April 4, 1950 E. P. SMITH 2,502,634

ELECTRIC CONNECTOR

Filed May 22, 1947

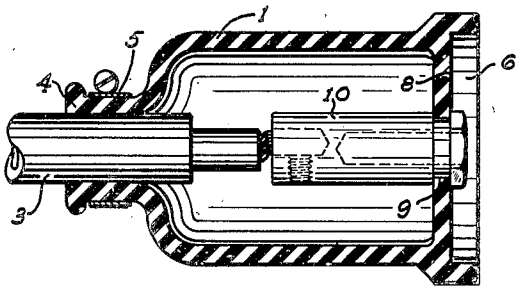

FIG. 1A

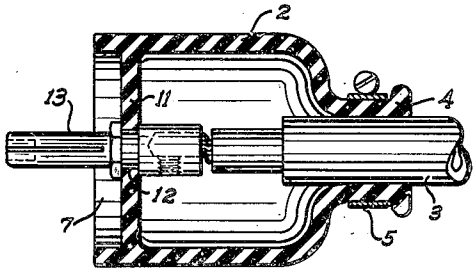

FIG. 1B

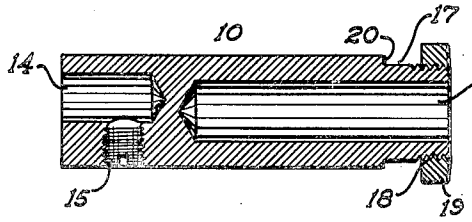

FIG. 2

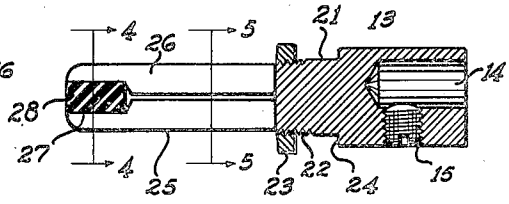

FIG. 3

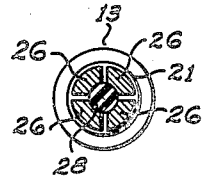

FIG. 4

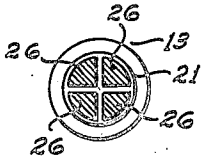

FIG. 5

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ELECTRIC CONNECTOR

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2 Claims. (Cl. 173—361)

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This invention relates to connectors for electric wires and cables and is of the strain detachable type and has particular reference to the construction of the plugs.

One object of my invention is to provide a connector in which the engagement between the plug and socket will be maintained independent of the spring in the metal.

Other objects will be disclosed as the description of the invention proceeds.

In the drawing—

Fig. 1A shows in partial section the socket portion of a complete connector.

Fig. 1B shows in partial section the plug portion of a complete connector.

Fig. 2 shows an enlargement in partial section of the socket shown in Fig. 1A.

Fig. 3 shows an enlargement in partial section of the plug shown in Fig. 1B.

Figs. 4 and 5 are sections on the lines 4—4 and 5—5 of Fig. 3.

In connectors of the pull detachable type now in general commercial use, employing a socket and plug, the plug is split longitudinally producing two or four prongs. These prongs are bent outwardly slightly to insure originally pressure between the plug and socket. This pressure depends upon the spring in the prongs of the metal plug which is generally of brass, bronze or copper.

This plug may lose its original contact pressure with the socket, if the plug is dropped, stepped on, or roughly handled especially when making or breaking engagement with the socket, or from other causes.

This loss of contact pressure causes overheating of the prongs which affects the temper and spring of the metal and may result in the loss of the entire connector.

A connector provided with a plug and socket as disclosed in Figs. 2 and 3 maintains efficient contact pressure even after considerable abuse.

In a preferred construction casings 1 and 2 are formed from insulating material. If desired to have the casings grip the conductor insulation 2 the casing is formed from an elastic or yieldable material such as a rubber or similar composition or some of the yieldable so called plastics.

In Figs. 1A and 1B, the casing is shown with a neck portion 4 to fit the cable 3 and a metal clamp 5 commonly known as a hose clamp may be used to add pressure of the neck portion upon the cable if desired to insure a moisture or water tight seal.

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The front end of the casing 1 is provided with a lip 6 and the casing 2 is provided with a lip 7 which is made to interfit with the lip 6 to form a moisture or water tight seal.

The front wall 8 of the casing 1 has a central opening 9 to receive the socket 10.

The front wall 11 of the casing 2 has a central opening 12 to receive the plug 13.

While the casings are shown with a single plug and socket, they may be arranged for two or more such fittings, depending on the number of conductors to be connected.

In Fig. 2 is shown a socket 10 having a bore 14 at one end to receive the conductor of a cable or wire and a screw 15 to grip the conductor. The socket is also provided with a bore 16 to receive the plug 13. The front end of the socket has a reduced portion 17 to fit the opening 9 in the casing 1 and has a threaded portion 18 on which is mounted a nut 19 to draw the shoulder 20 against the wall 8.

In Fig. 3 is shown a plug 13 having a bore 14 at one end to receive the conductor of a cable or wire and a screw 15 to grip the conductor. The plug is provided with a reduced portion 21 and has a threaded portion 22 on which is mounted a nut 23 to draw the shoulder 24 against the wall 11.

The plug 13 has a further reduced portion forming a contact portion 25 of a size to enter the opening 16 in the socket 10 with a sliding fit.

The contact portion 25 is shown as split to form four prongs 26. Before the plug is slotted, the end of the contact portion is drilled to form the bore 27. A cylindrical core 28 of resilient material such as rubber is provided and forced into the bore 27 to form an expander, the core being slightly larger in diameter than that of the bore.

This core tends to keep the prongs 26 spread outwardly to maintain contact pressure between the plug and socket and acts independently of any spring action in the prong per se.

If desired, the conductors may be secured to their respective parts by soldering thus omitting the screws 15. After the connection of the cable or wire to its fitting, it is inserted in the casing, through the openings 9 or 12 and secured by the nuts 19 or 23.

What I claim as new and desire to cover by Letters Patent of the United States is:

1. A contact plug for an electric connector comprising an elongated metal member for attachment to a casing and to a conductor, the plug provided with a solid body portion and a

contact portion projecting therefrom to engage a companion member, the contact portion provided with a plurality of resilient prongs formed by splitting a cylinder lengthwise, a cylindrical core of resilient material positioned between the free ends of the prongs and acting to urge said prongs outwardly to maintain pressure contact between the contact portion and a companion member.

2. A contact plug comprising a solid body portion and a contact portion projecting from one end thereof, said contact portion being substantially cylindrical and comprising four parallel prongs separated from each other by radial lengthwise extending spaces and having opposed free end portions of reduced cross section defining an axial recess having a cylindrical enlargement at said free end portions, and a cylindrical, deformable, resilient body in said enlarged recess, said body being maintained in fixed position in said recess by compressive forces exerted by said prongs on the cylindrical side surface thereof.

EDWARD P. SMITH.

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