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L. R. WALLER

1,883,137

SWITCHING DEVICE

Filed Sept. 11, 1929

Fig. 1.

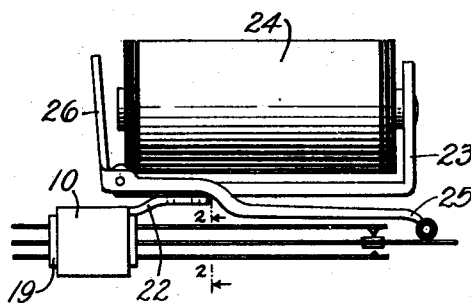


Fig. 2.

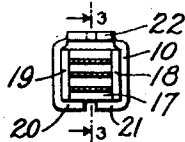


Fig. 3.

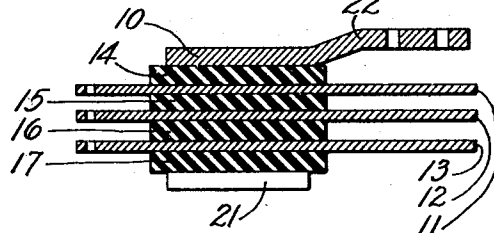


Fig. 4.

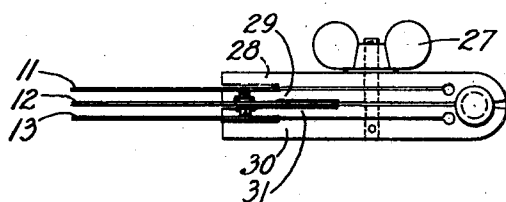
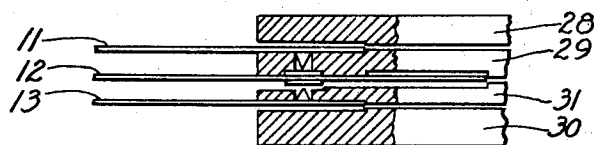


Fig. 5.



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SWITCHING DEVICE

Application filed September 11, 1929. Serial No. 391,724.

This invention relates to electrical switching devices wherein a number of switch springs are mounted in a pile-up arrangement.

Switch springs used in the pile-up of such apparatus are generally punched out of sheet brass and are provided at one end with a number of holes through which a corresponding number of screws thread into engagement with a support, these holes being of a diameter considerably larger than the screws in order to insert insulating bushings in the holes for electrically insulating the springs from the screws and the support. This type of mounting requires that the fastening holes be punched at exact intervals, one with respect to the other and with respect to the threaded holes in the support, and these holes in turn at exact distances from the contact points at the other ends of the springs in order to maintain the alignment of the platinum contacts with respect to each other. The maintenance of such close limits in the manufacture of these spring parts entails considerable expense in tools and other equipment and necessitates the use of contacts of relatively large contacting area in order to insure the registration of the contacts with the consequent wasting of a considerable amount of precious metal.

The object of this invention is to provide a spring mounting which will be simple, cheap to manufacture and in which the contacts are held in adjusted relation in a simple and positive manner.

According to this invention strips of fabric such, for example, as bakelite linen fabric, are used between the springs to insulate them from each other and other strips are provided for insulating the sides of these springs from a supporting bracket which is used to hold the pile-up together solely by its clamping action.

Referring to the drawing Fig. 1 is a side assembly view of a spring pile-up mounted on the heel piece of a relay;

Fig. 2 is a cross-sectional view of the springs and insulating strips taken approximately on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view of the bracket and spring taken on line 3—3 of Fig. 2;

Fig. 4 is a side view of a fixture used for holding the springs while closing the edges of the bracket for securing the springs in position; and

Fig. 5 is a partial, enlarged view thereof.

As shown in the drawing, the spring mounting consists of a heavy channel or U-shaped bracket 10 in which the springs 11, 12 and 13 are mounted, these springs being electrically insulated from the bracket by strips of semi-cured bakelite linen fabric such as 14, 15, 16 and 17 and the springs being insulated from each other by fabric strips 18 and 19 shown in Fig. 2 and the whole held securely by bending and pressing the free edges 20 and 21 of the bracket over the fabric strips to spread into the interstices at the surfaces of the springs and the bracket, the bracket being of such rigidity that the springs 11, 12 and 13 and the insulation strips 14, 15, 16, 17, 18 and 19 are held collectively and positively in adjusted position relative to each other through the sole clamping action of the bracket and thereby avoiding the added use of soldering or other binding media. The springs 11, 12 and 13 as well as the fabric 14, 15, etc., may be coated with a bakelite varnish before closing the bracket 10 and the whole baked to form a solid mass. Bracket 10 is formed integrally with a lug 22 best seen in Figs. 1 and 3. This lug is provided for securing the spring pile-up in position on a supporting member such as the heel piece 23 of magnet 24 shown in Fig. 1. The armature 26 of magnet 24 carries an arm 25 disposed in operable relation with spring 12 of the pile-up for effecting switching connections in a well known manner.

In order to secure the proper alignment of the contact points at the free ends of the springs these springs are preferably held in a fixture, for example, as shown in Figs. 4 and 5 wherein the contact points of the springs are placed in registering holes as shown and the springs held securely by closing the jaws 28, 29, 30 and 31 through the tightening of the wing nut 27.

Springs mounted according to this invention are held positively against disalignment through the clamping action of the bracket and further avoid the use of screws, insulating bushings and facilitate the placing of the contacts in close alignment, thus permitting the use of contacts of relatively small dimension with the consequent saving of a considerable amount of precious metal.

What is claimed is:

In a contact spring mounting for a relay, a metal bracket having an arm secured to the relay frame, the free end of said bracket having heavy integral lugs, a spring assembly comprising flat springs and resilient insulating strips therebetween, said assembly being held rigidly in place on the bracket solely through the clamping action of said lugs, said lugs being of such rigidity as to permit of no deformation thereof after being bent over the assembly.

In witness whereof, I hereunto subscribe my name this 6th day of September, 1929.

LEE R. WALLER.