

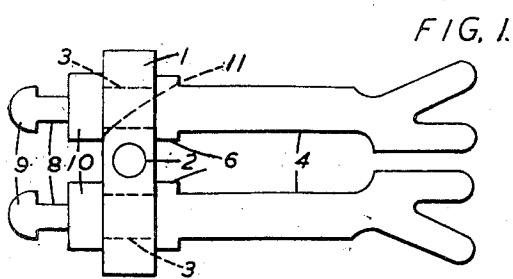
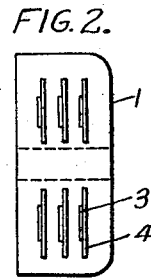
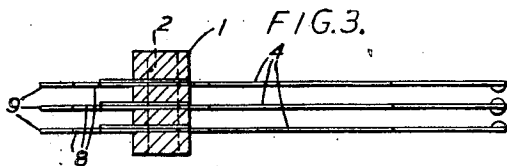
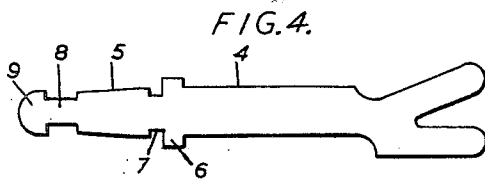
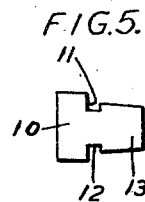
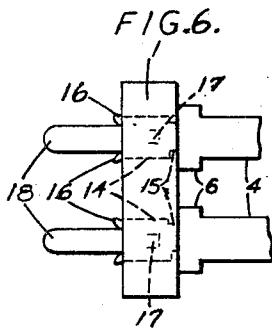
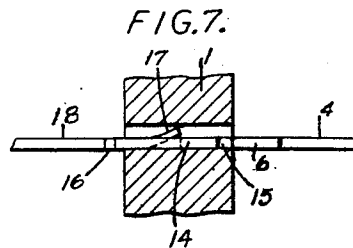
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ELECTRICAL CONTACT SPRING ASSEMBLY

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ELECTRICAL CONTACT SPRING ASSEMBLY

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4 Claims. (Cl. 200-166)

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This invention relates to electrical contact spring pile-ups or assemblies, and to constructions of contact springs and ceramic blocks for use in such pile-ups or assemblies.

In the construction of many types of electromagnetic relays, it is necessary to secure a number of flat contact springs in a rigid assembly. Each spring must be insulated from the other and the insulating material used is often required to withstand severe electrical and climatic conditions. Ceramic material is very suitable for the insulating material, but the use of a moulded ceramic block for this purpose presents considerable difficulties. Previous proposals of this character have been described in our application Serial No. 596,680, filed May 30, 1945, and the present invention provides improved and simplified arrangements giving a cheaper and more reliable product.

The present proposals arise from the fact that it has now been found possible to mould ceramic blocks with slots of similar cross sectional dimensions to the fixing shank of an electric contact spring of the type used on telephone-type electromagnetic contact-making relays, with an accuracy of dimension and of relative position sufficient for contact pile-up purposes.

The invention will be described with respect to particular embodiments which are examples only of devices embodying the novel features of the invention which are set out in the accompanying statement of claim. These embodiments are illustrated in the accompanying drawings in which:

Fig. 1 shows in plan view one method of fixing contact springs in a slotted ceramic block;

Fig. 2 is a side view of Fig. 3 looking from the left;

Fig. 3 is a sectional elevation of Fig. 1;

Fig. 4 is a detached plan view of the spring used in Figs. 1 to 3;

Fig. 5 is a detached plan view of the locking T-piece used in fixing the contact springs of Fig. 4 in the ceramic block as shown in Figs. 1 to 3;

Fig. 6 shows in plan view an alternative method of fixing contact springs in a slotted ceramic block; while

Fig. 7 is a sectional elevation of a slotted block through a slot with a contact spring of the type shown in Fig. 6 in position.

In accordance with the present invention the contact springs are firmly routed or fixed in slots which are premoulded in the ceramic mounting blocks. Two methods of securing the springs in the blocks will be described with reference to the drawings.

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The first method proposed is to locate each flat contact spring 4 in a slot 3 provided in a block of ceramic material 1 (Fig. 1). Each spring is held in position on one side of the block by two shoulders 6 which are formed at the sides of the spring and rest against the flat surface of the block as best seen with reference to Fig. 1. The spring is held on the other side of the block by the shoulders of a flat T-piece of metal 10 whose tongue 13 is inserted into the slot 3 alongside the contact spring but from the other direction. The T-piece is then welded or otherwise fixed to the portion 5 of the spring with the shoulders of the T-piece each in contact with the respective faces of the block.

In this way, the contact spring is secured by the shoulders against lateral twisting or longitudinal movement in the slot and is secured against undue lateral movement by the small clearance of the spring in the slot. The contact spring is secured against any vertical movement in the slot when flexing, by the tendency of the spring, when tensioned against some fixed point removed from the block, to rest against the upper part of one end of the slot and against the lower part of the other end of the slot. Fig. 2 shows the six springs assembled in the manner described. Each spring, Fig. 4, has portions of reduced width 7, 8 joined by a tapered length 5 and terminates in a soldering tip 9. The T-piece 10 is cut away at 12 on each side.

An alternative method is shown in Figs. 6 and 7 in which as before the spring 4 is provided with shoulders 6 which locate against the front surface of the ceramic block 1 as in Fig. 1. A tongue 4 is semi-sheared centrally from the body of the spring at a point corresponding to the centre of the slot in the ceramic block and projects forward and upwards in such a way as to press against the ceramic and force the spring against the lower surface of the slot as shown in Fig. 7. At each side of the spring as it emerges from the rear of the block, an acute angled shoulder 16 is formed. When the spring is inserted in the slot with the square shoulders 6 firmly in contact with the front face of the block, the acute angled shoulders 16 are staked so as to spread laterally over the edge of the slot so that the staked portion overlaps the rear surface of the block preventing the removal of the spring.

In this way, the spring is secured against lateral, twisting or longitudinal movement in the slot by the shoulders of the spring at the front and by the staking at the rear. The spring is secured against vertical movement in the slot

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by the projecting tongue which is forced against the internal surface of the slot in the ceramic block.

As in the case of Fig. 4, the spring is cut away at 15 to the rear of the shoulders 6.

What is claimed is:

1. An electrical contact spring assembly comprising a ceramic mounting block having a plurality of slots therein, a plurality of contact springs, each having a shoulder portion disposed between the ends thereof, one end of each of said springs passing through one of the slots in said block, the shoulder portions of said springs adapted to abut against said block, a plurality of shouldered plates or T-pieces, each inserted through a slot in said block from the end thereof opposite that into which said springs are inserted, each of said plates attached to a spring lying in the same slot of said block, thereby locking said springs against longitudinal motion in said block.

2. An electrical contact spring assembly comprising a contact spring, a ceramic mounting block slotted to receive an end portion of said contact spring, said end portion being defined at one end by shoulders of greater width than said slot for abutting against the surface of said block and means on the other end of said end

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portion operative to pass through said slot and to be moved into engagement with the opposite surface of said mounting block, thereby locking said contact spring firmly against longitudinal movement in said block.

3. An electrical contact spring as claimed in claim 2 and in which said means at the other end of the spring consist of unitary tongues adapted to be staked over after insertion in a block.

4. An electrical contact spring as claimed in claim 3 wherein said unitary tongues are upstanding from one surface and are adapted to lock the spring against one side having a slot of somewhat greater depth than said spring.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,348,088	Nichols et al.	May 2, 1944

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Number	Country	Date
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