Dec. 28, 1943.

M. S. TSIPKIN

2,337,694

ELECTROMAGNETIC TELEPHONE RELAY

Filed May 6, 1940

Fig. I

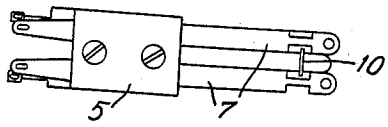


Fig. II

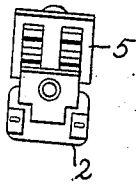


Fig. III

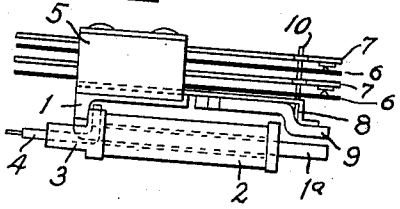


Fig. IV

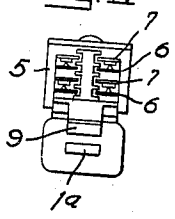


Fig. V

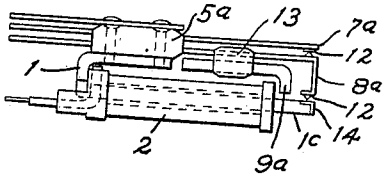


Fig. VI

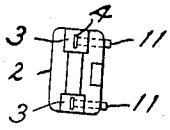


Fig. VII

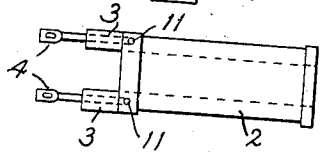


Fig. VIII

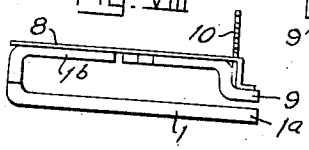


Fig. IX

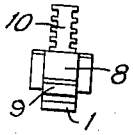


Fig. X



Fig. XII

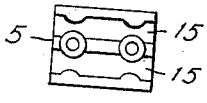


Fig. XIII

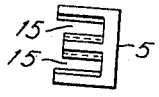
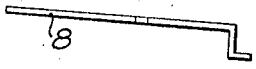


Fig. XI



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ELECTROMAGNETIC TELEPHONE RELAY

Matvey Samuilowith Tsipkin, Leningrad, Union of Soviet Socialist Republics

Application May 6, 1940, Serial No. 333,666. In the Union of Soviet Socialist Republics April 19, 1939

1 Claim. (Cl. 200—104)

This invention relates to relays of the electromagnetic type and has for its object to provide a device of simple and inexpensive construction in which the parts are so constructed and arranged as to provide a compactness combined with easy accessibility.

In the accompanying drawing wherein the invention is illustrated:

Figure 1 is a top plan view of the relay.

Figure 2 is a rear end elevation thereof.

Figures 3 and 4 are side and front elevations.

Figure 5 is a side elevation of a modified form of relay.

Figure 6 is a rear elevation of the magnet coil removed.

Figure 7 is a top plan view of the coil removed.

Figures 8 and 9 are side and end elevations, respectively, of the magnetizable bar and related armature detached from the form of the relay illustrated in Figures 1 to 4.

Figures 10 and 11 are top plan and edge views, respectively, of the armature spring illustrated in Figures 8 and 9.

Figures 12 and 13 are edge and end views, respectively, of the contact holding box.

The magnetizable bar 1 shown in detail in Figures 8 and 9 extends through the coil 2 to provide a pole piece *a* at one end. The opposite end of the bar is bent around the coil to provide an arm 1*b*. The coil is equipped with lugs 3 at its rear flange through which pass the out-leading pins 4.

The purpose of fitting this flange with lugs is to insulate the out-leading pins from the plate on which the relay is to be installed, as well as securing a rigid fixing of the relays when installed on the plate. The leading-out pins 4, pressed into the flange of the coil 2 are bent and brought out in the upper part of the flange as indicated at 11 so as to provide connection to the out ends of the winding of coil 2. These connecting points 11 in the assembled relay lie below the arm 1*b* thus affording a protection of the brought out coil ends from mechanical injuries.

The arm 1*b* forms a support on which the contact groups are to be installed. As shown in the embodiment illustrated in Figures 1 to 4 and 8 to 13 this arm is occupied by the box 5 with a set of contact springs 6 and 7. Here the thin springs represent working springs, while the bigger ones are rest springs. The box 5 secures the armature spring 8, carrying the armature 9 fastened to its free end. The box is represented separately in Figures 12 and 13, where is shown the arrangement of the slots 15 bearing sets of contact springs and insulating intermediate layers. The slit 8*a* on the forepart of the armature spring receives the insulating pull-rod 10, on which are provided dents each facing a spring and serving to transfer movements from armature to working springs. Accordingly the rest springs have recesses, permitting free movement of the pull-rod. The fastening of armature spring and pull-rod 10 to the armature 9 may be carried out by welding, soldering or riveting means.

When armature 9 is attracted to pole piece 1*a*, the working springs 6 are disengaged from the rest springs, being pulled by rod 10, thereby rupturing the contacts.

By variously combining the arrangement of springs bearing different contacts a closing and opening of contacts can be achieved. In particular the rest springs may be disposed beneath the working springs in order to get a closing of the contacts.

The relay shown in Fig. 5 is different by the mode of fastening armature 9*a* and armature spring 8*a* by means of a coupling 13 made of insulating material.

The box 5, holding the arrangement of contact groups is substituted here by a fixing device 5*a* made of plastics.

In this modification the armature spring 8*a* constitutes at the same time the contact spring and at its bent forward end is provided with contacts 12, situated on both horizontal planes on the same vertical axis.

When current flows through coil 2, the armature 9*a* is attracted to pole piece 7*c* and thus moves spring 8*a* from the upper contact on spring 7*a* to the lower contact 14 on the pole piece 1*c*.

Between the fixing device 5*a* bearing contact 7*a* and armature spring 8*a* and the coupling 13 fastening armature spring and armature there is provided a space in order to enable the introduction in this space of a special tool, by means of which the armature spring could be bent so as to produce the desired pressure on rest spring 7*a*.

I claim:

In an electromagnetic relay, a coil, a magnetizable bar extending through said coil providing a pole piece beyond an end of the coil, said bar being bent around the opposite end of the coil to provide an integral arm extending axially along a portion of the coil, an armature bar aligned with said integral arm along the remainder of the coil, an integral offset end carried by the armature terminating adjacent the pole piece, a leaf spring mounted on said integral arm extending along and supporting said armature, a contact carried by said pole piece, a contact mounted on said spring for engaging the first contact, and a contact member supported by said integral arm adjacent the leaf spring.

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