SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)

UNITED STATES PATENT OFFICE

2,517,845

SNAP SWITCH AND CONTACTS THEREFORAGE

James J. Cooper, St. Louis, Mo., assignor to H. Raymond Koch, St. Louis, Mo.

Application April 23, 1948, Serial No. 23,918

5 Claims. (Cl. 200—166)
has trunnions extending transversely from opposite sides thereof by means of which it is pivoted for rocking movement in the arcuate bearing notches. The lever is preferably molded of any suitable plastic material and is provided with a projection 45 at its lower end. A coil spring 41 is compressed between the lower end of the lever and the transverse bar of the U-shaped switch plate 33. Projections 37 and 46 enter the ends of the spring to retain it in position. The lever, spring 41 and blade 33 are retained in position by a mounting strap 49 secured to the receptacle by screws 51 extending through the end flanges of the receptacle.

This strap has a central opening 53 through which the lever extends out of the receptacle. On opposite sides of opening 53, the strap has arcuate raised portions 55 engaging over trunnions 43. Lever 41 has shoulders or wings 57 adapted for engagement with the steps 28, the latter serving as stops to limit rocking movement of the lever. Shoulders 57 are provided on their outer surfaces with the usual “On” and “Off” indications.

The above-described arrangement is such that with lever 41 in its “On” position shown in Fig. 2, with the shoulder 57 of the lever toward the contact end of the receptacle in engagement with the step 28 of the end rib 27 at the left-hand end of the casing, the switch blade 33 is in its limiting position determined by its engagement with the left-hand end rib 27 and engages the contact members 35 on opposite sides of the recess 8 in the receptacle to complete a circuit therein between. When the lever is rocked clockwise from that position, as viewed in Fig. 2, spring 47 rocks counterclockwise about the lower end of the switch blade 33 until it overcenters, whereupon it snaps the switch blade away from the contact members. The switch blade then rocks counterclockwise in its bearing notches 15 until it strikes the other end rib 27. The lever 41 rocks clockwise to its “Off” position wherein its right-hand shoulder 57 engages the step 29 of the right-hand end rib 27. When the lever is rocked counterclockwise as viewed in Fig. 2 from its “Off” position, spring 47 drives the switch blade back into circuit-closing position between the contact members 35.

The two contact members 35 are identical in construction. Each is formed from the flat sheet metal blank B, of brass or the like, illustrated in Fig. 6. This blank is shaped to have a generally rectangular terminal portion 61 and a contact clip portion 63 joined to the terminal portion by a narrow neck 65 extending centrally from the edge 67 of the terminal portion. The blank is slit as indicated at 69 and 71. Slits 69 extend inward from the edge 67 at the sides of neck 65, thereby forming two ears 73 on opposite sides of the neck. Slits 71 extend inward from the opposite edge 75 of the terminal portion, thereby forming two ears 77 at the two respective corners of the terminal portion, and an ear 79 intermediate the ear 77.

The blank is bent at the neck into generally V-shape, as illustrated in Figs. 7–9. The ears 73 are bent out of the plane of the terminal portion 61 in the direction opposite to the bend of the neck. This provides a keyway at the edge margin 67 of the blank. The ears 71 are bent in one direction out of the plane of the terminal portion and the ear 79 is bent in the opposite direction out of the plane of the terminal portion. This provides a keyway at the edge margin 75 of the blank parallel and opposite to the keyway in the margin 67. A central aperture 81 in the terminal portion 61 of each contact member is tapped to receive a terminal screw 83 for connecting wires to the contact members. The screws 83 extend substantially perpendicular to the side walls 5 of the receptacle 1 when the contact members 35 are assembled with the receptacle, and are threaded into the terminal portions from the sides of the receptacle.

The contact members 35 have their terminal portions 61 keyed in the respective slots 19 substantially coplanar with the respective side walls 5 by engagement of the keys 21 in the keyways in the margins of the terminal portions, and have their reflexed resilient contact clip portions 61 extending within the recess 8 toward the end wall 7 adjacent the slots 19 (Fig. 4). Ears 73 and 77 lie on the outside of the keys 21, and the ears 79 and neck 65 lie on the inside of the keys. The contact members are assembled with the receptacle simply by sliding them downward in the slots 19, with the keys 21 entered between their respective ears, until the lower edges of the contact members engage the lower edges of the slots. This positions the contact clip portions 63 of the contact members in opposed convergent relation so that they are adapted to be compressed and spread apart by the lower end of the switch blade 33 as it swings between them. The curved portions of the contact members at their necks 65 facilitate the entrance of the lower end of the switch blade 33 between the contact clip portions 63.

The contact members 35 are held in position within the lower ends of the slots by means of insulating retainers 65 (Fig. 10). Each of these consists of a rectangular piece of fibre or the like having ears 87 at the contact end and opposite to the keys 21, and a contact clip portion 63 in their keyways. They are assembled with the receptacle simply by sliding them downward in the slots 19 after contact members 35 have been mounted in position, with the keys 21 entered between the ears 87 and 89. Mounting strap 85 extends over the slots 15 to hold the retainers 85 and contact members 35 in place in the slots. The mounting strap 85 extends beyond the ends of the receptacle for mounting the latter in a recess in a wall in the usual manner. The strap, as illustrated in Fig. 1, is formed with winged portions 81 at its ends for cooperation with a first type of wall mounting. The strap is scored as indicated at 83 so that these winged portions may be readily broken off if not required and the switch mounted by means of screws extending through elongate apertures 86 in the strap inward of the score lines 83. Apertures 85 are in portions 97 of the ends of the strap adapted to be broken off at score lines 99 if a shorter strap is required for mounting purposes. The strap is provided with apertures 101 within the score lines 99 for mounting purposes when the portions outward of the score lines are broken off.

From the above, it will be clear that assembly of the contact members 35 with the receptacle in the process of manufacturing switches of this invention is quite simple. The process is simplified further due to the fact that the right and left hand contact members on opposite sides of
the recesses are of identical construction despite the fact that they are mounted in opposed relation. Thus, the assembly of the switch does not involve any necessity for selecting a particular contact for a particular side of the receptacle. Also all parts such as shown in Figs. 9 and 10 may be selected from a common supply of each, since each may be used indiscriminately either on the right or left of the switch.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a switch, an insulating support having two side walls, each wall having a slot therein leading inward from an edge thereof with the two slots transversely aligned, each wall being provided with opposed keys extending into its slot from opposite sides of the slot, a pair of contact members each mounted in a respective slot, each contact member comprising a one-piece sheet metal member having a generally rectangular terminal portion substantially coplanar with the respective side wall and joined to a contact clip portion by a narrow neck extending substantially centrally from a side margin of the terminal portion, the contact member being bent at the neck so that the respective terminal portions are in the general shape of a V, ears at said side margin of the terminal portion on opposite sides of the neck struck out from the plane of the terminal portion in the direction opposite to the bend of the neck to define with said neck a keyway, ears at the opposite side margin of the terminal portion struck out in opposite directions from the plane of the terminal portion to define another keyway, the terminal portions of the two contact members being keyed in the respective slots by engagement of the keys in their keyways with the contact clip portions extending into the space between said walls in opposed convergent relation for resilient engagement with a switch blade movable between said clip portions to spread them apart.

2. A snap switch comprising an insulation receptacle having a bottom wall, end walls and parallel side walls, each side wall having a slot leading from its upper edge toward the bottom wall adjacent one end wall, a pair of contact members each mounted in a respective slot, each contact member comprising a terminal portion substantially coplanar with the respective side wall and slidably keyed to the respective side wall at the sides of the slot therein, and a resilient contact clip portion extending into the receptacle from the keyed margin of the terminal portion remote from said one end wall, the contact clip portions of the two contact members being opposed to one another and converging toward said end wall, terminal screws threaded into said terminal portions substantially perpendicular to the side walls from the outside of the receptacle, a switch blade pivoted in the receptacle for swinging movement into and out of closed-circuit position wherein it engages and spreads said contact clip portions apart, and a toggle linkage including an operating lever extending out of the receptacle for operating said blade with snap action.

3. A snap switch comprising an insulation receptacle having a bottom wall, end walls and parallel side walls, each side wall having a slot therein leading from its upper edge toward the bottom wall adjacent one of the end walls and provided with keys on the opposite sides of the slot, a pair of contact members each mounted in a respective slot, each contact member comprising a terminal portion substantially coplanar with the respective side wall and having keyways at two opposite side margins thereof keyed in its slot by engagement of said keys in said keyways, and a resilient contact clip portion extending into the receptacle from one of the keyed side margins of the terminal portion, the contact clip portions being opposed to one another and convergent, terminal screws threaded into said terminal portions substantially perpendicularly to the side walls from the outside of the receptacle, a switch blade pivoted in the receptacle for swinging movement into and out of closed-circuit position wherein it engages and spreads said contact clip portions apart, and a toggle linkage including an operating lever extending out of the receptacle for operating said blade with snap action.

4. A snap switch as set forth in claim 3 wherein the contact members are mounted in the lower ends of the slots, and further including a pair of insulation retainers each mounted in a respective slot to hold the contact members therein, each retainer having keyways in two opposite margins thereof keyed in the upper end of its slot by engagement of the keys in its keyways, and a mounting strap fixed to the top of the receptacle holding said retainers and contact members in the slots.

5. A contact member for use in snap switches and the like comprising a sheet metal blank having a generally rectangular terminal portion joined to a contact clip portion by a narrow neck extending substantially perpendicularly to the side walls from the outside of the slot, the neck being bent at the neck into generally V shape, said terminal portion having ears at said one margin on opposite sides of the neck struck out from the plane of the terminal portion in the direction opposite to the bend of the neck to form with said neck a keyway, said terminal portion also having ears at its opposite margin struck out from the plane of the terminal portion in opposite directions forming a keyway at said opposite margin parallel and opposite to said first-named keyway.

JAMES J. COOPER.

REFERENCES CITED

The following references are of record in the file of this patent:

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,013,142</td>
<td>Caynor</td>
<td>Sept. 3, 1935</td>
</tr>
<tr>
<td>2,152,406</td>
<td>Owens</td>
<td>Mar. 26, 1939</td>
</tr>
<tr>
<td>2,186,038</td>
<td>Hall</td>
<td>Jan. 9, 1940</td>
</tr>
<tr>
<td>2,214,065</td>
<td>Pennock et al.</td>
<td>Sept. 10, 1940</td>
</tr>
<tr>
<td>2,288,283</td>
<td>Hutt</td>
<td>June 30, 1942</td>
</tr>
</tbody>
</table>