J. D. FIRMIN.

CABLE CONNECTOR.

APPLICATION FILED AUG. 20, 1906.

904,522. Patented Nov. 24, 1908.

Fig. 1.

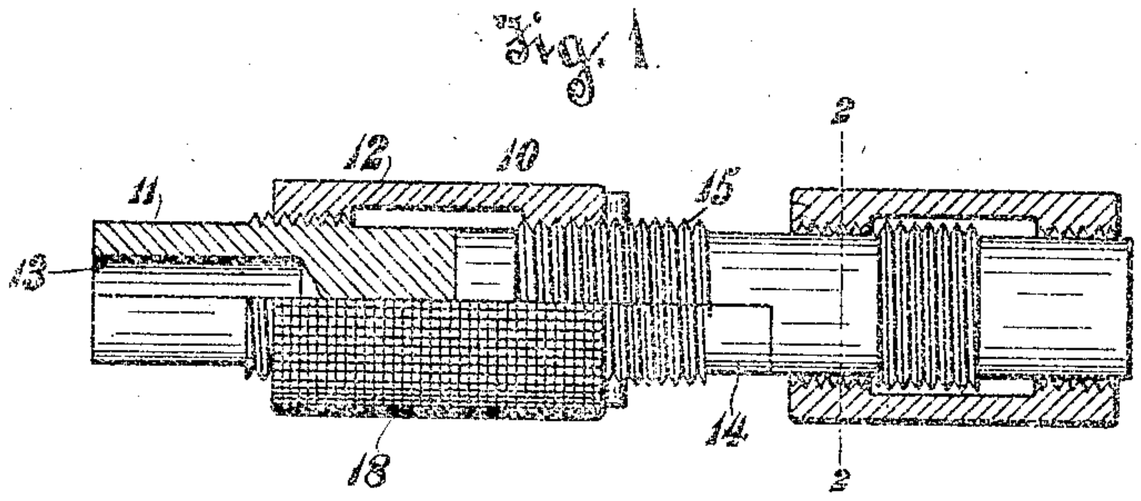


Fig. 2

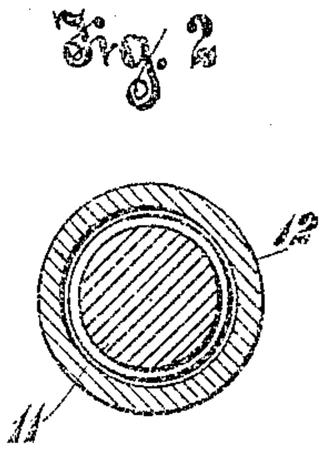


Fig. 3

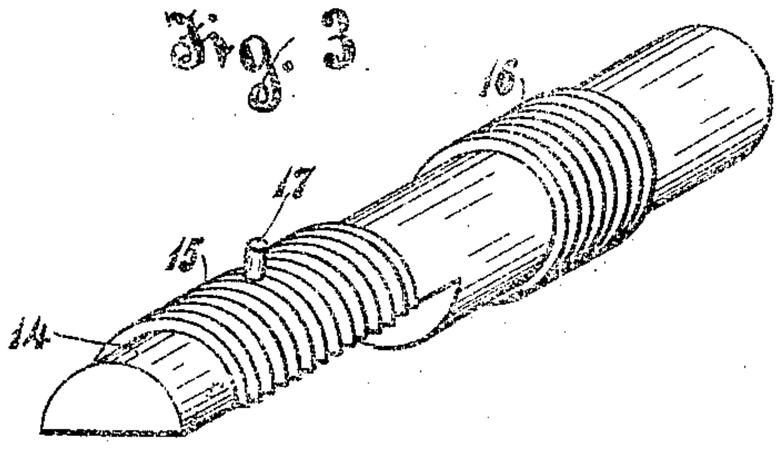


Fig. 4

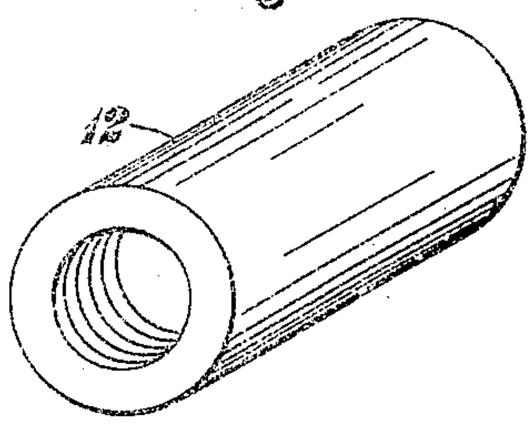


Fig. 5

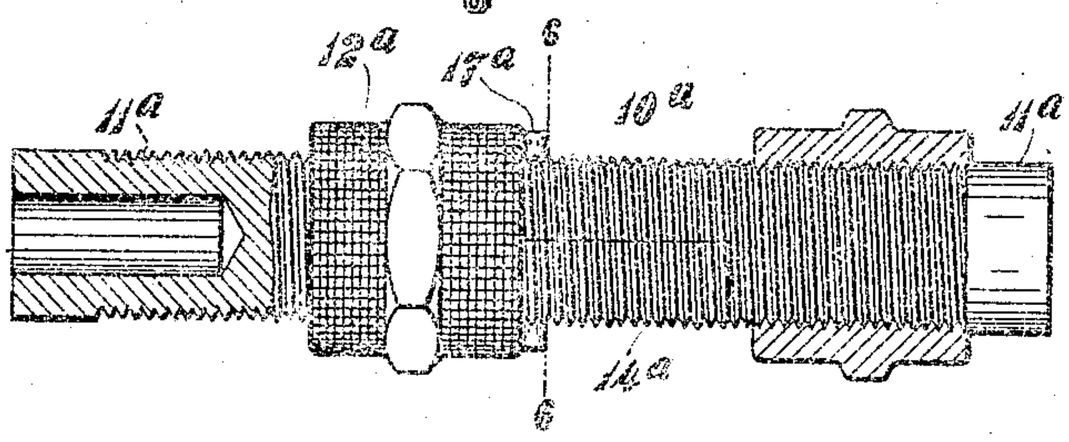


Fig 6.

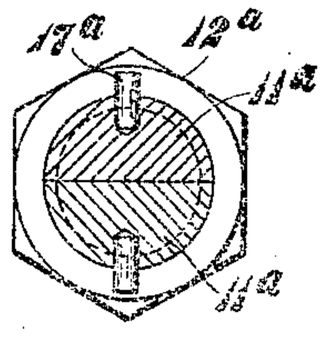


Fig. 7

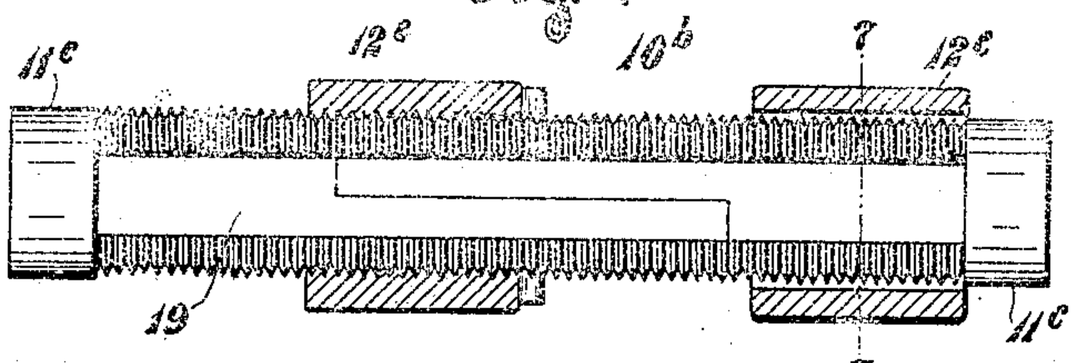
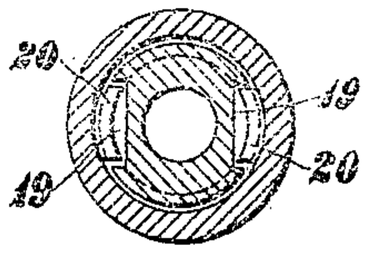


Fig. 8



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN D. FIRMIN, OF NORWOOD, OHIO, ASSIGNOR TO ALLIS-CHALMERS COMPANY, A CORPORATION OF NEW JERSEY, AND THE BULLOCK ELECTRIC MANUFACTURING COMPANY, A CORPORATION OF OHIO.

CABLE-CONNECTOR.

No. 904,522. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed August 20, 1906. Serial No. 331,294.

To all whom it may concern:

Be it known that I, JOHN D. FIRMIN, citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Cable-Connectors, of which the following is a full, clear, and exact specification.

My invention relates to connectors or couplers for electric conductors or cables.

It has for one of its objects to provide a connector or coupler of few parts which can be easily and cheaply made, and which are duplicate or interchangeable.

A further object is to provide a coupler consisting of parts which can be very quickly and easily connected or disconnected and which have ample surfaces of contact so that the resistance of the connection is negligible.

My invention consists in the details of construction and in the combinations and arrangements of parts described in the specification and set forth in the appended claims.

For a better understanding of my invention, reference is had to the accompanying drawings in which:—

Figure 1 is an elevation, parts being in section, of my improved coupling, one of the tightening sleeves being partly removed; Fig. 2 is a transverse section of the same along the line 2—2 of Fig. 1; Figs. 3 and 4 are isometric views of two members forming one half of the coupler; Fig. 5 is an elevation of a modification, parts being in section and broken away; Fig. 6 is a transverse section of the same along the line 6—6 of Fig. 5; Fig. 7 is an elevation of a further modification, parts being in section; and Fig. 8 is a transverse section of the same along the line 7—7 of Fig. 7.

Referring now to the figures of the drawing and first to Fig. 1, I have shown at 10 a coupler or connector consisting of two separable parts or halves, each of which consists principally of two members, a terminal member 11 which is in this case cylindrical or tubular, and a sleeve, collar, or nut 12. The terminal member 11 and sleeve 12 of one-half of the coupler are exact duplicates of the corresponding parts of the other half, so that the parts are interchangeable. The terminal members are each provided at one end with a socket 13 to receive the end of a conductor or cable and at the other end is notched or cut away forming a semi-cylindrical extension 14. The semi-cylindrical portion of the terminal member is provided with a group of threads 15 and the cylindrical portion is provided with a second group of threads 16 of the same pitch, the ends of the terminal members and the portions between the groups of threads being unthreaded and smooth. In this instance the threads extend above the unthreaded portions. Extending outward through approximately the center of the threaded portion of each semi-cylindrical extension is a pin or other projection 17, the purposes of which will be explained. The sleeves or collars 12 are threaded at each end, the central portions being unthreaded, and the distance between the threaded portion being substantially the same as the distance between the threaded portions on the tubular members. The outer surfaces of the sleeves are knurled as shown at 18.

Before the end cables are placed in the sockets of the tubular members, the sleeves are slipped onto the latter and the front ends of the sleeves are screwed past the threaded portion 16 to the position shown at the right hand side of Fig. 1. To make the connection between the two halves of the coupler or connector, the two notched ends of the terminal members are placed together so as to form a rabbet joint, the threaded portions 16 of the two semi-cylindrical portions matching, so that the sleeves can be slid forward until the threads are reached, and then screwed forward over the notched threaded portions of both members until they engage opposite sides of both pins 17, when the parts of the coupler are held tightly together.

The objects of this construction and the advantages will now be more fully explained. By providing short threaded portions on the tubular members, and unthreaded portions between, the connection can be made by first sliding the sleeves toward each other and then giving them a few turns. Since the sleeves are comparatively long the parts are held more firmly together than if short sleeves were employed. In fact, the terminal members are held together as firmly as if the long sleeves were threaded their entire lengths, but the parts can be connected or disconnected as quickly as if the tightening sleeves were only as long as

one of the threaded portions of the sleeve. The sleeves also serve to carry current from one terminal member to the other, especially in case the engaging faces of the terminals should become roughened or in case dirt or other foreign matter should become lodged between the contact faces. The pins 17 serve a two-fold purpose. They serve as an abutment for tightening the sleeves when the connection is made and also prevent the sleeves being removed and perhaps lost when the terminal members are disconnected.

In Figs. 5 and 6 I have shown a slight modification of my invention. The coupler or connector 10^a here shown is similar in the main details to the one first described. The coupler consists of two counterpart terminal members 11^a and two counterpart sleeves 12^a. The terminal members are notched or cut away forming semi-cylindrical portions 14^a each of which is provided with a pin 17^a as in the first construction. In this case, however, the terminal members are each threaded continuously from a point near the end containing the socket to the opposite end. In this instance to connect or disconnect the terminals, the sleeves must be screwed a distance equal to substantially their lengths or the distance of the pin 17^a from the ends of the semi-cylindrical portions. In this case more time is required to connect or disconnect the parts than in the first construction.

In Figs. 7 and 8 I have shown a still further modification which resembles in some respects both constructions previously described. The coupler 10^b consists of two counterpart terminal members 11^c and two counterpart sleeves 12^c threaded as in Figs. 5 and 6. The terminal members here shown can be connected or disconnected without screwing the sleeves the distance from the pins to the outer ends of the semi-cylindrical portions, but, as in the construction shown in Figs. 1, 2, 3, and 4, the sleeves can be slid a portion of the distance. In this case the tubular terminal members are provided with longitudinal channels or slots 19 on opposite sides, about 60° of the circumference of the tubular terminal member being cut away on each side. The threaded inner sides of the sleeve are also cut away leaving two threaded strips 20 slightly narrower than the slots 19 of the terminal members. Thus it is seen that when the sleeves are turned so that the threaded portions thereof are located in the slots 19 of the terminal members, the sleeves can be slid longitudinally toward or away from each other. In making the connection, after the terminal members are placed together, the sleeves are slid toward each other until very close to the pins, when each is given a short turn so that the threaded portions thereof engage the threaded portions of the terminal members and the sleeves are forced tightly against the pins. Thus with this construction even less time is required to connect or disconnect the parts than in the first construction.

I do not wish to be confined to the exact details shown, but aim in my claims to cover all modifications which do not involve a departure from the spirit and scope of my invention.

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

1. A coupler comprising two screw-threaded terminal members, and a pair of tightening sleeves for drawing said members into intimate contact.

2. A coupler comprising two threaded terminal members having notched ends, and a clamping sleeve on each member, the sleeve on each member being adapted to engage the threaded portion of the other member.

3. A coupler comprising two threaded counterpart terminal members having threaded interfitting projections, and a clamping sleeve screwed over said extensions.

4. A coupler comprising two threaded counterpart terminal members each having a semi-cylindrical extension forming one part of a rabbet joint, and a clamping screw adapted to be screwed over said extensions.

5. A coupler comprising two threaded counterpart terminal members having interfitting threaded semi-cylindrical extensions, and a pair of clamping sleeves screwed over said extensions.

6. A coupler comprising two threaded terminal members, each having a clamping sleeve and an abutment or stop to limit outward movement of the sleeve.

7. A coupler comprising two counterpart terminal members, having threaded interfitting extensions, sleeves for clamping said extensions together, and outwardly extending pins or other projections on said extensions, said pins serving as abutments for the clamping sleeves when the connection is made, and as stops to prevent the removal of the sleeves when the connection is broken.

8. A coupler comprising two terminal members having interfitting end extensions, and sleeves for clamping said members together, said members and sleeves having threaded portions separated by unthreaded portions, whereby said sleeves can be slid along said terminal members.

9. A coupler comprising two counterpart terminal members adapted to be secured to conductors or cables, and a pair of sleeves for clamping said terminal members together, said members and sleeves having threaded portions separated by unthreaded portions whereby said sleeves can be slid a limited distance along the terminal members and then screwed a further distance to tightly clamp the parts together.

10. A coupler comprising two terminal members adapted to be secured to conductors or cables, a pair of sleeves for clamping said terminal members together, said sleeves being threaded at their ends and having unthreaded portions between the ends, and said terminal members having threaded portions corresponding to the threaded portions on the sleeves and intermediate unthreaded portions, so that the sleeves can be slid a certain distance along said terminal members before the threaded ends of the sleeves engage the threaded portions of said terminal members.

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

JOHN D. FIRMIN.

Witnesses:

RUBY ROBINSON,
FRED J. KINSEY.