Dec. 15, 1959 A. P. CAWL 2,917,595

ELECTRIC SWITCH

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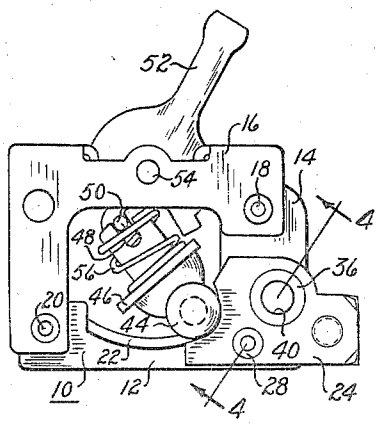


Fig. 1

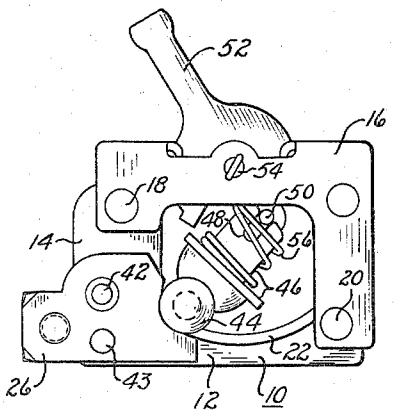


Fig. 2

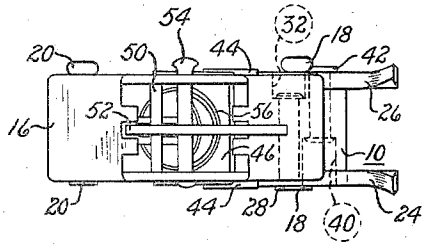


Fig. 3

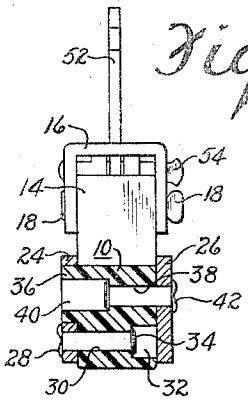


Fig. 4

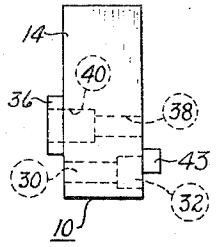


Fig. 5

INVENTOR.
ALLEN P. CAWL

BY
Thomas C. Betts
HIS ATTORNEY

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ELECTRIC SWITCH

Allen P. Cawl, New Canaan, Conn., assignor to Electrolux Corporation, Greenwich, Conn., a corporation of Delaware

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2 Claims. (Cl. 200—67)

My invention relates to electric switches and more particularly to switches of the toggle type.

Switches of this type comprise an insulating body formed with a track and having a pair of contact plates disposed on opposite sides of the body at one end of the track. A contact roller is arranged to travel along this track so as to selectively complete or interrupt an electric circuit between the two contact plates. Heretofore it has been common practice to construct the insulated body of several laminations in order that the metal fastening means, such as rivets, required to secure the contact plates to the insulating body need not pass all the way through the body, which would short circuit the switch, but need extend only through one or more of the laminations.

In accordance with my invention I employ a one-piece molded insulating body provided with a locating boss on each side thereof, each boss extending into an aperture in one of the contact plates. These bosses make it possible to use a single metal rivet to secure each plate to the body, as the boss prevents the plate from pivoting around the rivet. The insulating body is formed with a bore extending therethrough and through one of the bosses and a metal fastening member may be inserted through this bore for securing the contact plate which is on the side of the body opposite to that of the boss. The other contact plate is secured to the body by a metal fastening member which extends into a second bore in the insulating body which has a countersunk portion terminating underneath the first mentioned contact plate. In this way the contact plates may be located directly opposite each other and secured to the insulating body by metal rivets or the like without shorting the switch.

Further objects and advantages of my invention will be apparent from the following description when considered in connection with the accompanying drawing which forms a part of this specification and of which;

Fig. 1 is a side view of a switch in accordance with my invention;

Fig. 2 is a view showing the opposite side of the switch shown in Fig. 1;

Fig. 3 is a top view of the switch shown in the preceding figures;

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 1; and

Fig. 5 is an end view of the insulating body forming part of the switch shown in the other figures.

Referring to the drawings, reference character **10** designates generally an L-shaped one-piece molded body of insulating material having a horizontally extending leg **12** and a vertically extending leg **14**. An L-shaped frame member **16** is secured to body **10** by means of rivets **18** and **20**. This frame member need not be of insulating material and preferably is of metal.

The upper surface of the horizontal leg **12** has a central ridge forming a track **22**. A contact plate member **24** is secured on one side of the body **10** at one end of

track **22**, while a similar contact plate member **26** is secured to the other side of the body **10** at the same end of the track.

Plate member **24** is secured to the body **10** by means of a metal fastening member, specifically a rivet **28** which extends through an aperture formed in the plate and through a bore **30** in the body **10** which has a countersunk portion **32** at the opposite end, the head **34** of the rivet being received in the bottom of the countersunk portion. As shown, it is the preformed lead which is received in the recess, but this is not essential, and the rivet could be inserted in the opposite direction. The bore **30** is in line with the contact plate **26** on the other side of the body **10**, but the countersunk portion **32** provides ample spacing between the plate **26** and the head **34** of the rivet. In assembling the switch, the plate **24** is secured in place before the plate **26** is assembled, thus making it possible to insert the rivet **28** with the preformed head **34** in the countersunk portion **32** and this head may be backed up with a tool while the head is being formed on the end of the rivet. Formed integrally with the body **10** is a boss **36** which extends through an opening formed in the plate **24**. This boss prevents the plate **24** from pivoting about the rivet **28**. Thus, a single rivet is sufficient to secure the plate to the body **10**.

As is shown more particularly in Fig. 4, the body **10** is formed with a bore **38** which extends axially through the boss **36** and preferably is formed with a countersunk portion **40** extending inwardly from the outer end of the boss. A metal fastening member such as the rivet **42** has its preformed head received in the bottom of the countersunk portion **40** and extends through an aligned opening in the contact plate **26** on the opposite side of the insulating body. The latter is formed with a locating boss **43** which extends through an opening in the plate **26** so as to prevent pivoting of this plate about the rivet **42**. It will be noted that the rivet **42** may be inserted from the countersunk end of the bore **38** after the plate **24** has been secured in place.

A metal contact roller **44** is arranged to travel along the track **22**. This roller is rotatably carried by an insulating member **46** provided with a slot **48** at its upper end which receives a pin **50** secured to the lower end of a switch actuating arm **52** which is pivoted in the frame **16** at **54**. A compression spring **56** is disposed between the member **46** and the pin **50**.

The operation of this mechanism is well understood in the switch art. With the parts in the position shown in Figs. 1 and 2 the contact roller **44** is in contact with both of the plates **24** and **26** and thus completes an electric circuit between these plates. If the switch arm **52** is pivoted towards the opposite position, that is in a counterclockwise direction in Fig. 1 and a clockwise direction in Fig. 2, the roller **44** does not move until the arm **52** and the member **46** are in a substantially straight line, whereupon the member **46** rapidly moves the contact roller **44** to the other end of the track **22**, which suddenly interrupts the circuit between the contact plates.

Thus it will be seen that I have provided a toggle type switch having a one-piece molded insulating body and which requires only a single rivet or the like for securing each of the contact plates to this body. While I have shown and described one or more less specific embodiment of my invention, it is to be understood that this has been done for purposes of illustration only and that the scope of my invention is to be determined from the appended claims.

What I claim is:

1. In a toggle switch, a body of insulating material, formed with a track, a pair of contact plates disposed on opposite sides of said body at one end of said track, a

pair of locating bosses extending from said body, one on each of said opposite sides, and received in apertures formed in the respective plates, said body being formed with a bore extending therethrough and axially through one of said bosses, a metal fastening member extending through said bore and through an aligned opening in the plate on the side of said body opposite from said one boss for securing the last mentioned plate to said body, said fastening member terminating short of the end of said one boss, said body being formed with a second bore extending therethrough, one end of said second bore having a countersunk portion terminating within said body, the other end of said second bore terminating in alignment with an opening in the other contact plate, a second metal fastening member extending through the opening in said other plate and through said second bore to the countersunk portion thereof for securing said second plate to said body, and a contact roller movable along said track for selectively completing and interrupting an electric circuit through said contact plates.

2. In a toggle switch, a body of insulating material, formed with a track, a pair of contact plates disposed on opposite sides of said body at one end of said track, a pair of locating bosses extending from said body, one on each of said opposite sides, and received in apertures formed in the respective plates, said body being formed with a bore extending therethrough and axially through

one of said bosses, said bore having a countersunk portion extending inwardly from the end which extends through said one boss, a metal fastening member extending from the inner end of said countersunk portion through the remainder of said bore and through an aligned opening in the plate on the side of said body opposite from said one boss for securing the last mentioned plate to said body, said body being formed with a second bore extending therethrough, one end of said second bore having a countersunk portion terminating underneath said last mentioned plate, the other end of said second bore terminating in alignment with an opening in the other contact plate, a second metal fastening member extending through the opening in said other plate and through said second bore to the countersunk portion thereof for securing said second plate to said body, and a contact roller movable along said track for selectively completing and interrupting an electric circuit through said contact plates.

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