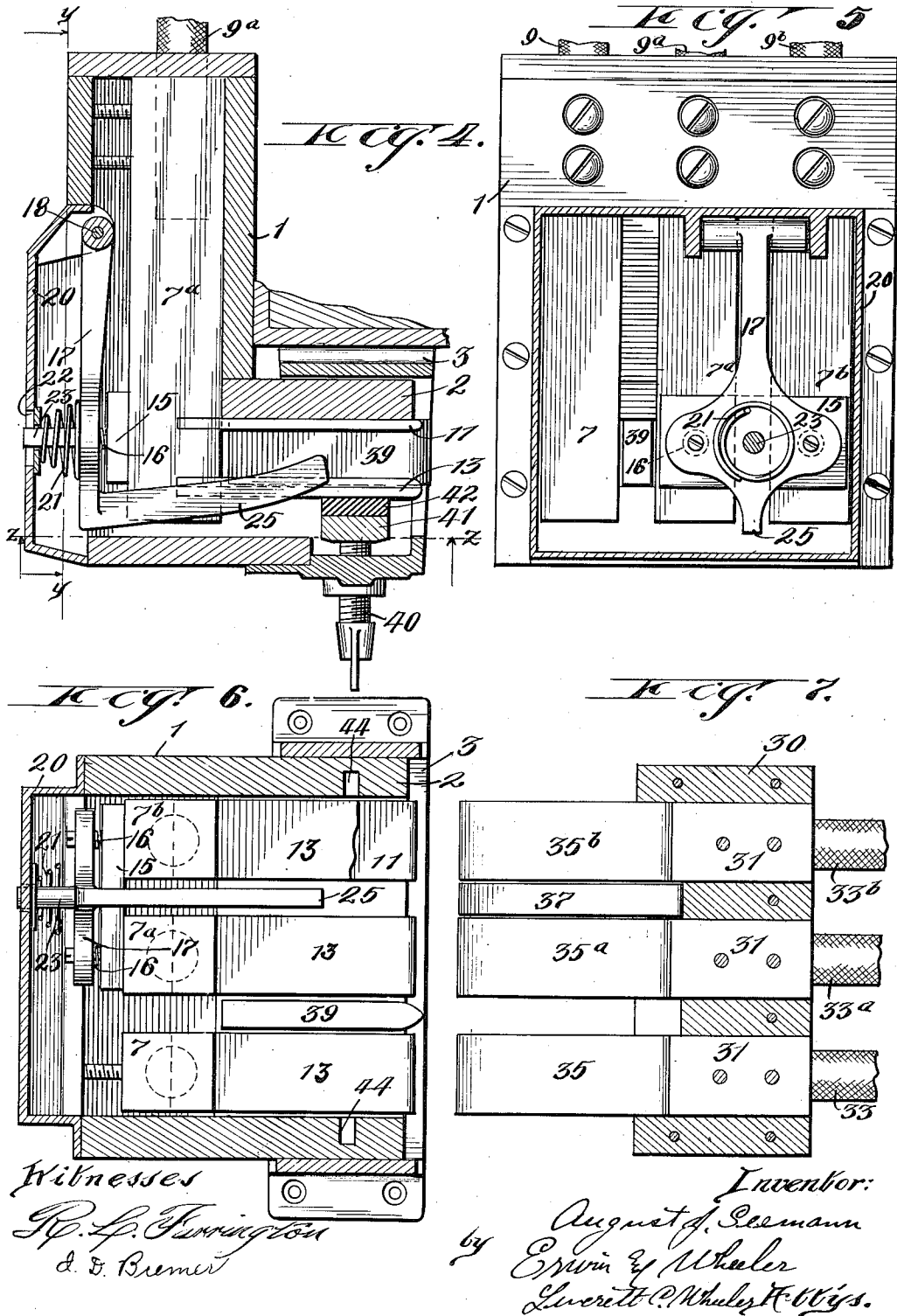


1,046,227.

3 SHEETS—SHEET 2.

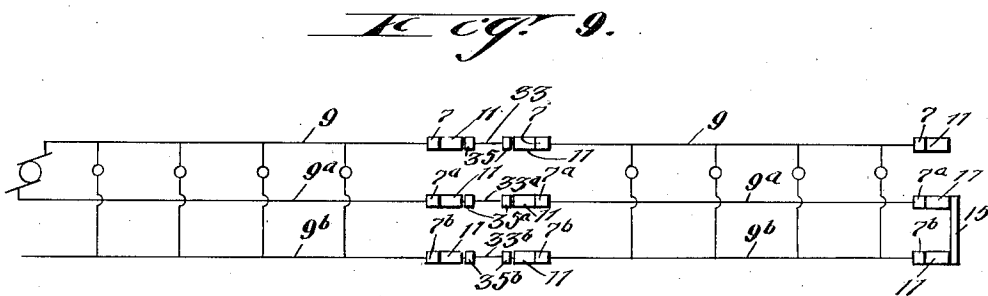
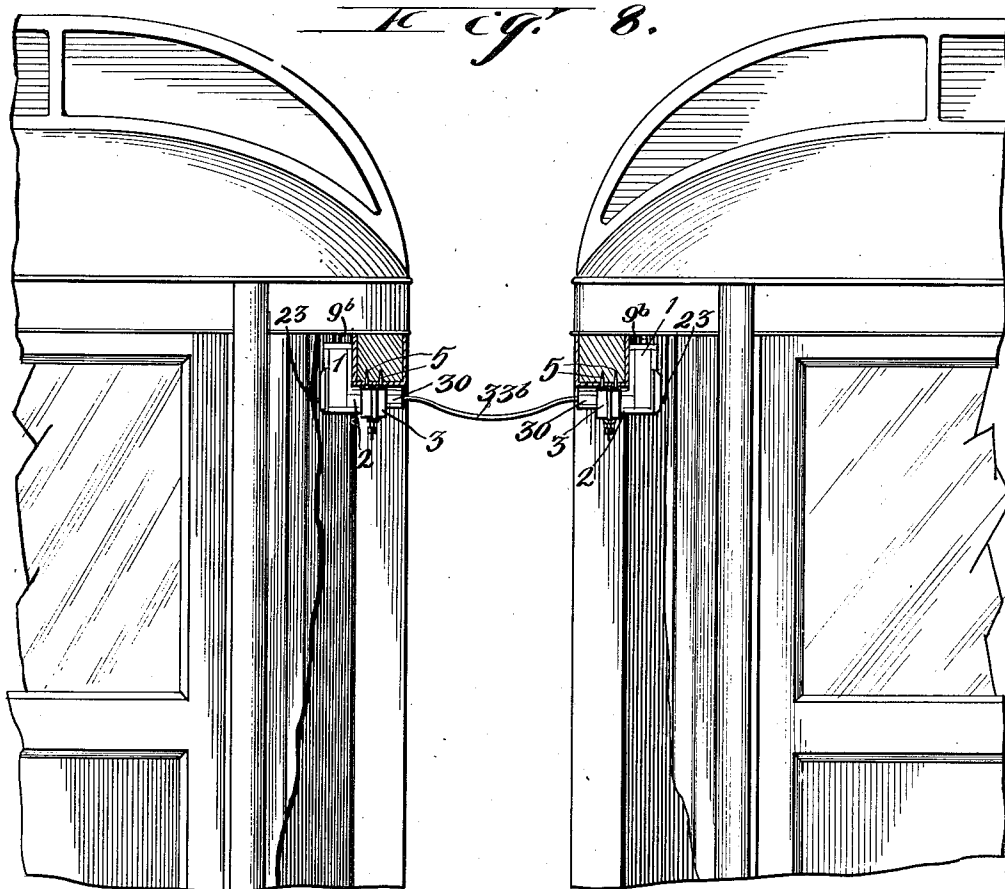


A. J. SEEMANN.
ELECTRICAL CONNECTOR.
APPLICATION FILED OCT. 8, 1910.

1,046,227.

Patented Dec. 3, 1912.

3 SHEETS—SHEET 3.



Witnesses

R. F. Harrington
J. E. Bremer

Inventor:

August A. Seemann
by Edwin C. Wheeler
Lucretia C. Wheeler
H. W. G.

UNITED STATES PATENT OFFICE.

AUGUST J. SEEMANN, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO LOEFFELHOLZ COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

ELECTRICAL CONNECTOR.

1,046,227.

Specification of Letters Patent.

Patented Dec. 3, 1912.

Application filed October 8, 1910. Serial No. 585,933.

To all whom it may concern:

Be it known that I, AUGUST J. SEEMANN, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Electrical Connectors, of which the following is a specification.

My invention relates to improvements in electrical train connectors, and pertains especially to that class of devices designed for coupling the conductors of the several cars which compose a train to each other, whereby a lighting circuit is established from a single generator through the several cars which compose the train.

The object of my invention is to provide a form of construction in which the circuit conductors will be automatically bridged at the rear end of the train regardless of the number of cars which compose the train and the bridging device automatically retracted or made inoperative at the ends of each intermediate car.

A further object of my invention is to provide a form of construction in which the parts may be easily adjusted and errors in adjustment, or accidental displacements readily detected. Also to provide a form of construction in which a resilient bridging device may be employed, which can not only be used without any tendency to cause a separation of the coupling members, but which will also coöperate in retaining said members in coupling position. Regard is also had for durability, simplicity of construction, and uniformity in operation, each of the electrical conductors being invariably connected in such a manner as to secure a perfect electrical transmission with substantially equal pressure of the several contact devices upon each other.

In the following description, reference is had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view, drawn on line *x-x* of Fig. 2. Fig. 2 is a rear elevation of said device. Fig. 3 is a front elevation with the removable coupling member omitted. Fig. 4 is a sectional view, drawn on line *x-x* of Fig. 2, with the coupling member removed. Fig. 5 is a sectional view, drawn on line *y-y* of Fig. 4. Fig. 6 is a bottom view with the base of the casing removed to show the contact members. Fig. 7 is a plan view of the re-

movable member of the coupling in position to be inserted between the contact members illustrated in Fig. 6, the casing of this coupling member being illustrated in section. Fig. 8 is a vertical sectional view of the adjacent ends of two railway cars, showing the coupling members applied thereto. Fig. 9 is a diagrammatic view, illustrating the electric circuit.

Like parts are identified by the same reference characters throughout the several views.

My improved electrical connector comprises two members, one fixed and the other removable. The fixed member is mounted within a casing having a vertical portion 1, which is provided near its lower end with a horizontally projecting portion 2, the latter being inclosed by a bracket 3 adapted to facilitate the attachment of the device to the car frame. Said device will ordinarily be secured to the door frame of the car, or to the body of the car immediately above the door frame, by means of suitable screws 5 passed through holes at the respective ends of the bracket. Within the vertical portion 1 of the casing, a series of bars 7, 7^a and 7^b, of suitable conducting material, are mounted, each of these bars being provided at its upper end with a socket adapted to receive the conducting wires or cables 9, 9^a and 9^b respectively, which enter the casing through a hole in the top thereof. The bars 7, 7^a and 7^b, are each provided near its lower end with two forwardly projecting contact shoes 11 and 13 respectively, which shoes are formed of similar material to that composing the bars and are rigidly secured to the bars, each contact shoe being preferably socketed in a recess formed in the side of the bar as shown. There are two of these contact shoes 11 and 13 for each vertical bar. The bars 7, 7^a and 7^b, together with their contact shoes 11 and 13, are separated from each other, as clearly illustrated in Fig. 6. A bridging member 15 is resiliently supported by springs 16 from a lever 17, which depends from a pivot pin 18 near the rear wall of the casing 1. The rear wall of the casing is preferably composed in part of a cap 20, which is offset rearwardly from the other parts of the casing, as clearly shown in Figs. 1 and 4, thus providing space which allows the lever 17 to swing and also provides sufficient space for a cushioning

spring 21 interposed between the lower portion of the lever and the offset portion 20 of the casing wall. This portion of the casing wall is also provided with an aperture 22 into or through which a pin 23 extends from the lever 17. The spring 21 is preferably coiled about this pin 23. The lever 17 is provided with an actuating arm 25, which extends forwardly between the bars 7^a and 7^b, and is upwardly inclined to such an extent that when the lever 17 is in the position shown in Fig. 4, the forward extremity of the actuating arm 25 will extend upwardly into the space between the contact shoes 11 and 13 carried by the bar 7^a, and the contact shoes 11 and 13 carried by the bar 7^b. When in this position, the bridging member 15 will be in contact with both of the bars 7^a and 7^b.

The removable member of the coupling is provided with a casing 30, inclosing socket blocks 31, each provided with a socket, and said sockets are adapted to receive flexible conducting wires or cables 33, 33^a and 33^b, which enter the respective sockets from the outer side of this member. The blocks 31 are respectively provided with contact shoes 35, 35^a and 35^b, and the contact shoes 35, 35^a and 35^b are adapted to pass between the contact shoes 11 and 13 carried by the bars 7, 7^a and 7^b respectively. The shoes on the removable member are of such thickness that each will bear forcibly against the corresponding upper shoe 11 and lower shoe 13. A block 37, of insulating material, is interposed between the shoes 35^a and 35^b in a position to engage and actuate the arm 25 of the lever 17, whereby the forward extremity of said arm will be pushed downwardly and said lever 17 caused to swing backwardly, compressing spring 21. The reactionary pressure of said spring 21 will thus cause the arm 25 to bear forcibly against the under surface of the insulating block 37 and assist in holding said block, and the removable coupling member to which it pertains, in position.

To insure the insertion of the removable coupling member, with its shoes 35, 35^a and 35^b in positions to register respectively with the shoes carried by the bars 7, 7^a and 7^b, I provide an insulating block 39 between the shoes carried by the bar 7 and the shoes carried by the bar 7^a. This prevents errors in the insertion of the removable coupling member, which might otherwise be reversed in position, for if the removable member should be reversed, the insulating block 37 would then strike the block 39 and prevent the insertion of the contact shoes 35, 35^a and 35^b into the fixed coupling members.

After the removable member has been applied to the fixed member in coupling position, the several contact shoes may be securely bound together by means of any

suitable clamping device. I preferably employ a clamping set screw 40, which has a threaded bearing in the bracket 3, through which it passes and engages a metallic clamping bar 41, having a covering 42 of insulating material, adapted to bear against each of the contact shoes 13 in the fixed member. By turning the set screw 40 inwardly after the contact shoes of the removable member have been inserted, the several bars 13 may be sprung inwardly, thus binding the several shoes rigidly together. The bar 41 is preferably provided with end lips 43, loosely engaged in guide channels 44 in the wall of the casing.

When the removable coupling member is in coupling position with the lever 17 forced backwardly against the tension of spring 21, as above explained, pin 23 will project outwardly through the opening 22 in the cap 20, whereby the fact that the coupling has been made will be apparent by a mere inspection of the position of this pin 23. In case one of the removable coupling members should become loosened, either by reason of a failure to properly adjust the clamping set screw 40, or for any other reason, the lever 17 will be permitted to swing forwardly or inwardly to the position shown in Fig. 4, as soon as the removable coupling member becomes withdrawn sufficiently to permit the extremity of the arm 25 to pass above the plane of the shoes 13. This movement of the arm 17 will of course retract the pin 23 to the position shown in Fig. 4, whereupon the fact that the coupling has been loosened will be evident to any member of the train crew, who inspects the device, even though the shoes of the removable member may not be wholly retracted from between the shoes 11 and 13.

Referring to Fig. 8, it will be observed that the abutting ends of any two cars provided with fixed coupling members may be electrically connected by means of the flexible conductors 33, 33^a and 33^b, provided at their respective ends with the removable coupling members above described. It will be understood that the fixed coupling members at the respective ends of any one car will be connected by the conductors 9, 9^a and 9^b, and therefore a complete electrical circuit may be established through the several cars of the train, by employing the couplings and the flexible conductors 33, 33^a and 33^b to connect the conductors 9, 9^a and 9^b of the respective cars.

The system illustrated is what is known as the "return loop system", the lamps being connected in parallel, (as shown in Fig. 9) between the conductors 9^a and 9^b, the conductor 9^a being bridged to the conductor 9^b at the rear end of the train, whereby the current to the various lamps is equalized in a well known manner. With my improved

connector, it is unnecessary to pay any attention whatever to the bridging device, since that will be automatically set to bridging position, connecting bars 7^a and 7^b, and thus electrically connecting the conductors 9^a and 9^b with each other, whenever the rear end of any car becomes separated from a succeeding car. Therefore the uncoupling of any car or set of cars from a train necessarily involves the bridging of the bars 7^a and 7^b of the fixed coupling member at the rear end of the rear car, which remains as a part of the train. It is also unnecessary to pay any attention to the retraction of the bridging member 15 from the bars 7^a and 7^b, since this retraction is a necessary incident to the insertion of the removable coupling member, when an additional car is added to a train.

The terms and expressions employed in this specification and in the appended claims are employed for the purpose of description and not of limitation, it not being my intention to exclude from the scope of my invention any mechanical equivalents for the features of my invention.

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

1. In an electrical train connector, comprising coupling members provided with sets of mutually engaging contact shoes, the combination of a spring actuated device connected with one of the coupling members, a bridging device controlled by the spring actuated device, and a non-conducting shoe carried by the other coupling member, said non-conducting shoe being adapted to hold the spring actuated device with the bridging member in an inoperative position, when the contact shoes are in proper coupling position, and said spring actuated device being arranged to frictionally retain the non-conducting shoe in the coupling position.

2. In an electrical connector, the combination with a set of coupling members provided with mutually engaging contact shoes, of a movable bridging device on one of the coupling members adapted to electrically connect two of the shoes, and a non-conducting device on the other coupling member for automatically retracting the bridging device when the shoes are in coupling relation, said retracting means being also adapted to cooperate with the coupling members to hold them in coupling relation.

3. In an electrical connector, the combination with a set of coupling members provided with mutually engaging contact shoes, of a movable bridging device on one of the coupling members adapted to electrically connect two of the shoes, and means for automatically retracting the bridging device when the shoes are in coupling relation, said retracting means being also adapted to cooperate with the coupling members to hold them in coupling relation, together with a movable detector connected with the bridging device and exposed for inspection to indicate the position of said device.

4. In an electrical connector, the combination with a fixed coupling member, of a set of separated contact shoes, a bridging bar for electrically connecting two of said shoes, a swinging lever supporting the bridging bar, an arm connected therewith in a position to swing into and out of the space between two of said shoes, a spring adapted to press the lever into a position with the bridging bar electrically connecting said shoes and the arm extending between such shoes, and a movable coupling member provided with a non-conducting shoe adapted to move over said lever arm and retract the lever against the tension of the spring, when the parts are in coupling position.

5. In an electrical connector, the combination with a fixed coupling member, of a set of separated contact shoes, a bridging bar for electrically connecting two of said shoes, a swinging lever supporting the bridging bar, an arm connected therewith in a position to swing into and out of the space between two of said shoes, a spring adapted to press the lever into a position with the bridging bar electrically connecting said shoes, and the arm extending between such shoes, and a movable coupling member provided with a non-conducting shoe adapted to move over said lever arm and retract the lever against the tension of the spring when the parts are in coupling position, together with a non-conducting shoe between two of the shoes on the fixed member on the opposite side of the fixed member, from that at which the non-conducting shoe on the movable coupling member enters.

In testimony whereof I affix my signature in the presence of two witnesses.

AUGUST J. SEEMANN.

Witnesses:

LEVERETT C. WHEELER,
I. D. BREMER.