

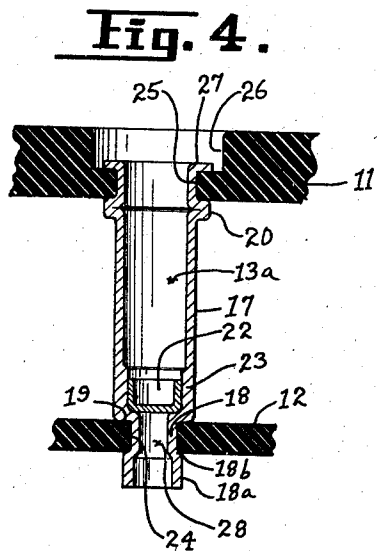
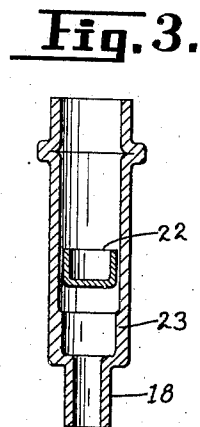
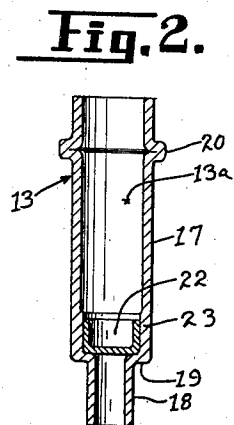
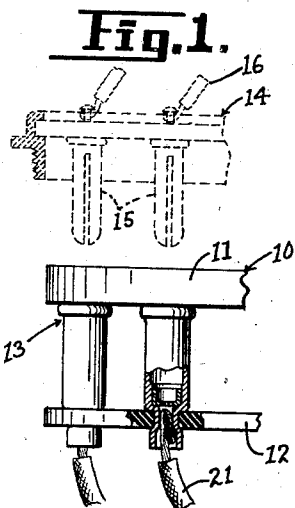
July 22, 1947.

E. T. COLLINS

2,424,435

ELECTRIC SOCKET

Filed Jan. 31, 1944



INVENTOR
Edward T. Collins.
BY *H. F. Johnston*
ATTORNEY

UNITED STATES PATENT OFFICE

2,424,435

ELECTRIC SOCKET

Edward T. Collins, Waterbury, Conn., assignor to
Scovill Manufacturing Company, Waterbury,
Conn., a corporation of Connecticut

Application January 31, 1944, Serial No. 520,514

8 Claims. (Cl. 173-328)

1

This invention relates to electrical socket members for use in conjunction with electrical devices having plug-in connections such as employed, for example, in radio tube connections, numerous applications in the electronic arts and various electrical devices requiring quick detachable electric circuit connections.

The particular sockets that are involved in this invention are those that are used in connection with electrical devices employing spaced insulation plates to which the opposite ends of the sockets are permanently anchored, and which sockets serve as a means for holding the plates in spaced relationship. Heretofore, sockets of this character have been screw machine products made of solid rod or bar stock which itself is quite expensive and which involves a relatively slow machining operation as well as considerable waste of materials in lost turnings, all of which add materially to the cost of making the sockets. Furthermore, sockets that are made from rod stock require a leaded alloy for machining purposes, which is not considered suitable as the ideal material for riveting which is necessary in anchoring the opposite ends of the sockets to their respective bases.

It is the principal object of my invention to overcome the above difficulties and expense by making the sockets from sheet metal blanks drawn up into tubular eyelet form by successive drawing operations and providing for a shoulder and beaded portion in each eyelet socket that cooperates with the insulation bases in making the final permanent assembly thereto.

Sockets of this character are made of various brass alloys suitable for drawing operations and having the normal electrical conductive properties. In some applications, however, a maximum degree of conductivity is required which is attained by coating the sockets with a silver plate. In the construction of my socket due consideration is made to preclude the marring of the silver coating in the manufacture and assembly of the socket particularly in the interior of the socket where the electrical contact is made. Also provision is made to preclude acid or soldering flux from entering the socket chamber when the electrical connections are made to one end of the socket.

The full nature of this invention, along with other objects and various advantages thereof, will be more apparent from a consideration of the following description when read in connection with the accompanying drawing, in which—

Fig. 1 shows two of the sockets as they appear attached to fragmentary portions of spaced supporting insulation bases, with portions of one socket in section to show the interior construction and showing in dotted outline the complementary

2

connecting member supporting push-in resilient plugs.

Fig. 2 shows a sectional view through my socket on an enlarged scale as it appears before assembly to the bases.

Fig. 3 is a similar view to Fig. 2 and shows the sealing cup member in the process of being dropped into the socket for assembly purposes, and

Fig. 4 shows one socket in section as it appears in its final state assembled to its supporting insulation bases.

Referring now to the drawing in which like reference numerals denote corresponding parts throughout the several views, numeral 10 designates generally an electrical unit in which there are employed spaced insulation plates 11 and 12 to which numerous sockets or jacks 13 may be attached, the latter serving as pedestals to hold the plates in spaced relationship. The unit 10 is generally referred to in the trade as a multiple jack. A complementary plug member 14 carries a corresponding number of resilient plug pins 15 which are supported in the plug member in properly aligned relationship to the sockets and suitable electric current conductors 16 may be connected to the individual pins in the usual manner.

Socket members or jacks 13, as they appear before assembly to the supporting bases 11 and 12, are in the form as shown in Fig. 2. Each socket 13 within the teachings of this invention is preferably made from a sheet metal blank by successive drawing operations in the form of an eyelet to provide for a tubular body portion 17 encompassing a socket chamber 13a for the reception of the plug pin 15 and having a reduced tubular neck 18 at one end joined integrally into the body portion by a connecting shoulder 19. A projecting circumferential bead 20 is provided adjacent the opposite open end of the body portion 17 and preferably the bead 20 is formed outwardly of the body wall to provide a bead of double wall thickness and removed a prescribed distance from the end of the body portion 17, the purpose of which will appear later.

As pointed out in the objects of this invention, in order to afford the maximum electrical conductive efficiency to these sockets, they are silver plated. In view of the fact that my socket is made from a drawn metal shell, with the closed end of the tubular neck 18 removed, as shown in Fig. 2, allows for an opening throughout the entire length of the socket member which is very desirable for cleaning and draining fluids preliminary to the plating operation. This through opening is also exceptionally helpful in the plating operation to allow the electrolyte to flow therethrough to assure that a proper silver plating will be deposited on the inside of the sockets

where the electrical contact is made. The socket member 13 eventually will have electric current conductors 21, as shown in Fig. 1, connected to the tubular neck 18 thereof by a soldering operation and this requires that the opening through the socket must be properly sealed so that none of the soldering flux and any harmful material will enter into the socket chamber 13a and ruin the silver coating. In order to make this seal I provide for the cupped shell 22 that must be assembled through the socket chamber 13a without scraping the side walls. This is accomplished by making the outside diameter of the cupped shell 22 somewhat smaller than the diameter proper of the socket chamber 13, and then in the drawing operations of the socket member 13 to provide for a thickened wall portion as at 23 adjacent the shoulder 19 of said socket member in which this thickened wall portion 23 is interiorly of the socket chamber 13a so as to provide for a smaller diameter at the base of the chamber 13a. The diameter at this thickened wall portion 23 preferably is slightly less than the diameter of the cupped shell 22 so that a drive fit will be afforded between thickened wall portion 23 and the cupped shell 22 when the latter is forced home against the shoulder 19.

It is also within the purview of this invention to have the wall portion of the socket adjacent the shoulder 19 offset slightly inwardly to provide for a reduced interior diameter for the same purpose and intent given for the thickened wall portion 23 stated above.

The manner in which the socket members or jacks 13 are assembled to the spaced plates 11 and 12 is best shown in Fig. 4. Specifically the plate 12 which is the lower plate of the unit 10 is provided with a suitable aperture 24 through which the tubular neck 18 may be inserted to a position where the shoulder 19 seats against the adjacent face of the base 12. That portion of the neck 18 projecting from the opposite face of said base 12 may then be flared outwardly or diametrically increased in size as at 18a so as to provide for an opposing shoulder 18b for permanently anchoring that end of the socket member 13 to the base 12. The opposite end of the socket member 13 is shown attached to the insulation plate 11 which happens to be in this disclosure of somewhat greater thickness than the plate 12. The plate 11 is provided with a requisite number of openings 25 of a size to receive the tubular body portion 17 of the socket member 13, and a countersunk recess 26 is aligned with each opening 25. The opened end of the socket member 13 is assembled through the opening 25 to a position where the bead 20 seats against the adjacent face of the plate 11, and the outer end of the socket may be flared or spun over as at 27 within the recess 26 to anchor that end of said socket member 13 permanently to said plate 11.

When the proper number of sockets are assembled into the electrical unit 10, which is usually then known as a multiple jack, the electrical connections 21 may be made in the usual manner by soldering the exposed ends of the conductor wires 21 in the socket 28 formed by the tubular neck 18 and enlarged portion 18a and the base of the cupped shell 22. The manner in which this cupped shell 22 is rigidly secured by a drive fit into the socket member 13 will give assurance that none of the materials involved in the soldering operation can drop or leak into the socket chamber 13a of the socket members with its deleterious effects.

While the form of the invention herein shown and described embraces a preferred embodiment of the same, it is to be understood that the construction may be varied as to mechanical details without departing from the spirit of the invention and the scope of what is claimed.

I claim:

1. A socket for electrical devices comprising a tubular body having a reduced hollow neck portion at one end with a connecting shoulder, a circumferential outwardly projecting bead adjacent the open end of said body, and a cup-shaped plug member received in the hollow of said body and having its base end seated against said shoulder as a means of sealing the hollow of said body from the hollow of said neck.

2. A socket for electrical devices comprising a tubular body having a reduced hollow cylindrical neck portion at one end with a connecting annular shoulder, a circumferential outwardly projecting bead adjacent the open end of said body, the interior of said body having a diametrically reduced section adjacent the connecting shoulder, and a plug member having a drive fit in said reduced section and seated against said shoulder as a stop, said plug serving as a means for completely sealing the hollow of said body from the hollow of said neck.

3. A socket for electrical devices comprising a tubular body having a reduced hollow cylindrical neck portion at one end with a connecting annular shoulder, the interior of said body having a diametrically reduced section adjacent the connecting shoulder, and a plug member having a drive fit in said reduced section and seated against said shoulder as a stop, said plug serving as a means for completely sealing the hollow of said body from the hollow of said neck.

4. A socket for electrical devices comprising a drawn metal tubular shell having a restricted tubular neck portion made integral to the shell by a connecting shoulder, a double walled bead formed adjacent the open end of said shell, and a cup-shaped plug member received into said shell and having its base end seated against said shoulder for sealing the interior of said shell from said neck portion.

5. A socket as defined by claim 4 wherein means is provided in the tubular shell to afford a drive fit for said plug member with the base end of said plug member adjacent said shoulder.

6. As an article of manufacture, a tubular drawn eyelet shell comprising an enlarged hollow cylindrical body and a reduced cylindrical neck portion connected to said body by a shoulder, the wall thickness of said body being increased inwardly adjacent said shoulder as a means of reducing the interior diameter of said body, and a plug having a drive fit into said reduced interior diameter of said body against said shoulder as a stop.

7. As an article of manufacture, a tubular shaped eyelet shell comprising an enlarged hollow cylindrical body and a reduced cylindrical neck portion connected to said body by a shoulder, the wall thickness of said body being increased inwardly adjacent said shoulder as a means of reducing the interior diameter of said body, and a plug fitted into said reduced interior diameter of said body against said shoulder as a stop.

8. As an article of manufacture, a tubular shaped eyelet shell comprising an enlarged hollow cylindrical body and a reduced cylindrical neck portion connected to said body by a shoulder

5

der, the wall thickness of said body being increased inwardly adjacent said shoulder as a means of reducing the interior diameter of said body, and a cup shaped plug having a forced fit into said reduced interior section with the base of said cup seated against said shoulder as a stop.

EDWARD T. COLLINS.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,339,174	Kosha	Jan. 11, 1944

	Number
	2,125,816
	2,171,726
5	1,854,000
	1,963,793
	2,033,765
	2,022,669
	1,915,185
10	2,206,798
	2,290,172
	2,121,521
	1,702,158
	2,055,341
15	2,118,446

6

Name	Date
Reynolds	Aug. 2, 1938
Howell	Sept. 5, 1939
Starr	Apr. 12, 1932
Kimbell	June 19, 1934
Franke	Mar. 10, 1936
Keefe	Dec. 3, 1935
Gagnon	June 20, 1933
Woods	July 2, 1940
Eby	July 21, 1942
Del Camp	June 21, 1938
Gagnon	Feb. 12, 1929
Dyer	Sept. 22, 1936
Schneider	May 24, 1938