Nov. 7, 1933. L. A. KEMPTON 1,934,470

ELECTRIC SWITCH

Filed Oct. 26, 1931

Fig. 1.

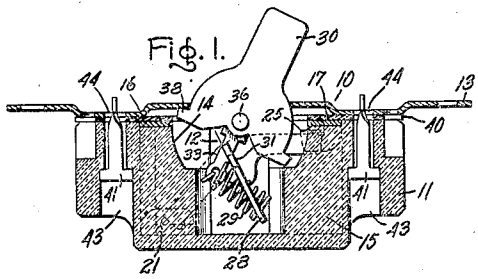


Fig. 2.

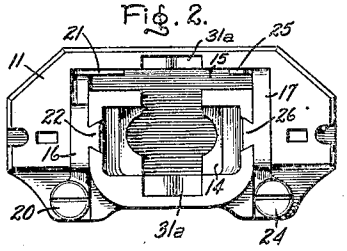
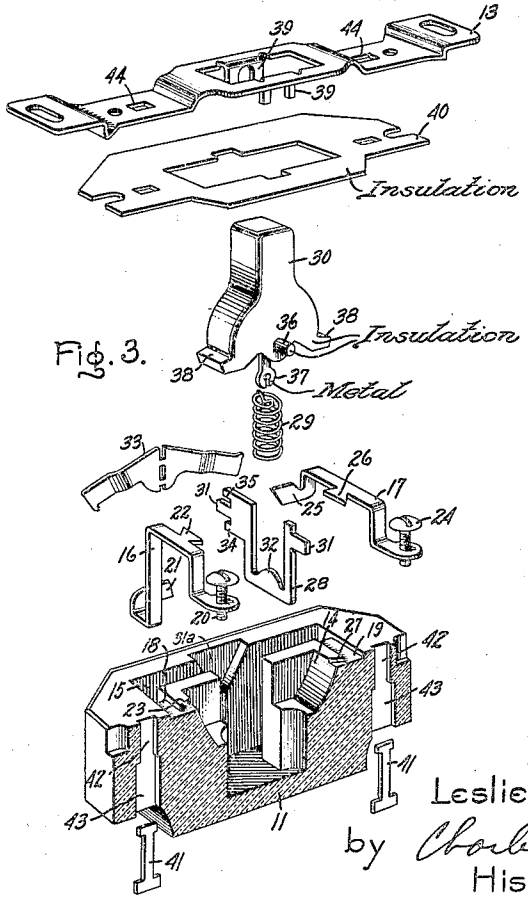


Fig. 3.



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ELECTRIC SWITCH

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2 Claims. (Cl. 200—67)

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

The object of my invention is to provide a tumbler switch of simple but rugged construction which will be easy to assemble and of low cost of manufacture.

What I consider to be novel and my invention will be better understood by reference to the following specification and appended claims when considered in connection with the accompanying drawing.

In the accompanying drawing, Fig. 1 is a side view of the tumbler switch completely assembled; Fig. 2 is a plan view of the receptacle; and Fig. 3 is an exploded view of the tumbler switch in perspective with the receptacle in section.

Tumbler switch 10 comprises a receptacle 11, a switch movement 12, and a supporting strap 13. Receptacle 11 has a central recess 14 in which the switch movement 12 is located and a contact chamber 15 communicating with the recess in which the electrical connections are adapted to be made and broken. Two stationary contact members 16 and 17 are seated in recesses 18 and 19 in the top of receptacle 11 which extend from one side of the receptacle to the contact chamber 15 at the other side. Stationary contact member 16 has a threaded aperture in one end for a binding screw 20 and extends up one side of receptacle 11, across its top, down on the inside wall of contact chamber 15, across the bottom and up the opposite wall of contact chamber 15 a short distance to a contact surface 21, which is parallel to and rests against the latter wall. A tenon 22 is provided extending inwardly from the top of contact member 16 and adapted to engage a mortise 23 provided in the top of receptacle 11. Stationary contact member 17 has a threaded aperture in one end for a binding screw 24 and extends up one side of receptacle 11 across its top to the far wall of contact chamber 15 and down the wall a short distance to a contact surface 25 which is parallel to and rests against the wall. A tenon 26 extends inwardly from contact member 17 and engages a mortise 27 in the top receptacle 11. The arrangement of contacts 16 and 17 saddled across the top of receptacle 11 with portions abutting parallel walls thereof combined with the dovetail joints insures a firm seating of the contact members without the necessity of any screws to secure them in position. Thus in the assembly of the switch the stationary contact members are merely dropped into position in the receptacle and held there by engagement with the supporting strap.

Switch movement 12 comprises lever 28, spring 29, and operating handle 30. Lever 28 is of U-shape and has outwardly extending lugs 31 which serve as pivots for the lever and seat in V-shaped notches 31ª in the side walls of receptacle 11. A lug 32 is provided in the bottom of lever 28 which spring 29 is adapted to engage to move the lever from one position to another. Brush contact 33 is connected to lever 28 by engagement with one lug 31 and adjacent lugs 34 and 35. Lug 34 which is located below lug 31 is shorter than the latter lug to permit the latter to engage the bottom of the notch 31ª in which it is pivoted. Lever 28 is stopped in its two extreme positions by engagement of the bottom of the lever with the end walls of the central recess 14.

Operating handle 30 is of insulating material and has integral stub shafts 36 on which it is pivoted. An arm 37 extends from the bottom of the operating handle and has a slotted end to engage the top of spring 29 to compress it and communicate the motion of the operating handle to lever 28. Extending from the opposite ends of the operating handle are shoulders 38 which serve as stops for the handle. By providing stub shafts 36 and shoulders 38 integral with the operating handle 30 of insulating material all of the parts of the operating handle engaging supporting strap 13 are of insulating material. This arrangement makes it unnecessary to insulate the brush contact 33 from the lever 28 since the operating handle insulates the actuating mechanism from the supporting strap. Insulating the brush contact from the actuating lever is frequently a troublesome problem and in many cases in which a short circuit has developed in the switch it has been found to be due to the breakdown of the insulation between these two parts. Thus, by this arrangement the necessity of the insulation is eliminated reducing the cost of manufacture of the switch and at the same time reducing the danger of a breakdown of such insulation resulting in the failure of the switch.

Supporting strap 13 has a central opening through which a portion of operating handle 30 extends. At either side of this opening are located two integral depending trunnions 39 which engage the top of stub shafts 36 to provide a bearing surface therefor and to hold the operating handle 30 in position. Shoulders 38 engage

the supporting strap adjacent its central opening to stop the operating handle.

Spring 29 in addition to communicating the motion of the operating handle 30 to the lever 28 holds the stub shafts 36 in engagement with trunnions 39 and the lugs 31 in engagement with the bottom of notches 31a.

In order to insulate the stationary contacts 16 and 17 from the supporting strap 13 a plate 40 of insulating material is provided.

To secure the supporting strap 13 to the receptacle 11, pins 41 are provided. Pins 41 have enlarged heads at each end with one head larger than the other. Recesses 42 are provided extending from the top of receptacle 11 and communicating with larger recesses 43 which extend from the bottom of the receptacle. Recesses 42 are large enough to permit the easy passage of these smaller heads of pins 41 but not the larger heads. Rectangular openings 44 are provided in supporting strap 13 in line with recesses 42 and sufficiently long to permit the passage of the smaller heads of pins 41 but of a lesser width than said heads. In securing the supporting straps to the receptacle, pins 41 are passed through recesses 43 and 42 until the larger heads engage the shoulder between the recesses. The supporting strap is placed in position with the pins 41 extending through openings 44. The smaller heads of pins 41 are then twisted at right angles and secure the supporting strap to the receptacle.

In the assembly of the switch 10 the stationary contacts 16 and 17 are first dropped into position in the receptacle 11. Brush contact 33 is placed over the lugs 31, 34 and 35 of lever 28 and the assembly dropped in position in the receptacle. Spring 29 is placed with one end engaging lug 32. Operating handle 30 is placed in position with the slot in the end of arm 37 engaging the top of the spring 29. Plate 40 is placed on top of the receptacle and the supporting strap 13 located in position. The whole assembly is then secured together by means of pins 41.

By my invention a switch is provided with the parts placed in position without individual securing means, that is, all the individual parts are held in position by the securing means which fastens the supporting strap to the receptacle. In addition the parts are of simple construction and thus of low cost of manufacture. The simplicity of the assembly of this switch reduces the cost of the labor to assemble it and thereby further reduces the cost of manufacture of the switch as a whole.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. An electric switch including a receptacle of insulating material having a central recess, a contact chamber communicating with said recess, recesses located on opposite sides of said central recess and extending from one side of the receptacle across the top and communicating with the contact chamber, stationary contacts seated in said recesses, extending into said contact chamber, and having tenons engaging mortises in said receptacle, a switch movement located in said central recess, a brush contact connected to said switch movement and located in said contact chamber, a supporting strap, and means to secure said supporting strap to said receptacle.

2. An electric switch including a receptacle of insulating material having a central recess, a contact chamber communicating with said recess, recesses located on opposite sides of said central recess and extending from one side of the receptacle across the top and communicating with the contact chamber, stationary contacts seated in said recesses extending into said contact chamber and having tenons engaging mortises in said receptacle, a lever of U-shape having outwardly projecting lugs pivoted in notches in said receptacle, a contact connected to said lever, a spring engaging said lever, an operating handle engaging said spring and having integral stub shafts, a supporting strap having a central opening through which said operating handle projects and depending projections engaging the stub shafts, and means to secure said supporting strap to said receptacle to hold the stationary contacts in position in the recesses in said receptacle.

LESLIE A. KEMPTON.