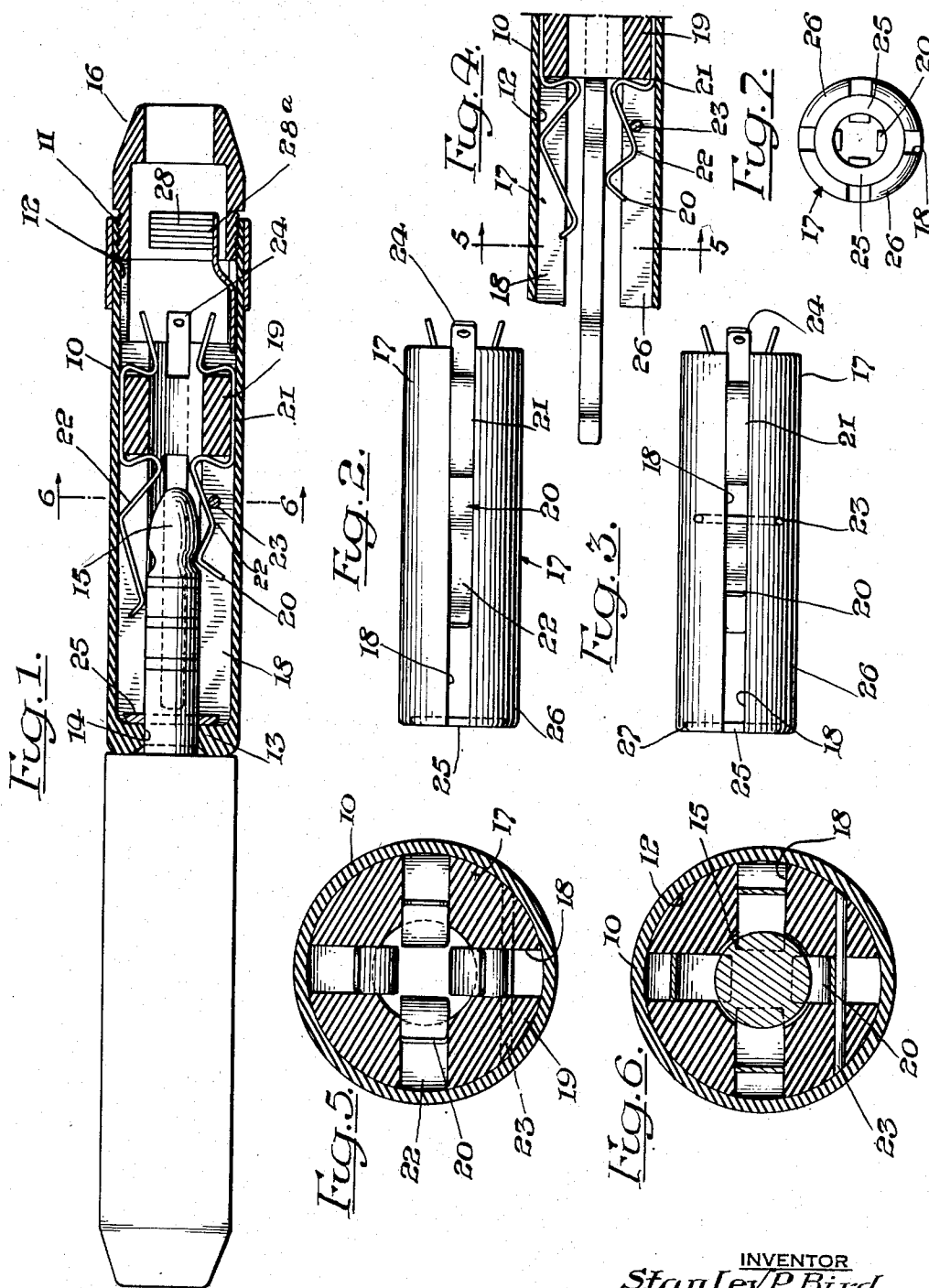


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PLUG AND JACK ASSEMBLY

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1

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PLUG AND JACK ASSEMBLY

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This invention relates to a plug and jack assembly such as is used in the rapid making and breaking of electrical contacts. Where it is desired to employ a plug and jack electrical connector, it is essential that the relative position between the plug and the jack be assured, and that smooth engagement and disengagement be provided for. It is also necessary to facilitate the assembly and disassembly of the unit, for the purpose of repair or making wire connections thereto.

Accordingly, it is an object of this invention to provide a plug and jack assembly which will operate with a maximum of efficiency and smoothness, and which may be assembled without the necessity of rivets or other securing means which make field assembly difficult.

A further object of this invention is to provide a jack assembly which will enable the user to make electrical connections with the maximum amount of ease.

Another object of this invention is to provide a jack assembly which will enable one or more of the contacts to be removed without disturbing the remaining members.

A feature of the present invention is its interchangeable contact spring structure.

A further feature of this invention is its novel fulcrum pin which regulates the amount of tension applied to the plug member by the contact springs.

Another feature of this invention is its simplified construction, which enables the user to trace the electrical circuits by visual examination, when necessary.

The invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawings, forming a part hereof, is illustrated one form of embodiment of the invention, in which drawings similar reference characters designate corresponding parts, and in which:

Figure 1 is a vertical section of a complete embodiment of the plug and jack assembly, according to the present invention.

Figure 2 is a view in side elevation of the retainer barrel and contact spring assembly shown in Figure 1.

Figure 3 is a bottom plan view of the retainer barrel and contact spring assembly shown in Figure 2.

Figure 4 is a fragmentary view taken in vertical section, showing the contact spring assembly, according to the present invention.

Figure 5 is a section taken on line 5—5 of Figure 4, looking in the direction indicated by the arrows.

Figure 6 is a section taken on line 6—6 of Figure 1, looking in the direction indicated by the arrows.

Figure 7 is a front end view of the retainer and contact spring assembly, shown in Figures 2 and 3.

Referring to the drawings, and specifically Figure 1, 10 indicates a substantially tubular outer shell having internal threads 11 at the rearward end of the shell bore 12. The front of the shell 10 is provided with an inwardly depending flange 13, said flange 13 having an opening 14 therein. The opening 14 is adapted to receive therethrough a jack 15 in the manner shown in Figure 1. The threaded end of the shell 10 is adapted to receive a threaded member 16, which substantially closes the end of the shell 10, with the exception of an opening 17a provided in the said threaded member 16, through which a cable (not shown) may be drawn.

A retainer barrel 17, best shown in Figures 2 and 3, is inserted within the shell 10. The retainer barrel 17 is formed from some suitable dielectric material and is provided with a plurality of longitudinal slots 18 therein.

2

Specially shaped sections 19 molded in the barrel 17 bridge the slots 18 and provide an anchor for contact springs 20. The contact springs 20, one of which is inserted in each of the slots 18, are provided with substantially U-shaped bends 21 at a point slightly spaced from the center of the said springs 20. The U-shaped bends 21 have inwardly directed sides so that they grasp the bridging sections 19. (See Figures 1 and 4). The forward portion of the spring contact members 20 extend in the direction of the opening 14 in the front of the shell member 10; and are adapted to bear upon the jack 15 when the contact is desired. The spring contact members 20 are further provided with an outwardly bowed contour, as indicated at 22, whereby separation of the spring contact members is limited by the wall of the shell member 10.

A fulcrum pin 23, best shown in Figures 1, 3, 4 and 6, is provided in the barrel member 17 and underlies one of the spring contact members 20. The fulcrum pin 23 may be longitudinally adjusted when the hole through which it is thrust is bored in the barrel member, so that the desired tension upon the contact spring which it supports may be achieved. In this manner, the amount of pull necessary to disengage the plug from the jack member may be determined and provided for in accordance with the requirements of the particular job which it is to accomplish.

The rearwardly extending portions 24 of the spring contact members 20 are adapted to receive thereon electrical wires (not shown), in the well known manner. A spacer ring 25 is provided in the front of the barrel 17 for the purpose of maintaining the alignment of the four fingers 26 which are formed in the barrel 17 as a result of the longitudinal slots 18. The fingers 26 are bored as indicated at 27, for the purpose of receiving the spacer ring 25 therein. The completed retainer barrel and contact spring assembly are thrust into the shell member 10, as previously stated, until it strikes the flange 14 at the front of the said shell member 10. The combined spacer and cable clamp 28a is then slipped into the bore 12 of the shell 10 behind the barrel member 17. The spacer and cable clamp member are provided with a substantially circular ring portion 28 through which a cable may be slipped, prior to soldering the wires of the said cable to the ends 24 of the spring members 20. When the threaded member 16 is tightened upon the spacer 27, the barrel member 17 is securely held in place and the jack assembly completed.

In order to repair or inspect the jack assembly it is merely necessary to unscrew the threaded member and slip the entire spacer member and barrel out of the shell 10. In the event that one of the spring contact members 20 is damaged, said spring contact member may be slipped over the bridging section 19 upon which it is located, and a new one substituted.

It will thus be seen that highly simplified and efficient means have been provided for assembling and repairing the jack member, while at the same time assuring the efficient operation of the said electrical connector.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States, is:

1. A plug and jack assembly comprising, an outer shell, a barrel member carried within the shell and having an outside diameter only slightly smaller than that of the inside of the shell, comprising a plurality of spaced longitudinal segments held together at a point spaced from the wire receiving end thereof by bridging members, said barrel being provided with a longitudinal bore therethrough, spring contacts secured to the bridging members at a point spaced from the wire receiving ends of said contacts, each contact having its ends extending within and beyond the spaces between the segments and aligned thereby, a fulcrum pin disposed across one of the spaces so as to underlie one of the spring contacts and a bore in the plug receiving end of the shell in register with the longitudinal bore in the barrel, said bores being adapted to receive and guide the plug between the spring contacts.

2. A plug and jack assembly comprising, an outer shell, a barrel member carried within the shell and having an outside diameter only slightly smaller than that of the in-

3

side of the shell, comprising a plurality of spaced longitudinal segments held together at a point spaced from the wire receiving end thereof by bridging members, said barrel being provided with a longitudinal bore therethrough, spring contacts, substantially U shaped bends in the contacts whereby the said contacts may be slipped over and thereby secured to the bridging members at a point spaced from the wire receiving ends of said contacts, each contact having its ends extending within and beyond the spaces between the segments and aligned thereby, a fulcrum pin disposed across one of the spaces so as to underlie one of the spring contacts and a bore in the plug re-

4

ceiving end of the shell in register with the longitudinal bore in the barrel, said bores being adapted to receive and guide the plug between the spring contacts.

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