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G. DUMONT

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ELECTRICAL RELAY SWITCH

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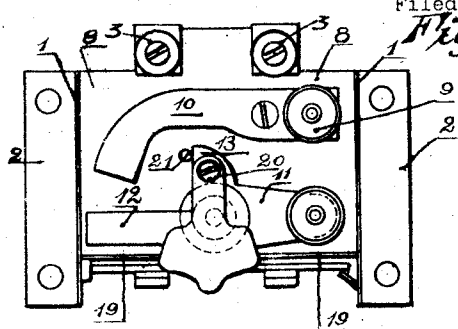


Fig. 1.

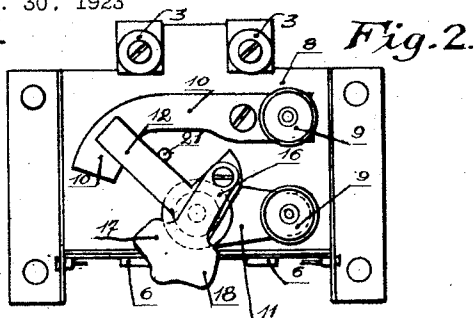


Fig. 2.

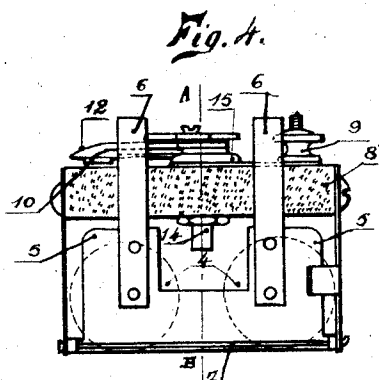


Fig. 4.

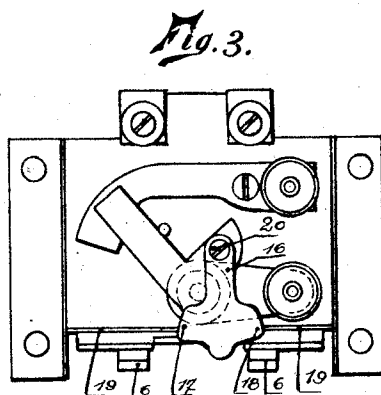


Fig. 3.

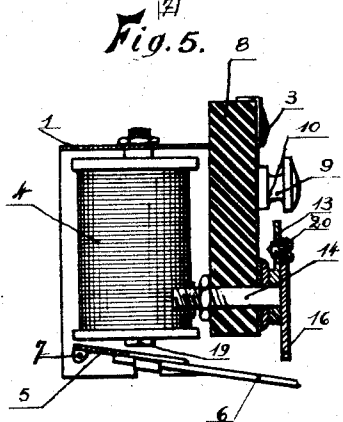


Fig. 5.

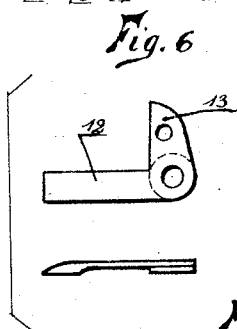


Fig. 6.

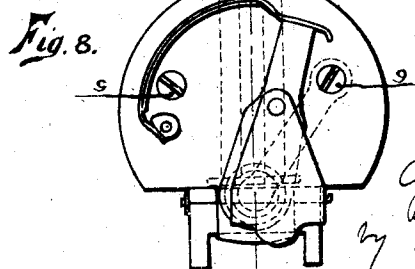


Fig. 8.

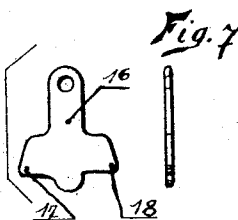


Fig. 7.

Inventor
Guillaume Dumont
by M. H. Babcock & Son
Attorneys

UNITED STATES PATENT OFFICE.

GUILLAUME DUMONT, OF ESNEUX, NEAR LIEGE, BELGIUM.

ELECTRICAL RELAY SWITCH.

Application filed November 30, 1923, Serial No. 677,753, and in Belgium December 8, 1922.

This invention relates to electrical switches of which the operation is controlled by a relay device supplied by low tension current, for example that of the kind used in electric bell circuits.

The invention consists of an improved relay switch for this purpose, in which the rise of the armature of an electromagnet supplied with low tension current through the operation of a push button or the like, causes successively the connection and disconnection of a movable contact with a second stationary contact, these two contacts last-mentioned being arranged in the circuit of higher tension which is to be closed or opened for any purpose in view.

The accompanying drawings represent by way of example a mode of construction of an apparatus of this nature.

Figure 1 is a front elevation of the improved switch with the high-tension circuit open.

Figure 2 is a similar view, showing the closure of the high-tension circuit at the moment of the operation of the relay.

Figure 3 shows a view similar to Figure 1, but at the moment when the relay is about to act to break the high-tension circuit and restore the apparatus to the position of Figure 1.

Figure 4 represents a view of the apparatus seen from below.

Figure 5 is an elevation in section on the line A—B of Figure 4.

Figure 6 shows the detail of the movable contact.

Figure 7 shows the detail of the pendulum or balance which controls the device.

Figure 8 shows a modified construction of the apparatus.

The apparatus illustrated comprises a metal frame or support 1 provided with feet or flanges 2 by which it can be mounted. Upon the front of this frame or body is fixed a plate 8 of fibre or other insulating material, upon which are secured the low-tension terminals 3, supplying the windings 4 of the magnet cores 19. Upon this same plate 8 there are likewise arranged the terminals 9 for the higher voltage current.

One of the terminals 9 is in electrical connection with hook-shaped plate 10, of which the free end constitutes the contact face for a movable arm 12 mounted upon a spindle 14.

The arm 12 carries also a second arm 13 upon which is secured a screw 20 designed to support with free pivotal movement the arm 16 of a balance member of which the ends 17 and 18 are adapted to make contact with arms 6 secured to a soft-iron armature or the like 5, pivoted on a pin or spindle 7 supported by the metal body, frame or the like 1.

A connecting strip 11 extends from the other high-tension terminal 9 so to make contact with the bell crank lever 12, 13.

A stop-pin 21 is provided to limit the movement of the lever arm 13.

The method of operation is as follows:—

Referring to Figure 1, which represents the switch in position to close the high-tension circuit, if the control button of the relay windings 4 is pressed, the armature 5 is attracted and one of the arms 6 lifts the extremity 17 of the lever 16; the latter acting as a crank carries with it the arm 13 and therefore the contact arm 12 which comes into engagement with the contact plate 10, so as to produce the closure of the high-tension circuit through the terminals 9.

The control button having returned to its normal position, the pallets 6 resume the position of Figure 5, and the member 16 falls by gravity as indicated in Figure 3, that is, the opposite extremity 18 of this member 16 comes into position above a pallet 6 similar to that which has previously struck against its end 17.

In order to open the high-tension circuit, it suffices to exert a further pressure upon the control button supplying the windings 4, the right hand pallet 6 then raising the extremity 18 as shown in Figure 3 causing the arm 12 to effect an angular movement which will have for effect to break the contact between this arm 12 and the plate 10.

The high-tension circuit will then be open once more, and the apparatus having fulfilled the requirements will resume the position shown in Figure 1.

It will be noted that the spindle 14 to which the lever 12, 13 is secured, is freely pivoted in the support 8, upon which there is likewise provided a stop-pin 21 serving to arrest the extremity of the lever arm 13 in the position in which the high-tension circuit is open.

The action of the mechanism, as will be noted, results from the eccentricity of the

support of the member 16 in relation to the spindle 14.

It will be obvious that modifications of construction may be applied to the device shown in the accompanying drawings which in no way limit the nature of the mechanism employed in an apparatus of the kind in question for the purpose indicated, and that the nature, the tension and the magnitude of the currents may be any within reason.

Similarly the nature and the composition of the materials may be any suitable, provided that they respond to the required conditions as specified above. Figure 8 represents a drum-shaped single magneto relay switch of the type described above.

I claim:

An electrical relay switch comprising an electro-magnet, and a plate pivotally connected thereto and actuated thereby and being bifurcated to provide a pair of spaced arms, the free ends of which have an appre-

ciable reciprocatory vertical movement due to the movement of said plate on its pivot under the influence of said electro-magnet, in combination with a contact, a pivotally mounted switch element, and an actuating element pivoted to said switch element at a point removed from the axis thereof and free to assume a vertical position under the influence of gravity, the lateral lower portions of the said actuating element being formed into abrupt downwardly presented shoulders respectively, and its medial lower portion being formed with downwardly tapering converging sides to engage against said arms respectively to limit movement of said actuating element about its pivot, said arms alternately engaging the respective co-operating shoulders to move said actuating element and operate the switch.

In testimony whereof, I have signed my name to this specification.

GUILLAUME DUMONT.