A. J. STECKER.

ELECTRIC SWITCH.

APPLICATION FILED JAN. 18, 1917.

1,268,173. Patented June 4, 1918.

Fig. 2

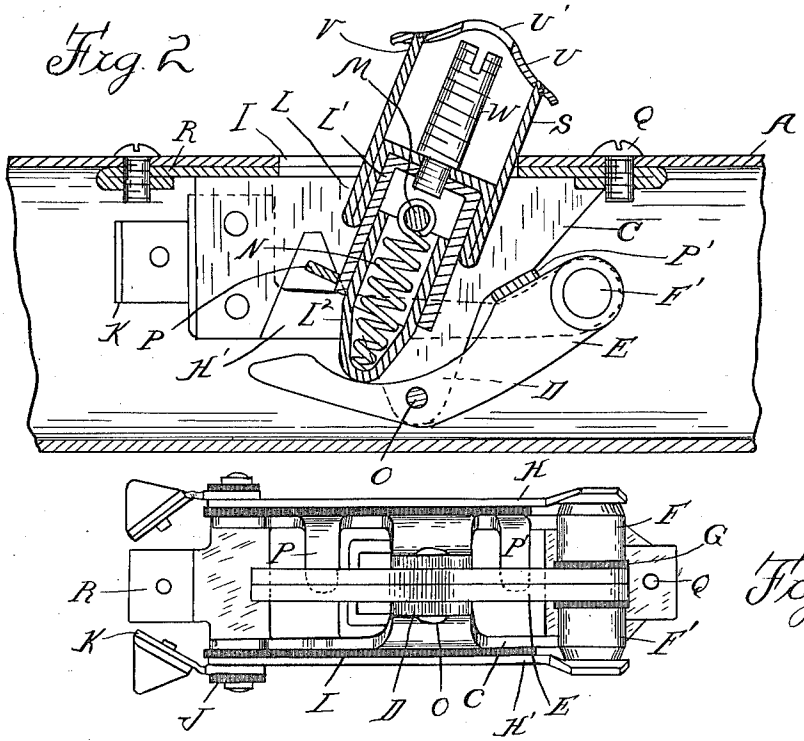


Fig. 3.

Fig. 1.

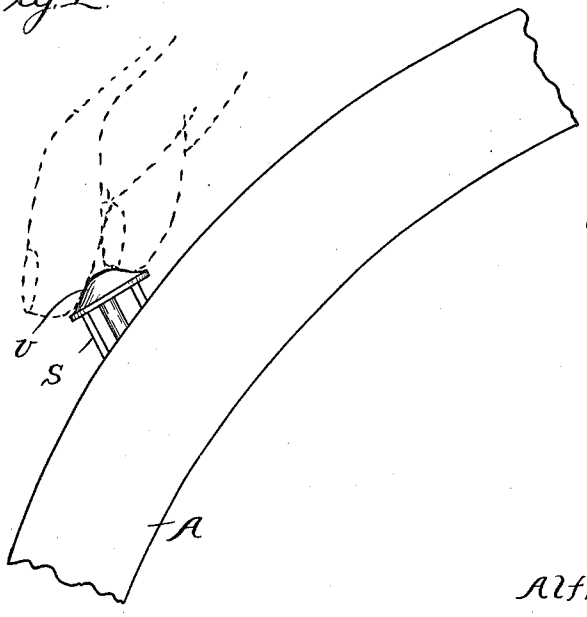


Fig. 4.

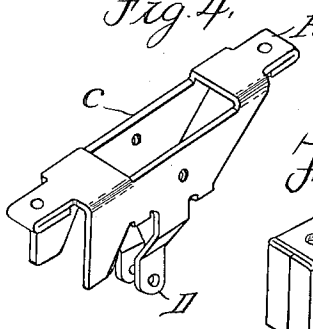


Fig. 5.

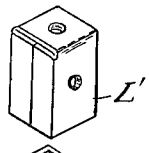
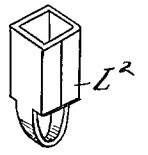


Fig. 6.



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ELECTRIC SWITCH.

1,268,173. Specification of Letters Patent. Patented June 4, 1918.

Application filed January 18, 1917. Serial No. 143,151.

To all whom it may concern:

Be it known that I, ALFRED J. STECKER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to electric switches, and has for its object the obtaining of a construction which may be conveniently operated by the thumb or finger in both opening and closing of the circuit. More particularly it is an object to obtain a switch that may be conveniently located within the handle of an electrically-operated instrument, such as a vacuum cleaner, and may be operated as above described.

In the drawings:

Figure 1 is an elevation, illustrating the arrangement of the switch in the handle of a vacuum cleaner or other tool;

Fig. 2 is an enlarged longitudinal section through the switch;

Fig. 3 is a bottom plan view thereof;

Fig. 4 is a detail perspective view of the frame whereon the parts of the switch are mounted; Figs. 5 and 6 are detail perspective views of members adapted to be telescopically engaged, said members comprising a portion of a lever for actuating said switch.

In the operation of vacuum cleaners and other handled electrical instruments it is desirable to provide convenient means for quickly turning on and off the current. The diameter of the handles usually employed is insufficient for receiving an electric switch of standard construction, and such switch would not be convenient for operation even if it could be installed. I have therefore devised a construction in which the switch is operated by the rocking movement of a lever pivotally mounted in a handle, and having a thumb-piece for actuating the same.

In detail, A is the handle, which as shown is provided with a curved upper end portion formed of tubing. Within said handle is arranged a switch preferably comprising a frame C formed of a sheet-metal stamping, substantially U-shaped in cross-section, having the projecting ears D forming a bifurcated bearing for a pivoted lever E. This lever carries at one end laterally-projecting electrical contacts F and F′, which are insulated from the lever, as indicated at G. H and H′ are spring contact members mounted upon opposite sides of the U-shaped frame C and separated therefrom by the electrical insulation I. These spring contact members are arranged to extend longitudinally within the handle A, and their free ends are located to contact with the members F and F′ in one position of the lever E. The opposite ends of the members H and H′ are clamped to but insulated from the frame C, as indicated at J, and projecting ears K form the terminal connections.

To operate the lever E with a snap movement, I have provided an operating mechanism of the following construction: L is a lever formed of two telescopically-engaged sections L′ and L², preferably struck-up from sheet-metal blanks. M is a pivot extending transversely through the sides of the frame C and through the upper member L′. N is a spring housed within the members L′ and L², and operating to separate said members to elongate the lever. The member L² has a rounded end, which bears against the inner side of the lever E, and upon rocking of the lever L the point of bearing of this rounded end is shifted from one side to the other of the pivot O for the lever E. P and P′ are stops struck out from portions of the frame C and serving to limit the rocking movement of both the lever L and the lever E.

The parts as thus far described are all arranged within a cross-sectional area which will fit within the tubular handle A, so that the switch may be inserted through the end of the tube and secured in position by suitable means, such as the screws Q engaging ears R on the frame. To operate the lever L an extension member S is formed to engage said lever through a slot I in the tube A. This extension member, as shown, is struck up from sheet-metal blanks, having at its outer end a member U forming a thumb-piece, and a shank portion V formed of a return-bent strip fitting over the end of the member L. These parts are secured to each other by a screw W insertible through an aperture U′ in the member U and fastening the shank V and member L′ to each other.

It will be noted that all of the elements of the switch with the exception of the pins and screws are formed of sheet-metal stamp-

ings, and therefore may be manufactured at small expense and easily assembled. In operation, when the handle A is grasped by the hand of the operator, the thumb of the hand is in convenient position for operating the thumb-piece U to rock the lever L in either direction. During this rocking movement the rounded end of the member L^2 is shifted from one side to the other of the pivot O, as has been previously described, and at the same time the members L′ and L^2 are telescopically collapsed and the spring N is compressed. Thus the instant that the lever L has passed its dead center the tension of the spring N will cause a quick completion of the movement, thereby opening and closing the switch with a snap. The movement of both the levers L and E is limited by the stops P and P′, and the arrangement of the contacts H and H′ is such that when the switch is operated to open the circuit said contacts will maintain their connection with the contact members F and F′ until the lever L has passed its dead center and the quick automatic movement is effected.

What I claim as my invention is:

1. In an electric switch, the combination with a slotted tubular casing, of switch mechanism proportioned for insertion into said tubular casing through the end thereof and comprising a bifurcated frame, a rockable contact lever pivotally mounted therein and a transversely-extending telescopic operating lever provided with a spring for yieldably extending the same, the inner end of said lever bearing against said rockable contact lever and shiftable to opposite sides of the fulcrum thereof, and an extension of said operating lever operatively engageable with the lever body by insertion through the slot in said tubular casing.

2. In an electric switch, the combination with a bifurcated frame, of stationary contact members mounted upon and insulated from said frame, a rockable lever pivoted in said frame, a bridge contact member carried by said rockable lever and insulated therefrom, and an operating lever extending transversely to said rockable lever and formed of telescopic sections provided with a spring for yieldably and resiliently extending the same, the inner section bearing against said rockable lever and being shiftable to opposite sides of the fulcrum thereof.

3. In an electric switch, a sheet-metal frame having substantially parallel side portions and a connecting web portion centrally cut away, a rockable contact member pivotally mounted in said parallel side portions, an operating lever extending transversely to said rockable contact lever and through the central cut-away portion of said frame, being also pivoted in the side portions thereof, said operating lever being formed of hollow telescopically-engaged sections, the inner section bearing against said rockable contact member and shiftable to opposite sides of the fulcrum thereof, and a spring housed within said telescopic sections for yieldably and resiliently extending the same.

4. In an electric switch, the combination with a tubular casing having a slot in the side thereof, of a frame rigidly secured to said casing within the same formed with an opening registering with said slot, a rockable contact member pivotally mounted upon said frame within the casing, and an actuating member for said lever pivoted upon said frame and extending outwardly through said opening in the frame and slot in the casing, the portion of said lever exterior to the casing being detachable.

5. In an electric switch, the combination with a slotted tubular casing, of switch mechanism mounted in said casing adjacent the slot thereof, and an actuating lever for said mechanism extending through said slot and provided with a thumb-piece exterior to the slot having an aperture giving access to a member fastening said extension to the body of the lever.

6. In an electric switch, the combination with a tubular casing having a slot in the side thereof, of a frame rigidly secured within said casing and formed with an opening registering with said slot, switch mechanism carried by said frame, an actuating lever for said mechanism pivoted upon said frame and projecting through the opening in the frame and through said slot in the casing.

In testimony whereof I affix my signature.

ALFRED J. STECKER.