June 8, 1937. F. C. KUCH 2,083,384

RELAY STRUCTURE

Filed Sept. 2, 1936

FIG. 1

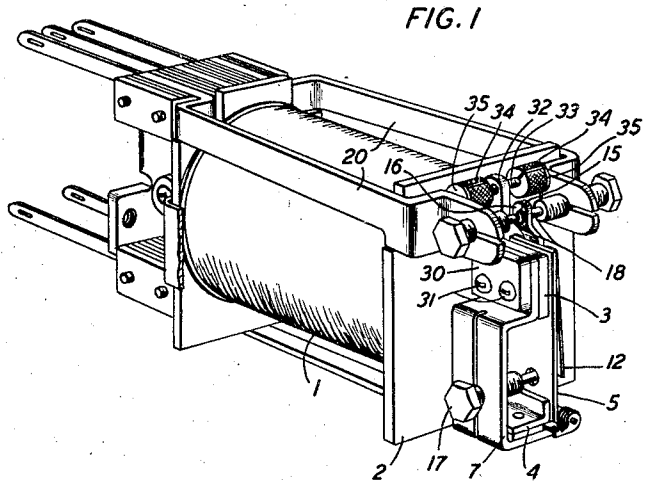



FIG. 2

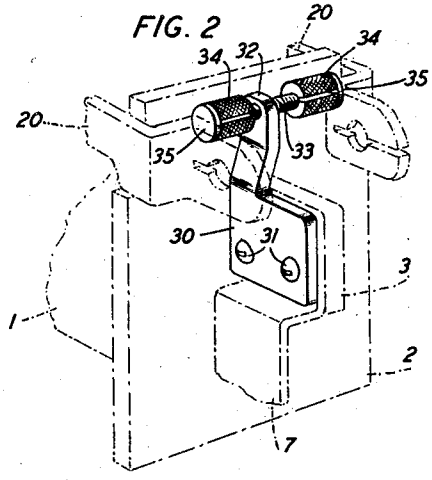
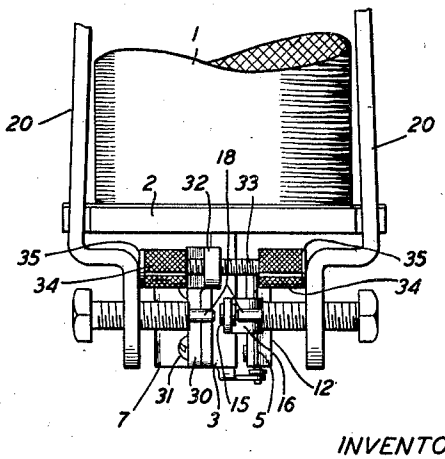



FIG. 3

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# UNITED STATES PATENT OFFICE

2,083,384

## RELAY STRUCTURE

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Application September 2, 1936, Serial No. 99,049

5 Claims. (Cl. 200—87)

This invention relates to electromagnetic relays and has for its object to facilitate the adjustment thereof.

In certain relays, for example, those of the type shown in Patent 1,478,045 granted to E. D. Mead on December 18, 1923, the contact carrying members either rest on or may come in contact with the spool-head. Under certain conditions the spool-head may expand and contract, thereby altering the position of the contact carrying members and destroying the adjustment of the contacts.

In accordance with the present invention a spacer is provided which may be mounted on the magnet core and engage the contact carrying members, to render them independent of the spool-head. This spacer comprises a bracket which carries a screw threaded pin onto the ends of which knurled nuts with insulating caps are threaded and adjusted to bear against the contact carrying members to move them away from the spool-head. The relay contacts may then be adjusted and remain in adjustment regardless of the condition of the spool-head.

The invention will be more clearly understood from a consideration of the following description and accompanying drawing in which:

Fig. 1 shows a perspective view of the relay as a whole;

Fig. 2 shows a perspective view of the bracket with parts of the relay indicated in dot-dash lines; and

Fig. 3 shows an enlarged plan view looking down on the bracket.

Referring first to Fig. 1, the relay as a whole comprises an energizing coil 1, wound on one leg of a U-shaped core 3, the other leg of said core having a bent-over portion forming a magnetic pole-piece 4. The armature 5 is secured to pole-piece 4 and is adjusted by means of spring 12 under the action of screw 17 which is held in place by the non-magnetic bridge 7, connecting the two pole-pieces. Secured to the free end of armature 5 is a member 16 carrying a contact 15. Cooperating with the movable contact 15 are adjustable fixed contacts 18 mounted on screws threaded into retaining and current carrying members 20. These members are mounted at the rear of the magnet and extend to the front where they enter notches cut in the spool-head 2 and in which they normally would rest.

To prevent contact between the spool-head 2 and the contact carrying members 20, a bracket 30, shown more clearly in Fig. 2, is mounted on the core 3 by means of the same screws 31 that hold the bridge 7 in place. The base of this bracket is of substantially the same width as the bridge 7. From the rear of the base an arm 32 extends upwardly and is bent toward the center of the core. On this arm is a fixed screw threaded pin 33 onto the outer ends of which the knurled nuts 34 are screwed. Each nut is provided with an insulating cap 35. These nuts 34 may be adjusted until they lift the contact carrying members 20 away from the spool-head 2, as is shown in Fig. 3. With the free ends of members 20 held in place in this manner the fixed contacts 18 may be adjusted with respect to the movable contact 15 and the adjustment will be maintained independent of atmospheric conditions.

What is claimed is:

1. In an electromagnetic relay, a core having forward and rearward extensions, an armature cooperating with said forward extension, a contact member carried by said armature, contacts for cooperation with said contact member, supporting members for said contacts mounted on said rearward extension, and a spacer mounted on said forward extension to fix the positions of said supporting members.

2. In an electromagnetic relay, a core having forward and rearward extensions, an armature cooperating with said forward extension, a contact member carried by said armature, contacts for cooperation with said contact member, supporting members for said contacts mounted on said rearward extension, and means to independently adjust the positions of said supporting members with respect to said forward extension.

3. In an electromagnetic relay, a core having forward and rearward extensions, an armature cooperating with said forward extension, a contact member carried by said armature, contacts for cooperation with said contact member, supporting members for said contacts mounted on said rearward extension, and a spacer to fix the positions of said supporting members, said spacer comprising a bracket, a threaded stud and a plurality of knurled nuts.

4. In an electromagnetic relay, a core having forward and rearward extensions, an armature cooperating with said forward extension, a contact member carried by said armature, contacts for cooperation with said contact member, supporting members for said contacts mounted on said rearward extension, and a spacer to fix the positions of said supporting members, said spacer comprising a bracket, a threaded stud and a plurality of knurled nuts having insulating caps.

5. In an electromagnetic relay, a core having forward and rearward extensions, an armature cooperating with said forward extension, a contact member carried by said armature, contact for cooperation with said contact member, supporting members for said contacts mounted on said rearward extension, and a spacer to fix the positions of said supporting members, said spacer comprising a bracket secured to said forward extension, a threaded stud in the free end of said bracket, and two insulated nuts one on each end of said stud and adjustable into engagement with said supporting members.

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