Oct. 12, 1954 H. H. BURTT ET AL 2,691,771

SHEET METAL CONTACT WITH SOLDER STOP

Filed April 4, 1952

Fig. 1

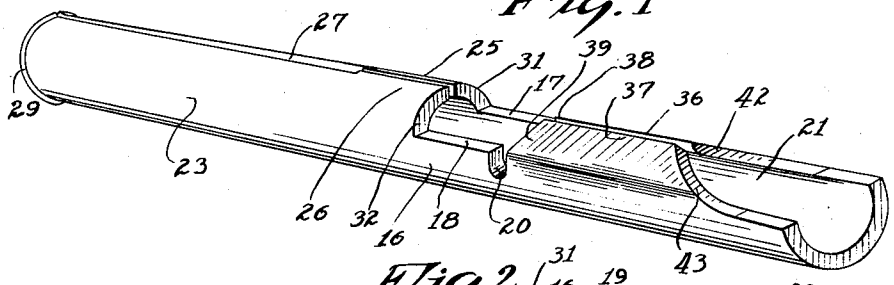


Fig. 2

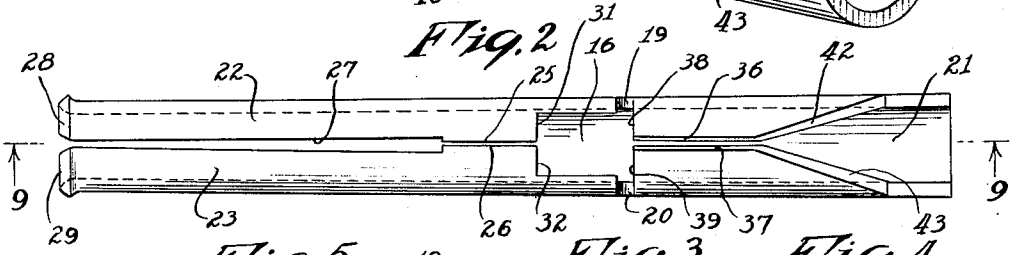


Fig. 5

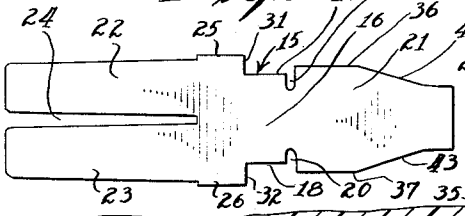


Fig. 3

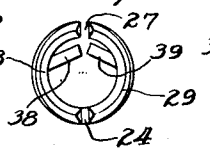


Fig. 4

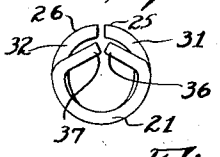


Fig. 8

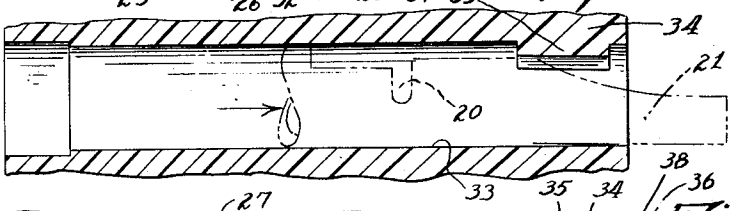


Fig. 7

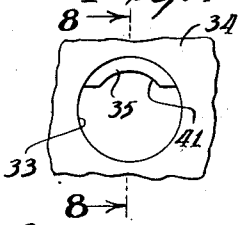


Fig. 9

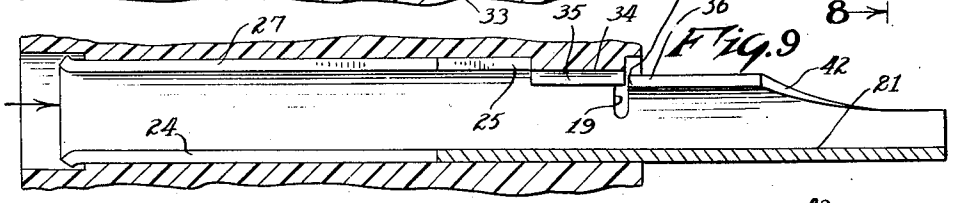


Fig. 10

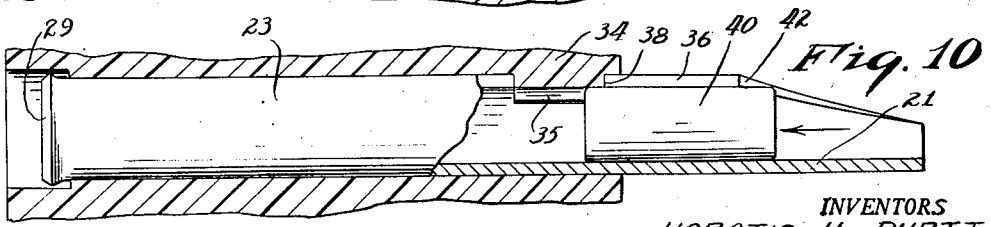


Fig. 6



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SHEET METAL CONTACT WITH SOLDER STOP

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5 Claims. (Cl. 339—217)

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This invention relates to sheet metal electrical contacts for electrical connectors and to the method of making the same.

It is an object of the present invention to provide a sheet metal electrical contact of the female type adapted for use in electrical connectors and to the method of making the same.

It is an object of the present invention to provide a sheet metal electrical contact of the female type adapted for use in electrical connectors wherein the contact can be inserted from one side of an insulating block and into an opening thereof and thereafter be shaped by means of a plug so that a stop portion is provided to prevent the outward axial displacement of the contact and which when left in the contact serves as a stop for solder that is applied when connecting a wire to the rearwardly projecting end of the electrical contact already made fixed to the insulating block.

It is another object of the invention to provide a sheet metal contact of the female type that is formed of only two parts and which can be quickly and easily assembled in the insulating block and is made fast to the insulating block by the insertion into the contact of a single block element that will abut with an inwardly extending shoulder in the opening of the insulating block and be held by the tension of the folded in portions of the contact, the block entering under the stop portion of the insulating member and expanding the flexed side portions to provide a stop to prevent the outward displacement of the contact from the insulating connector member.

Other objects of the invention are to provide a sheet metal contact of the female type which is of simple construction, inexpensive to manufacture, easy to install in the insulating member, compact, provides for a solder stop and efficient in use.

For other objects and for a better understanding of the invention reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a perspective view of the electrical contact removed from the insulating block with the expanding solder block removed therefrom and the stop portions retracted;

Fig. 2 is a top plan view of the contact;

Fig. 3 is a front end elevational view of the contact;

Fig. 4 is a rear end elevational view of the contact;

Fig. 5 is a plan view of the blank from which the contact is made;

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Fig. 6 is a perspective view of the cylindrically shaped expanding block or plug;

Fig. 7 is a fragmentary elevational view of a portion of the insulating connector member showing the depending stop shoulder in the contact opening thereon;

Fig. 8 is a fragmentary longitudinal sectional view taken on line 8—8 of Fig. 7 and of the portion of the insulating member;

Fig. 9 is a longitudinal sectional view of one of the contacts installed in the insulating member and of the insulating member prior to the insertion of the expanding solder stop;

Fig. 10 is a fragmentary sectional view of the contact lying within the insulating block opening with the expanding solder stop member inserted to expand the shoulder portions of the contact for abutment against the depending stop portion of the insulating block and depending into the top of the opening thereof.

Referring now to the figures, and particularly to Fig. 5, 15 represents a struck metal piece which can be folded into the contact shown in Figs. 1 and 2. This struck piece has an intermediate portion 16 with cutaway edges 17 and 18 and notches 19 and 20 separating this portion from a rearward portion 21 and serving when folded for effecting the wire connection to the contact. Forwardly of the intermediate portion 16 are two contact engaging portions 22 and 23 separated by a bottom slot 24.

This struck piece 15 is folded over a mandrel or by similar means extending longitudinally thereof to assume the shape shown in Figs. 1 and 2. Widely separated edges 25 and 26 are brought into near abutment with each other as shown in Fig. 2. The contact engaging portions 22 and 23 are separated by a longitudinally extending slot 27. This slot runs in continuation of the nearly joined edges 25 and 26 of the intermediate portion 16. The contact engaging portions are flared respectively at their ends as indicated at 28 and 29 respectively in order to more readily and easily receive the male contact. These contact engaging portions 22 and 23 are tapered toward the flared forward ends so as to have a good grip on the male contact.

Since the separated edges 25 and 27 are outwardly removed from the edges 17 and 18, shoulders 31 and 32 will provide a stop for the contact when the contact is inserted into opening 33 in insulating block 34 and will abut with a portion 35 depending radially downwardly into the opening 33 to prevent further insertion of the contact as it is assembled in the insulating block 34 with

its rearward portion 21 being thrust from the front of the block rearwardly and through the rear face of the block 34 to be available for the connection of a wire to the contact by solder in the usual manner.

The rearward portion 21 has side edges 36 and 37 which are separated at a distance less than the side edges 17 and 18 of the intermediate portion and greater distance than the side edges 25 and 26 of the intermediate portion. When the struck piece is folded, these side edges 36 and 37 are brought over the bottom part of the rearward portion 21 so as to clear the depending projection 35 of the insulating block 34 as the contact is moved inwardly through the opening 33. The notches 19 and 20 permit the side edges 36 and 37 to be brought toward each other to a greater extent than the side edges 17 and 18 of the intermediate portion 16. The inner ends of the side edge portions 36 and 37 will, when the contact is extended the full distance into the insulating block opening, as shown in Fig. 9, be located beyond the rear end of the depending portion 35 in the opening 33 of the insulating block 34. These ends are respectively indicated at 38 and 39. In order to make these ends 38 and 39 serve as stop means to prevent the removal of the contact from the opening 33 of the insulating block 34, a cylindrical shaped plug 40 is driven into the rearward portion 21 in the manner illustrated in Fig. 10 so as to spread the side edge portions 36 and 37 and to align the ends 38 and 39 thereof with the rear edge of the depending portion 34. The bottom face of the depending portion 35 is undercut as indicated at 41 to receive the cylinder plug 40. The plug 40 can be extended under the depending portion 35 to any extent, but it need only be done sufficiently to expand the side edges 36 and 37 and to provide adequate surface on the bottom of the rearward portion for the securement of a wire by means of solder.

In order to facilitate the soldering of the wire behind the plug 40, the side edges 36 and 37 are respectively relieved and cut away as indicated at 42 and 43.

It will be seen that the plug serves a double purpose of holding the side edges 36 and 37 in their expanded positions so that their respective ends 38 and 39 may serve as stop means to hold the contact against displacement from the opening 33 and as a stop for the solder which may be used in the connection of the wire to the rearward portion 21 and thereby prevent the same from being lodged within the contact engaging portions 22 and 23 of the contact. The plug serves as a positive stop for solder and is moved inwardly under the depending portion 35 a sufficient distance to close the notches 19 and 20 as shown in Fig. 10.

It should now be apparent that there has been provided an electrical contact of the female type which is made of sheet metal and which can be assembled and shaped with die stamping and bending operations and wherein after the contact is formed, it is easy to assemble within an opening in an insulating block and made in such a manner that it is easily and rigidly secured within the insulating block opening. It will also be noted that the assembled contact is solderproof and so formed that the contact engaging portions will not be coated with solder resulting from the wire attaching operation upon the rearwardly projected end of the contact. It should be further apparent that the contact is so formed as to provide shoulder stop means engageable with a depending portion in the opening of the insulating block and upon the opposite ends of the same to prevent longitudinal displacement of the contact, either rearwardly or forwardly through the opening. The operation of inserting the plug is a simple one and can be done with much ease by workers familiar with the assembly or electrical contacts in insulating blocks and with the assembly of electrical connectors utilizing such contacts.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A hollow electrical contact of the female type comprising an intermediate portion having a cut away part for receiving a depending portion of an insulating block opening into which the contact may be inserted and shoulder stop means engageable with one end of the insulating block depending portion, contact engaging portions extending forward from the intermediate portion, a rearward portion having expandable stop end means adjacent to the cut away part of the intermediate portion and engageable with the depending portion of the insulating block opening to prohibit the forward displacement of the contact in the opening, and plug means to engage within the rearward portion of said stop end means to retain the same in expanded condition and serve as a solder stop within the contact.

2. A hollow electrical contact of the female type comprising an intermediate portion having a cut away part for receiving a depending portion of an insulating block opening into which the contact may be inserted and shoulder stop means engageable with one end of the insulating block depending portion, contact engaging portions extending forwardly from the intermediate portion, a rearward portion having stop end means adjacent to the cut away part of the intermediate portion and engageable with the depending portion of the insulating block opening to prohibit the forward displacement of the contact in the opening, said intermediate portion having notches adjacent the stop end means of the rearward portion to permit the rearward portion to be flexed when installing the contact within the insulating block opening, and a plug element insertable within the rearward portion to flex the rearward portion outwardly against the depending portion of the insulating block opening and to serve as a solder stop.

3. A tubular contact split longitudinally at least through one end portion and having an intermediate portion, said intermediate portion being cutaway to provide a recess for a depending stop shoulder in an insulating block opening, the said split end portion being of a dimension not exceeding that of the restricted zone formed by the depending stop shoulder in said insulating block opening and serving to receive a wire, and a plug element tightly fitted within said split end portion to cause the edges of the longitudinal split therein to move transversely so as to expand the portion to a dimension exceeding the dimension of the said restricted zone.

4. A tubular contact split longitudinally at least through one end portion and having an intermediate portion, said intermediate portion being cutaway to provide a recess for a depending stop shoulder in an insulating block open-

ing and stop shoulder means for limiting the rearward motion of the contact within said opening, the said split end portion being normally folded to a dimension not exceeding that of the restricted zone formed by the depending stop shoulder in said block opening and serving to receive a wire, notches, between the cutaway portion and the split end portion to permit the said end portion to be flexed, and a plug element tightly fitted within said split end portion to cause the edges of the longitudinal split therein to move transversely so as to expand the portion to a dimension exceeding the dimension of the said restricted zone and to provide shoulder means limiting the rearward motion of the contact within said insulating block opening.

5. A tubular contact of the female type comprising contact engaging elements, an intermediate portion cutaway to provide a recess for a depending portion of an insulating block opening and shoulder means engageable with said depending portion to limit the rearward motion of the contact in said opening, a rearward portion

serving to receive a wire and split longitudinally, the edges of said split portion being foldable inwardly to permit the passage of the split portion under the depending portion of said block opening and cutaway and relieved in an inclined manner at their rearward ends, notches between the cutaway portion and the split rearward portion to relieve the edges of said split portion, and a plug element tightly fitting within said split portion to retain the same in an expanded condition to provide stop shoulder means for preventing the forward displacement of the contact within the opening.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,318,651	Penfold	May 11, 1943
2,401,430	Lake	June 4, 1946
2,430,159	Chenier	Nov. 4, 1947
2,463,826	Thacker	Mar. 8, 1949