June 16, 1931. L. R. TAYLOR 1,810,687

ELECTRICAL CONNECTER RECEPTACLE

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Fig-1-

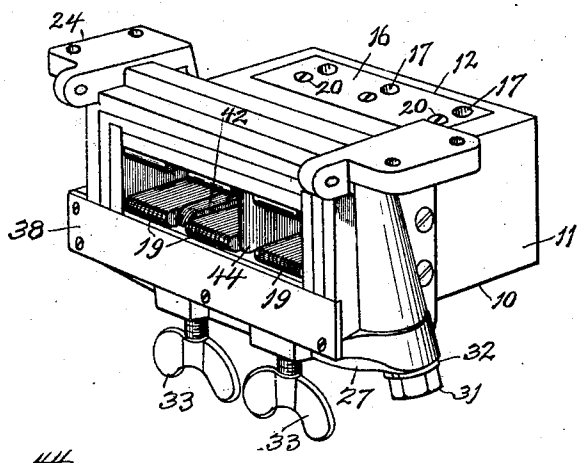


Fig-2-

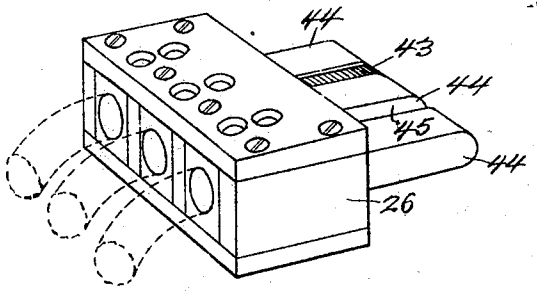
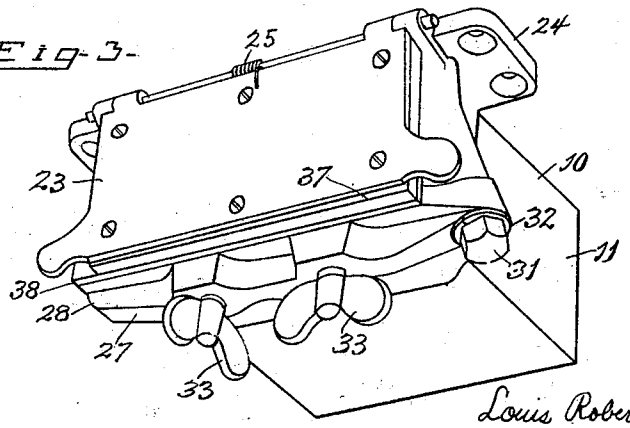


Fig-3-



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Fig. 4.

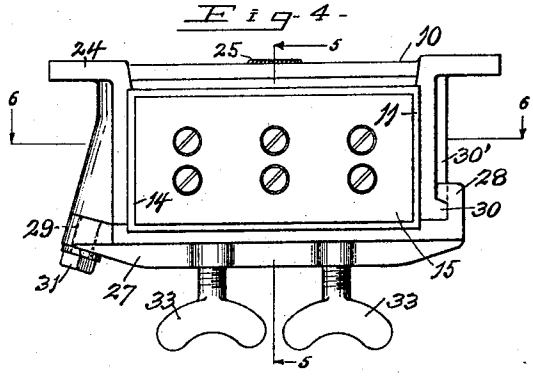


Fig. 5.

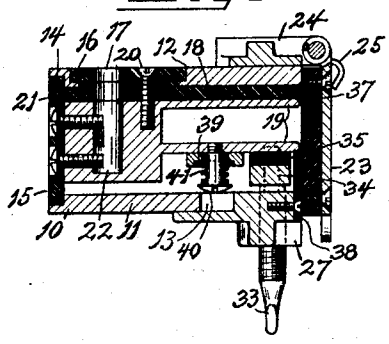


Fig. 6.

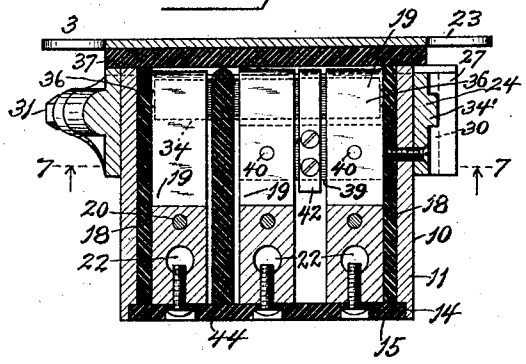


Fig. 8.

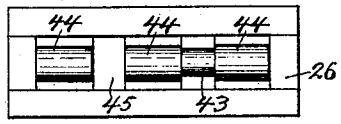
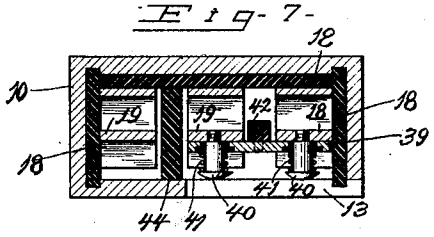


Fig. 7.



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UNITED STATES PATENT OFFICE

LOUIS ROBERTS TAYLOR, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO LOEFFELHOLZ CO., OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN

ELECTRICAL CONNECTER RECEPTACLE

Application filed October 20, 1927. Serial No. 227,511.

This invention relates to improvements in electrical connecter receptacle more particularly adapted for use in coupling the electrical conductors of the several cars which compose a train to each other, in completing the lighting circuit of the train.

It is one of the objects of the present invention to provide an electrical connecter receptacle which will receive standard electrical male plugs now in service for railway car lighting.

A further object of the invention is to provide an electrical connecter receptacle formed of a one piece metal casting as distinguished from the ordinary fiber receptacles formed of a number of pieces and which pieces warp and permit leakage with exposure to the elements.

A further object of the invention is to provide an electrical connecter receptacle having adjustable yielding contact means for engaging the contact fingers of the male plugs and removably holding said fingers in position.

A further object of the invention is to provide an electrical connecter receptacle shaped to receive and hold insulating plates to which electrical contacts and terminals are connected.

A further object of the invention is to provide an electrical connecter receptacle so constructed and assembled as to permit the parts being easily removed for repairs of replacements.

A further object of the invention is to provide an electrical connecter receptacle which is easily convertible from a three finger contact head end lighting system to a two finger contact axle lighting system.

A further object of the invention is to provide an electrical connecter receptacle having an easily removable portion to permit access to the interior portion of the receptacle.

A further object of the invention is to provide an electrical connecter receptacle having a polarity divider or partition so formed and constructed as to prevent the male plug from being inserted at an angle or in any way other than the correct way.

A further object of the invention is to provide an electrical connecter receptacle having a hinged cover closing the opening for the insertion of the plug contacts which is s constructed as to prevent the short circuiting of the parts if the plug contacts are wrongly inserted in the receptacle by a careless attendant.

A further object of the invention is to provide an electrical connecter receptacle so shaped and formed as to permit being connected to the under flat surface of a support without having any portions projecting above said surface.

A further object of the invention is to provide an electrical connecter receptacle having an automatic bridging device which bridges two of the contacts in the receptacle except when engaged by the contact plug, thus providing for bridging the contacts at at the end of the train and causing the bridges to become inoperative at intermediate ends of the cars of the train.

A further object of the invention is to provide an electrical connecter receptacle which is of simple construction, is strong and durable and is well adapted for the purpose described.

With the above and other objects in view the invention consists of the improved electrical connecter receptacle and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a front perspective view of the electrical connecter receptacle, the cover being removed to show interior portions;

Fig. 2 is a perspective view of the electrical contact plug used in connection with the recentacle;

Fig. 3 is a perspective view of the receptacle with the cover in closed position;

Fig. 4 is a rear end view of the receptacle;

Fig. 5 is a vertical sectional view thereof taken on line 5—5 of Fig. 4;

Fig. 6 is a horizontal sectional view taken on line 6—6 of Fig. 4;

Fig. 7 is a vertical sectional view taken on line 7—7 of Fig. 5; and

Fig. 8 is a front end view of the contact plug.

Referring to the drawings the numeral 10 indicates the improved electrical connecter receptacle which comprises a metal casing 11 open at its opposite ends and also having openings 12 and 13 in its upper and lower portions. The rear edges of the walls of the casing are recessed or rabbeted as indicated by the numeral 14 to receive the insulating rear plate 15, and the portions of the upper wall surrounding the upper opening 12 are also rabbeted to receive the insulating plate 16. Said plates are formed of fabric and paper base or other insulating material and the last mentioned plate 16 is provided with terminal openings 17 through which the terminal ends of the circuit wires (not shown) extend. The interior portion of the casing with the exception of the bottom wall is lined with plates of insulating material 18 to insulate the terminal contact yokes 19 secured thereto by screws 20. The screws 20 extend through both insulating plates 16 and 18 and into the contacts 19 to securely connect the contacts to the plates and the plates to the casing 10. The openings 17 of the insulating plate 16 are in alinement with terminal openings 21 and 22 formed, respectively, in the upper insulating plate 18 and the contact yoke 19 to receive the circuit terminals before mentioned.

The front or open end of the receptacle is provided with a door 23 hinged at its upper edge to the casing attaching part 24 and is provided with a coiled spring 25 for yieldingly holding the door 23 in closed position when the yokes are out of engagement with the contact plug 26. The arms of the yokes are spaced apart a sufficient distance to yieldingly receive the plug contacts therebetween, and to more firmly hold said contacts a removable clamping bracket 27 is provided which is formed with a notched hook 28 at one end and a bolt opening 29 at its other end. The notched hook end of the bracket extends over the shoulder 30 and locking rib 30′ formed on the attaching part 24 while a bolt 31 extending through the opening 29 is threaded into the opposite end of the attaching part 24. A split lock nut 32 mounted on the bolt 31 locks the said bolt against accidental unscrewing. The opening 13 in the lower portion of the casing 11 immediately above the clamping bracket 27 is closed by the clamping bracket, and when the clamping bracket is removed access is permitted to the yoke contacts within the casing. Thumb screws 33 threaded through the clamping bracket are adapted to bear at their inner ends against a follower 34, interposed between the lower sides of the contact yoke arms, and said follower is provided with an insulating strip 35 to insulate said follower from the said yoke contacts. The opposite end portions of the insulating strip are reduced in width and extend into guide grooves 36 to maintain the follower in proper position. As thus constructed the thumb screws 33 may be turned inwardly when the plug contacts are inserted between the arms of the respective yoke contacts to firmly clamp said plug contacts between said arms.

To insulate the door and the front portion of the casing the inner side of door is provided with an insulating plate 37 and the clamping bracket 27 carries an insulating plate 38 which extends in front of the lower portion of the casing as shown in Figs. 1 and 5.

These two insulating plates in conjunction with the other insulting plates prevent the attendant from accidentally short circuiting or grounding the terminals in inserting the plug contacts into the receptacle.

A bridging member 39 is also located in the same opening as the follower and is connected to two of the yoke contacts by screw studs 40 which are threaded into said yoke contacts 19 and extend loosely through the bridging member 39. Coiled springs 41 surrounding the screw studs and interposed between the heads of the screws and the bridging members normally hold the said bridging member yieldingly in bridging engagement with two of the yoke contacts 19. An insulating cam member 42 mounted on the bridging member 39 is positioned between the yoke contacts and projects upwardly therefrom to be engaged by an insulating member 43 interposed between two of the contacts 44 of the plug 26. When the plug contacts are inserted into the receptacle the insulating member 43 will engage and force the insulating member 42 downwardly and as the bridging member 39 is connected to the insulating member 42 it will be moved away from bridging contact with the yoke contacts 19.

The insulating strip 43 in connection with an insulating partition 44 positioned between two of the yoke contacts 19 performs an additional function in that the plug cannot accidently be inserted in upside down position in the receptacle, as the space 45 between two of the plug contacts must register with the insulating partition to permit the insertion of the plug contacts into the receptacle.

From the foregoing description it will be seen that the electrical connecter receptacle is of simple construction and is well adapted for the purpose described.

What I claim as my invention is:

1. An electrical connecter receptacle, comprising a casing having an open end, fixed contacts therein, a yielding contact bridging

member, a bracket frame mounted on said open end and having an easily removable clamping portion, a plug member for entering the casing to engage the contacts, the bridging member being beneath said contacts and automatically movable with respect thereto in a line perpendicular to the axis of insertion of the cooperating plug contacts, a follower member engaging said fixed contacts, and means associated with said bracket frame and engaging said follower for causing the fixed contacts to clampingly engage the plug contacts.

2. An electrical connecter receptacle, comprising a casing having an open end, a bracket frame mounted on said open end portion and having an easily removable clamping portion, fixed contacts within the casing, a yielding transversely extending bridging member, a plug member for entering the open end of the casing to engage the contacts, the bridging member being beneath said contacts and automatically movable with respect thereto in a line perpendicular to the axis of insertion of the cooperating plug contacts, a follower member engaging the fixed contacts, and means carried by the clamping portion of the bracket frame and engaging the follower for causing the fixed contacts to clampingly engage the plug contacts.

3. An electrical connecter receptacle, comprising a casing having an open end, fixed contacts positioned within the casing, a yielding transversely extending bridging member connected to the casing, a plug contact means insertable through the open end of the casing for engaging the fixed contacts, the bridging member being beneath said contacts and automatically moved with respect thereto in a line perpendicular to the axis of insertion of the cooperating plug member, a follower member having an insulated portion which engages some of the fixed contacts, and screws extending through the clamping portion of the bracket member and engaging the follower for causing the fixed contacts to clampingly engage the plug contacts.

4. An electrical connecter receptacle, comprising a casing having an open end, a bracket frame clamping part connected to the casing and having clamping screws and an insulating plate, a door for the open end of the casing, fixed yoke contacts positioned within and insulated from the casing and having terminal connecter openings, a transversely extending bridging member, a plug contact means including a cam insertable through the open end of the casing for engaging the fixed contacts, the bridging member being beneath said contacts and automatically moved by said cam with respect to the contacts in a line perpendicular to the axis of insertion of the cooperating plug contacts, springs normally holding the bridging member in engagement with said contacts, and a follower interposed between the fixed contacts and the clamping screws.

In testimony whereof, I affix my signature.

LOUIS ROBERTS TAYLOR.