Aug. 29, 1950 H. L. SHAW 2,520,739

ELECTRIC COUPLING

Filed Sept. 9, 1947

Fig. 1

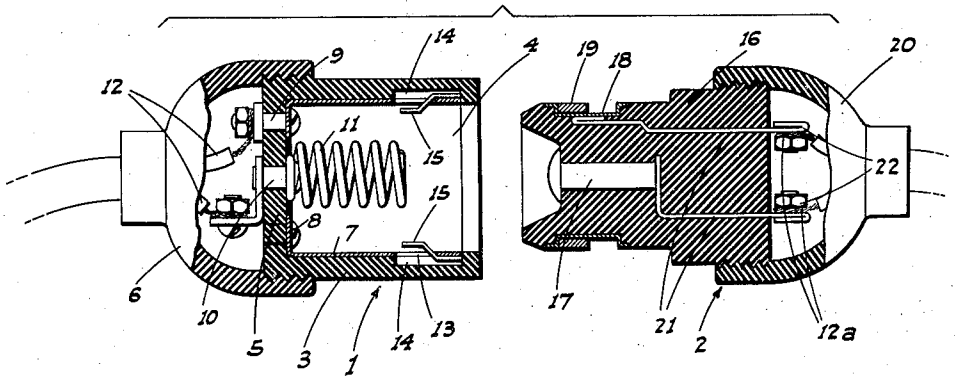


Fig. 2

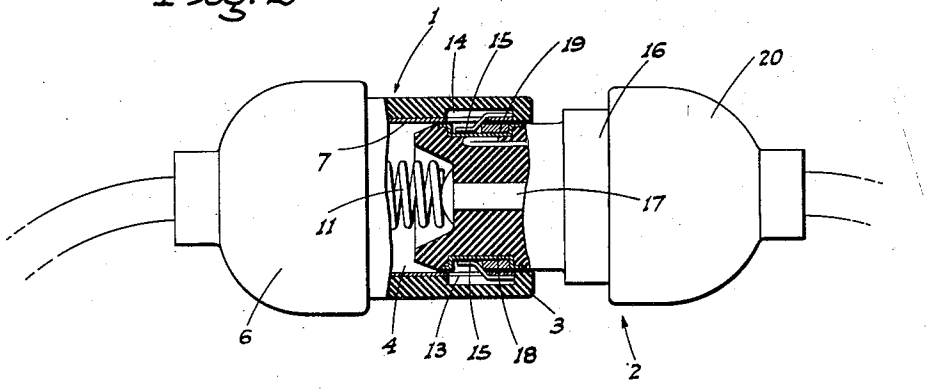
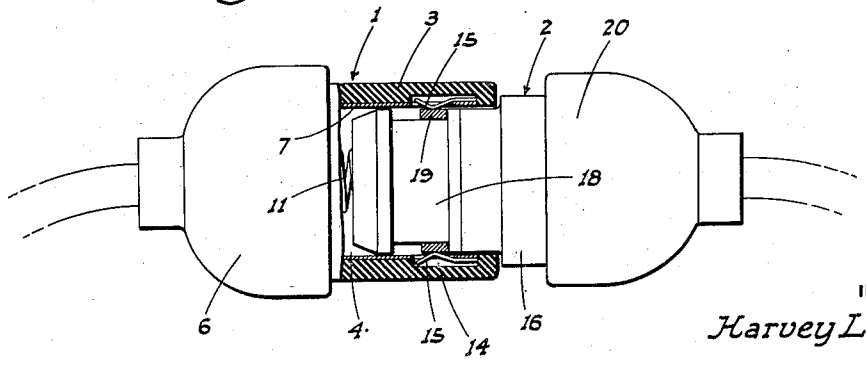


Fig. 3



INVENTOR

Harvey L. Shaw

BY Webster & Webster

ATTORNEYS

Patented Aug. 29, 1950 2,520,739

UNITED STATES PATENT OFFICE

2,520,739

ELECTRIC COUPLING

Harvey L. Shaw, Merced, Calif.

Application September 9, 1947, Serial No. 772,927

3 Claims. (Cl. 173—343)

1

This invention is directed to, and it is an object to provide, a novel, quick-detachable electric coupling.

Another object of the invention is to provide an electric coupling designed so as to prevent accidental separation of the parts thereof.

A further object of the invention is to provide an electric coupling which is constructed so that the parts thereof may relatively rotate or swivel whereby the electric cord leading from a supply outlet to the coupling, or from the coupling to an appliance, does not twist, and remains straight and easy to manipulate.

A further object of the invention is to provide a simple, practical, and inexpensive electric coupling, and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a sectional elevation showing the coupling with the parts thereof alined but detached.

Fig. 2 is an elevation, partly in section, showing the coupling engaged for use.

Fig. 3 is a similar view, but shows the relationship of the parts just prior to separating the same.

Referring now more particularly to the characters of reference on the drawings, the device comprises a socket unit, indicated generally at 1, and a plug unit, indicated generally at 2, adapted to quick-detachably couple in relatively rotatable or swivel relation in said socket unit 1. The socket unit 1 comprises a cylindrical dielectric body 3 formed with a relatively large-diameter bore 4 open to the forward end of the body. At its rear end the body includes an inner end wall 5, and a hollow cap 6 is threaded onto said end of the body in enclosing relation to the end wall 5.

The body 3 is fitted with a metallic lining sleeve 7 which terminates adjacent but short of the forward end of said body, and at its inner end the metallic lining sleeve 7 is flanged inwardly, as at 8, and secured to the end wall 5 by bolts, one of which forms a terminal 9 laterally offset from the axis of the socket unit 1.

The other terminal 10 is centrally disposed in the end wall 5, and is fitted with an axially and forwardly projecting central contact spring 11 disposed within the bore 4. The electric supply wires 12, of a cord, lead into the hollow cap 6 and connect to corresponding ones of the terminals 9 and 10 in the manner illustrated.

2

Adjacent but short of its forward end the metallic lining sleeve 7 is formed with a plurality of equally and circumferentially spaced slots 13, and the body 3 is recessed, as at 14, to communicate with said slots. Spring contact fingers 15 are fixed to the outside of the metallic lining sleeve 7 in the recesses 14, and project through the slots 13 into the bore 4 in radially resilient relation. The portion of the contact fingers 15 within the bore 4 is in the form of a generally L-shaped, rearwardly projecting foot.

The plug unit, indicated generally at 2, comprises a dielectric plug 16 having a forward portion of a diameter to engage in the bore 4. Such forward portion of the dielectric plug 16 is formed with a central contact pin 17 and an annular metallic contact channel 18 countersunk thereinto, as shown.

The annular metallic contact channel 18 carries therein a flat metallic ring 19 of considerably lesser width than said channel 18, whereby the ring is capable of sliding motion axially of the plug 16.

The dielectric plug 16 is fitted at its outer end with a hollow, threaded-on cap 20, and leads 21 extend from the contact pin 17 and contact channel 18 through the plug to terminals 22 on the end within the cap 20. Wires 12*a* of a cord extend in the cap to connection with said terminals 22.

The socket unit 1 and the plug unit 2 are interposed in an electric cord and are engaged together in the manner shown in Fig. 2 by projecting the forward portion of the plug 16 into the bore 4 of the body 3. As such engagement is accomplished the contact fingers 15 engage and shift the flat metallic ring 19 in a direction toward the outer end of the dielectric plug 16 to the position shown in Fig. 2, whence said contact fingers 15 snap into the contact channel 18, in the portion thereof adjacent the inner end of said plug 16.

As so coupled, the socket unit 1 and plug unit 2 cannot accidentally separate, but are maintained for relative rotation or swiveling; this being an advantageous feature, as it prevents twisting, undesirably, of the cord. As a consequence, the cord is always straight, and easy to manipulate without twisting.

When it is desired to uncouple the device, the plug unit is first shifted axially inwardly a slight distance relative to the socket unit 1, causing the contact fingers 15 to ride from their locking position of Fig. 2 in the contact channel 18 onto the ring 19, as shown in Fig. 3. When this occurs,

the parts can then be easily separated, for the reason that as the dielectric plug 16 is withdrawn, the contact fingers 15 remain on the ring 19, which shifts toward the inner end of said plug 16 until it reaches its limit of movement, whence the contact fingers 15 then freely escape said channel 18.

As soon as the contact fingers 15 so escape, the plug 16 may be completed in its withdrawal without obstruction.

The above described device provides a simple, inexpensive and practical electrical coupling which not only prevents twisting of the cord, but permits of ready and easy attachment or detachment of the parts of said coupling.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the object of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. An electric coupling comprising a socket and a plug engageable in the socket, cooperating contact elements formed in the bottom of the socket and the end of the plug respectively, the plug being formed with an annular channel shaped contact member in the outside of the plug, an inwardly projecting spring contact finger on the inside of the socket and engageable in the said channel shaped contact member when the plug is engaged within the socket, the end of the finger interlocking with the side of the channel to prevent accidental separation of the plug and socket, and movable release means mounted on the plug and operative upon relative axial movement of the plug and socket in one direction along the axis of the plug and socket, to release the finger from its interlocked relationship with the side of the channel to permit separation of the plug and socket.

2. A coupling as in claim 1 in which said release means comprises a slip ring loosely mounted in the channel shaped contact member and engageable with the spring finger upon movement of the plug in one direction relative to the socket whereby the ring will push the finger out of the channel shaped contact member and hold it clear thereof and permit withdrawal of the plug from the socket.

3. An electric coupling comprising a socket and a plug engageable with the socket, cooperating contact elements formed in the bottom of the socket and the end of the plug respectively, a contact sleeve fitted into the socket, the body of the socket being provided with a recess in its inner side adjacent the open end of the socket, the sleeve being provided with a slot in register with the recess, a spring contact finger fixed to the sleeve within the recess and projecting through said slot into the interior of the socket, the plug being of a diameter such as to have a close sliding fit with the inside surface of the sleeve, an annular channel shaped contact member in the outside of the plug, the sides of the channel extending at substantial right angles to the bottom of the channel, that portion of the spring finger which projects into the sleeve having a portion lying in substantial parallelism with the longitudinal axis of the socket and spaced from the inside of the sleeve, whereby when the plug is engaged in the socket the spring finger will engage with the channel shaped contact member with the end of the finger interlocking with one side of the chanenl to prevent accidental separation of the plug and socket, and a slip ring loosely mounted in the channel and engageable with the finger upon movement of the plug in one direction relative to the socket whereby the ring will push the finger out of the channel shaped contact member and hold it clear thereof to permit withdrawal of the plug from the socket.

HARVEY L. SHAW.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
837,184	Brown	Nov. 27, 1906
994,517	Hubbell	June 6, 1911
1,225,391	Anderson	May 8, 1917
1,550,306	Dustin	Aug. 18, 1925
1,648,518	Werner	Nov. 8, 1927
2,104,945	Guinn	Jan. 11, 1938