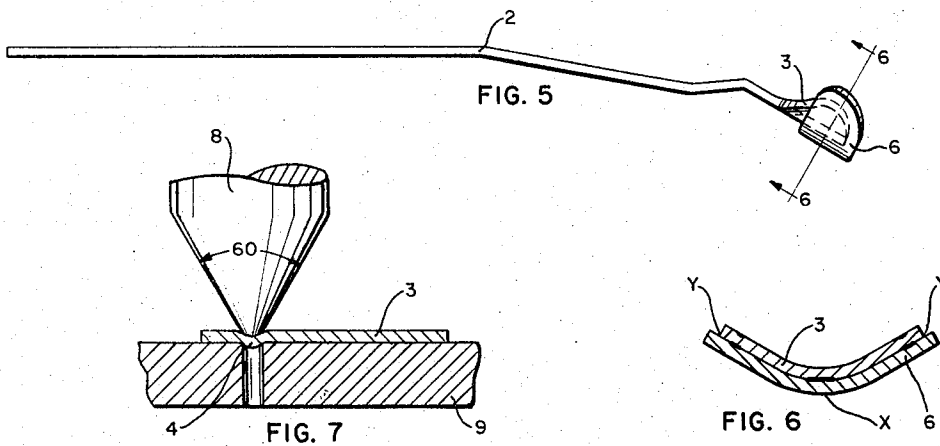
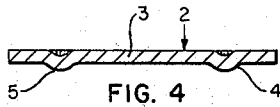
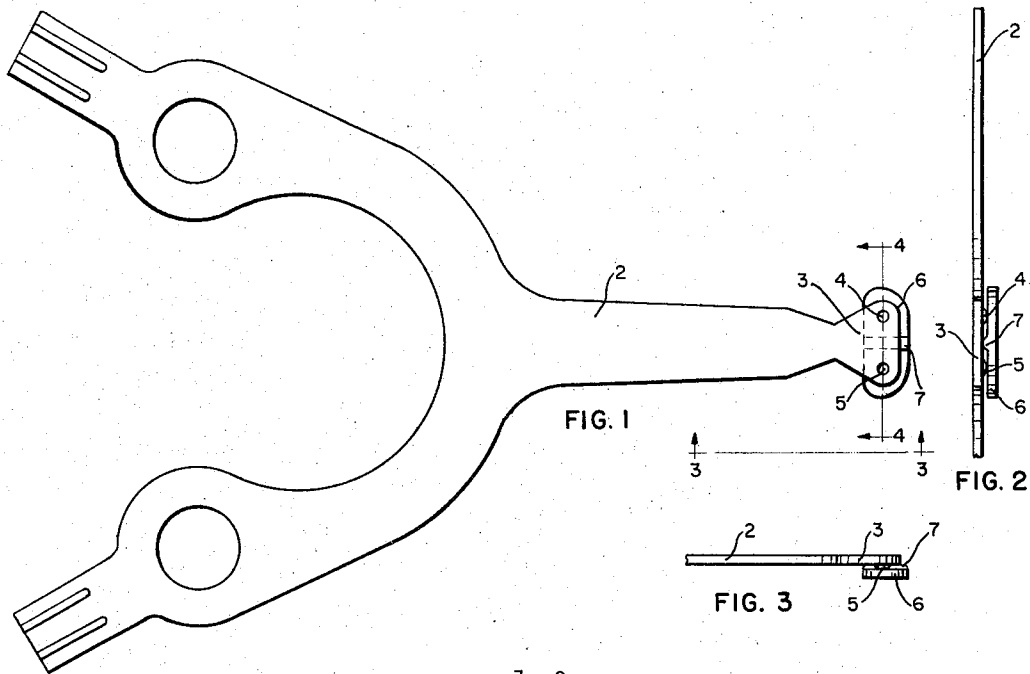


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F. GIENGER ETAL
METHOD OF APPLYING PRECIOUS METAL TIP TO
BASE METAL SWITCH WIPER
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METHOD OF APPLYING PRECIOUS METAL TIP TO BASE METAL SWITCH WIPER

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Our invention relates in general to electrical switch wipers for use in automatic telephony and more specifically to an improved method of applying a precious metal tip to the contact making surface of such a wiper.

In the production of movable switch wipers for use in automatic telephone systems, where the wiper is moved back and forth over a bank of contacts, it has become the practice to construct the main body of the wiper of a base metal such as brass or a similar metal to provide the proper tension required and to apply a tip of precious metal such as gold or the like to the tip of the wiper which wipes over the contacts and provides the proper low resistance contact with the bank contacts.

Several methods have been employed to apply the precious metal tip to the wipers and the method most in use is that shown in the patent to Gellatly et al., No. 2,932,880, granted Apr. 19, 1960. While this wiper has proved satisfactory to a certain degree yet it has been found that after a certain amount of wear on the center part of the precious metal surface, the outer edges of the surface tends to bend downward and such edges may catch in the spaces between contacts of the bank to cause breakage thereof and at times bring about short circuits in the bank caused by the broken off edges. Certain efforts to weld or secure the outer edges of the precious metal tip to the wiper have been tried and found unsatisfactory.

We have therefore provided a novel method of securing the tip to the wiper so that the above difficulties have been overcome. This novel method involves the use of projection welding in which a pair of beads are provided in the outer surfaces of the wiper tip adjacent the precious metal tip and a nib or ridge in the precious metal tip extending longitudinally thereof as regards the wiper. By the use of projection welding the tip is securely welded to the wiper tip at three points, one at the center point where the nib on the precious metal meets the base metal of the wiper tip and at two outer points near the outer edges of the tip where the two beads on the base metal meet the precious metal tip.

Having generally described the method of assembling the wiper tip we will now describe the same more in detail having reference to the accompanying sheet of drawings in which:

FIG. 1 shows the base metal wiper in the flat before forming, with the precious metal tip in place ready for welding.

FIG. 2 is a view of the tip end of the wiper and tip taken from the right of FIG. 1.

FIG. 3 is a view taken along the line 3—3 of FIG. 1.

FIG. 4 is a sectional view of the base metal part of the wiper tip taken along line 4—4 in FIG. 1.

FIG. 5 is a view taken from the side of the wiper after welding and after forming.

FIG. 6 is a sectional view taken along line 6—6 in FIG. 5 to show the tip after welding and forming.

FIG. 7 is a view of a punch and die with the material of the wiper tip shown between the two as used to press out the beads on the base metal tip.

Referring now to the drawing, we have shown in FIGS. 1, 2 and 3, top, end and bottom views of the wiper 2 lying over the precious metal tip 6 in the positions in which they are placed prior to welding. The base metal

wiper 2 has its tip end 3 which has the beads 4 and 5 punched out therefrom as more clearly shown in FIG. 4. These two beads are pressed or punched out by means of a punch and die arrangement such as shown in FIG. 7. In this figure the punch 8 is shown above the die 9 punching out the dimple 4 in the end 3 of the wiper 2. The precious metal tip 6 as shown in FIGS. 1, 2 and 3 has a rib 7 extending crosswise thereof in the center of the tip and when the tip is placed under the end of wiper 2 as shown in FIG. 1 the rib extends lengthwise of the wiper between the two beads 4 and 5 of the wiper tip. The elements, after being placed as in FIG. 1, are welded together by means of so called projection welding at the points where the rib 7 of the precious metal engages the brass or base metal of the wiper tip and at the two points where the beads 4 and 5 engage the precious metal. By this method of welding, the precious metal is rigidly secured to the base metal of the wiper tip at three points without greatly thinning or spreading the gold of the precious metal tip.

After the elements have been welded together the wiper tip is formed into the shape shown in FIGS. 5 and 6 with the gold or precious metal tip 6 formed into a convex surface as shown in FIG. 6 to form the wiping surface of the wiper when it is assembled and caused to move over a bank of contacts.

Referring to FIG. 6 it will be seen that as the wear of the wiping surface occurs at point X, the ends of the precious metal tip are securely held at the points where beads 4 and 5 were welded and the edges of the tip do not tend to separate at points Y as has been the case with previous wipers.

While it should be understood that the rib on the precious metal element and the two beads on the surface of the wiper may be of any desired size, it has been found satisfactory in one instance to provide a rib of a height of approximately .006" on the element and to provide the two beads of a slightly less height of approximately .005" so that when placed in juxtaposition, as in FIG. 2, the precious metal will touch the wiper before the beads 4 and 5 contact the element.

Having fully described the features and aspects of our invention, what we consider to be new and desire to have protected by Letters Patent will be pointed out in the appended claims.

What we claim is:

1. The method of securing a precious metal tip to the end of a switch wiper to provide a low resistance contact wiping surface therefor which consists in providing a raised rib along the upper surface of a precious metal element adjacent the end of the wiper, of punching out a pair of beads in the end of the wiper on opposite sides of the rib of the element, projecting toward the upper surface of the element, of welding said element to the wiper end by means of projection welding so that the precious metal element is welded to the wiper tip along the line of the rib in the element and at the points where the two beads on the wiper end engage the element, and then forming the element and wiper tip into a convex shape to provide a wiping surface of rounded form for the wiper.

2. The method of welding a precious metal tip to the end of a switch wiper which consists in providing a precious metal element of slightly greater width than the wiping end of the wiper and having a central raised rib extending across the upper surface thereof, of punching out a pair of beads from the end of the wiper at the outer edges of the wiper end projecting outward toward the element, of welding the element and the wiper end together by means of projection welding at the points where the rib meets the wiper end and where the two beads meet the outer ends of the element, and then form-

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ing the welded parts into a semi-circular form with the precious metal on the convex surface thereof.

3. The method of welding a precious metal element to the wiping surface of a switch wiper which consists in punching out a pair of beads or embosses on the surface of the wiper tip extending toward the outer edges of the element, of providing a projection in the center of the element extending toward the wiper tip and of slightly greater height than the beads on the wiper tip, of placing the tip and the element in juxtaposition and welding the element to the wiper tip by projection welding so that the projection on the element is fused into the wiper tip at the center thereof and that the two beads on the wiper tip are fused into the outer edges of the element, and

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then forming the fused elements into a wiping surface with the element forming a convex wiping surface.

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