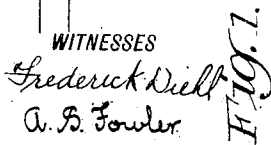


1,244,950.

2 SHEETS—SHEET 1.



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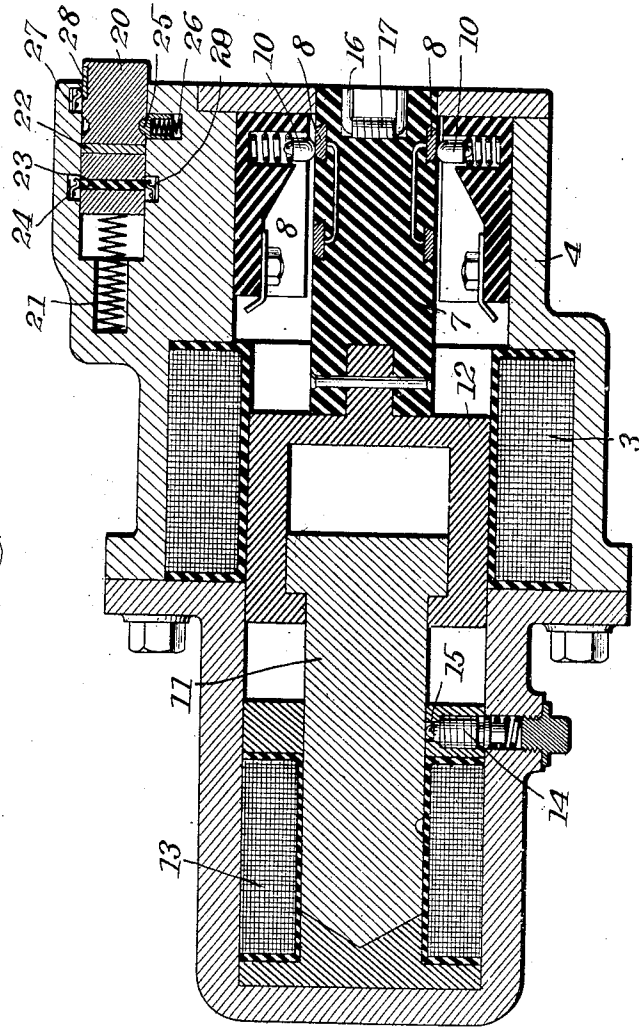
T. R. BROWN.
ELECTRIC TRAIN LINE COUPLING.
APPLICATION FILED JULY 14, 1914.

1,244,950.

Patented Oct. 30, 1917.

2 SHEETS—SHEET 2.

Fig. 2.



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THOMAS R. BROWN, OF SPARKILL, NEW YORK, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF WILMERDING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ELECTRIC TRAIN-LINE COUPLING.

1,244,950.

Specification of Letters Patent.

Patented Oct. 30, 1917.

Application filed July 14, 1914. Serial No. 850,989.

To all whom it may concern:

Be it known that I, THOMAS R. BROWN, a citizen of the United States, and a resident of Sparkill, in the county of Rockland and State of New York, have invented a certain new and useful Improvement in Electric Train-Line Couplings, of which improvement the following is a specification.

This invention relates to means for coupling electric circuits between the cars of a train, and more particularly to that type of electric couplings in which each counterpart coupler is provided with a plurality of fixed contacts, and a movable contact carrier having corresponding contact bars, and adapted to be projected outward so as to extend into the counterpart coupling of the adjacent vehicle, and establish electrical connection for the respective circuits through the train.

In my prior Patent No. 1,190,509, dated July 11, 1916, there is shown an electric coupling of this character in which electric means, such as a solenoid, is employed for projecting the contact carrier to establish the electrical connections, and one of the objects of my present invention is to also provide electrically operated means for retracting the contact carriers and returning same to normal release position when it is desired to separate the couplings and uncouple the cars. Another object is to provide an improved tappet mechanism operating automatically upon the coming together of the counterpart couplings to effect the projection of the contact carrier. These and other novel features will be hereinafter more fully described, and set forth in the claims.

In the accompanying drawings: Figure 1 is a diagrammatic section, showing a pair of counterpart couplings, embodying one form of my improvement, the parts being in coupled position; and Fig. 2, a vertical longitudinal section of one of said couplings with the parts in the normal release or uncoupled position.

As shown in the drawings, my improved construction may comprise a casing, 4, containing a plurality of contact fingers, 8, connected by suitable wires to the respective train line circuits, and a movable contact carrier, 7, having corresponding contact bars, 8, adapted to electrically connect the corresponding contact fingers of the coun-

terpart couplers when projected to their outer or coupled position. An electromagnet device or solenoid, comprising a coil, 3, and a core, 12, secured to the carrier, 7, is employed for projecting the carrier in a manner similar to that set forth in my prior patent above referred to.

For the purpose of withdrawing or releasing the carrier, I now provide an electromagnet device comprising a coil, 13, and a core or plunger, 11, having a sliding connection with the core, 12, with a certain amount of lost motion between said parts, whereby the core, 12, may have a short movement relative to the core, 11, but said parts are also adapted to move together at certain times. When the parts are in the normal release or uncoupled position, the carrier is retracted within the casing, and the cores occupy their inner positions, as indicated in Fig. 2. Any suitable form of manually operated switch mechanism may be employed for energizing the opening coil, 3, for projecting the carrier, and for energizing the closing coil, 13, for retracting the same, but according to one of the features of my invention, I provide an improved tappet device operated automatically by the coming together of the counterpart couplings to effect the projection of one of said contact carriers. For this purpose a tappet, 20, having a spring, 21, is mounted in each coupler casing, and normally projects outward a certain distance beyond the face of the coupling, as shown in Fig. 2. In this position, a detent, 25, actuated by spring, 26, engages in a groove formed in the side of the tappet, and tends to prevent the tappet from being pushed inward.

When the counterpart couplers are brought together in coupling, the tappets, 20, engage each other, and each tends to force the other inward. One of the detents, 25, will always yield before the other, and as soon as the resistance of one of the detents is overcome, the corresponding tappet is immediately pushed inward by the other tappet which does not yield, thereby compressing the spring, 21, and operating the switch mechanism, as indicated in Fig. 1. Such switch devices may comprise contacts, 24 and 29, located in the circuit of the opening coil, 3, and a contact bar, 22, carried by the tappet, for closing said circuit. Another contact bar, 28, is so located as to

connect the contacts, 27, and close a circuit from one coupler to the other. The tappet may also be provided with an insulation strip, 23, for engaging contacts, 24 and 29, when the tappet is in its outer position.

When the coil, 3, is thus energized, the core, 12, is thrown outward thereby projecting the contact carrier into the counterpart coupling where it engages the other carrier and forces the same back to the coupled position indicated in Fig. 1, in which the contact bars, 8, (see Fig. 2), establish electrical connections between the corresponding contact fingers, 10, of the counterpart couplers. During this movement, the core, 12, of the projected carrier pulls the core, 11, along to its outer position, while the core, 12, of the counterpart coupler moves inward through the lost motion connection relative to the core, 11.

In order that the current supply to the solenoid coil, 3, may be automatically cut off after the carrier has been thrown, switch contacts, 32 and 33, are located in said circuit, and the switch bar, 31, which normally connects said contacts, is operated by the movement of the carrier to disconnect the same and open the circuit when the carrier is projected to its outer or closed position. The contact bar, 31, is of sufficient length to remain in engagement with contacts, 32 and 33, during the preliminary movement of the carrier so that the momentum of the same is sufficient to carry the core and its connected slide to the extreme outer position after the circuit is opened. A spring actuated switch 19, may also be located in the circuit to the coil, 3, and operated by a coil, 18, in the circuit of the release or opening coil, 13, controlled by the release switch, 30. A spring actuated locking device, 15, is provided for holding the core or plunger, 11, in its outer position, a coil, 14, in the release circuit being employed for unlocking said device. As the slide or carrier, 7, of one of the couplings is pushed inward from its normal position by the carrier of the other counterpart coupling, when the same is projected, means should be provided for returning said carrier to its normal position when the projected carrier is retracted at the time of releasing, and for this purpose, I provide an electromagnet, 16, having a coil, 17, located in the releasing circuit.

When it is desired to release and separate the couplings, the release switch, 30, on either one of the counterpart couplings may be thrown to its closed or dotted line position. If the switch on the coupling having the projected carrier is the one that is thrown, the current flows directly through the release circuit of said coupling including the coils, 17, 18, 13 and 14. The current also flows by way of the contacts, 27 and 28,

on the tappet, 20, through the release circuit of the counterpart coupler. The coil, 18, is thus energized to open the switch, 19, and prevent the flow of current to closing coil, 3, even when the contacts, 32 and 33, are connected by the bar, 31. The unlocking coil, 14, is also energized to withdraw the lock, 15, and permit the opening coil, 13, to retract the plunger, 11, with core, 12, and carrier, 7, to its normal position. During this movement the magnet, 16, is energized and draws the slide, 7, and core, 12, of the counterpart coupling along with it to the release position, the lost motion between the core, 12, and plunger, 11, of the counterpart coupling permits this movement, while the plunger, 11, therein, remains at its inner position with reference to its coil, 13. When the slides are thus returned to the normal open or release position, the couplers may be released, and the cars separated in the usual manner. As the counterpart couplings are pulled apart, the tappet, 20, which had been forced inward, is returned to its outer position, by means of its spring, 21, and the detent, 27, again engages its groove. The release switch being turned to its full line position, the coils are deenergized, and the switch, 19, closes the circuit to the closing coil, 3, whereby the same may be energized as controlled by the tappets, when the couplers are again brought together for coupling.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, means for projecting said carrier to electrically connect the respective contacts of counterpart couplings, and electrically operated means for retracting said contact carrier.

2. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, and electrically operated mechanism for projecting said carrier to electrically connect the respective contacts of counterpart couplings and for retracting said carrier.

3. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, a solenoid having a plunger for projecting said carrier, and another solenoid provided with a core having a sliding connection with said plunger for retracting said carrier.

4. In an electric train line coupling, the combination of a casing having a plurality

of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, means for projecting said carrier to move back the corresponding carrier of the counterpart coupling and electrically connect the corresponding contacts, electrically operated mechanism for retracting said carrier, and electromagnetic means for holding said carriers together during said return movement.

5. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, means for projecting said carrier to electrically connect the respective contacts of counterpart couplings, a solenoid having a plunger for retracting said carrier, and an electrically operated locking device for said plunger.

6. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, electrically operated means for projecting said carrier, and switch mechanism controlled by the movement of said carrier for opening the circuit of said projecting means.

7. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, a closing coil for projecting said carrier, an opening coil for retracting said carrier, and electromagnetic means in the retracting coil circuit for controlling the circuit to the closing coil.

8. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, a yielding tappet extending from said casing and adapted to engage the corresponding tappet of a counterpart coupling, a detent engaging said tappet, and tending to prevent a yielding movement of the same, and means controlled by the movement of said tappet for automatically projecting said carrier.

9. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits,

a movable contact carrier provided with corresponding contacts, an electric solenoid for projecting said carrier, a yielding tappet mounted in said casing and adapted to engage the corresponding tappet of a counterpart coupler, and switch mechanism operated by the movement of one of the tappets for controlling said solenoid.

10. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, electrically operated mechanism for projecting said carrier, to electrically connect the respective contacts of counterpart couplings, and means operated automatically by the coming together of said couplings for controlling said mechanism.

11. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, means for projecting said carrier to electrically connect the respective contacts of counterpart couplings, an opening coil for releasing said carrier, a release switch for controlling the circuit to said coil, and contacts for connecting said release circuits between the counterpart couplers whereby the contact carrier may be released by the release switch upon either car.

12. In an electric train line coupling, the combination of a casing having a plurality of contacts connected to the respective circuits, a movable contact carrier provided with corresponding contacts, a closing coil for projecting said carrier, a yielding tappet, adapted to engage a corresponding tappet of a counterpart coupling, switch mechanism operated by the yielding movement of one of said tappets for energizing said coil, a releasing coil for retracting the carrier, a release switch therefor, and contact means mounted on said tappets for connecting the release circuits of the counterpart couplers.

THOMAS R. BROWN.

Witnesses:

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S. W. KEEFER.