Sept. 13, 1966 J. MALIN 3,273,090

MAGNETICALLY OPERATED SWITCH

Filed June 8, 1965

FIG. 1

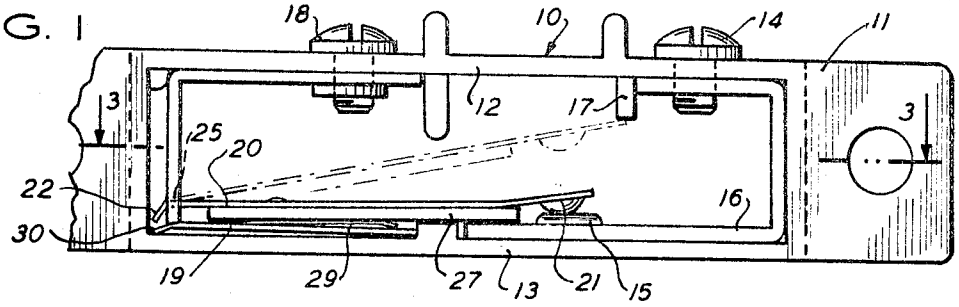


FIG. 2

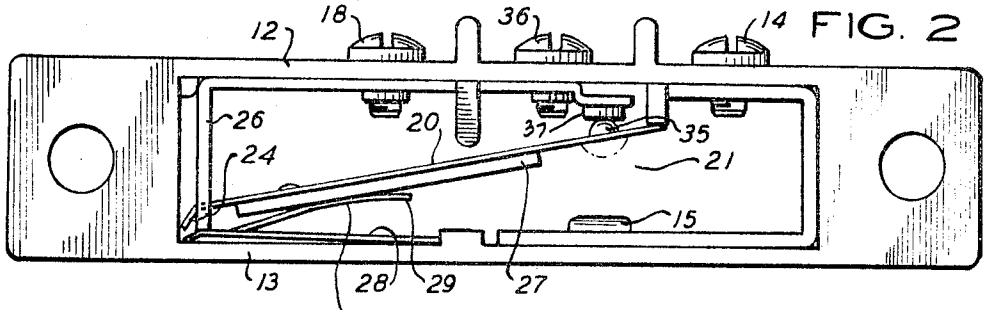


FIG. 3

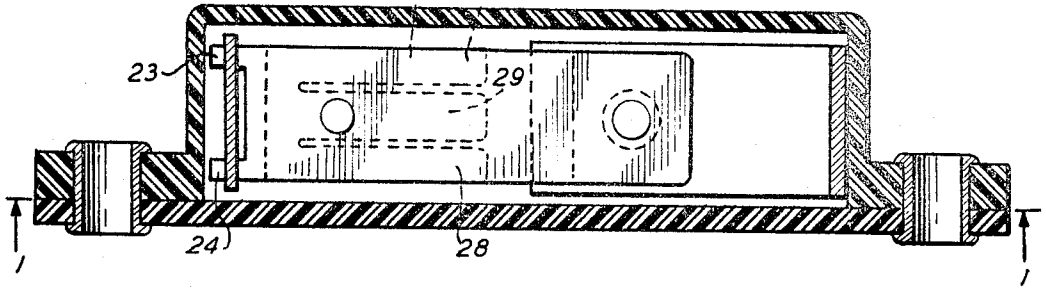


FIG. 4

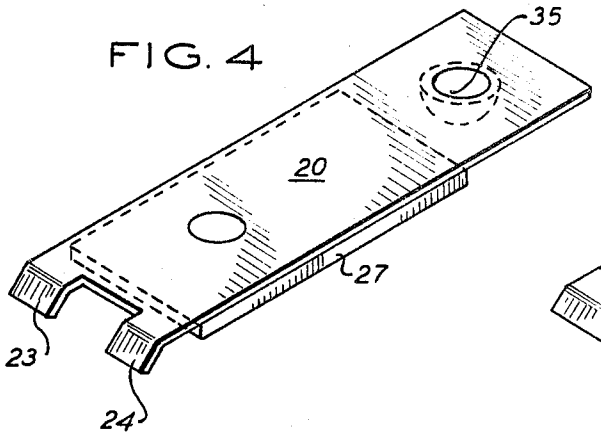
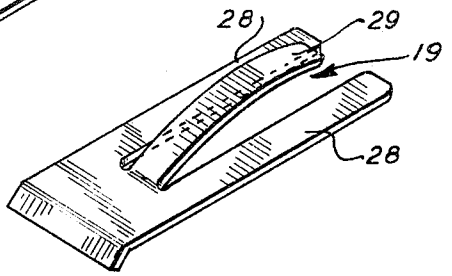


FIG. 5



INVENTOR
JACK MALIN

BY

ATTORNEY

United States Patent Office

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MAGNETICALLY OPERATED SWITCH

Jack Malin, Beechhurst, N.Y., assignor, by mesne assignments, to Alarm Device Mfg. Co., a division of Pittsburgh Railway Co., Inc., Carle Place, N.Y., a corporation of Pennsylvania

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This invention relates to electrical switches and more particularly to an electric switch actuated from one position to another responsive to proximity to a magnet.

The switch may be used to normally open or normally close an electric circuit until such time as it is moved relative to a magnet, thereby overcoming the biasing action novel spring means in the switch. Switches of this invention are well adapted for use, for example, to actuate burglar and fire alarm systems and devices, the switch being placed at a given position and actuated for example, on moving a door or window to dispose the switch relative to a magnet..

The switch incorporates novel structural features which render it essentially foolproof and positive in operation and economical and sturdy to manufacture.

The drawings, illustrating procedures and devices useful in carrying out the invention, and the description below, are exemplary only of the invention, which shall be deemed to cover all other devices and procedures coming within the scope and purview of the appended claims.

In the drawings, wherein similar reference characters indicate like parts:

FIG. 1 is a partly fragmentary, elevational view of an electric switch embodying the invention, with the closure plate removed, taken at line 1—1 of FIG. 3,

FIG. 2 is an elevational view of a further form thereof, with the closure plate removed,

FIG. 3 is a medial sectional view, taken at line 3—3 of FIG. 1,

FIG. 4 is a perspective view of a spring contact plate used in carrying out the invention, and

FIG. 5 is a perspective view of a spring member used in carrying out the invention.

A switch **10** of this invention is shown in the drawings, comprising casing **11** having internal spaced upper and lower walls **12** and **13** and a first terminal post **14** for connection of a wire or other conductor or part of an electric circuit to be controlled; a first contact member **15** in the casing is connected to the first terminal post **14**, as by conductor plate **16**, which may be of J-shaped form and registered with stud **17** in the casing **11**. The first terminal post **14** may threadedly engage the conductor plate **16** to further register the same in position and locate first contact member **15** on the lower wall **13** of the casing **11**. A second terminal post **18** is positioned on the casing for connection with the electric circuit. Biasing means **19** (FIG. 1) provide a normal biasing action, urging an elongated spring contact plate **20**, having a second contact member **21** at one end thereof, to the dotted line (FIG. 1) position. The elongated spring contact plate **20** is preferably downturned or otherwise disposed at one end, **22**, pivotally in a slot in or under the plate **26** in one end of the casing (FIG. 2). Plate **20** may be provided with spaced terminal fingers **23**, **24** at the end **22** thereof (FIG. 3), for reception in openings **25** in the second conductor plate **26** positioned in the casing **11** for pivotally mounting the elongated spring contact plate **20** and to electrically connect it with the second terminal post **18**.

The form of switch shown in FIG. 1 would be normally open, as indicated in dotted lines, a spring **29** urging

second contact member carrying plate **20** away from first contact **15**, opening the switch; on movement of the switch close to a magnet, the switch will close, due to the attraction of an armature bar **27**, fixed to the spring contact plate **20**. The spring contact plate **20** will then pivot so that the second contact member **21** carried thereby will close on the first conact member **15** and thereby the circuit through the first and second terminal posts **14** and **18** (and through any electric circuit connected therewith) is closed. Upon movement of the switch away from the magnet, spring contact plate **20** will return to its normal (dotted line) position and the circuit will be opened.

The biasing means **19** may comprise a W-shaped spring member (FIG. 5) having a U-shaped base portion **28** (FIG. 5) and a central finger **29** which may be bent angularly upwardly for sliding engagement with the underside of the armature bar **27**. Thus sliding contact is provided, assuring smooth and relatively friction free movement of the parts in an effective manner.

The form shown in FIG. 2 is different from that of FIG. 1 in the provision of the third contact member **35** at the end of the elongated spring contact plate **20** for engagement with a fourth contact **37** in the casing electrically connected with a third terminal post **36** on the casing. In the FIG. 2 form of the invention, the switch is normally biased so as to close the third contact **35** on the fourth contact **37** and thereby close the circuit through the posts **18** and **36**; on attraction of armature **27** by proximity to a magnet, movement of the elongated spring contact plate **20** toward the first contact member **15** is effected, second contact member **21** of the spring contact plate **20** then closing on the first contact member **15**, thereby closing the circuit through the terminal posts **14** and **18**. Thus, selective circuits connected to posts **14** and **18** and to posts **18** and **36** may be controlled according to the position of the switch, in the FIG. 2 form, relative to a magnet.

While the foregoing disclosure of exemplary embodiments is made in accordance with the Patents Statutes, it is to be understood that the invention is not limited thereto or thereby, the inventive scope being defined in the appended claims.

I claim:

1. In an electrical switch for connection with an electric circuit to be controlled thereby according to the proximity of the switch to a magnet, a casing for the switch having internal spaced upper and lower walls, a first terminal post on the upper wall of the casing for connection with the electric circuit, a first contact member on the lower wall of said casing and within the casing, connected to said first terminal post, a second terminal post on the casing for connection with an electric circuit, a conductor plate connected to the second terminal and extending to the lower wall, an elongated spring plate member, means pivotally connecting one end of said spring plate member to the lower end of said conductor plate and electrically connecting said end of the spring plate member to said second terminal post, a second contact member on said spring plate member, an armature secured to said spring plate member, biasing means engaging the casing and engaging the armature urging the second contact member carrying portion of the spring plate member for movement relative to the first contact member until the attraction of the armature to a magnet overcomes the said biasing means.

2. In an electric switch as set forth in claim **1**, a third terminal post positioned on the upper wall of the casing for connection of an electric circuit, a third contact member on the elongated spring plate member, and a fourth contact member in the casing connected with the third terminal post on the casing, whereby the contact member may be urged into engagement with the contact member

of the third terminal post on the casing responsive to the urging of the biasing means.

3. In an electrical switch for connection with an electric circuit to be controlled thereby according to the proximity of the switch to a magnet, a first terminal post on the casing for connection with the electric circuit, a first contact member within the casing connected to said first terminal post, a second terminal post on the casing for connection with an electric circuit, an elongated spring plate member, means movably connecting one end of the spring plate member with respect to the casing and electrically connecting said end of the spring plate member to said second terminal post, a second contact member on said spring plate member, an armature secured to said spring plate member, and biasing means engaging the casing and engaging the armature, urging the second contact member carrying portion of the spring plate member for movement relative to the first contact member until the attraction of the armature to a magnet overcomes

the said biasing means, said biasing means comprising a W-shaped spring member having a central portion upturned and abutting the armature.

4. The switch as set forth in claim 3 in which the upturned central portion is a medial finger having sliding engagement with the armature.

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BERNARD A. GILHEANY, *Primary Examiner.*

B. DOBECK, *Assistant Examiner.*