July 23, 1946. W. F. BOEHLKE 2,404,564

ELECTRIC SWIVEL CONNECTOR

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Fig. 1.

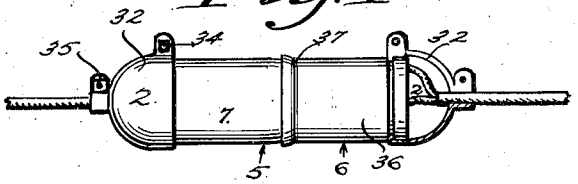


Fig. 2.

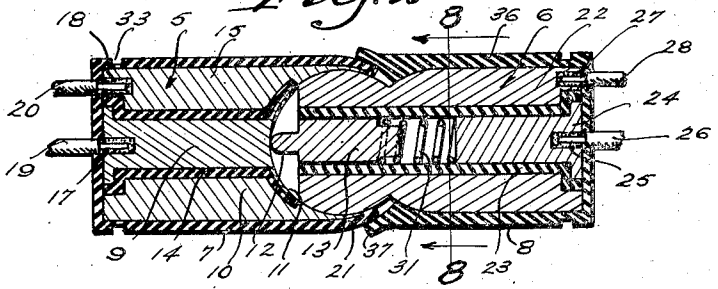


Fig. 3.

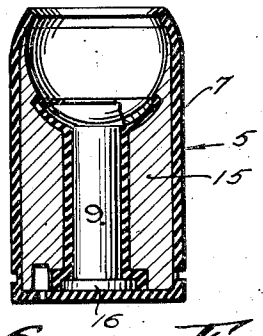


Fig. 4.

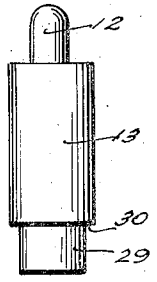


Fig. 5.

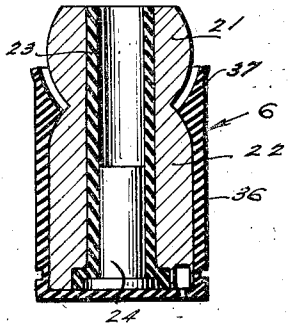


Fig. 6.

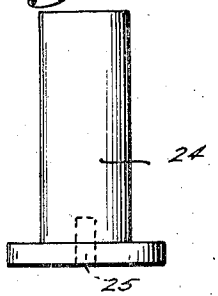
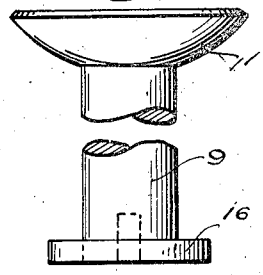


Fig. 7.



Inventor

WILLIAM F. BOEHLKE

By Thomas A. O'Brien and Harvey B. Jackson

Attorneys

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Fig. 8.

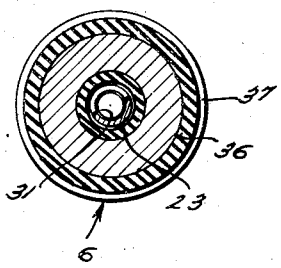


Fig. 9.

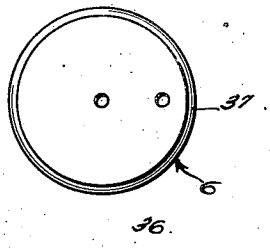


Fig. 10.

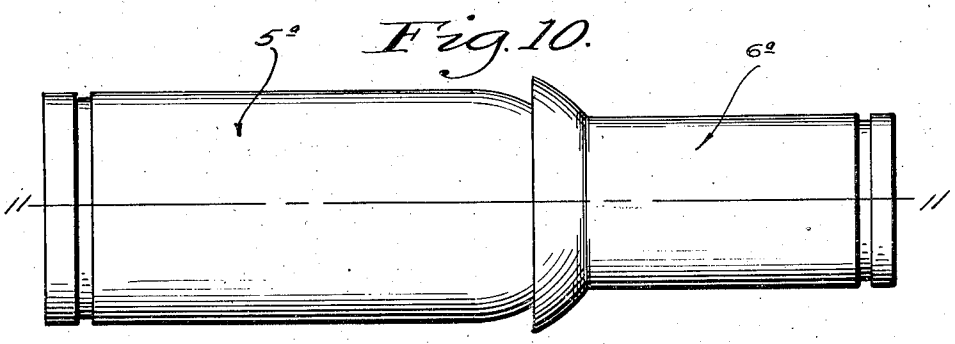
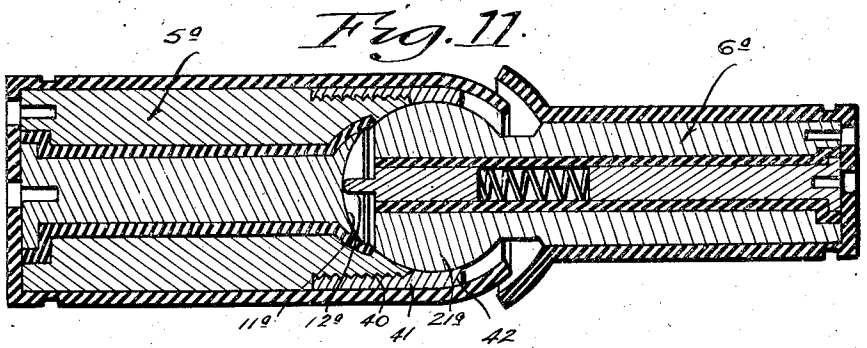


Fig. 11.



Inventor

WILLIAM F. BOEHLKE

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Patented July 23, 1946 2,404,564

UNITED STATES PATENT OFFICE

2,404,564

ELECTRIC SWIVEL CONNECTOR

William F. Boehlke, Los Angeles, Calif.

Application January 27, 1944, Serial No. 519,917

2 Claims. (Cl. 173—324)

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This invention relates to new and useful improvements in electrical connectors, the principal object of the present invention being to provide a connector for interposition in an electrical conductor or conductors, especially for the purpose of preventing kinkling or other distortion of the conductor members.

Another important object of the invention is to provide a swivel connector which can be easily interposed in conductors to prevent twisting or other deformations thereof.

Other important objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings:

Figure 1 is a side elevational view of the connector showing the end caps in place.

Figure 2 is a longitudinal sectional view taken on the line 2—2 of Figure 1 with the end caps removed.

Figure 3 is a longitudinal sectional view of the socket section of the connector.

Figure 4 is a side elevational view of the spring projected contact.

Figure 5 is a longitudinal sectional view of the ball section of the connector.

Figure 6 is a side elevational view of the spring projected contact barrel.

Figure 7 is a fragmentary side elevational view of the stationary contact element of the socket section (enlarged).

Figure 8 is a cross section on the line 8—8 of Figure 2.

Figure 9 is an end elevational view of the connector.

Figure 10 is a side elevational view of a slightly modified form of the invention.

Figure 11 is a longitudinal sectional view taken on the line 11—11 of Figure 10.

It can be seen in Figures 1 and 2, that the connector consists of a socket section 5 and a plug section 6, having jackets 7 and 8, respectively, of some suitable insulation.

The socket section 5 has a longitudinal bore therein for receiving an elongated cylindrical conductor 9 having a cup-shaped contact 11 against which the contact 12 of a slide plunger 13 in the plug section 6 wipes. The cylindrical conductor 9 has a jacket 14 to insulate the same from the outer portion of the body 5 which defines a second conductor element 15. The jacket 14 is formed at its ends to thoroughly insulate the butt end 16 of the conductor 9 and also the cup 11. The free ends of the conductor elements 9, 15

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have small sockets 17, 18, respectively, into which conductor wires 19, 20 are secured.

The inner end of the conductor element 15 has a semi-globular pocket or socket for receiving the semi-spherical-shaped head 21 which is located on the inner end of a conductor element 22 forming part of the section 6. The element 22 has a longitudinal bore which extends through the head 21 and this bore is lined with a sleeve 23 of insulation which at one end receives a conductor plug 24 having a small socket 25 therein for the reception of a conductor wire 26. The adjacent end of the element 22 also has a recess 27 for the reception of a conductor wire 28.

The plunger 13 has a reduced extension 29 defining a shoulder 30 between which and the plug 24 a coiled compression spring 31 is interposed, serving to force the contact 12 against the inner surface of the cup-shaped contact 11.

The section 6 has a jacket 36 of insulation which is flared at its inner end as at 37 to overlap the inwardly disposed portion of the insulation jacket 7 as is clearly shown in Figure 2.

It can be seen, that the sections 5, 6 can swivel and thus prevent twisting or kinkling of the conductor wires.

Caps 32 are provided for the ends of the connector and these have tongue portions for disposition in circumferential grooves 33 at the ends of the connector and are also provided with clamp portions 34, 35 for holding the cap to the connector and also for clamping the corresponding conductor, thus preventing the conductor from easily pulling loose from the connector.

A modification of the invention is shown in Figures 10 and 11. This modification of the invention is substantially the same as that shown in Figures 1 and 2, excepting that the inner end of the section 5 is not rolled over the ball head of the section 6. As shown in Figure 11, section 6a has a ball head 21a from which a contact 12a projects making a riding contact with the cup-shaped contact head 11a of a complementary section 5a. Instead of having the socket end of the conductor 15 of the modification of the invention shown in Figure 2 rolled in over the ball head, the modified structure shown in Figure 11, has the inner end of the section 5a reduced and externally threaded as at 40. This externally threaded portion carries an internally threaded sleeve 41 having a curved surfaced inner portion 42 for engaging the ball 21a so as to prevent its displacement. This form of connector can easily be disconnected for the purpose of making repairs.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. An electrical connector comprising male and female sections each having a body of conductive material formed with a longitudinal bore, the male section having an end formed with a substantially spherical head and the female section with a socket rotatably and tiltably receiving the head, jackets of insulation for said sections having extended and overlapped inner end portions, each section having a longitudinal bore, a lining of insulation for the bore of each section, the lining of the female section having its inner end portion flared and countersunk in the inner portion of the socket, a conductor extending longitudinally through the lined bore of said female section and having a cup-shaped contact at its inner end disposed in said socket in engagement with the flared end of the lining for the female section, a conductor fitted into the lined bore of said male member through the outer end thereof, a plunger of conductive material slidable longitudinally in the inner end portion of the bore of said male member, a spring between said plunger and the last-mentioned conductor urging said plunger outwardly and maintaining the plunger in engagement with the cup-shaped end of the first conductor and outer ends of said sections and said conductors being provided with means for connecting circuit wires therewith.

2. An electrical connector comprising male and female sections each having a conductive body formed with a longitudinal bore and a lining of insulation for its bore, said male section having a head at its inner end and the female section having a socket at its inner end receiving the head and mounting the sections for movement relative to each other, the lining for the female section having a flared inner end of the inner end portion of said socket, a conductor fitting snugly in the bore of said female section and having a contact at its inner end disposed in said socket against the flared end of the lining of the female section, a conductor in the bore of said male section and a contact companion thereto urged from the inner end of the bore and engaging the inner end of the conductor of said female section, outer ends of said bodies and said conductor being formed with wire-receiving sockets, and jackets for said sections having outer ends formed with openings registering with the wire-receiving sockets.

WILLIAM F. BOEHLKE.