May 31, 1927. 1,630,401

H. R. MEYER

CONNECTER

Filed May 17, 1920

Fig. 1.

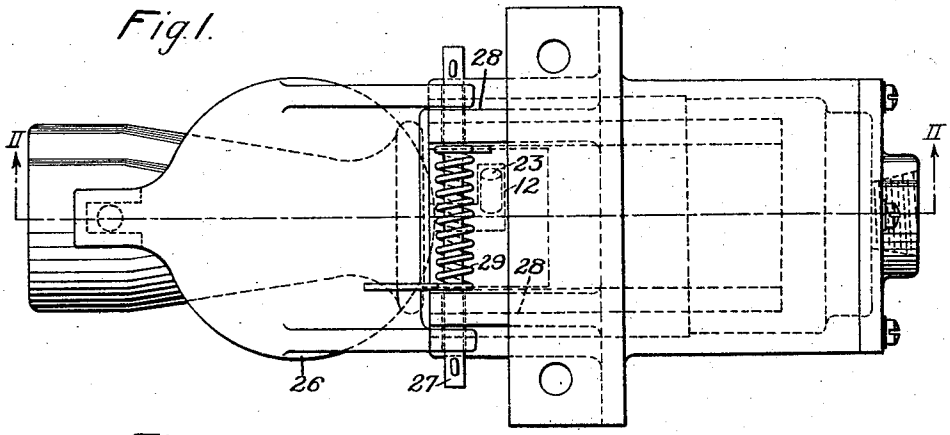


Fig. 2.

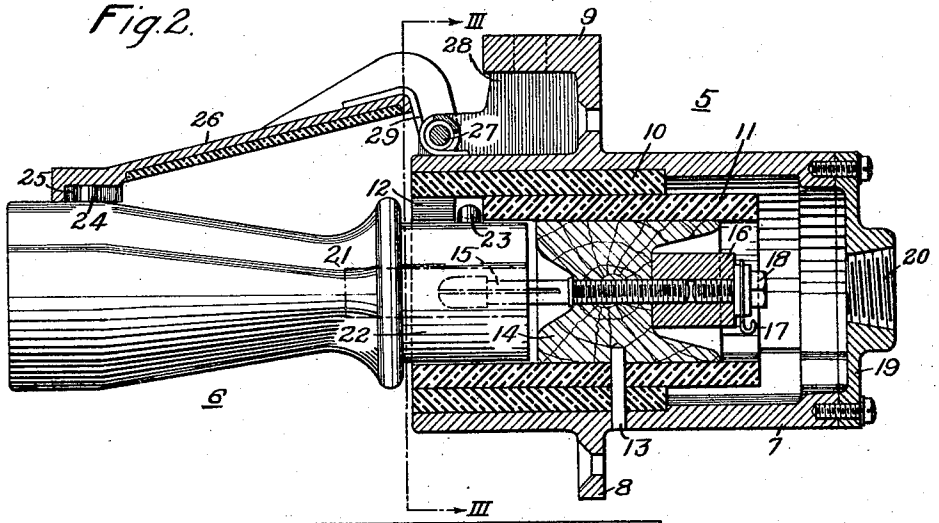
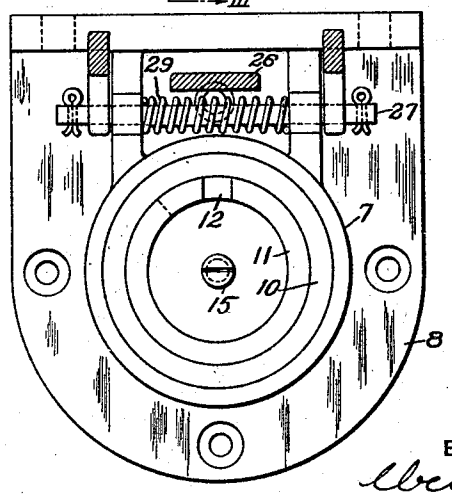


Fig. 3.



WITNESSES:

J. A. Helsel

J. H. Kendig

INVENTOR

Harry R. Meyer

BY

Wesley G. Carr

ATTORNEY

Patented May 31, 1927. 1,630,401

UNITED STATES PATENT OFFICE.

HARRY R. MEYER, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

CONNECTER.

Application filed May 17, 1920. Serial No. 381,841.

My invention relates to connecters and particularly to connecters of the type used in connecting electric-current conductors which carry control, lighting, heating and motor currents between cars of a train.

One object of my invention is to provide a simple and efficient connecter which may be quickly and securely joined and retained in operative connection during the periods of service.

Another object is to provide a connecter having the characteristics above defined wherein the conductor terminals are maintained in effective engagement and cannot be shaken loose by vibrations incident to the service in which they are employed.

Heretofore, it has been the practice to retain the plug or "jumper" within the receptacle of the connecter by means of a recess-and-pin connection between the plug and receptacle cover, which is usually hinged to the exterior of the receptacle. A certain amount of lost motion between the pin and recess, incident to this form of latch construction, permits relative longitudinal movement of the plug and receptacle which results in the gradual loosening of the plug and a consequent loose and imperfect contact with the terminals. Another objection to this form of connection is that the terminals are liable to become detached, as the result of a sudden jerk of the cable connected to the plug or an accidental displacement of the cover. To obviate these objectionable features, I have provided a plug and receptacle with a bayonet connection which is moved into operative locked position first by a relative longitudinal movement of the plug and receptacle and then by a relative rotary movement of the plug and receptacle, whereby the parts are locked against relative longitudinal displacement.

The plug is provided with a pin adapted to be aligned with a recess in the cover when the plug and receptacle are in interlocked relation, and the function of the pin and recess in the improved construction is to prevent relative rotary movement of the plug and receptacle. A certain degree of lost motion between the pin and receptacle cover is not objectionable because the bayonet joint or connection securely holds the plug and receptacle in operative relation. All strains imposed upon the cable tending to separate the plug and receptacle are opposed by the bayonet joint, and the longitudinal strains, therefore, have no effect tending to disengage the connection between the cover and the plug. Should the cover be accidentally raised out of engagement with the pin on the plug, the connection is held intact by the bayonet joint. It will be seen, therefore, that the sole function of the connection between the cover and the plug is to prevent such rotary movement of the plug with respect to the receptacle as would disengage the bayonet connection.

The above mentioned objects, as well as others which will hereinafter appear, are attained by means of apparatus embodying the features herein described and illustrated in the drawings accompanying and forming a part hereof, wherein:—

Fig. 1 is a plan view of a connecter embodying my invention.

Fig. 2 is a longitudinal section of the receptacle taken along the line II—II of Fig. 1, showing the plug in side elevation and in operative position in the receptacle.

Fig. 3 is a transverse section of the receptacle shown in Fig. 1, taken along the line III—III of Fig. 2.

Referring to the drawings, the connecter includes a terminal connecter 5 and a terminal plug 6 adapted to co-operate in forming an electrical connection between the conductors carried by the cars of a train. The receptacle 5 includes a metal cylindrical casing 7 provided with external attaching flanges 8 and 9 adapted to be fitted to the end of a car in an accessible location. The interior of the receptacle is provided with a pair of cylindrical insulating sleeves 10 and 11, the innermost sleeve 11 being provided, at its outer edge, with a slot 12 of L-shape, which is preferably formed before the sleeves are assembled within the casing. The sleeves are retained in fixed position within the casing by means of a fiber dowel pin 13 which extends through the casing and sleeves and projects into an insulated terminal support or base 14 provided in the innermost sleeve 11.

A connecter terminal 15 projects from the forward end of the base 14 and is retained therein by a metal nut 16 screwed upon the threaded end of the terminal. The conductor, not shown, is attached to a clip 17, which, in turn, is attached to the nut 16 by

means of a stud 18. The rear end of the casing 7 is closed by means of a detachable cap 19 to which the usual conduit is attached and the conductor leads into the receptacle from the conduit through the opening 20 provided in the cap 19.

The terminal 15 is of the well-known split type, and is adapted to snugly engage the terminal ferrule 21 provided in the cylindrical contact plug 22 of the plug or "jumper" 6, and the conductor, not shown, may be attached to the ferrule in any preferred manner and lead out of the free end of the plug. The cylindrical contact plug 22 is so formed that it snugly fits into the sleeve 11 and is provided with a locking pin 23 adapted to enter the slot 12. The plug 22 is inserted in the sleeve first by a longitudinal movement thereof, the pin at this time passing through the longitudinally extending portion of the slot 12. After the pin has engaged the inner end of the slot, the plug is rotated about its axis, the pin, at this time, traversing the transversely extending portion of the slot 12 of L-shape. It will be seen that longitudinal displacement of the plug with respect to the receptacle is prevented by the bayonet connection formed by the slot 12 of L-shape and the pin 23. The plug may be disengaged by a reverse movement thereof.

This form of connecter provides a joint which is tight and secure and the plug cannot be vibrated loose or be separated from the receptacle unless it is first rotated a distance sufficient to clear the transverse leg of the slot 12. During service, it is desirable to prevent the rotary movement of the plug and this is accomplished by providing the plug or "jumper" 6 with a pin 24 adapted to project into a longitudinally extending slot 25 provided in the lower or inner side of the receptacle cover 26.

The cover 26 is hinged to the receptacle casing 7 and rotates about a shaft 27 mounted in webs 28 cast integral with the casing. A spring 29 is mounted upon the shaft 27 between the webs 28 and the forwardly and rearwardly extending ends thereof respectively engage the receptacle casing 7 and the outer side of the cover 26. The spring is so coiled that tension is constantly applied to the cover, tending to hold it in closed position. The spring 29, therefore, serves to retain the cover in contact with the plug or "jumper" 6 when the plug is in operative connection with the receptacle. The pins 24 and 23 are relatively positioned upon the plugs 6 in such manner that, when the plug 23 has been moved into its extreme locking position within the transverse leg of the slot 12, the pin 24 is moved into alignment with the slot or groove 25 in the cover 26. In joining the plug and receptacle, the cover 26 is first so raised substantially to a horizontal position as to clear the plug. The plug is then inserted into the receptacle by a longitudinal movement until the pin 23 engages the rear wall of the transverse section of the slot. The plug is then rotated in a counterclockwise direction until the pin 23 engages the inner end of the transverse leg of the slot 12. This movement locks the base and receptacle against relative longitudinal displacement, and, at the same time, moves the pin 24 so that it registers with the slot 25 in the cover. The cover is then lowered into contact with the plug, thus bringing the pin 24 and slot 25 into operative relation and preventing rotary movement of the plug with respect to the receptacle.

While I have described and illustrated but one embodiment of my invention, it will be apparent to those skilled in the art that various changes, modifications, substitutions, additions and omissions may be made in the apparatus illustrated without departing from the spirit and scope of the invention, as set forth by the appended claims.

I claim as my invention:

1. A connecter, comprising a pair of terminal members movable axially into conductive engagement and provided with interlocking means adapted to be moved into operative attaching engagement by relative rotary movement of the members about their axes and to prevent separation of the members, and means hinged to one of the members and adapted to operatively engage the other member to prevent relative rotary movement of the members.

2. The combination with a receptacle, a plug and a closure for the receptacle adapted to be held in open position by the plug and to prevent rotary movement of the plug with respect to the receptacle, of an interlocking means carried by the plug and receptacle and adapted to prevent relative longitudinal displacement of the plug and receptacle and to be disengaged by relative rotary movement of the plug and receptacle.

3. A connecter comprising a terminal plug, a terminal receptacle adapted to receive the plug, a cover for the receptacle adapted to be held in closed position when the plug is removed from the receptacle and to be held in engagement with the plug when the plug is in operative position in the receptacle, interlocking means on the plug and receptacle for preventing relative longitudinal displacement of the plug and receptacle, and interlocking means on the plug and the said cover adapted to be moved into operative alignment when the plug and receptacle are moved to operative interlocking positions.

4. A connecter comprising a terminal plug, a terminal receptacle adapted to receive the plug, a cover hinged to the receptacle having a latch recess therein and

adapted to engage the plug when the plug is in operative position in the receptacle, a bayonet connection between the plug and connecter adapted to prevent relative longitudinal displacement of the plug and receptacle, and a pin on the plug so located that it registers with the said recess in the cover when the plug is in operative connection with the receptacle for preventing unlatching movement of the said bayonet connection.

5. A connecter comprising a receptacle casing, open at opposite ends, a pair of tubular insulating members disposed in telescoped relation within the casing, an insulating base within the innermost tubular member for closing communication between the open ends of the receptacle, a conductor terminal extending through the base and having at one end a contact member and at the other end a terminal member and a pin extending through the casing, the tubular members and into the base for holding them in assembled relation.

In testimony whereof, I have hereunto subscribed my name this 13th day of May, 1920.

HARRY R. MEYER.