coiled spring 19. This roller 18 makes contact with a stationary contact-piece 20 when the boom is locked in its proper working position. Only one of these stationary contact-pieces 20 is shown; but it will be understood that two will be employed, the one not shown corresponding in position to the opposite side of the pivotal support of the boom. The circuit through the motors and controlling apparatus is completed through this arm 17, roller 18, and stationary contact 20, as is indicated by the dotted lines in Fig. 4 of the drawings. The particular form of contact device employed is obviously not material.

In Fig. 9 is shown a device 20^a, slightly different from the device 20, (shown in Figs. 4 and 8,) which may be employed, if desired, or one having a plain contact-surface would be suitable for use in lieu of one having the trough-shaped contact-surface indicated in the drawings. The outer end of the boom is provided with depending lugs 21, in which is mounted a sliding bolt 22, normally pressed inward by means of a coiled spring 23. This bolt 22 engages between the inner ends of locking-dogs 24, which are mounted in a suitable casting 25 and are pressed outward by means of a coiled spring 26, connecting lugs

27, projecting laterally from their inner ends. The casting 25 is provided at each end with a roller 28, with which bearing-arms 29, projecting laterally from the boom, engage when the boom is swung into position to be locked. These arms 29, as indicated in Fig. 7 of the drawings, have curved or beveled outer ends in order that they may ride freely and easily over the rollers 28, with which they engage. They are also made of sufficient length to afford an extended bearing-surface for engagement with the upper surface of the casting 25 in order to obviate any rocking tendency of the boom and the arm and contact device carried thereby. Pivotaly mounted between lugs projecting from the outer end of the boom is a lever 30, the lower end of one arm of which is pivoted to the outer end of the bolt 22, and the upper end of the other arm of which has connected to it a cord 31, which extends along the arm 16, over a pulley 32 near the upper end of the arm, (see Fig. 3,) and downward into position to be grasped by the conductor or motorman when it is desired to lower the arm and reverse the boom. The normal position of the lever 30 is such that the arm 16 will be lowered materially below its normal position before the lever will be actuated to withdraw the bolt from between the locking-dogs 24. When in this position, a further pull upon the rope will withdraw the bolt, and the boom may then be readily swung around into its opposite position and locked against further movement. When the rope is released, the spring 9, acting against the head 11, will elevate the arm 16. The contact device proper consists of a central roller 33, mounted in a bearing head or frame 34, and stationary extensions 35 on each side of the roller. These extensions are approximately horizontal, but may extend downward slightly, if desired, and through each of them extends a rod 36, which from the end of the extension is bent outwardly and downwardly to form a guard and then downwardly and inwardly toward the contact-arm 16. These inner ends are inserted in and suitably held in sockets in a head or collar 37.

In order to provide a sufficiently-rigid supporting-arm for the contact device, I construct that portion of it extending below the collar or head 37 of two tubes 38, instead of the single tube usually employed.

I claim as my invention—

1. A contact device for engagement with overhead conductors and its supporting-arm, in combination with a reversing-boom pivotally supported at or near one end and having two bearing-arms extending laterally therefrom at or near its outer end, and locking mechanism, the stationary member of which is provided with a bearing-plate and a pair of rollers with which said bearing-arms engage.

2. The combination with a contact device, its supporting-arm and a reversing-boom therefor, of a spring-actuated locking-bolt for said boom, a pivoted lever connected to

said bolt at one end, and a cord extending from the other end of said lever through or over a guide near the outer end of the supporting-arm.

3. The combination with a contact device and its supporting-arm, of a tubular reversing-boom, a coiled spring seated therein, and means extending through said boom and connecting said spring with a projection from said supporting-arm, whereby the arm is normally yieldingly supported in an elevated position.

4. The combination with a contact device and its supporting-arm, of a tubular reversing-boom pivoted to a suitable support to swing in a horizontal plane, and a hinge connection between the other end of the boom and the supporting-arm, a coiled spring located in said boom, a movable head or plate bearing against one end of the spring, and a rod extending through said boom and connecting said plate with a projection on the supporting-arm.

5. The combination with a contact device for engagement with overhead conductors, a supporting-arm therefor, and a pivoted boom, to one end of which the lower end of the supporting-arm is hinged, of means for locking said boom in operative position, and a circuit-closing device, one member of which is carried by the boom.

6. The combination with a device for making contact with overhead conductors, a supporting-arm therefor and a pivoted boom to one end of which the lower end of the supporting-arm is pivoted or hinged, of means for automatically locking the boom in operative position, a contact device pivotally supported upon the boom, and a stationary cooperating contact device in position to be engaged by the said movable contact in order to close the electric circuit when the boom is in operative position.

7. A current-collector for electrically-propelled vehicles, comprising an arm pivotally supported at one end and a head at its other end, consisting of a rotatable portion, a frame having bearings therefor, lateral stationary extensions and brace-rods forming continuations of said extensions, said rods being curved outwardly and downwardly and laterally with reference to the head proper to form guards, and thence extending away from the head but inwardly to the supporting-arm.

8. The combination with a current-collecting device for electrically-propelled vehicles, of a reversible support therefor, means for locking said support in either of two positions and a circuit-closing device one member of which is carried by said support.

In testimony whereof I have hereunto subscribed my name this 4th day of April, A. D. 1896.

GEO. WESTINGHOUSE.

Witnesses:

WESLEY G. CARR,
HUBERT C. TENER.