Oct. 18, 1955 M. E. BOURNS 2,721,246

CONTACT MEMBER FOR POTENTIOMETERS

Filed Dec. 5, 1952

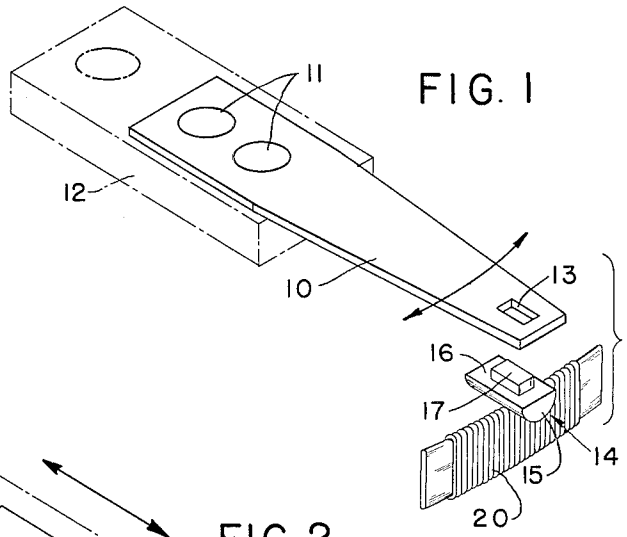


FIG. 1

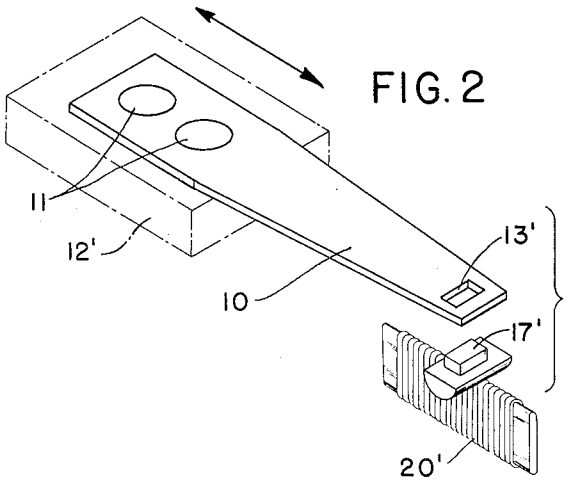


FIG. 2

FIG. 3

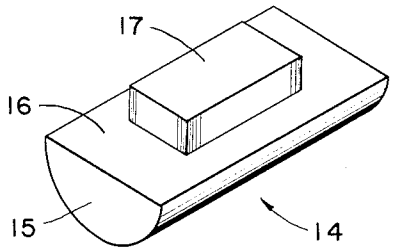
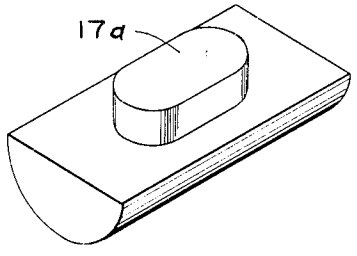


FIG. 4



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2 Claims. (Cl. 201—63)

The present invention relates to the art of making contacts for potentiometers and similar electrical instruments, and its primary object is to provide a new and improved method of attaching contact tips of precious metal to spring fingers of beryllium copper or the like.

In high precision potentiometers, it is customary to make the contact tip that rides on the resistance coil or conductor strip, of platinum alloy or other precious metal which combines minimum contact resistance with high electrical conductivity, good hardness and resistance to wear, resistance to corrosion, and ease of welding or soldering. These contact tips are made as small as possible, so as to minimize the effects of vibration and acceleration; and also to improve resolution by providing a contact surface of extremely small radius that touches only one or two wires of the resistance element.

Heretofore, such tips have taken the form of tiny pellets that are soldered or welded to one side of a spring finger. One important consideration in potentiometer design is that the contact tip makes point contact with the resistance element, and to that end, it has become common practice to make the contact tips in the form of half-round pellets, of the order of 1/32 inch diameter and 1/16 inch length, which are attached to the spring finger with their longitudinal axis perpendicular to the line of travel of the contact. Because of their extremely minute size, much difficulty has been experienced in handling the pellets and in attaching them to the spring finger, and the problem is further complicated by the necessity for orienting the longitudinal axis of the pellet in the proper direction.

One of the important objects of the invention, therefore, is to provide a contact tip pellet which may be attached quickly and easily to a supporting spring finger, and which is self-aligning on the finger to orient the longitudinal axis of the pellet in the proper direction.

A further object is to provide a contact tip pellet which is readily soldered to a spring finger, forming a sound, tight joint of good electrical and mechanical properties.

These objects are attained by providing the half-round pellet of precious metal with a raised boss on the back side, of non-circular planiform, which is received within a correspondingly shaped non-circular hole in the spring finger. Owing to its non-circular configuration, the boss can be inserted in its seat only when the longitudinal axis of the pellet is properly aligned, and the pellet is positively held in the correct position while it is being soldered to the spring finger.

The foregoing and other objects and advantages of the invention will become apparent to those skilled in the art upon consideration of the following detailed description of the preferred form thereof, reference being had to the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of a spring finger and contact tip embodying the principles of my invention;

Figure 2 is a similar view of a slightly modified form of the invention;

Figure 3 is an enlarged perspective view of the form of the contact pellet; and

Figure 4 is a perspective view of another form of contact pellet.

In the drawings, the spring finger is designated by the reference numeral **10**, and is preferably formed of thin strip beryllium copper. The finger is secured by rivets **11** to a carrier **12**, which, in Figure 1, is pivoted for swinging movement in the direction indicated by arrows. In Figure 2, the carrier **12** is slidably supported for rectilinear travel, as indicated by the arrows.

At the other end of the spring finger is a non-circular hole **13**, which may be rectangular in planiform, as shown, or any other suitable non-circular shape. The contact pellet is indicated in its entirety by the reference numeral **14**, and is formed of platinum alloy or other precious metal, which may be coined or machined to the shape shown. The pellet comprises a half-round body portion **15**, with a flat back side **16** and raised boss **17**. The boss **17** rises from the flat side **16**, and is shaped to fit the hole **13** in the spring finger when the longitudinal axis of the pellet is in the proper direction. Typical dimensions for a pellet of this type are: length—1/16 inch; diameter—1/32 inch; width of boss—1/64 inch; and height of boss—.010 inch.

The contact pellet **14** is assembled with the spring finger **10**, and the boss **17** is inserted into the hole **13**. The pellet is then soldered or welded to the spring finger, and becomes an integral part thereof. The boss **17** and hole **13** are preferably shaped so that the pellet can only be attached to the spring finger with its longitudinal axis parallel to the longitudinal axis of the finger, as in Figure 1, or perpendicular thereto, as in Figure 2. The contact of Figure 1 is adapted for use with an arcuate resistance coil **20** extending in the direction shown, perpendicular to the spring finger.

In Figure 2, the boss **17** and hole **13** are turned 90° from the positions occupied in Figure 1, and this contact is adapted for use with a resistance coil **20** extending in the direction shown, parallel to the spring finger.

Figure 3 shows a pellet having a boss **17** of rectangular planiform, while Figure 4 shows a pellet having a boss **17*a*** with rounded ends. The boss might also be elliptical, or a combination of curved and polygonal sides. It is also contemplated that the boss **17** might be made somewhat thicker than the spring finger **10**, and the projecting portion flattened or upset, to rivet the pellet to the finger.

While I have shown and described what I believe to be the preferred form of my invention, it will be understood that various changes may be made without departing from the scope of the appended claims.

I claim:

1. A contact member for potentiometers and the like comprising a spring finger of thin strip material, and a contact pellet attached thereto, said finger having a non-circular hole formed in one end thereof, said pellet having a raised boss of non-circular contour shaped to fit within said hole, and said pellet being secured to one side of said finger with said boss seated within said hole.

2. A contact member for potentiometers and the like comprising a spring finger of thin strip material, and a contact pellet attached thereto, said finger having a non-circular hole formed in one end thereof, said pellet being formed with a half-round body having a flat side, and a raised boss of non-circular contour standing up from said flat side, said boss being shaped to fit within said hole, and said pellet being secured to one side of said finger with said boss seated within said hole.

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