

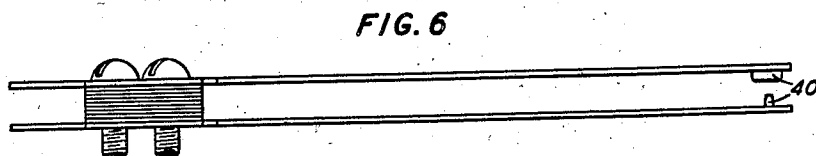
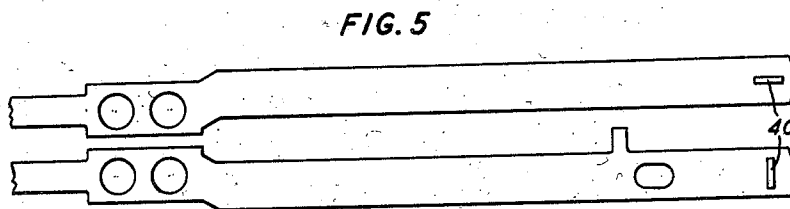
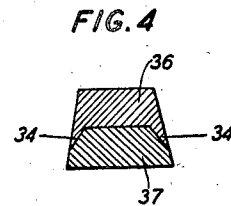
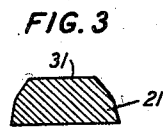
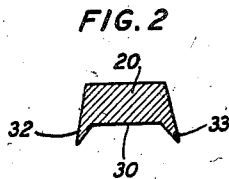
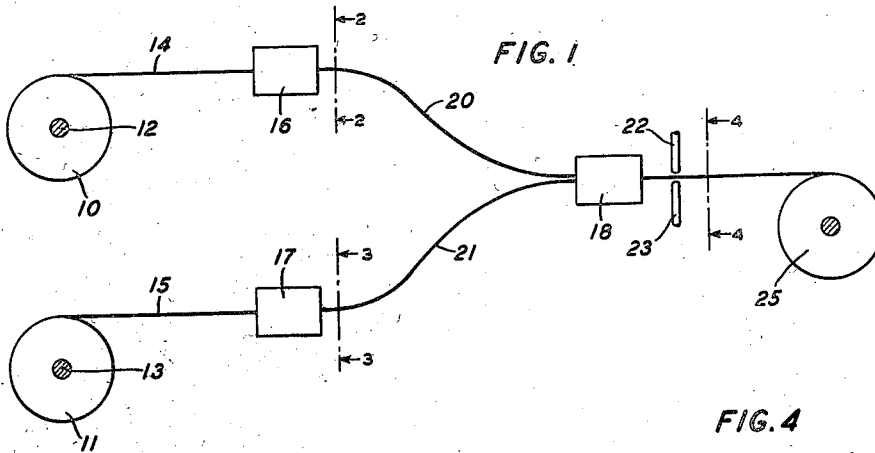
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METHOD OF MAKING BIMETALLIC STOCK

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METHOD OF MAKING BIMETALLIC STOCK

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1 Claim. (Cl. 29—188)

This invention relates to manufacturing processes and more particularly to a process of and means for manufacturing bi-metal contact ribbon stock such as is employed extensively in the structure of contact elements which constitute a part of circuit controllers of the spring contact variety.

With the advent of precious metal as a necessary constituent of electrical contacts of the bi-metal type, it has become essential that the process employed in the manufacture of the contact element be of such a nature as to preclude the possibility of any waste of the precious metal and to insure against the incorporation in the contact structure of any more contact metal than is necessary for satisfactory contact operation.

It is also an outstanding requirement in bi-metal contact design that the base metal to which the contact metal is secured be provided with an overlapping portion or skirt of the contact metal to minimize the objectionable effects of arcing.

It is accordingly the object of this invention to provide an improved process of and means for manufacturing bi-metal contacts which satisfy the requirements necessary in the design of such contacts and at the same time insure a simple and economical manufacturing process.

This object is attained in accordance with a feature of the invention, by the provision of a plurality of dies of predetermined sectional contour by virtue of which ribbons of the metals of which the bi-metal contact is composed, are individually and collectively drawn to a predetermined final contour, which embodies the proper proportions of the two metals and their relative cooperating formations.

The invention will be readily understood from the following detailed description made with reference to the accompanying drawing in which:

Fig. 1 is a schematic sketch showing the relative disposition of the apparatus employed in producing the steps relied upon in the manufacturing process of this invention;

Fig. 2 is an enlarged section taken along the line 2—2 of Fig. 1 looking in the direction of the arrows and indicates the sectional contour of the precious metal ribbon as it emerges from the die;

Fig. 3 is an enlarged section taken along the line 3—3 of Fig. 1 looking in the direction of the arrows and indicates the sectional contour of the base metal ribbon as it emerges from the die;

Fig. 4 is a section taken along the line 4—4 of Fig. 1 and indicates the sectional contour of

the composite ribbon as it emerges from the die;

Fig. 5 is a plan view of two contact springs provided with contacts manufactured by the process described by this invention;

Fig. 6 is a side view of a spring unit showing the relative disposition of the contacts shown in Fig. 5.

Referring generally to Figs. 1 to 4 inclusive and to Fig. 1 particularly, two freely rotatable spools or reels 10 and 11 are shown mounted on their respective shafts 12 and 13. Upon spool 10 there is wound a continuous ribbon 14 of precious metal having a substantially rectangular cross-section. Upon spool 11 there is wound a continuous ribbon 15 of base metal also of a substantially rectangular cross-section.

At 16 and 17 are shown a set of dies, the die 16 being of such a nature as to cause the ribbon 14 to emerge therefrom with a sectional contour as shown in Fig. 2, whereas the die 17 causes the ribbon 15 to be extruded to the sectional contour shown in Fig. 3. As the two ribbons 14 and 15 emerge from the dies 16 and 17 respectively, they are combined in any suitable manner, and fed collectively into the die 18. The die 18 is of such a formation that the composite ribbon, as it emerges from the die, has a sectional contour as shown in Fig. 4. A pair of welding electrodes is schematically shown at 22 and 23 by which the composite ribbon is spot-welded to form a single bi-metal ribbon.

The composite ribbon is then stored on a spool 25 to be used as occasion requires.

It will be noted that the manufacturing process just described is a continuous one in which no manual operations are required in forming the ribbon stock to its final predetermined contour. The precious metal ribbon 14 and base metal ribbon 15 are singly drawn through the dies 16 and 17 respectively, and collectively through the die 18, passed between the welding electrodes 22 and 23 to be made into a single ribbon and then stored upon the spool 25.

It is also to be understood that the dies 16 and 17 are so designed as to accurately turn out metal ribbon stock of contours shown in Figs. 2 and 3. In being drawn through the dies 18, the surface 30 of the precious metal ribbon is aligned with the top surface 31 of the base metal ribbon, the protruding portions 32 and 33 shown in Fig. 2 serving to provide the skirts indicated at 34 in Fig. 4.

In Fig. 4 which shows the sectional contour of the final composite ribbon, the area indicated

by 36 is precious metal and that designated 37 is base metal.

It is obvious that any means may be employed for providing the motive power which causes the ribbon to be drawn through the dies 16, 17 and 18 and stored upon the reel 25 without departing from the spirit and scope of the invention.

In Figs. 5 and 6 the contact 40 is shown as applied to two cooperating springs after the ribbon has been taken from reel 25 and cut into desirable lengths. To insure perfect engagement of the contacts, they are placed at right angles to each other on adjacent springs.

What is claimed is:

15 The process of manufacturing bimetallic contact stock which comprises forming by a con-

tinuous drawing process a ribbon of contact metal to give it a substantially truncated triangular section having downwardly projecting skirt portions, forming by a continuous drawing process a ribbon of base metal to give it a substantially truncated section having beveled upper edges, combining in superposed relation said separately formed ribbons with the beveled edges of the latter skirted by the skirt portions of the former, drawing by a continuous process the combined ribbons to form a composite ribbon having a truncated triangular section and welding the composite ribbon as it emerges from the last drawing process.

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