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Dietsch et al.

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[54] **ARMATURE ASSEMBLY FOR AN ELECTROMAGNETIC RELAY**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 38,157, May 18, 1970, abandoned.

[52] **U.S. Cl.** **335/135**, 335/274

[51] **Int. Cl.** **H01h 50/58**

[58] **Field of Search** 335/135, 274

[56] **References Cited**

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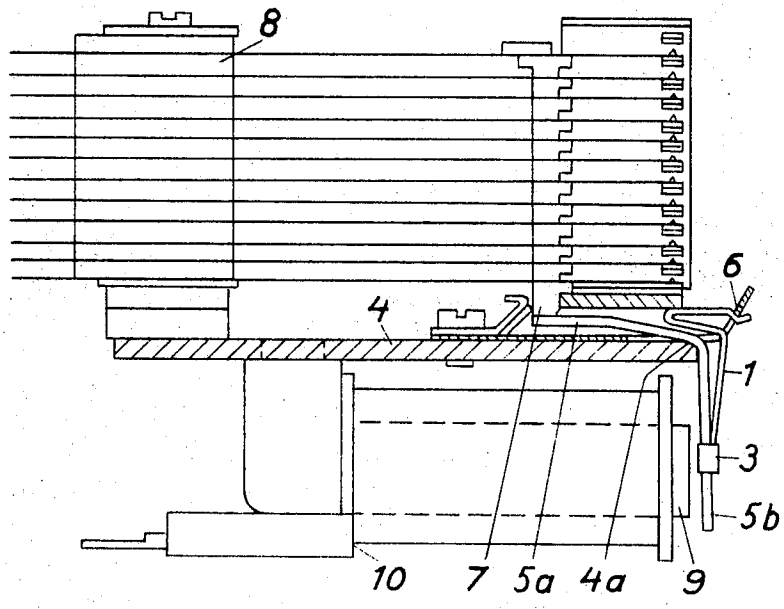
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[57] **ABSTRACT**

An electromagnetic relay has a generally L-shaped armature which rests at its bend on a bearing edge of the yoke of the relay for pivoting the armature about said edge as a fulcrum. One branch of the armature coacts with the core of the relay for controlling the angular position of the armature by the state of magnetization of the core and the other branch of the armature underlies a contact spring assembly for control of the same by the angular position of the armature. A generally V-shaped leaf spring extends between the armature and the spring assembly. One leg of this spring is secured to the branch of the armature coacting with the core and the other leg has a nose which is hooked on a clamping member fixedly secured to the yoke of the relay. As a result, the spring holds the armature in its position on the bearing edge. Detachment of the armature together with the spring is effected by simply unhooking the nose of the spring from the clamping member.

3 Claims, 3 Drawing Figures



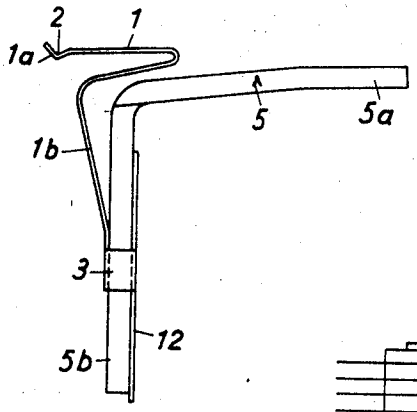


Fig. 1

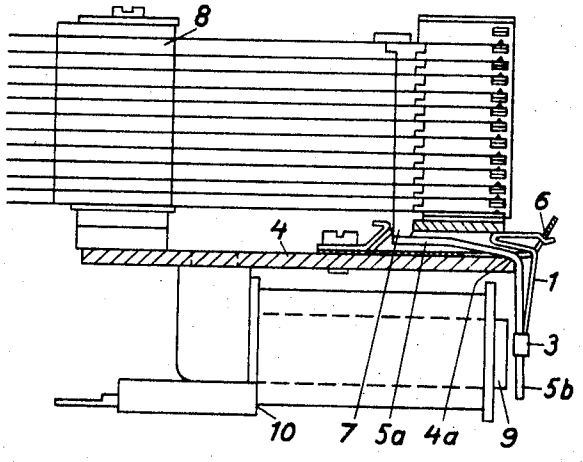


Fig. 2

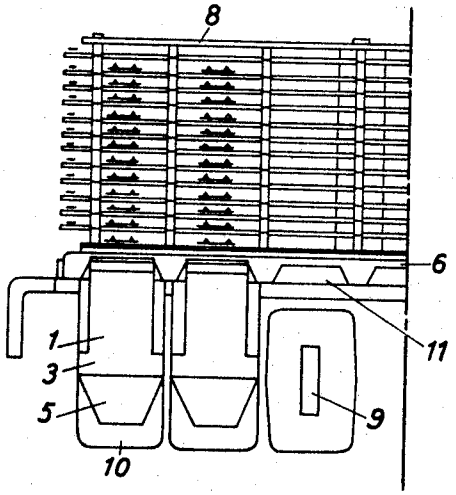


Fig. 3

ARMATURE ASSEMBLY FOR AN ELECTROMAGNETIC RELAY

The application is a continuation-in-part application based on our copending application Ser. No. 38,157, filed May 18, 1970, and now abandoned.

The invention relates to an electromagnetic relay or solenoid and more particularly to the mounting of an L-shaped armature of such relay.

BACKGROUND

Relays of the general type above referred to are widely used for controlling the switching position of a contact spring assembly by the pivotal position of the armature of the relay which, in turn, is controlled by the state of energization of the relay and more specifically by the magnetization of the relay core. The conventional pivotal mounting of the armature is by means of a hole in the armature through which extends a pivot pin secured to the yoke of the relay. A mounting of this kind unavoidably causes considerable friction at the pivot axis and corresponding wear. Such friction and the resulting wear tend to result eventually in jamming of the armature and thus in failure of the control of the spring assembly.

THE INVENTION

It is an object of the invention to provide a novel and improved electromagnetic relay for control of a spring assembly by the angular position of an L-shaped armature in which the armature is pivotal virtually without friction and wear and moreover, can be conveniently and rapidly installed in the relay and detached therefrom.

Other and further objects, features and advantages of the invention will be pointed out hereinafter and are set forth in the appended claims constituting part of the application.

DETAILED DESCRIPTION OF THE INVENTION

In the accompanying drawing a preferred embodiment of the invention is shown by way of illustration and not by way of limitation.

In the drawing:

FIG. 1 is an elevational view of the armature and spring assembly of the relay;

FIG. 2 is a diagrammatic elevational view, partly in section, of the electromagnetic relay and of the contact spring assembly controlled by the same; and

FIG. 3 is an elevational front view of FIG. 2.

Referring now to the figures more in detail and first to FIG. 1, the armature and spring assembly according to this figure comprises an L-shaped armature **5** having branches **5***a* and **5***b*. The armature may be in one piece, in which case it is made of magnetic material, or of two parts, in which case part **5***a* actuating the contact spring assembly is made of non-magnetic material and part **5***b* of magnetic material for a reason which will be more fully explained hereinafter. The figure further shows a generally V-shaped leaf spring **1** the legs of which terminate in extensions **1a** and **1***b*, respectively. Extension **1***a* is short and joined to the respective leg of the spring by a generally V-shaped depression forming a nose **2.**

Extension **1b** is longer than extension **1a** and secured at its end to branch **5***b* of the armature by means of bent-over lugs or ears **3.** A plate **12** is secured to armature branch **5***a* by suitable fastening means such as ears **3.**

Turning now to FIG. **2,** this figure shows a coil **10** wound about a core **9** protruding at one end from the coil. The coil and the core are mounted on a yoke **4** of the relay. The armature rests at its bend on an edge **4***a* of the yoke. This edge thus constitutes a bearing about which the armature is pivotal without appreciable friction. Branch **5***b* of the armature coacts with the protruding end of core **9** whereby the angular position of the armature is controlled by the state of energization of the core. The other branch **5***a* overlies the yoke and coacts with a lifting member **7** of a conventional contact spring assembly **8.** Attraction of branch **5***b* of the armature will cause lifting of the spring assembly in a conventional manner and thus a corresponding change in the switching position of the assembly.

As is clearly shown in FIGS. **2** and **3,** the legs of spring **1** extend between branch **5a** of the armature and contact spring assembly **8.** The spring **1** and thus the armature are held in position by hooking nose **2** upon a clamping member **6** fixedly secured to yoke **4** protruding therefrom. The spring and armature branch **5a** extend through an opening **11** in the clamping member **6.** The width of spring **1** equals the width of opening **11** at the upper edge thereof but is larger than the width of armature branch **5***a.*

Assembly of both the armature and the spring is very simple. All that is necessary is to hook nose **2** on clamping member **6** and disassembly of both the armature and the spring is equally simple as it is merely necessary to unhook nose **2.** Such hooking and unhooking is effected by slightly pressing the legs of the spring toward each other.

What is claimed is:

1. In an electromagnetic relay including a yoke, a core supported by the yoke and a movable armature, a mounting assemblage for the armature comprising:

a generally L-shaped armature resting at its bend against a bearing edge of the yoke for pivoting the armature about said edge as a fulcrum, one of the branches of the L-shaped armature coacting with said core for controlling the angular position of the armature by the state of energization of the core and the other branch of the armature overlying the yoke;

a clamping member secured to the yoke extending therefrom;

a generally V-shaped leaf spring, each of the legs of the spring terminating in a bent-off extension, one of the legs being secured at the end of its extension to said one branch of the armature and the extension of said other leg including a nose, said nose being hooked to said clamping member for holding the spring and thus the armature in position, the extension of said one leg being angled off said one armature branch for holding the spring spaced apart from the armature except at the secured end of said extension; and

a contact spring assembly and a lifting member for switching the assembly, said other branch of the armature coacting with said lifting member and the legs of the leaf spring extending between said other branch of the armature and the lifting member.

2. The mounting assemblage according to claim **1** wherein the extensions of the legs of the leaf spring are of different length, the short extension including said nose and the long extension being secured to said one branch of the armature.

3. The mounting assemblage according to claim **2** wherein said nose is formed by a generally V-shaped depression intermediate the short leg of the spring and the extension thereof.

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