The present invention relates to a polarized relay using a circuit arrangement for a magneto-phonic unit and provided with a specific adjusting device capable of varying the electromagnetic features.

The principle aim of this invention is to provide an electromagnetic circuit to feed a polarized electromagnetic relay which by means of a specific adjusting device can operate in different modes, for example as a monostable, a bistable, or a differential device.

The detailed features of the present invention and the invention itself, will be better understood by referring to the following description of an exemplary embodiment taken in conjunction with the accompanying drawings, in which:

FIG. 1 shows a perspective view of a relay according to the invention;
FIG. 2 shows a cross sectional view taken along line A-A of the relay of FIG. 1;
FIG. 3 shows, in an exploded view, details of the relay; and
FIG. 4 shows a diagram of the basic electromagnetic circuit of the relay.

In FIGS. 1 and 1A is shown an electromagnetic relay using a magnetophonic unit circuit. On a base 11 assembled, in an insulating way, two studs forming fixed electric contacts 6 and 6'. The spacing of said fixed electric contacts from the corresponding movable electric contacts 8 and 8' can be varied by making suitable adjustments or adjusting and blocking nuts 13 and 13'. On the same base is further applied a supporting member 12 of U-shaped ferromagnetic material supporting magnetic coils 5. The energizing coils 5 of said electromagnets are connected to an external driving circuit as shown in FIG. 2. At the center of said supporting member 12 is mounted a permanent magnet 7 that functions to bias the armature 3.

The parts described above substantially form the fixed section bearing the movable section of the relay.

As shown in FIG. 3 the movable section is comprised of armature 9 formed by an S-shaped panel carrying at its ends movable contacts 8 and 8' intended to contact fixed contacts 6 and 6'. Armature 9 is firmly supported by underlying armature 3; the latter is of a dihedral corner form with upwards acute side and it is provided on said side facing the magnet with two embossings to make rocking easy. To armature 3 is soldered a strip 4 coming to an end with eyelet 4' through which passes screw 14 clamping armature 9 to an end of member 12 whereas the other end of said strip 4 comes to an eyelet 4" through which passes screw 14'. Said strip 4 has chiefly the purpose of retarding the electric continuity, as armature 9 is hardly attracted in the rocking field by the magnet itself. Under the armature is adapted a panel of nonmagnetic material 2 of suitable thickness acting as an antimagnetic material.

Now there will be described adjusting member 1 by adjustment of which it is possible to arrange the relay for a required mode of operation. This is the part to which the inventive idea disclosed by the present invention most particularly refers.

A leaf spring 1 is fixed by an eyelet end to the supporting member 12 through screw 14' which is also used for securing the end 4" of armature 3. The other end of the leaf spring 1 resiliently presses on armature 9. The spring has been shaped at its pressure applying end to facilitate the rocking of movable armature 9 while the other end, as indicated above, is pivoted on clamping screw 14'.

After releasing screw 14', spring 1 can be rotated either in one or the other direction according to the operation required. Such an angular movement causes sensible variance of the relay, since the power needed to move armature 9 is directly dependent upon the amount of movement of spring 1 in relation to the axis of strip 4. Accordingly, by increasing the movement of spring 1 there is increased not only the operation power required, but also the restoration power of the rest contact.

As a result of the set adjusting position can be particularly attained two kinds of operation, namely: if adjusting is effected on left or right side of the middle axis of strip 4, the relay will operate as a monostable device (in such an operation one of contacts 6 or 8 is closed while the other one is open, when the relay is at a rest); the closing of the right or the left contacts depends upon setting spring 1 on the right or the left side of the axis referred to above. On the contrary if spring 1 is set parallel to the axis of strip 4 the relay will operate as a bistable device (flip-flop), since the armature when set in this position can rock in a state of indifferent balance or will be on the last operation position. In the latter case slight movements may be used for correcting the symmetry thereof.

Alternatively, instead of only two electric contacts, groups of electric contacts may be assembled on an insulating support secured to armature 9, thus meeting different requirements according to the use for which the relay is intended.

While the principles of the present invention have been described above in connection with a specific embodiment, it is to be clearly understood that this specification is made only by way of example and not as a limitation to the scope of the invention as set forth in the accompanying claims.

What is claimed is:
1. An adjustable electromagnetic relay capable of operation in a plurality of modes, comprising:
   a. a base,
   b. a pair of electrical contacts supported on said base,
   c. an armature, said armature including an underlying armature portion forming a dihedral corner, said dihedral corner constituting an edge about which the armature may be pivoted, means supported on said base to act as a bearing surface against which said edge is seated, means fastening said armature to said base to permit rotation about said edge, said armature supporting a pair of electrical contacts positioned one on each side of said edge and facing respective ones of said pair of electrical contacts supported on said base with spacing between contacts to enable connection between a pair of facing contacts,
   d. a leaf spring having first and second ends, means for fastening the first end of said leaf spring to said base in a manner to permit rotation of the second end about the first end, said second end of said leaf spring bringing pressure to bear on said armature to apply a mechanical bias urging the armature to a particular mode of behavior, and
   e. means for applying a further bias to said armature including electromagnets is positioned on either side of said edge.
2. An electromagnetic relay substantially as claimed in claim 1, in which said second end of said leaf spring may be positioned at a small angle to a line parallel to said edge to provide a monostable relay.

3. An electromagnetic relay substantially as claimed in claim 1, in which said second end of said leaf spring may be positioned to have its longitudinal axis parallel to a line through said edge to provide a bistable relay.

4. An electromagnetic relay substantially as claimed in claim 1, in which said electromagnets may be made responsive to potentials of different strength to cause said relay to operate as differential device.

5. An electromagnetic relay substantially as claimed in claim 1, in which said pair of electrical contacts supported on said base are adjustable to permit raising and lowering them relative to said base.

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