C. J. KLEIN.

SEPARABLE CONNECTOR FOR ELECTRICAL CONDUCTORS.

APPLICATION FILED JAN. 13, 1913.

1,141,121.

Patented June 1, 1915.

Fig. 1.

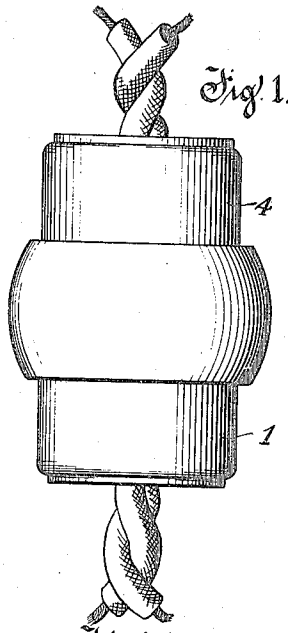


Fig. 2.

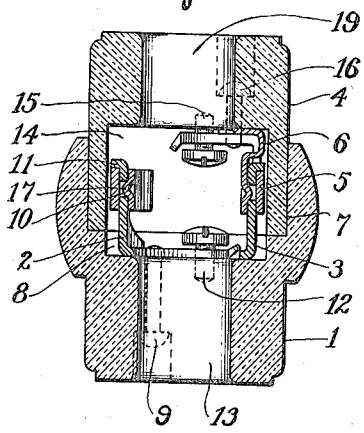


Fig. 3.

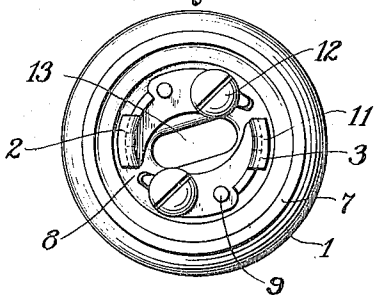


Fig. 4.

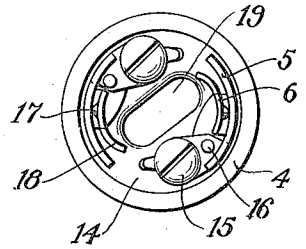


Fig. 5.

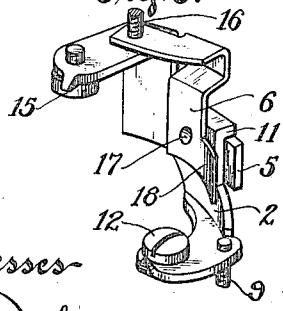
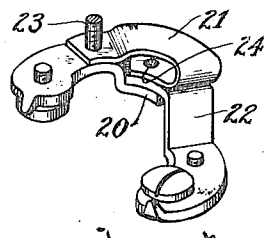


Fig. 6.



Witnesses-

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SEPARABLE CONNECTOR FOR ELECTRICAL CONDUCTORS.

1,141,121. Specification of Letters Patent. Patented June 1, 1915.

Application filed January 13, 1913. Serial No. 741,771.

To all whom it may concern:

Be it known that I, CHARLES J. KLEIN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Separable Connectors for Electrical Conductors, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to separable connectors for electrical conductors.

It has among its objects to provide an improved connector the parts of which are readily separable upon a predetermined rotary movement of the same but are normally locked against both longitudinal separation and relative rotation.

A further object of my invention is to provide a connector of simple, rugged and efficient construction.

Other objects and advantages of my improvement will hereinafter appear.

In order that my invention may be fully and clearly disclosed, I have illustrated two embodiments of the same in the accompanying drawings.

Figure 1 is a side elevation of one form of connector; Fig. 2 is a central longitudinal sectional view of the same; Fig. 3 is a plan view of one of the members thereof; Fig. 4 is a plan view of the other member thereof, Fig. 5 is a perspective view of the contact members; Fig. 6 is a perspective view of a modified form of contact members.

The connector illustrated herein comprises an insulating base 1 carrying a pair of contacts 2 and 3, which are adapted to be received in a second insulating base 4 and engage contacts 5 and 6 carried therein and be locked thereto upon a relatively rotary movement of the parts as hereinafter described. The base 1 is substantially cylindrical in shape and preferably provided at its upper end with a portion of enlarged diameter in which is formed a recess or chamber 7 of cylindrical cross-section. Communicating with this chamber 7 is a second and more shallow recess 8 of smaller diameter. Upon the bottom of this recess 8 and on opposite sides of the same the contacts 2 and 3 are mounted. In a preferred form these contacts are of identical construction but are oppositely disposed as shown in Fig. 3. Each of the contacts is preferably formed of a single piece of metal and provided with a horizontal portion secured to the base 1 by means of screws 9, and vertically extending portions of arc-shaped cross-section disposed at right angles to the horizontal portions. Each of these vertically extending portions is provided with a substantially circular opening 10 near its upper end and at its end is provided with an outwardly extending lip or lug 11. In a preferred form binding screws 12 are carried by the horizontal portions of the contacts on opposite sides of the recess 8 and are located adjacent a vertically extending conductor opening 13 of elliptical cross-section. The base 4 is likewise of substantially cylindrical cross-section and is adapted to be received in the chamber 7 in the base 1 and have its lower end abut against the end wall of said chamber. A substantially cylindrical chamber or recess 14 is likewise provided in the end of the base 4. The contact members 5 and 6 are carried upon the end wall of this chamber and on opposite sides of the same, being arranged in pairs as shown in Fig. 4. Each contact 5 is rigid and is provided with a horizontally disposed portion carrying a binding screw 15. In a preferred form the contact is also provided with an integral vertically extending portion having a lateral extension at the end thereof and is formed as to conform to the shape of the resilient contact 6. As in the case of 5, the contact 6 is provided with a horizontally disposed portion resting upon the end wall of chamber 14. In a preferred form, the contacts 5 and 6 are secured in position thereof by screws 16, accessible from the outer end of the base. Each of the contacts 6 is likewise provided with a vertically extending portion disposed parallel to the inner face of the contacts 5 and of substantially the same shape as the latter. In order to obtain the parallel relation of the parts the member 6 is preferably bent inward at a point adjacent its horizontal portion. Each contact 6 is provided near its end with an outwardly extending projection or punched out portion 17, and the laterally extending free end of each of the contact members 6, is preferably flared inward, as shown at 18. As in the case of contact members 2 and 3, the binding screws 15 for the contacts 5 and 6, are located adjacent a vertically extending con-

ductor opening 19 provided in the upper end of the base.

When it is desired to connect the ends of the conductors the two members are brought together so that the contact members 2 and 3 are located between the two sets of parallel contacts 5 and 6 and then a rotary movement is given the parts, so that the same pass between the contacts of each set. The projection 17 on each contact 6 then snaps into the openings 10 in the contacts 2 and 3. In this position the parts are locked against accidental rotation by the engagement of the projection with the walls of the opening. They are further locked against continued movement in the same direction by the engagement of the sides of the lugs or lips 11 with the sides of the vertical portions of the contacts 5. It is further to be noted that the turned over ends 11 on the contacts 2 and 3 rest upon the upper edge of the contacts 5, so that longitudinal separation is prevented. When it is desired to separate the parts, however, it is only necessary to reverse the direction of relative rotation, whereupon the contacts 2 and 3 force back the resilient contacts 6 and disengage from the projections formed thereon, so that the two members may be readily separated longitudinally.

In Fig. 6, I have illustrated a modified construction of contact members adapted to use in a single pole connector. In this construction, the contact members 20 and 21, correspond to the members 5 and 6, while the contact member 22, corresponds to one of the contact members 2, 3, the parts being arranged in this instance in a horizontal plane, instead of a vertical plane. The contact member 20 is rigid and provided with a horizontal portion, adapted to carry a binding screw. Near the opposite end of the same it is bent downward, substantially at right angles and then protruded in a plane parallel to its horizontal portion. The contact member 21 is resilient and fixed to the contact member 20 by a suitable screw 23, which may be used to attach both of the contact members to the base. Adjacent to its point of attachment to the contact member 20, the contact member 21 is bent upward slightly and then protruded in a substantially horizontal plane to a point adjacent the contacting end of the contact member 20, where it is bent downward and inward, until its free end is parallel with its horizontal portion and also with the end of the contact member 20 and above the latter. As in the previous construction a projection or punched-out portion 24 is provided near the end of the resilient contact. The cooperating contact 22 is rigid and provided with a horizontal portion adapted to be attached to the base. In a preferred form, this contact is also provided with a vertically extending portion intermediate its ends and its contacting end is bent at right angles and disposed in a parallel plane to said horizontal portion. As in the previous construction, the end of this horizontal portion is provided with an opening adapted to receive the projection 24 on the contact 21. When it is desired to connect these contact members, they are relatively rotated, so that the contact member 22 passes in between the active surfaces of the contact members 20 and 21 and the projection 24 on the latter snaps into the opening in the contact 22. In this position the parts are locked against longitudinal separation by the interlocking of the contact members. They are further locked against continued rotation in the same direction, due to the engagement of the end of the contact 22, with the vertical wall of the contact 20. However, as in the first form discussed, when it is desired to disengage the parts, the same are readily separated by simply reversing the direction of rotation, to disengage the projection 24 from the contact 22.

While I have described two embodiments of my invention in order to clearly and fully disclose the latter, it is to be understood that these embodiments chosen for purposes of illustration are susceptible of modification without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent is:

1. An electric connector comprising, in combination, a pair of bases, a rigid contact on each thereof, said contacts being adapted to interengage by relative rotation of said bases after the same are brought together for effecting an axial lock thereof, and separate resilient means to lock said bases against relative rotation after the interlocking of said contacts.

2. An electric connector comprising, in combination, two insulating bases, a rigid contact on one, a rigid and a resilient contact on the other, said rigid contacts having coöperating shoulders to lock said bases against separation and said first mentioned rigid contact and said resilient contact having coöperating shoulders to lock said bases against relative rotation.

3. An electric connector comprising, in combination, a pair of complementary bases, a pair of oppositely disposed rigid contacts on one, a pair of oppositely disposed rigid contacts on the other, and a pair of resilient contacts superposed on said second mentioned rigid contacts, said bases being adapted to be brought together when said contacts are out of registry and to be threafter relatively rotated, said rigid contacts having coöperating shoulders interlocked by said relative rotation of said bases to effect an axial lock thereof, and said first mentioned rigid contacts and said resilient con-

tacts having coöperating shoulders interlocked after the interlocking of said first mentioned shoulders to effect a rotative lock of said bases.

4. An electric connector comprising, in combination, a pair of complementary bases, a rigid contact on one, a rigid contact on the other, said contacts having coöperating shoulders to lock said bases against separation, and a resilient contact on one of said bases adapted to engage with the rigid contact on the other to insure intimate electrical interconnection, said resilient contact and its coöperating rigid contact also having cooperating shoulders to lock said bases against relative rotation.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

CHARLES J. KLEIN.

Witnesses:
H. L. Rockwell,
Jeanette F. Brock.