Oct. 13, 1953 E. BESAG ET AL 2,655,622

MEANS FOR MOUNTING MAGNETS OR THE LIKE WITHIN SWITCH CASINGS

Filed Jan. 31, 1949

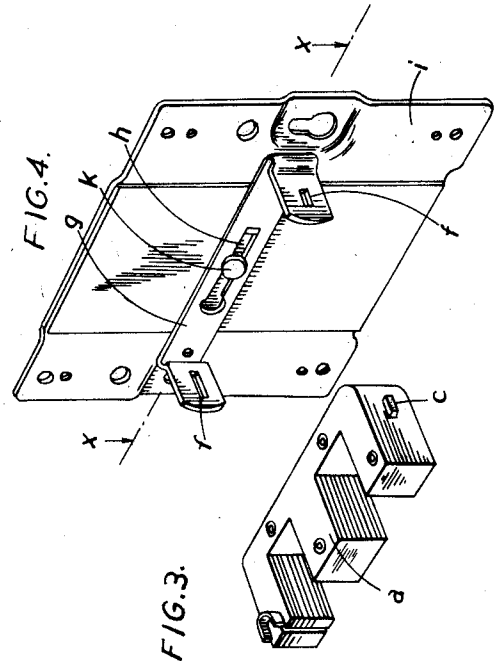


FIG. 4.

FIG. 3.

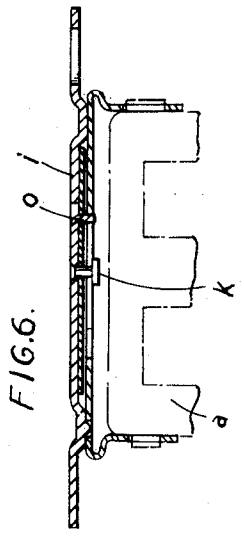


FIG. 6.

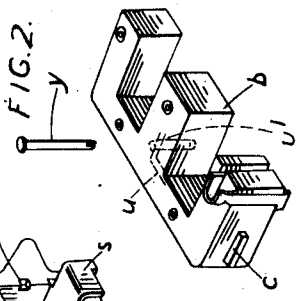


FIG. 2.

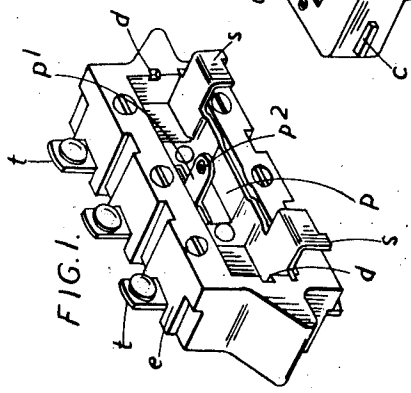


FIG. 1.

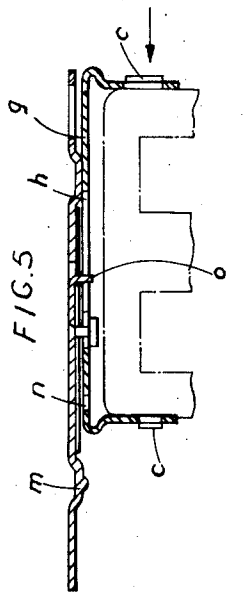


FIG. 5.

Inventors:-
Ernst Besag and Thomas D.G. Wintle,
By
Smith, Michael and Gardiner,
Attorneys.

Patented Oct. 13, 1953

2,655,622

UNITED STATES PATENT OFFICE

2,655,622

MEANS FOR MOUNTING MAGNETS OR THE LIKE WITHIN SWITCH CASINGS

Ernst Besag, Streetly, and Thomas D. G. Wintle, Birmingham, England, assignors to J. A. Crabtree & Co. Limited, Walsall, England, a British company

Application January 31, 1949, Serial No. 73,834
In Great Britain June 9, 1948

4 Claims. (Cl. 317—195)

1

This invention relates to improvements in electro-magnetic switches, and has as its principal object the provision of a simple means for mounting the magnet so as to absorb shocks on impact of the armature thereon, for the purpose of minimizing contact wear. A further object is the provision of an accurate mounting for the magnet and for the armature, to thereby ensure correct replacement, and to facilitate the removal of parts without necessitating the employment of tools.

According to this invention, the magnet is removably mounted in a frame secured to the switch casing, which frame is adapted to impart resiliency for the purpose of absorbing shocks. The frame may be of U-shape, its connecting limb being secured to the rear plate of the switch casing, while its side arms are slotted or apertured for engagement with lateral projections on the outer surface of the opposite sides or ends of an E-shaped laminated magnet. At the junction of each side wall with the connecting limb, a bend or bead is formed for imparting the desired degrees of resiliency upon the impact of the armature on the magnet. For ensuring the correct mounting of the magnet in the frame, the slots in the frame and the projections on each side or end of the magnet may be differently arranged or formed. The slots and projections are preferably disposed on an axis passing through, or adjacent to, the centre of gravity of the magnet, to ensure that avoidable opening forces on the faces of the magnet are not introduced. Similar projections may be formed on the armature for ensuring its correct disposition in an insulating traverse or carrier.

In order to enable the invention to be readily understood, reference will now be made to the accompanying drawings, illustrating, by way of example, one construction for carrying the invention into effect, in which drawings:

Figures 1, 2, 3 and 4, are respectively, perspective views of the armature traverse, the armature, the magnet and the frame mounted on the switch plate, and

Figures 5 and 6 are sections on the line X—X of Figure 4, showing the frame (with the magnet in chain lines), in different positions thereon.

Referring to the drawing, the magnet *a* and the armature *b* are of similar construction, each being formed on each side or end with differently formed projections *c*, those on the armature being engageable in shaped recesses *d* in an insulating traverse or carrier *e*, while those on the magnet are engageable in slots *f* in the side arms of a

2

U-shaped frame *g*. The recesses *d* in the traverse and the slots *f* in the frame are differently shaped for accommodating the projections and ensuring that the armature and magnet, respectively, can only be mounted in the correct position. This frame *g* is formed with a keyhole slot *h* in its connecting limb, and the rear plate *i* of the switch casing has a headed rivet *k* projecting therefrom.

The magnet is sprung into position in the frame, the differently shaped projections *c* ensuring its correct disposition therein. In mounting the frame, and the magnet, on the plate *i*, the circular portion of the slot *h* is passed over the headed rivet *k*, and the frame *i* is then moved laterally toward the left from the position shown in Figure 5 to the position shown in Figure 6, so that the head of the rivet *k* engages over the edges of the walls defining the rectangular portion of the slot *h* for returning the frame against forward withdrawal. The frame *g* is resiliently held against lateral movement by the engagement of a small protuberance *m*, on the front face of the plate *i*, in a hole *n* in the frame *g*. The plate *i* is also formed with a forwardly projecting hook *o* which enters the keyhole slot *h* and ensures the correct assembly of the frame and magnet thereon.

The front of the traverse *e* carries moving contacts *t*, and it is formed, on its rear face, with a deep recess in which is secured a bracket *p* for carrying the armature *b*. An arm p^1 extending rearwardly from the upper part of the bracket *p* is adapted to extend into a slot *u* in the armature, a securing pin *r* then being passed through a vertical opening u^1 in the armature and an aperture p^2 in the arm p^1. The lower part of the bracket is formed with feet *s* which serve for supporting the traverse on a pivotally mounted carrier which is not shown.

We claim:

1. Means for mounting a magnet within the casing of an electromagnetic switch, comprising a magnet having axially extending projections at the opposite ends thereof, each projection being of different external configuration, a substantially U-shaped bracket including side arms having apertures of different configuration corresponding, respectively, to the configurations of said projections, each of said apertures receiving therein the projection of corresponding configuration whereby the magnet is supported between said side arms, the difference in configuration of said projections with respect to said apertures insuring correct mounting of said magnet in said bracket, and means for securing the bracket to the casing of said switch.

2. Means for mounting a magnet within the casing of an electromagnetic switch, comprising a magnet having axially extending projections at the opposite ends thereof, each projection being of different external configuration and at least one of said projections having a flat side surface, a substantially U-shaped bracket including side arms having apertures of different configuration corresponding, respectively, to the configurations of said projections, at least one of said apertures being defined by a wall having a flat surface complementary to the flat side surface on said one projection, each of said apertures receiving therein the projection of corresponding configuration whereby the magnet is supported between said side arms, the difference in configuration of said projections with respect to said apertures insuring correct mounting of said magnet in said bracket and engagement between the flat side surface of said one projection and the complementary flat surfaces of the wall defining the aperture which receives said one projection preventing rotation of said magnet within said bracket, and means for securing the bracket to the casing of said switch.

3. Means for mounting a magnet within the casing of an electromagnetic switch as defined in claim 2 wherein the axially extending projections at the opposite ends of said magnet are rectangular in transverse cross section with one projection of greater transverse cross section than the other, and wherein the apertures in the side arms of the bracket are rectangular and correspond, respectively, to the transverse cross section of said projections.

4. Means for mounting a magnet within the casing of an electromagnetic switch as defined in claim 2 wherein the apertures in the side arms of the bracket and the projections on the opposite ends of the magnet are disposed on a line which passes substantially through the horizontal axis of the center of gravity of the magnet when said magnet is mounted between said side arms.

ERNST BESAG.
THOS. D. G. WINTLE.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
657,683	Swearingen	Sept. 11, 1900
693,127	Gardner et al.	Feb. 11, 1902
998,023	McCann	July 18, 1911
1,225,525	Sweet	May 8, 1917
1,571,762	Driscoll	Feb. 2, 1926
1,766,577	Willing	June 24, 1930
1,805,016	Schwartz	May 12, 1931
2,097,071	Lichten	Oct. 26, 1937
2,291,870	Blair	Aug. 4, 1942
2,434,096	Ayers	Jan. 6, 1948
2,466,382	Coake	Apr. 5, 1949
2,513,161	Friend	June 27, 1950

FOREIGN PATENTS

Number	Country	Date
437,955	Great Britain	Nov. 5, 1935
452,598	Great Britain	Aug. 26, 1936
543,190	Great Britain	Feb. 13, 1942