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2,805,306

CONTACT SPRING SUPPORTS

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Fig. 1.

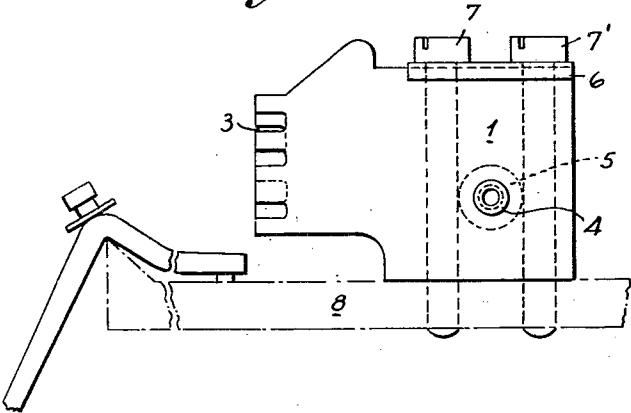
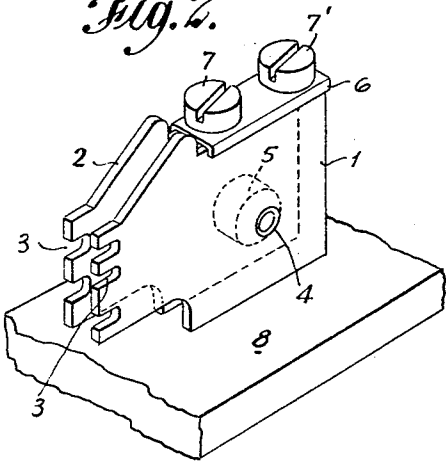


Fig. 2.



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3 Claims. (Cl. 200—166)

This invention relates to supports for contact spring assemblies of the kind used in telephone and other light current relays, automatic telephone selecting switches and like electrical apparatus.

In a commonly used support for the contact springs of a telephone relay insulating material has been employed in the form of a rectangular moulding with indentations at one edge, the material between the indentations providing shoulders against which some of the contact springs are normally tensioned. As the contact springs are required to operate with precision the spacing between the several supporting surfaces and the width of the shoulders between successive indentations need to be accurately determined. For ease of adjustment of the contact springs the shoulders of the support should be situated close to the point on the springs at which the contacts are secured since in such a position the displacement of a spring on flexure is larger than it would be if the shoulder were situated further from the contact and is more readily perceptible. It is difficult to produce a moulding of the kind referred to to a sufficient degree of accuracy and since different dispositions of the shoulders on either side of a support situated between two contact spring assemblies and serving both assemblies may be required, the moulding cannot readily be machined to sufficiently accurate dimensions. For this reason the block has been positioned so that the shoulders are set back from the optimum position mentioned to permit of inaccuracies being compensated for by spring adjustment.

In the present invention these difficulties are largely overcome by forming the support mainly from a sheet of suitable insulating material such as a thermosetting plastic material, with indentations formed in one edge to provide shoulders for the support of the contact springs, the indented sheet of the support being adapted for mounting alongside the assembly of contact springs it is to support with its plane at right angles to the planes of the springs. Two such indented sheets, one for each of two contact spring assemblies, may be arranged side by side but spaced apart and the two sheets may be secured together by riveting, eyeletting or the like, suitable spacers being provided between the two sheets. Each indented sheet would have the shoulders formed by the indentations of a size and spaced apart to suit the contact spring assembly it is to serve and the size of the shoulders may be accurately determined by the forming process, any adjustments required may then be performed on the shoulders before or after assembling the pair of sheets. The sheets would be secured to the apparatus, e. g. the yoke of an electromagnetic relay by any suitable means.

The indented sheet of a support is formed preferably by stamping but it may be formed by moulding and if necessary followed by a machining operation to attain the desired degree of accuracy. In the latter case the shoulders may be formed at right angles to the plane of the indented sheet which would enable the lugs normally provided on contact springs to be dispensed with.

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The nature of the invention will be clear from one embodiment thereof which will now be described by way of example with reference to the accompanying drawing in which Figs. 1 and 2 show side and perspective views respectively of a pair of contact spring supports according to the invention. In the drawing the supports are shown clamped to the yoke of a light current electromagnetic relay and are intended for use with a pair of contact spring assemblies of the kind described, not shown in the drawing, but which would be clamped to the yoke of the relay so that they lie one on each side of the supports with their springs extending in a direction parallel to the planes of the supports.

Referring to Figs. 1 and 2 together, the contact spring supports comprise mainly a pair of broadly rectangular sheets 1 and 2 each provided with indentations shown at 3 along one edge, the material between adjacent indentations forming shoulders of a size and spaced apart to suit the contact spring assembly the sheet is to serve. The sheets 1 and 2 may be very accurately formed from a sheet of thermo-setting plastic insulating material, for example that known as Bakelite, by stamping, or they may be moulded from such material and their shoulders subsequently operated on (e. g. machined) to attain a high degree of dimensional accuracy. The sheets 1 and 2 are secured together by means of a metallic tube 4 spun over at its ends but the sheets are spaced apart by the intervention of spacer 5 carried by tube 4. A metallic channel member 6 fits closely over the upper edges of the sheets 1 and 2 and is apertured for the passage of clamping screws 7 and 7' clamping the sheets to the yoke 8 (shown in part) of the light current relay.

The contact springs to be supported would constitute the so-called fixed springs of the two contact spring assemblies to be served by the supports and would lie with their planes substantially parallel to that of the yoke 8 and at right-angles to the planes of the sheets 1 and 2 such that lugs or the like furnished on all the fixed springs towards their free ends engage with the several shoulders of the sheets with the spring assemblies in their normal or operated condition according to contact spring arrangements. For example, a spring set with a make action would have its fixed spring supported in the normal condition of the set, while the fixed spring of a spring set with a break action would be supported only when the set has been actuated.

It is important that the shoulders of the sheets 1 and 2 should be accurately located with respect to the springs they are to support. To this end the outer diameter of the spacer 5 is made substantially equal to the shortest distance between threaded holes formed in the yoke 8 for the reception of clamping screws 7 and 7' and the apertures in the channel member 6 similarly spaced apart so that the clamping of the sheets 1 and 2 to the yoke 8 serves to locate the shoulders in their true position relatively to the springs they are to support.

What is claimed is:

1. A contact spring support for use with fixed contact springs of a fixed and moving contact spring assembly whose springs are secured together and insulated from one another near one end in a pile, said fixed springs having near their free ends lugs which extend laterally from one side edge, said support comprising in combination a generally rectangular sheet of insulating material having indentations along one edge forming shoulders of a size and spaced apart to suit said contact springs and means clamping said sheet alongside said contact springs such that its plane is at right angles to the planes of said springs and parallel to the longitudinal direction thereof, and such that its shoulders extend towards the free ends of said springs so as to engage the lugs projecting from said fixed springs.

2. A contact spring support for use with fixed and moving contact springs secured together and insulated from one another near one end in a pile, said support comprising a generally rectangular sheet of insulating material having shoulders along one edge which extend at right angles to the plane of the sheet and which are of a size and spaced apart to suit said contact springs and means clamping said sheet alongside said contact springs with its plane at right angles to the planes of said springs and parallel to the longitudinal direction thereof and with its shoulders projecting inwards towards said fixed springs so as to be engageable thereby, such that said shoulders support said fixed contact springs.

3. A light current relay, comprising two contact spring supports for contact spring assemblies mounted in parallel and in spaced relationship on a yoke for said relay, said assemblies containing fixed and moving springs secured together and insulated from one another near one end in a pile, said supports being also mounted in parallel and for supporting respectively the fixed springs of said assemblies

comprising generally rectangular sheets of insulating material having shoulders along one edge of a size and spaced apart to suit the contact spring assembly it is to serve, means securing the two sheets of the supports together in parallel and spaced relationship and means clamping said sheets to said yoke between said assemblies so that the sheets lie alongside the springs they are to support with their planes at right angles to the planes of the springs and parallel to the longitudinal direction thereof and with their shoulders extending towards the free ends of the springs so as to be engageable by said fixed springs, said clamping means comprising clamping screws which pass through apertures in a channel member fitting closely over the upper edges of said spaced sheets and engage threaded holes in said yoke.

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