R. G. AVERILL.

ELECTRIC COUPLING.

APPLICATION FILED MAR. 16, 1916.

1,237,857.

Patented Aug. 21, 1917.

Fig. 1.

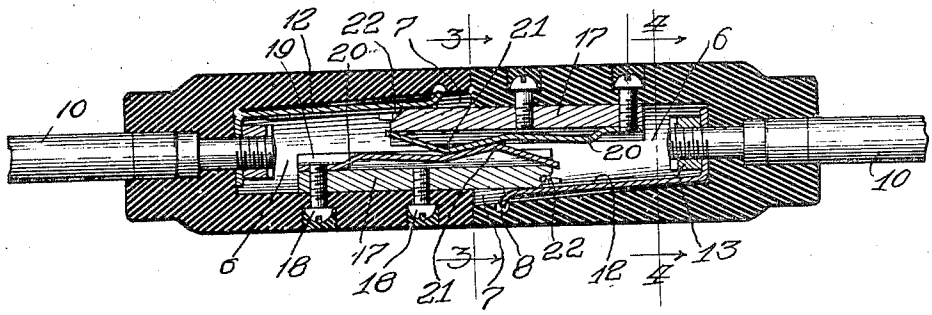


Fig. 2.

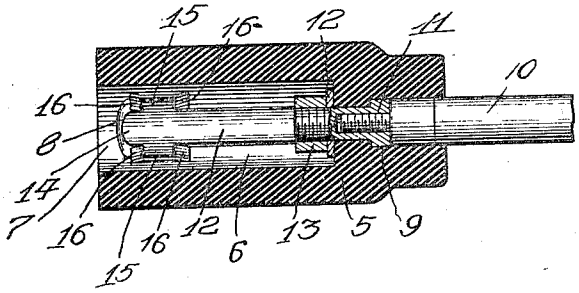


Fig. 3.

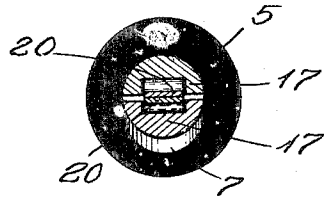
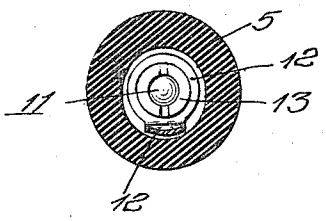


Fig. 4.



Witness:
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Attys

UNITED STATES PATENT OFFICE.

REX G. AVERILL, OF MANSFIELD, OHIO, ASSIGNOR TO THE OHIO BRASS COMPANY, OF MANSFIELD, OHIO, A CORPORATION OF NEW JERSEY.

ELECTRIC COUPLING.

1,237,857. Specification of Letters Patent. Patented Aug. 21, 1917.

Application filed March 16, 1916. Serial No. 84,599.

To all whom it may concern:

Be it known that I, REX G. AVERILL, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Electric Couplings, of which the following is a specification.

This invention relates to a coupler for making electrical connections between cars and the like, although, of course, it may have a more general application wherever it can be used. The principal object of the invention is to provide a new and improved construction, combination and arrangement of parts by which the coupling operation can be performed.

In the drawings, Figure 1 is a sectional view of a pair of couplers constructed in accordance with my invention in coupled position; Fig. 2 is another sectional view of one of the couplers; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1, and Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

In couplers of the class to which this invention relates for making single or multiple electrical connection between coupler plugs it is the usual practice to have one or both of the couplers provided with an extending live conductor, or to provide recessed terminals from which the conductors do not protrude, but requiring an additional connector cable which must be inserted in both of the said couplers to make the desired connection. The present construction is in a way a combination of both of these well known forms for a pair of counterpart couplers are provided with a terminal within the coupler and a projecting conductor member which does not have electrical connection with the live terminal in each coupler until two similar couplers are connected. This overcomes any objection that there might be to a coupler with a protruding metal member, for this metal member is not in the electrical connection until two couplers are united, and no separate connector cable is necessary for when the couplers are joined they make a proper electrical connection.

Each coupler of the present invention comprises an insulator 5 of wood, fiber, or any suitable material formed with a recess 6 with an enlargement 7 at one side of the recess in which is a small depression 8 near the outer end of the insulator 5. Connected with the recess 6 at the rear end of each insulator is a shouldered hole 9 in which one end of an insulated conductor 10 is inserted. The conductor is secured to a headed screw 11 which abuts the shouldered portion of the hole 9 and extends within the recess 6. A bent contact 12 has a perforation through which the screw 11 extends and a nut 13 is disposed within the recess to secure the contact to the screw 11 and thereby to make proper connection with the insulated conductor 10. This conductor 12 extends along the side of the recess 6 in that portion in which the enlargement 7 of the recess is located, the conductor being formed with a bent tip 14 which extends into the depression 8 adjacent the outer end of the insulator 5. Extending from the sides of the contact member adjacent the outer end thereof are lateral wings 15 with bent tips 16. These wings and tips extend outwardly and downwardly from the contact member 12 so that when the contact member is pressed downwardly it will engage the sides of the recess 6, giving the contact member a spring action.

Opposite the contact member 12 is a conductor 17 secured in the recess 6 in any suitable manner, as for example, by the fastening screws 18 which are preferably countersunk and the space above the screw heads filled with some suitable insulating material, with the end of the conductor 17 projecting beyond the end of the insulator 5. Each conductor 17 is formed with a groove 19 in which a spring 20 is seated and secured thereto in any suitable manner by one of the fastening devices 18, for example. Each spring 20 is formed adjacent its outer end and just without the insulator 5 with a hump or projection 21. The outer end of each conductor 17 is formed with a beveled edge 22 which engages and rides over the bent extremity 14 of the contact 12 of the coupler with which it coöperates, so that

there is no danger or possibility that the conductor 17 will ride under the contact 12 in making connection between the couplers.

It will be noted, therefore, that since the contacts 12 and the conductors 17 of a pair of coupler members are insulated from each other, there are no protruding live contacts from either of the couplers and even the conductors 17 have no current flowing through them until they are inserted within corresponding and coöperating couplers. Each conductor 17 acts as a guide for properly connecting the couplers and after two coöperating couplers are connected they are held firmly in place by the humps 21 of the springs 20. The winged extensions 15 at the end of each contact member 12 insure a firm and sufficient contact with that extremity of the conductor 17 which protrudes from the opposite coupler. The bent tips 16 of these lateral extensions engage the sides of the enlargement 7 of the recess 6 and press the wings 15 firmly but yieldingly in engagement with the extremity of the conductor 17, thereby making a sufficient electrical connection to carry the current for which the coupler is designed without any undue heating of any of the coupler parts. It is only when the projecting portions of the conductors 17 make proper connection with each other and with the contact member of the opposite couplers that an electric connection is made between the couplers. This connection may be traced from one insulated conductor 10 through the screw 11, nut 13 and contact member 12 to the conductor 17 of the opposite coupler; thence through the springs 20 to the conductor 17 of the first coupler and from it to the contact 12 of the second coupler and thence to the other insulated conductor 10.

What I claim is:

1. An electric coupler comprising a recessed insulator, a yielding contact member wholly within the recess, a conductor fixed in the recess but protruding therefrom, and a spring contact finger secured to the said conductor.

2. An electric coupler comprising a recessed insulator, a yielding contact member wholly within the recess, a rigid conductor spaced in the recess from the member and protruding from the recess, and a spring contact finger fixed at its inner end to the conductor and having a hump at its outer end to engage the hump of a counterpart finger.

3. An electric coupler comprising counterpart recessed insulators, each having a spring contact and a rigid conductor opposite and insulated from each other in the recess and the conductor extending from the insulator, and a spring finger attached to the conductor to press the conductor and spring finger of the counterpart coupler toward the spring contact, as they are inserted.

4. In an electric coupler, the combination with a recessed insulator, of a contact therein having fixed connection with an electrical source of supply, a conductor secured in the recess and projecting therefrom insulated from the said contact, and means in connection with the conductor for pressing the inserted conductor of a counterpart coupler against the contact member to make electrical connection from it through the said conductors.

5. In a coupler of the class described, the combination with a recessed insulator having an enlargement at one side thereof and a depression in the enlarged portion adjacent the outer end, an electrical contact member secured in the insulator having a resilient extremity of which the tip is bent to be seated in the said depression, and contact means tending to press a conductor as it is inserted in the recess against the resilient extremity of the said contact means.

6. In combination, a pair of counterpart couplers each comprising a recessed insulator, a spring contact member disposed within the recess, a conductor fixed in the recess opposite the contact member and out of electrical connection therewith, the extremity of the conductor projecting beyond the insulator, and a spring in connection with the conductor for pressing the conductor of the counterpart coupler in yielding engagement with the contact member as it is inserted in the recess.

7. In combination, a pair of counterpart couplers each comprising a recessed insulator, a spring contact member disposed within the recess, a conductor fixed in the recess opposite the contact member and out of electrical connection therewith, the extremity of the conductor projecting beyond the insulator, and a spring in connection with the conductor having a hump or projection adjacent the end thereof so that when the projecting extremities of counterpart couplers are inserted within each other the conductors will be pressed resiliently in engagement with the contact members of the opposite couplers and the couplers will be held in engagement by the said humps or projections of the springs with each other.

8. In an electric coupler, the combination with a recessed insulating member, of a conductor secured in one side of the recess and projecting beyond the end of the coupler, and an electrical contact member disposed in the other side of the recess free from connection with the said conductor having a free and yielding extremity with lateral extensions thereof adapted to engage the walls

of the recess when the protruding extremity of a conductor of the counterpart coupler is inserted between the conductor and contact member, to make a firm but yielding connection with the said lateral extensions and the said contact member.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of Mar. A. D. 1916.

REX G. AVERILL.

Witnesses:
C. V. MARKS,
G. F. BUCHAN.