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PLUG SOCKET

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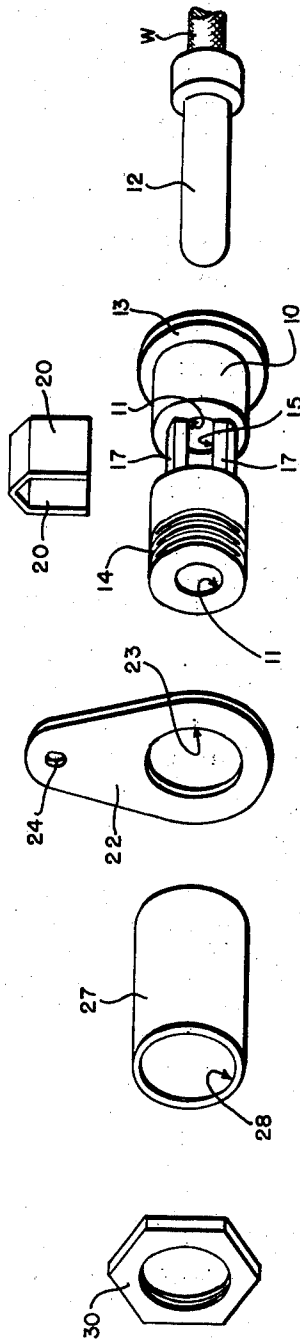


FIG. 1

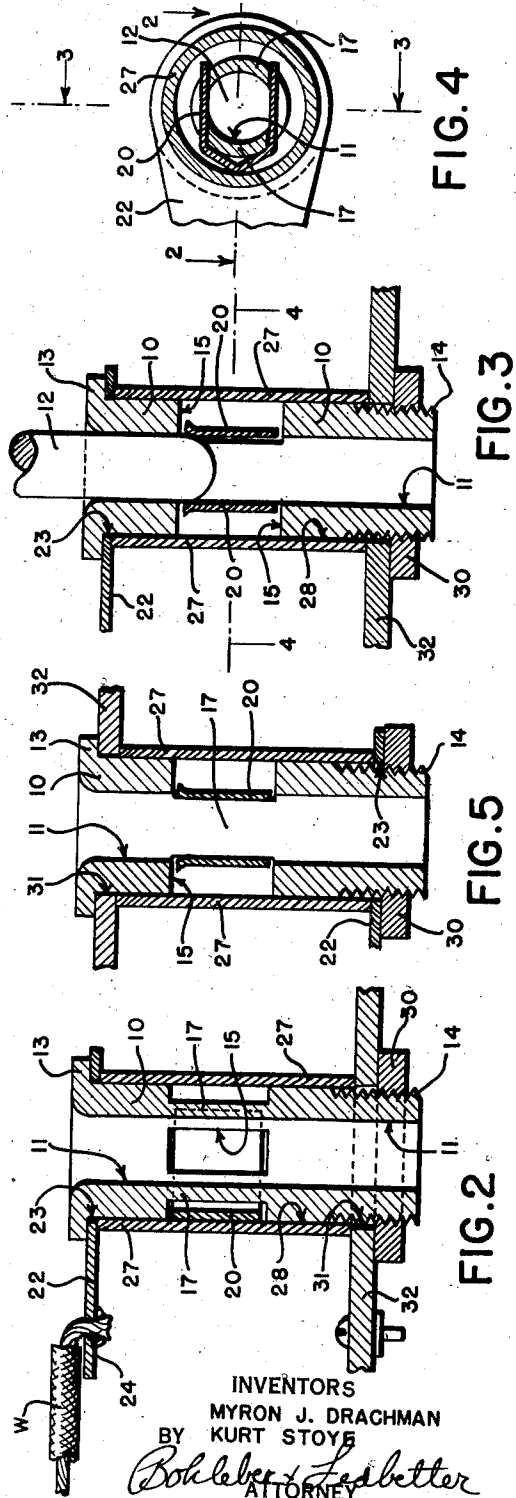


FIG. 4

FIG. 3

FIG. 5

FIG. 2

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## PLUG SOCKET

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5 Claims. (Cl. 173-339)

The invention relates to a plug socket by which an electrical connection may be made merely by pushing a plug into the bore of a socket member, which plug is connected or adapted to be connected with a wire. The plug socket is so constructed that it may be easily secured to a bracket, a wall, such as a panel, or any other structure.

It is an object of the invention to construct an effective plug socket of new and novel form and which is easily manufacture and assembled.

Another object of the invention is to construct a plug socket which retains all parts together merely by the use of a single screw thread and nut.

A still further object is to utilize a U-shaped plug engaging member which is merely slipped into place upon a socket member and retained in position by a surrounding shell.

Other objects of the invention will be more apparent from the following description taken in connection with the accompanying drawing, showing a preferred embodiment of the invention, in which:

Figure 1 is an exploded view in perspective of the plug socket with the parts in position preparatory to being assembled.

Figure 2 is a longitudinal section through the assembled plug socket, taken on line 2-2 of Figure 4, in which the socket is shown secured upon a wall or panel.

Figure 3 is a longitudinal section of the plug socket, taken on line 3-3 of Figure 4, in which the socket is secured to a wall or panel.

Figure 4 is a cross-section through the plug socket, taken on line 4-4 of Figure 3, and shows the flexible arms, which engage the plug when the latter is inserted in the socket member, in spread apart position in dot and dash lines.

Figure 5 is a sectional view of the plug socket like Figure 2, but with the wall or panel at the other or front end of the socket.

The plug socket comprises a socket member 10 having a bore 11 therethrough to receive a plug 12. One end of the socket member has a stop in the form of a flange 13 which is shown as being a circumferential flange solely for the purpose of illustration. The other end of the plug member 10 carries screw threads 14, the purpose of which will appear more fully hereinafter.

An opening 15 into the bore 11 is provided in the socket member, and preferably an opening is provided on each side of the socket member as illustrated. These openings may be formed by making a pair of parallel cuts in the socket mem-

ber, at least one of which extends into the bore 11 to form an opening. These cuts provide connecting bars 17 joining the ends of the socket member 10. Preferably, too, the bars 17 have their outer diameter reduced below the diameter of the socket member 10, the purpose of which will be described hereinafter.

A spring arm 20 is received in each opening 15, formed by the transverse cut through the socket member 10, which spring arm normally projects into the bore 11 so that when the plug 12 is inserted therein, the spring arm resiliently yields radially or laterally and frictionally engages the plug 12 to retain the same within the socket member 10 and to establish electrical contact therewith. These spring arms preferably are joined, as illustrated, so that they form a U-shaped engaging member. This U-shaped engaging member receives the connecting bars 17 within the U between the spring arms 20, and the edges of the transverse cuts retain the U-shaped engaging member in position against movement in an axial direction with respect to the socket member.

A connecting link or wire attaching means 22 is preferably used and has a hole 23 therethrough which is adapted to receive the socket member 10. A small solder hole 24 is also provided therein adjacent its outer end for making a solder connection with a wire. This connecting link, in the assembly illustrated, is slipped over the socket member 10 until it engages the flange 13. The connecting link may be assembled at another position upon the socket member with equal facility, as will appear more fully hereinafter.

A sleeve 27 has a bore 28 therethrough which receives the socket member 10. This sleeve is cylindrical at least in the major part thereof which surrounds the U-shaped engaging member and the connecting bars 17. Preferably, the sleeve is cylindrical throughout its length inasmuch as this is the simplest form in which to make this part. The sleeve 27 is slipped over the socket member 10 after the arms 20 or the U-shaped engaging member has been positioned over the connecting bars 17 and its end engages the connecting link 22. This sleeve, therefore, slips over the U-shaped engaging member and retains it in position upon the socket member.

An operating means or nut 30 is received upon the screw threads 14 on the end of the socket member 10 and it may engage the end of the sleeve 27 to clamp the sleeve and the connecting link 22 in position upon the socket member. Usually, however, the threaded end of the plug

socket 10 is projected into an opening 31 in a wall, such as a panel, or bracket 32, as illustrated in Figure 2, and the nut 30 is then threaded upon the screw threads 14 so that the entire plug socket is clamped to the panel or bracket, and the connecting link 22 and sleeve 27 are rigidly clamped upon the socket member 10 between the nut and the flange 13. The nut and flange therefore comprise means to retain the shell or sleeve 27 and connecting link upon the socket member and to secure the plug socket onto some other structure, such as the panel.

The bottom of the U-shaped engaging member 20 is preferably bulged so that it engages the sleeve 27 at all times, as illustrated in Figure 4, in order to positively assure electrical contact through the U-shaped clamping member to the shell or sleeve and the connecting link 22.

It has been described that the connecting link 20 or wire attaching means 22 is positioned as illustrated in the drawing and engages against the flange 13 on the socket member 10. It is obvious, however, that the bracket or panel 32 may be first received upon the socket member 10 and rest against the flange 13, in which case the connecting link 22 may be received between the nut 30 and the sleeve 27. In this position the major portion of the plug socket will be concealed behind the panel which is advantageous from the standpoint of appearance. If the space in back of a panel is limited, then the illustrated assembly may be used. One assembly of the plug socket is, however, as efficacious as the other assembly.

Various modifications will occur to those skilled in the art in the configuration, composition and disposition of the component elements going to make up the invention as a whole, as well as in the selective combination or application of the respective elements, and no limitation is intended by the phraseology of the foregoing description or illustrations in the accompanying drawing.

What is claimed is:

1. A plug socket adapted to be received in an opening in a wall or like structure comprising a socket member having a bore therethrough adapted to receive a plug, a groove extending transversely across the socket member and cutting therethrough into the bore to form an opening, a flexible arm positioned in the groove and extending transversely of the bore, the flexible arm extending within the bore through the opening thereby adapting it to engage a plug which is pushed into the bore of the socket member, a tubular shell slidable over the socket member and the flexible arm to retain the latter in position, and means carried by the socket member to retain the tubular shell thereon and secure the socket within the opening in the wall.

2. A plug socket adapted to be received in an opening in a wall or like structure comprising a socket member having a bore therethrough adapted to receive a plug, a pair of grooves extending transversely across the socket member and at least one of said grooves cutting therethrough into the bore to form an opening, a flexible U-shaped engaging member having a leg positioned in each groove and extending transversely of the bore, at least one leg of the U-shaped engaging member extending within the bore through an opening thereby adapting it to engage a plug, a tubular shell slidable over the socket member and the U-shaped engaging mem-

ber to retain the latter in position, and means carried by the socket member to retain the tubular shell thereon and secure the socket within the opening in the wall.

3. A plug socket adapted to be received in an opening in a wall or like structure comprising a socket member having a bore therethrough adapted to receive a plug, a pair of grooves extending transversely across the socket member and said grooves cutting therethrough into the bore to form openings on opposite sides thereof, a flexible U-shaped engaging member having a leg positioned in each groove and extending transversely of the bore, each leg of the U-shaped engaging member extending within the bore through an opening thereby adapting it to engage a plug, a tubular member slidable over the socket member and the U-shaped engaging member to retain the latter in position, and means to retain the tubular member on the socket member and secure the socket within the opening in the wall.

4. A plug socket adapted to be secured in an opening in a wall or like structure comprising a socket member having a bore therethrough adapted to receive a plug, a pair of grooves extending transversely across the socket member and at least one of said grooves cutting therethrough into the bore to form an opening, a flexible U-shaped engaging member having a leg positioned in each groove and extending transversely of the bore, at least one leg of the U-shaped engaging member extending within the bore through an opening thereby adapting it to engage a plug, a tubular member slidable over the socket member and the U-shaped engaging member to retain the latter in position, a shoulder upon one end of the socket member, threads upon the other end of the socket member, and a nut received upon the threads to retain the tubular member on the socket member between the shoulder and nut and to selectively secure the socket within the opening at either end of the tubular member.

5. A plug socket for attachment in a hole in a wall or the like comprising a socket member having a bore therethrough adapted to receive a plug to be retained therein, a pair of grooves extending transversely across the socket member and at least one of said grooves cutting therethrough into the bore to form an opening, a shoulder upon one end of the socket member, a flexible U-shaped engaging member having a leg positioned in each groove and extending transversely of the bore, at least one leg of the U-shaped engaging member extending within the bore through an opening thereby adapting it to engage a plug received within the bore, wire attaching means having a hole therein to receive the socket member, a tubular member slidable over the socket member and the U-shaped engaging member to retain the latter in position, said wire retaining means being selectively located at and engaged by either end of the tubular member and the wall being located at and engaged by the other end of the tubular member, and operating means upon the other end of the socket member to retain the wire attaching means and the tubular member thereon and to secure the plug socket within the opening in a wall between the shoulder and the operating means.

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