(No Model.) 2 Sheets—Sheet 1.

G. D. BURTON.

ELECTRICAL COUPLER.

No. 343,515. Patented June 8, 1886.

Fig. 1.

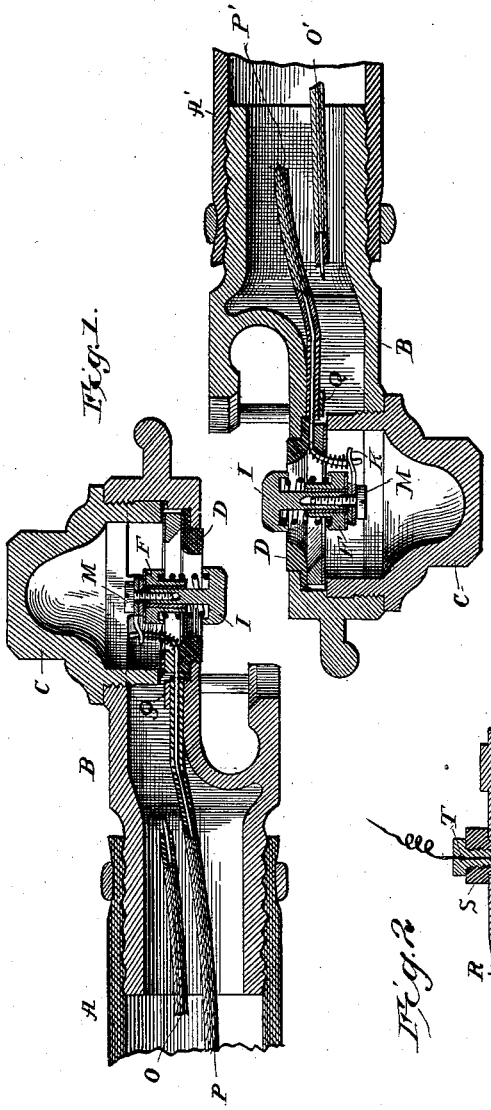


Fig. 3.

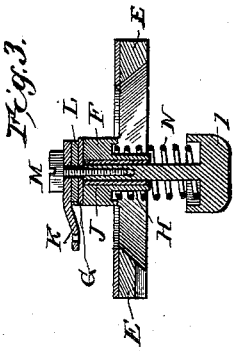


Fig. 4.

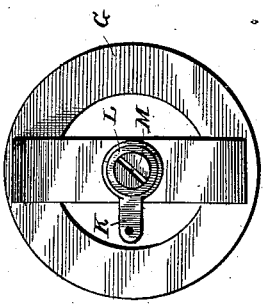
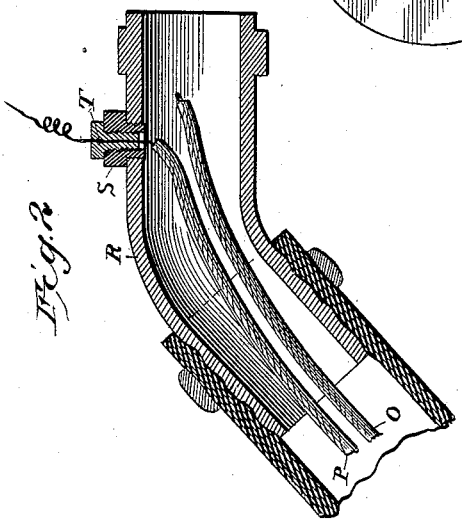


Fig. 2.



Witnesses
Jos. A. Ryan
P. C. Lawis

Inventor
Geo. D. Burton
by Chas. E. Barbur
His Atty. in fact.

(No Model.) 2 Sheets—Sheet 2.

G. D. BURTON.

ELECTRICAL COUPLER.

No. 343,515. Patented June 8, 1886.

Fig. 5.

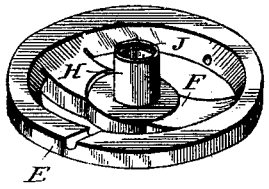


Fig. 6.

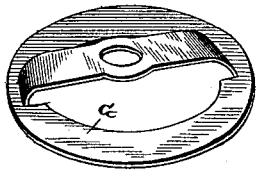


Fig. 7.

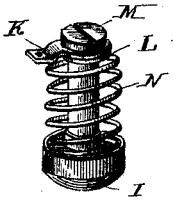


Fig. 8.

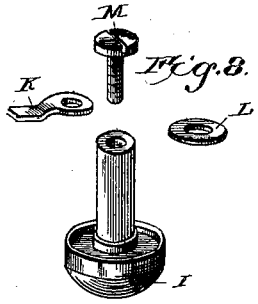
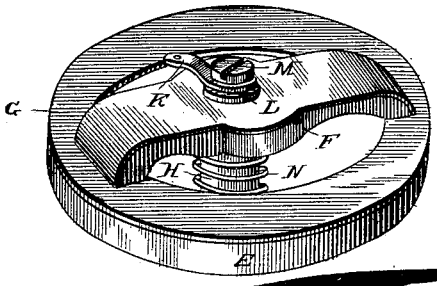


Fig. 9.



Witnesses.
Jos. A. Ryan
Richard S. Lawrence

Geo. D. Burton
Inventor.
By Chas. E. Barber.
His atty. in fact.

UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF NEW IPSWICH, NEW HAMPSHIRE.

ELECTRICAL COUPLER.

SPECIFICATION forming part of Letters Patent No. 343,515, dated June 8, 1886.

Application filed February 16, 1886. Serial No. 192,137. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. BURTON, a citizen of the United States, residing at New Ipswich, county of Hillsborough, in the State of New Hampshire, have invented certain new and useful Improvements in Electrical Apparatus for Lighting and Signaling on Railway-Cars, of which the following is so full, clear, and exact a description as will enable one skilled in the art to which my invention appertains to make and use the same.

This invention relates to improvements in means of making electrical connections in conductors carried by railway-trains for the purpose of supplying electrical currents for lighting and signaling. It is desirable to form a means of connecting the wires carried by each coach electrically together, with little additional labor beyond what is required in coupling the cars and the air-brake pipes, and with a view to economizing in this respect my invention provides means for effecting a connection of the electric wires by the act of connecting the air-brake pipes.

In the accompanying drawings, forming a part of this specification, and on which similar letters of reference indicate the same or corresponding features, Figure 1 represents a horizontal longitudinal sectional view of an air-brake coupling, showing the respective members adjacent to each other; Fig. 2, a longitudinal sectional view of the coupling at the other end of the flexible portion of such pipe; Fig. 3, a detached sectional view of the contact devices; Fig. 4, a view looking down upon one side of said devices; Fig. 5, a detached perspective view of the opposite side of said devices; Fig. 6, a detached perspective view of a portion of the contact device; Figs. 7 and 8, detached perspective views of the several parts of the same, and Fig. 9 a perspective view of the contact device complete.

The letters A and A′ designate, respectively, the adjacent ends of the rubber tubes used to connect the iron pipes carried by railway-coaches for the purpose of conducting the compressed air by which the brakes are operated. These sections of tubing or hose are each provided with the usual coupling-irons, consisting of shells B, secured to the respective sections, and of the metal screw-caps C, which enter threaded apertures in the shells. The usual rubber or leather packing-rings, D, are also employed, and between these rings and the opposite ends of the caps C, I locate my contact device. This device consists of an annulus, E, constructed of vulcanized rubber or other non-conducting material, across which spans a bridge-bar, F, formed by preference integrally therewith. Upon this annulus and bridge-bar is fitted a metallic frame, G, of corresponding shape, the function of which is to prevent the cap C from abrading the annulus when the cap is screwed home and its inner ends bind against the annulus. Projecting from one side of the bar F is a short sleeve, H, within which is fitted a stem of a contact-button, I, a tubular sleeve, J, being fitted around the said stem and within the sleeve H, and the hole in the bar F, or not, as desired. Upon the cross-piece of the frame G is placed a short arm, K, of conducting material, and an insulated washer, L, the screw M passing through them and entering a threaded aperture in the stem of the button I, whereby the several parts are secured together. The inner face of the button-head is recessed, as is also the opposite side of the cross-bar F, and the spiral spring N is fitted to said recesses and about the stem and the sleeve H, the function of which spring is to admit of the buttons yielding to each other, and yet always maintaining a positive contact.

The letters O and O′ designate the sections of the wire which connect with one pole of the battery, as the positive, and these sections are electrically connected, as by entering a hole in the shells B, whereby, when the shells are engaged in the usual manner, the integrity of one branch of the circuit is established.

The letters P and P′ designate sections of the wire, which connect with the other pole of the battery, and these sections are connected in the following manner: The wire P, after passing through a notch formed in the projection Q of the shell B, is stripped of its insulating material, and then passes through a like notch in the annulus E, (see Fig. 3,) and its projecting end electrically connected with the arm K. Inasmuch as the contact-buttons move back and forth, as above suggested, the

connections between the wires P and P' and the arms K should be yielding, and to supply this necessity I have provided the spiral springs, one end of each of which is in electrical contact with the respective wires, while the other ends bear against the respective arms K. Thus it will be observed that when the shells are coupled together the faces of the contact-buttons are made to impinge and the springs N to act to keep them in close contact, the current passing from one section of wire through one of the arms K, thence through the shank of the screw to the button, and thence to the other button. At the opposite end of the hose, where it permanently connects with the iron pipe, I provide the metallic coupling R with an insulated bushing, S, which screws into the coupling, and which itself carries a screw, T, preferably of metal through which passes the wire, the same being stripped by preference of its insulating material at this point, in order to effect a closer joint to prevent the escape of the compressed air. The wire then passes on through the car to the other end.

The screw M is not in contact, but is insulated from the washer L and from the cross-bar of the frame G, as seen in Fig. 3, the black lines at either side of the screw indicating some insulating material. This prevents the current from reaching the cap G through the frame.

It will be observed that my device can be applied to all the couplings now in use with little or no alteration.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the couplings, of the non-conducting annuli, one within either coupling and held in place by the coupling-cap, and provided each with a yielding contact-button, and electrical conductors contained within the couplings and electrically connected with the buttons.

2. The combination, with the couplings and electrical conductors in electrical connection therewith, of other electrical conductors insulated therefrom, and non-conducting annuli secured to the couplings and carrying yielding contact-buttons, with which the last-named electrical conductors are electrically connected.

3. The combination, with a coupling and its cap, of an annulus of non-conducting material having a metallic frame on one side against which the cap fits, and resting on the other side against a non-conducting washer, and provided with a yielding contact-button.

4. The combination, with a coupling having a screw-cap and a non-conducting washer, of a non-conducting annulus fitted between said cap and washer, and having a metallic frame adjacent to the cap, and provided with a projecting bar and a spring interposed between the bar and button-head, and an arm adapted to connect with the electrical conductor.

5. The combination, with a coupling, of a non-conducting annulus having a bridge-bar, a contact-button fitted to said bar, and a spring interposed between the bar and the button-head.

6. The combination, with a coupling, of a non-conducting annulus having a bridge-bar, a contact-button whose shank is fitted to said bar, an arm insulated from the frame, and a screw for connecting it with the button, and a spring interposed between the bar and button.

7. The combination, with a coupling and a bushing of insulating material, of a screw fitted to said bushing and an electrical conductor passing through the screw.

8. The combination, with a coupling, of a non-conducting annulus, a yielding contact-button carried by the annulus, and an arm carried by the button, an electrical conductor, and a spring connecting said conductor with said arm.

9. The combination, with a coupling, of an annulus, a yielding contact-button, and an electrical conductor connected with said button through the medium of a spring, whereby contact between the button and the conductor is maintained notwithstanding the movements of the button.

In testimony that I claim the above I sign in the presence of two witnesses.

GEO. D. BURTON.

Witnesses:

WILLIAM M. NASH,

E. F. PERKINS.