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SPOTWELD TIP WITH REPLACEABLE INSERT

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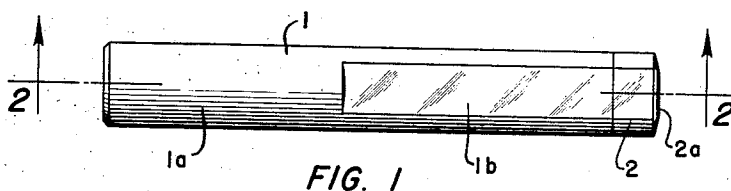


FIG. 1

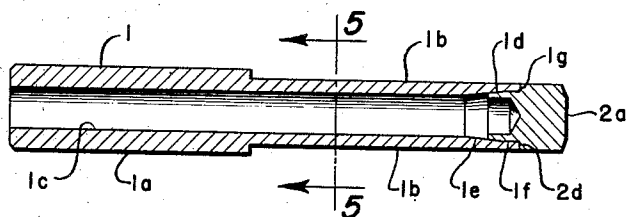


FIG. 2

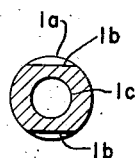


FIG. 5

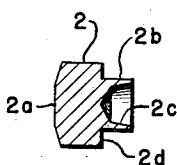


FIG. 4

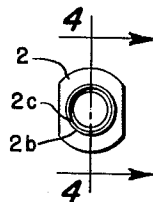


FIG. 3

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SPOT WELD TIP WITH REPLACEABLE
INSERT

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5 Claims. (Cl. 219—4)

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My invention relates to a spotweld tip with replaceable inserts more particularly for use in sheet metal fabrication and the objects of my invention are:

First: To provide a spotweld tip of this class having a replaceable insert which embodies a small amount of material whereby this spotweld tip is very economical to use and replace.

Second: To provide a spotweld tip with replaceable inserts of this class in which no soldering or other alloy bonding process is required in connection of the insert for leak proof joint.

Third: To provide a spotweld tip with replaceable insert of this class having no electrical resistance through the insert connection.

Fourth: To provide a spotweld tip of this class in which the insert is very easily and quickly replaced.

Fifth: To provide a spotweld tip with replaceable inserts in which the insert is pressed and wedged into the tip for accomplishing a very tight and efficient electrical contact.

Sixth: To provide a spotweld tip with replaceable insert of this class which is very simple and economical of construction, efficient in use and which will not readily deteriorate or get out of order.

With these and other objects in view as will appear hereinafter my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon forming a part of this application in which:

Fig. 1 is a side elevational view of my spotweld tip with replaceable insert, Fig. 2 is a longitudinal sectional view thereof taken from the line 2—2 of Fig. 1, Fig. 3 is an end view of the replaceable insert of my spotweld tip, Fig. 4 is a sectional view thereof taken from the line 4—4 of Fig. 3, and Fig. 5 is a transverse sectional view of the spotweld tip taken from the line 5—5 of Fig. 2.

Similar characters of references refer to similar parts and portions throughout the several views of the drawing.

The spotweld tip 1 is provided with a straight shank portion 1a which is circular in cross section as shown in Fig. 5 of the drawing and is provided with flat portion 1b on opposite sides thereof as shown best in Figs. 1, 2 and 5 of the drawing. This tip member 1 is provided with an internal bore 1c at the circular in cross-section end thereof which bore 1c is slightly funnel-

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shaped at its opposite end portion 1d, it being noted that this funnel-shaped portion includes an internally tapered portion 1e which terminates in a straight cylindrical portion 1f at the end of the tip 1. The replaceable insert 2 conforms in cross-sectional outline to the tip member 1 at the flat portion 1b thereof as shown best in Fig. 3 of the drawing. This replaceable insert 2 is provided with a contact portion 2a for contact welding and is provided with a hollow annular insert skirt portion 2b which is fitted in the funnel-shaped portion 1d of the bore 1c of the spotweld tip 1. It will be noted that the exterior of the skirt 2b is a straight annular portion while the internal wall 2c of the skirt 2b is a tapered annular wall providing a tapered cross section of the skirt 2b all as shown best in Fig. 4 of the drawing. When the skirt insert portion 2b is forced into the funnel portion 1d of the bore portion 1c of the tip 1, the skirt 2b of the replaceable insert 2 is wedged into the tapered bore portion 1e providing very tight contact of the exterior annular surface of the skirt 2b with the internally tapered wall 1e of the bore portion 1c all as shown best in Figs. 2 and 4 of the drawing.

The operations of my spotweld tip with replaceable insert is substantially as follows:

The shank portion 1a of the top 1 is secured in connection with the spotwelding machine in watertight relation therewith and in secure electrical connection with said spotwelding machine. The contact surface 2a of the replaceable insert 2 contacts the material during fabrication thereof and the welding of the material takes place on this contact portion 2a. The internal bore 1c of the spotweld tip 1 is provided with a conventional water nozzle for cooling the spotweld tip 1 and the replaceable insert 2, it being noted that the conventional water nozzle is not shown in the drawings and is no part of my present invention. When in operation the spotweld tip 1 at its end portion 1f exerts pressure on the shoulder 2d of the replaceable insert 2 as shown best in Fig. 2 of the drawing. When replacing the replaceable insert 2 an instrument is inserted in the bore portion 1b of the spotweld tip 1 and is struck by an instrument causing the replaceable insert 2 to be removed from the funnel-shaped portion 1d of said spotweld tip 1. Thus the old worn insert is disposed of and the new insert before being fitted to the spotweld tip 1 is substantially as shown in Fig. 4 of the drawing wherein the outer side-walls of the skirt insert portion 2b are straight and these side wall portions 2b are tapered in cross section providing an annular skirt graduated in

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yield strength for a wedge or close fit in the internally tapered portion of the bore portion 1c of the spotweld tip 1. When the insert 2 is thrust into the spotweld tip 1 the insert skirt portion 2b conforms to the annular tapered wall portion 1e and the shoulder portion 2d abuts the end 1g of the spotweld tip 1 providing sufficient bearing area to withstand the normal tip pressure required in sheet metal fabrication.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to the particular construction, combination and arrangement but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a spotweld tip with replaceable insert of the class described the combination of a hollow tubular spotweld tip having an internally tapered bore portion at one end thereof and a replaceable insert having a welding surface portion and an integral hollow annular insert skirt portion wedged into the internally tapered bore portion at one end of said spotweld tip, the sidewall of said annular skirt insert portion being tapered in cross section toward its end, the internally tapered bore portion of said spotweld tip terminating in substantially straight cylindrical reduced diameter bore portion at its inner end and a substantially straight enlarged diameter bore portion at its outer end.

2. In a spotweld tip with replaceable insert the combination of a hollow tubular spotweld tip having a central bore therein and an internally tapered bore portion near one end thereof terminating in an enlarged diameter straight bore portion near the end of said spotweld tip.

3. In a spotweld tip with replaceable insert the combination of a hollow tubular spotweld tip having a central bore therein and an internally tapered bore portion near one end thereof terminating in an enlarged diameter straight bore

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portion near the end of said spotweld tip, and a replaceable insert having a welding contact portion at one end and a hollow straight cylindrical skirt portion at its other end adapted to be wedged into the internally tapered bore portion of said spotweld tip.

4. In a spotweld tip with replaceable insert the combination of a hollow tubular spotweld tip having a central bore therein and an internally tapered bore portion near one end thereof terminating in an enlarged diameter straight bore portion near the end of said spotweld tip, and a replaceable insert having a welding contact portion at one end and a hollow straight cylindrical skirt portion at its other end adapted to be wedged into the internally tapered bore portion of said spotweld tip, said spotweld tip and said replaceable insert having flat side portions arranged in opposed relations to each other.

5. In a spotweld tip with replaceable insert the combination of a hollow tubular spotweld tip having an internally tapered bore portion near one end thereof, a replaceable insert having a welding contact portion at one end and a reduced diameter straight annular hollow skirt portion at its other end, and a shoulder portion outwardly of said skirt portion perpendicular to the axis of said replaceable insert, said replaceable insert adapted to be thrust into said spotweld tip wherein said straight annular skirt portion is wedged into said internally tapered bore portion of said spotweld tip and said shoulder portion of said replaceable insert abuts the end of said spotweld tip.

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