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VACUUM RELAY

Filed April 14, 1939

Fig. 1

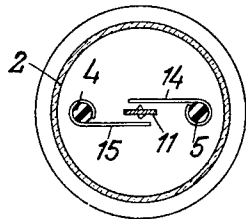
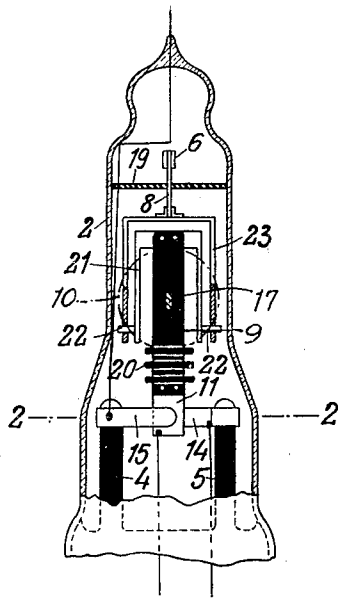


Fig. 2

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# UNITED STATES PATENT OFFICE

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## VACUUM RELAY

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Application April 14, 1939, Serial No. 267,747  
In Germany April 14, 1938

### 1 Claim. (Cl. 200—87)

The invention is an improvement upon the vacuum relay shown in the copending patent application Serial No. 204,441, filed April 26, 1938. The relay there described has its armature and contacts fixed on a carrier made of an insulating material. Preferably, a ceramic material is to serve this purpose. In the construction disclosed in the prior application this carrier is in the shape of a bar suspended at one of its ends after the manner of a pendulum. The free end thereof, that is, the end remote from the point of suspension or fulcrum, is provided with the relay contacts. This construction aims to afford an insulating path for high voltages which is of the greatest possible length. Such construction, however, is possessed of the disadvantage that the carrier or bar so suspended is very sensitive to shocks whereby undesired switching operations readily occur.

The invention therefore proposes to fasten the bar-shaped carrier to a bridge-shaped device in a manner to locate the fulcrum in the vicinity of the relay contacts.

In the accompanying drawing Fig. 1 is a sectional view of one embodiment of the invention, while Fig. 2 shows a section thereof on line 2—2.

2 denotes the bulb of a vacuum vessel the closure or cover of which is not shown, being immaterial to the invention. On two studs 4, 5 contact springs 14, 15 are fixedly mounted. A bar 9 of insulating, e. g., ceramic material carries at its end an armature 11 which is provided on its two sides with contacts cooperating with the contact springs 14 and 15, respectively. A metal plate 10 is fastened to each side of the bar 9 by means of a stud 17. Bar 9 is rigidly connected with the cross-bar of a U-shaped member

21 which at its free ends is provided with trunnions 22 and which is mounted by means of these trunnions in a U-shaped member 23. This member is fastened to a support 6 by a piece of sheet metal 8 and is centered in the bulb 2 by suitable clamping means, such as a mica disc 19. Bar 9 has ribs 20 arranged to add to the length of the insulating path.

Under operating conditions in the preferred embodiment, metal plates 10 attached to the bar 9 are acted upon by a magnetic field produced by electromagnets external to the tube (not shown). The plates are moved in either of two directions depending on the polarity or energization of the electromagnets, and the bar 9 is pulled or pushed closing the contacts carried by contact member 11 on either of the springs 14 or 15. Leads from the high voltage circuit it is desired to make operative are attached to the springs 14 and 15, and the armature 11, and the high voltage circuit is therefore made operative when the armature is moved a distance sufficient to close the contacts of member 11 against springs 14 or 15. The armature may, however, be actuated by any of several known means.

What is claimed is:

In a vacuum relay, an armature and cooperating switching contacts, a support of insulating material for said armature and contacts, a U-shaped movable clamp having a crossbar to which said support is attached, studs projecting from the free legs of said U-shaped clamp, and a stationary clamp in which said movable clamp is pivoted by means of said studs.

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