

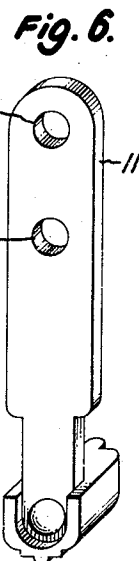
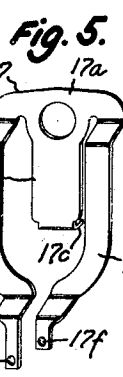
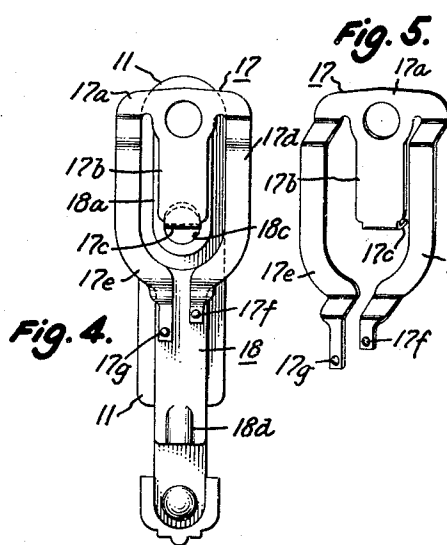
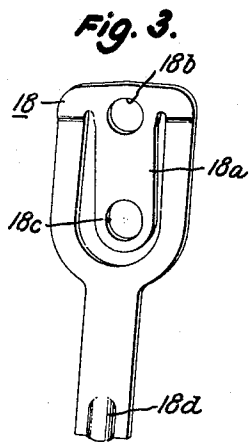
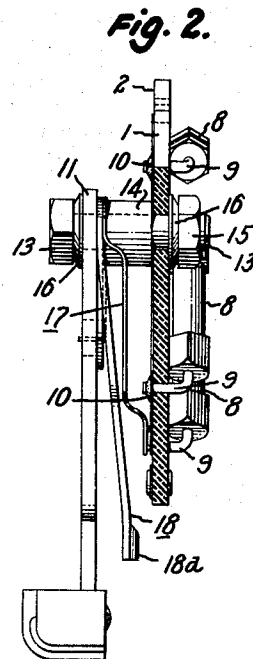
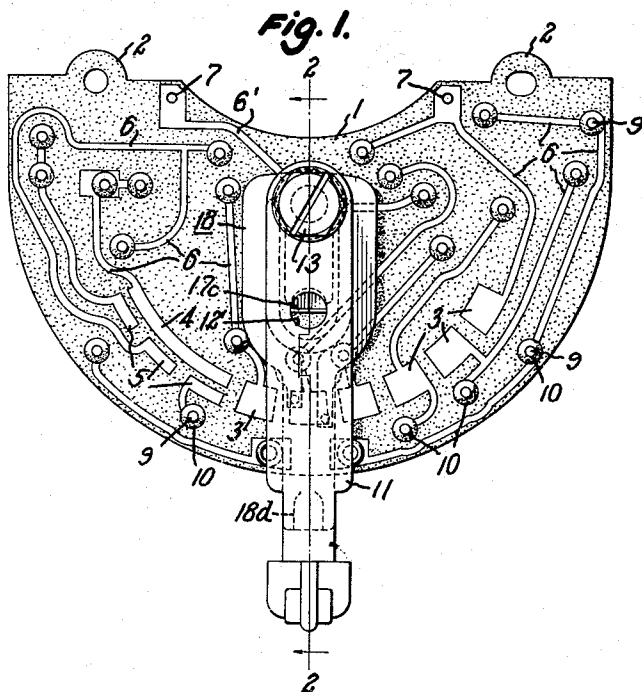
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2,848,567

MULTIPOINT SWITCH

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2,848,567

MULTIPOINT SWITCH

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Application June 6, 1955, Serial No. 513,484

4 Claims. (Cl. 200—11)

This invention relates to a multipoint switch and more particularly to a multipoint switch adapted to be incorporated in an electrical measuring instrument as a part of a range-changing system.

Objects of the invention are to provide a multi-point switch of relatively small size and economical construction which may be readily mounted in the case of a measuring instrument. More specifically, an object is to provide a multipoint switch comprising, as a unitary assembly, a plate of insulating material carrying a plurality of contacts, an angularly movable contact blade and a series of resistors connected between the contacts. A further object is to provide a multipoint switch of the type stated in which the contacts are printed on one face of a plate of insulating material and the resistors are supported at the opposite face of the plate by extending their terminal wires through the plate and soldering them to leads extending from the printed contacts.

These and other objects and the advantages of the invention will be apparent from the following specification when taken with the accompanying drawing illustrating an embodiment of the invention. It is to be understood that the drawing is for the purpose of illustration and is not to be construed as defining the scope or limits of the invention, reference being had for the latter purpose to the appended claims.

In the drawing wherein like reference numerals denote like parts in the several views:

Figure 1 is an elevation of a multipoint switch embodying the invention;

Figure 2 is a side elevation of the same, with the insulating plate in section on line 2—2 of Figure 1;

Figure 3 is a rearward perspective view of the indexing finger of the switch;

Figure 4 is a rear elevation of the blade and handle assembly; and

Figures 5 and 6 are rearward perspective views of the movable blade and the handle, respectively.

The invention is shown as embodied in a switch for use with an instrument in a case such as described and claimed in the co-pending application of C. S. Peterson, Serial No. 513,195, filed June 6, 1955, "Case for Electrical Instruments," but it is to be understood that various features of the invention are applicable to switches of other types.

In the drawing, the reference numeral 1 identifies an approximately semi-circular sheet or plate of insulating material having integral apertured ears 2 for mounting the switch in an instrument case in the manner described in the above-referenced co-pending application. An arcuate array of a plurality of contacts 3 and an arcuate contact strip 4 concentric with contacts 3 and an arcuate array of additional contacts 5 are "printed" on one face of the plate 1 by any known or desired process, the contacts 3 being of substantial radial extent and circularly aligned with both contact strip 4 and contacts 5. Printed leads 6 extend from contacts 3, 5 and contact strip 4 and have terminal ends which surround holes 7 that extend through the in-

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insulating plate 1. Resistors 8 are mounted at the opposite face of the plate 1 by extending their terminal wires 9 through the holes 7 and securing them to the terminal ends of leads 6 by solder 10. The resistors are connected to the switch contacts to form a range-change network such as described and claimed in the copending application of John H. Miller and R. F. Estoppey, Serial No. 521,130, filed July 11, 1955, but the particular range-change network forms no part of the present invention.

A handle 11 for rotating the movable blade of the switch comprises a molded strip of insulating material having an opening 12 for mounting upon a bolt 13 which extends through the plate 1 at the center of the circular array of printed contacts, the handle being supported in spaced parallel relation to the plate on a metal bushing 14 which is slipped over bolt 13. A nut 15 and spring washers 16 are fitted upon the bolt 13 to secure the handle to the plate. The blade 17 is a stamped sheet of resilient metal such as Phosphor bronze having a flat head portion 17a which is apertured to fit upon the bolt 13 and has an extension 17b with a flanged end 17c for fitting within a second opening 12' of the handle to anchor the blade to the handle. The blade 17 has side arms 17d, 17e bent angularly from the head 17a and its extension 17b to extend toward the contact face of the plate 1, and these arms are of different lengths and provided near their free ends with small projecting contact areas 17f and 17g, respectively, for engagement with the switch contacts. An electrical connection is made to the blade 17 by a printed lead 6' having an inner terminal area, not shown, on which the bushing 14 is seated. The spring washers 16 provide an axial biasing pressure to maintain good electrical contact between the blade 17 and the metal bushing 14 and between such bushing and the underlying terminal area.

The lateral spacing of the blade contacts 17f and 17g is such that the blade 17 engages one of the switch contacts 3 before it leaves an adjacent contact 3, and the side arms of the blade are of such relative strength that blade contact 17f moves along contact strip 4 while blade contact 17g moves along the contacts 5.

A resilient indexing finger 18 has a head and central extension 18a provided with openings 18b and 18c for fitting over the bolt 13 and for alignment with opening 12' of the handle 11, respectively. The free end of finger 18 has a stamped projection 18d for seating in indexing notches of the case, not shown, in which the switch is mounted. The indexing finger 18 is arranged between the blade 17 and the handle 11, and is anchored to the handle by the projection of flanged end 17c of the blade through the opening 18c of the finger 18 and into aperture 12' of the handle.

External leads, now shown, are connected to appropriate points of the switch and, at some points, such external leads may be attached by the solder 10 which secures the resistors 8 to the plate 1.

Having now described our invention in detail in accordance with the requirements of the patent statutes what we desire to protect by Letters Patent of the United States is set forth in the following claims.

We claim:

1. A multipoint switch comprising a plate of insulating material, a plurality of contacts printed on one face of said plate in an arcuate array, each contact being disposed adjacent the contact next in sequence, relatively elongated and narrow leads printed on said plate and extending from the several printed contacts to terminal areas, said plate being provided with holes therethrough at said terminal areas of the leads, a blade with contact areas angularly and radially spaced for cooperation with said contacts, and means supporting said blade for movement on said plate and about an axis for selective engagement with said contacts.

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2. A multipoint switch comprising a plate of insulating material, a plurality of contacts printed on one face of said plate in an arcuate array, each contact being disposed adjacent the contact next in sequence, relatively elongated and narrow leads printed on said plate and extending from the several printed contacts to terminal areas, said plate being provided with holes therethrough at said terminal areas of the leads, one of said contacts being disposed a distance from the center of the array different from that of others, a blade, means supporting said blade for movement on said plate and about an axis for selective engagement with said contacts, said blade comprising a head section for attachment to said supporting means and side arms of different lengths having contact areas for respective engagement with said one contact and said other contacts.

3. In a switch, a plate of insulating material, contacts carried by one face of said plate, a blade for cooperation with said contacts, and means supporting said blade on said plate for angular movement for selective engagement with said contacts, said supporting means comprising a bolt extending through said plate, a handle of insulating material having an opening for mounting the same on said bolt, a bushing fitted on said bolt to space said handle from said plate, said blade having an apertured portion for mounting the same on said bolt between said handle and said bushing, means anchoring said handle and

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blade against relative angular movement, and a resilient indexing finger fitted upon said bolt between said blade and said handle.

4. In a switch, the invention as recited in claim 3, wherein said indexing finger has an opening therethrough, and said anchoring means extends through said opening of the indexing finger to anchor the same against angular movement with respect to said handle.

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