E. A. HAWTHORNE.

ELECTRICAL CONNECTION.

APPLICATION FILED MAY 20, 1915.

1,276,216. Patented Aug. 20, 1918.

Fig. 1.

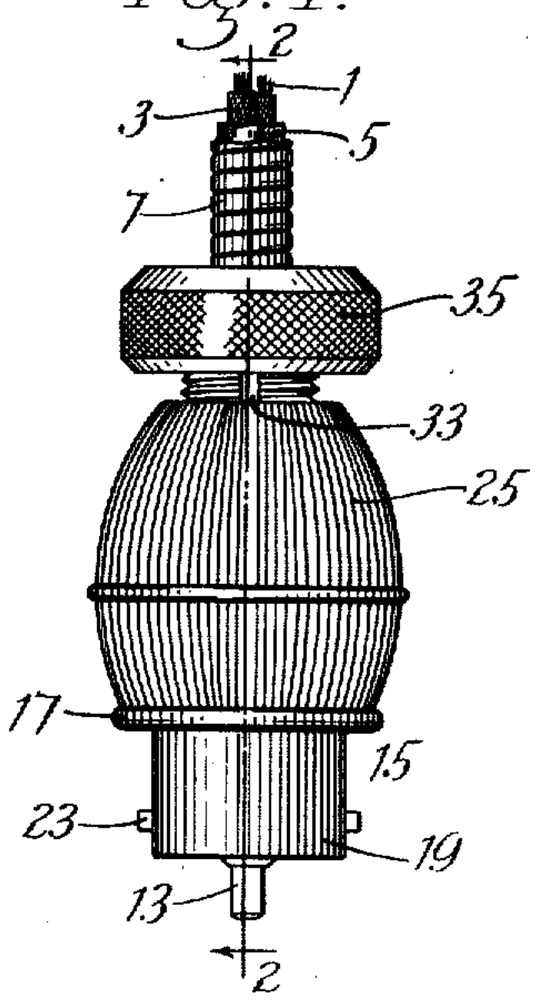


Fig. 2.

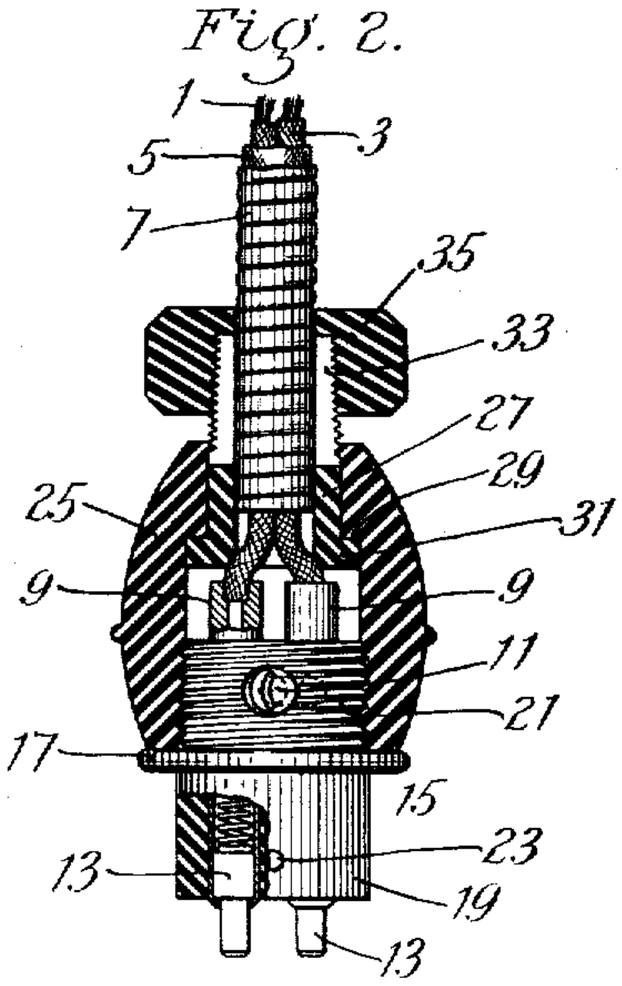


Fig. 3.

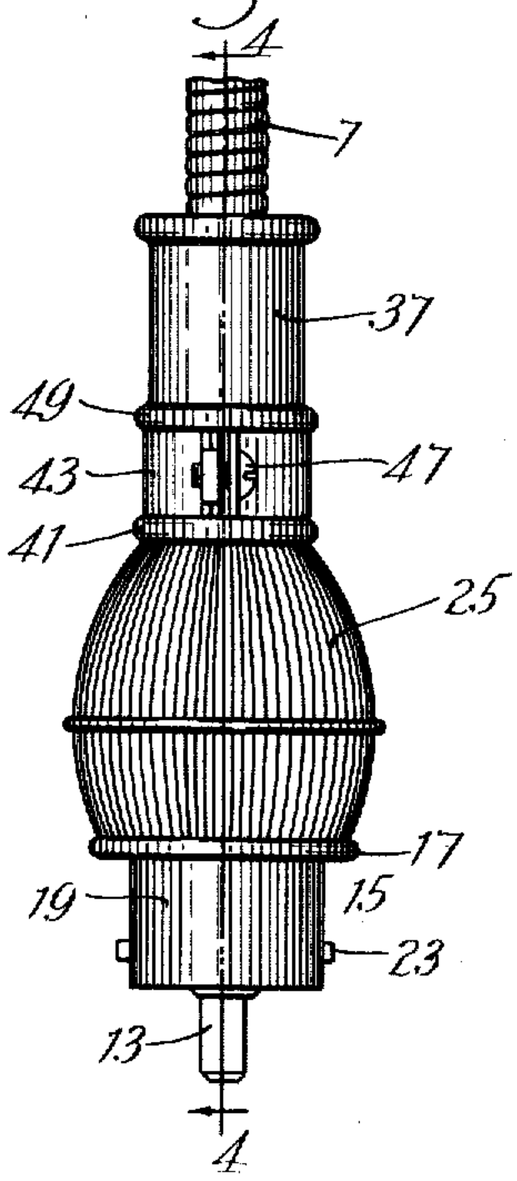
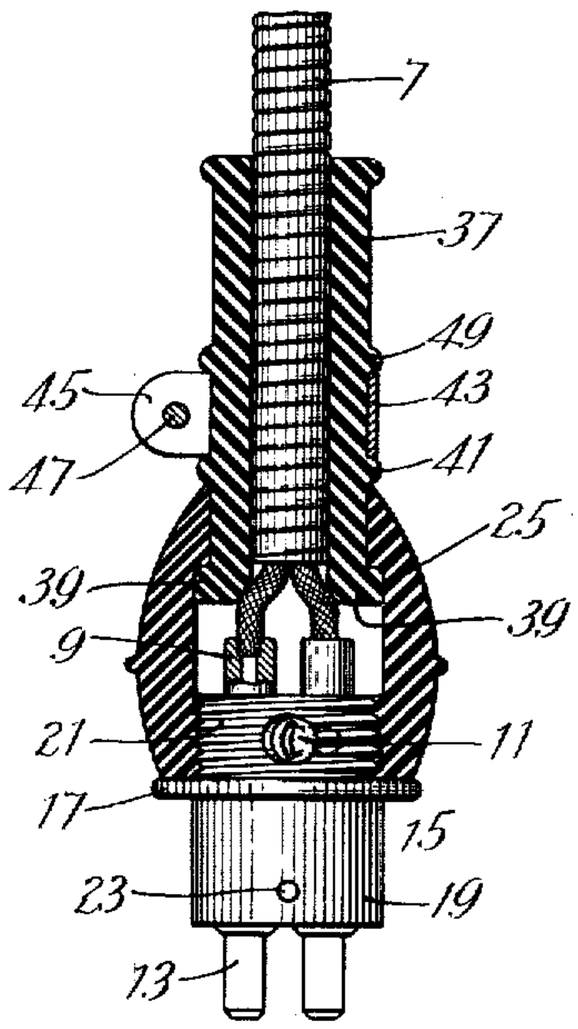


Fig. 4.



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UNITED STATES PATENT OFFICE.

ELLSWORTH A. HAWTHORNE, OF BRIDGEPORT, CONNECTICUT.

ELECTRICAL CONNECTION.

1,276,216. Specification of Letters Patent. Patented Aug. 20, 1918.

Application filed May 20, 1915. Serial No. 29,418.

To all whom it may concern:

Be it known that I, ELLSWORTH A. HAWTHORNE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented an Improvement in Electrical Connections, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to electrical connections and the like, and among other objects aims to provide a strong and simple connection for securely holding electric conducting wires to a plug or socket.

The character of the invention may be best understood by referring to the following description of illustrative embodiments thereof shown in the accompanying drawings, wherein:

Figure 1 is a side elevation of one illustrative embodiment of the invention;

Fig. 2 is a longitudinal section taken on line 2—2 of Fig. 1;

Fig. 3 is a side elevation of another embodiment of the invention, and

Fig. 4 is a longitudinal section taken on line 4—4 of Fig. 3.

Referring to the drawing, 1 designates electrical conducting wires having individual insulations 3 inclosed in an insulation cable 5 protected by a coiled wire flexible metal covering 7.

The wires 1 are extended beyond their insulations 3 and inserted in sockets in pins 9 of brass or other appropriate material and are secured by screws 11 tapped into said pins. In the opposite ends of said pins are sockets containing spring-pressed terminals 13. The pins 9 are mounted in a plug 15 of hard rubber or other appropriate material having a circumferential flange 17 between a smooth portion 19 adapted for insertion into a socket of a lamp or other device and a threaded portion 21 for a purpose to be described. To hold the smooth portion of the plug in its socket it is provided with diametrically opposed pins 23 adapted to cooperate with slots of the socket and constitute a bayonet joint connection between them.

Heretofore considerable trouble has been experienced from the breaking away of the wires from their screws 11 and the pulling of the wires out from the pins, thereby breaking the electrical connection. The flexing of the wires at their point of connection with the pins tends to weaken the same and enable their separation from their binding screws. The fabric of the insulation cable is likely to become frayed and expose the portions of the wires adjacent their entrance into the pins and present a ragged and unsightly appearance.

To overcome the above and other objections I have provided connecting means for the wires and plug comprising a casing 25 of hard rubber or other appropriate material having one end internally threaded to receive the threaded plug end 21 referred to. The casing projects beyond this end of the plug a considerable distance and is made hollow to form a housing for inclosing portions of the wires, their insulation, its metal covering and the ends of the socket pins to which the wires are connected.

To connect the casing with the flexible metal covering of the wires, there may be provided a sleeve 27 embracing said covering and projecting a substantial distance into said casing. To secure said cap and sleeve together the former is provided with an internal flange or shoulder 29 for engagement with an external flange or shoulder 31 on said sleeve. By this construction the casing is positively prevented from pulling off from said sleeve. To secure said sleeve tightly to said metal covering, the sleeve may have a series of longitudinal slots or kerfs 33 therein and the end portions of said sleeve may be tapered and tapped to receive a nut 35. When this nut is tightened, it will flex or press the sections of the sleeve between said slots toward and into tight gripping engagement with said metal covering.

By this construction there is provided means for securely connecting the plug with the wires independently of the screws 11 referred to. Consequently there is no likelihood of the wires pulling away from their screws and a smooth finished appearing connection is provided.

The modification shown in Figs. 3 and 4 is similar to that shown in Figs. 1 and 2, with the exception that instead of providing a hard rubber sleeve 33, a sleeve 37 is provided of rubber or other flexible material. To limit relative movement between said sleeve and the cap 25, the sleeve has an outward flange 39 similar to the flange 31 described, and a circumferential bead 41. To clamp the yielding rubber sleeve 37 to the

wire covering 7, there is provided thereon a band 43 of brass or other appropriate material having ears 45 held together by a screw 47. To contribute to the preventing of this band from slipping along the sleeve it may be located between the circumferential bead 41 referred to, and a second circumferential bead 49.

To facilitate the screwing of the casing on the plug the former may be provided with a ribbed or roughened external surface as shown.

In applying the connection, first the sleeve is inserted into the casing until limited by the interengagement of their shoulders; then the sleeve and casing are slipped onto the metal covering of the wires to a point a sufficient distance from the ends of the wires to permit convenient access to the latter. Then the bared ends of the wires are inserted into the pin sockets and secured by tightening their holding screws. Next the cap is slid out along the metal covering and rotated thereon to screw the same onto the threaded end portion of the plug until limited by the flange on said plug. The cap when thus set up on the plug will drag along the sleeve with it, and then the sleeve clamp or nut is tightened to securely hold the sleeve to the covering, thereby completing the connection.

If there is any pull tending to separate the wires from the plug it will be positively resisted by the cap and its connections to the plug and wires independently of the screws which secure the ends of the wires in the plug. Thus a permanent electrical connection between the wires and the plugs is insured.

For purposes of illustration the connection has been shown and described as applied to two electrical conducting wires, but obviously any number of wires might be employed, if desired. While the connection has been described for electrical conducting wires, obviously its field of use is not limited thereto.

Having described illustrative embodiments of the invention without limiting the same thereto, what I claim as new and desire to secure by Letters Patent, is:

1. An electrical connection comprising a sleeve having an internally flanged bore, a contact plug seated in one end thereof and a wire holding device comprising a tubular member projecting from the other end and having a flange seated on the flange of said sleeve and a compressible neck and clamping means to compress said neck about a wire passed through said tubular member.

2. A device as described in claim 1 wherein the neck is rendered compressible by longitudinal slits 33 therein.

3. An electrical connection comprising a sleeve having a bore, a contact plug removably seated in one end thereof, a tubular member to receive a wire leading to the plug insertible in the sleeve from said one end and having provision preventing withdrawal from the other end, said member having a compressible portion projecting from said other end and means to compress the same about the wire which passes therethrough.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ELLSWORTH A. HAWTHORNE.

Witnesses:

E. HORACE HAWTHORNE,

E. STEWART HAWTHORNE.

Correction in Letters Patent No. 1,276,216.

Cl. 173—322.

It is hereby certified that in Letters Patent No. 1,276,216, granted August 20, 1918, upon the application of Ellsworth A. Hawthorne, of Bridgeport, Connecticut, for an improvement in "Electrical Connections," an error appears in the printed specification requiring correction as follows: Page 1, line 81, and page 2, lines 22, 26, and 34, for the word "cap." read *casing;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of October, A. D., 1918.

[SEAL.]

R. F. WHITEHEAD,

Acting Commissioner of Patents.