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J. B. PARSONS

2,446,141

SWITCH STRUCTURE

Original Filed July 3, 1944

Fig. 1.

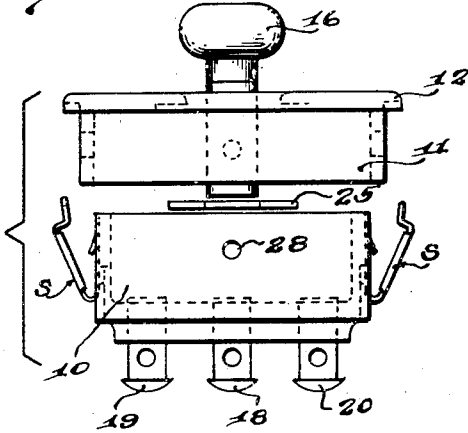


Fig. 2.

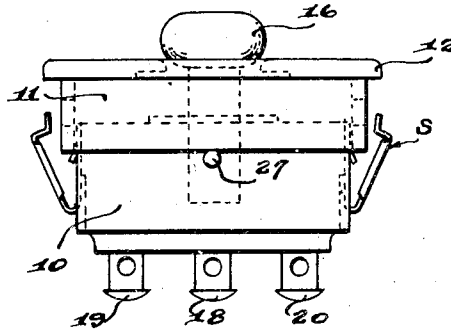


Fig. 3.

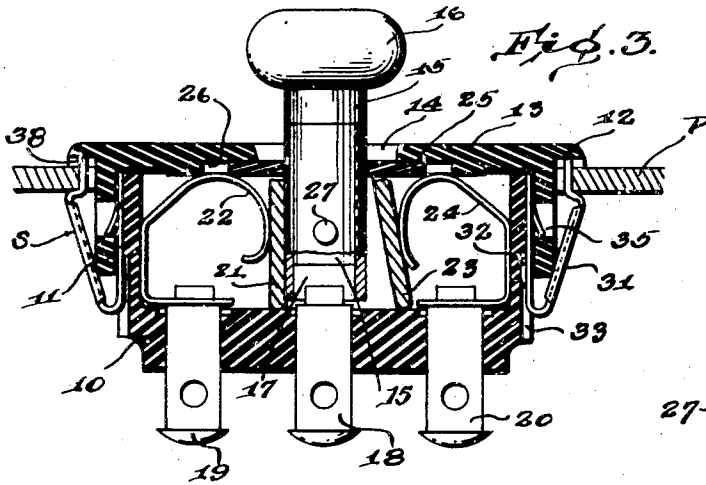


Fig. 4.

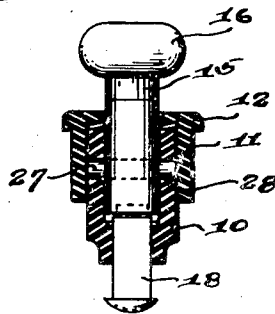
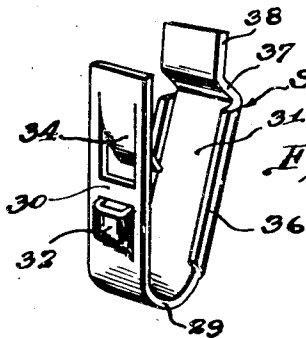


Fig. 5.



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## UNITED STATES PATENT OFFICE

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## SWITCH STRUCTURE

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Original application July 3, 1944, Serial No. 543,363, now Patent No. 2,425,391, dated August 12, 1947. Divided and this application February 14, 1945, Serial No. 577,877

5 Claims. (Cl. 200—168)

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This invention relates to switch mechanisms but more particularly to the assembly and mounting thereof, and an object is to produce a new and improved switch assembly by which the parts can be readily and conveniently put together or taken apart without the use of screws or similar fastening devices.

Another object is to improve the assembly of the switch shown in the patent to Parsons 2,344,452, dated March 14, 1944, to enable the switch arm to be pivotally mounted on a member which is held in place solely by the telescoping housing or casing members, thereby facilitating and simplifying the assembly operation.

A further object is to produce a spring metal clip or fastener by which the housing or casing parts of the switch are held together and in addition cooperates with the casing and the edge portions of an aperture in a supporting panel for mounting the assembly in position of use without the use of screws or the like.

A still further object is to produce a simple and efficient means for initially securing together the parts of a sectional casing and subsequently to hold the sections to a supporting structure.

Other objects and advantages of the invention will hereinafter appear and for purposes of illustration but not of limitation, an embodiment of the invention is shown on the accompanying drawings in which

Figure 1 is an exploded view in side elevation of the switch parts preliminary to assembly thereof;

Figure 2 is a side elevation of the switch parts in the course of assembly but before the outer casing member has been fully telescoped with the inner casing member;

Figure 3 is an enlarged vertical sectional view of the switch mechanism with the parts assembled and showing the assembly mounted in an aperture in a supporting panel;

Figure 4 is a transverse sectional view of the assembly showing the mounting of the switch arm; and

Figure 5 is an enlarged perspective view of the spring metal clip which operates not only to hold the casing parts in assembled position but also cooperates in the mounting of the assembly on a supporting panel.

The illustrated embodiment of the invention comprises a switch mechanism having telescoping housing parts 10 and 11, the housing part 10 being cup-shaped and the housing part 11 being adapted to fit over or telescope with the part 10. Both parts are of insulating material such as a

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suitable plastic and as shown, the parts are of elongate rectangular shape. The housing part 11 is formed with a flange 12 which extends entirely about the housing part 11 and projects laterally therefrom. The housing part 11 has a top wall 13 which is formed with an elongate central aperture 14 to permit rocking movement of a non-conductive control knob 16 having an integral shank arm 15 extending through the aperture, the lower portion of the shank arm 15 being enclosed by a conductive metallic sleeve 17 which extends downwardly beyond the end of the shank arm 15 normally to maintain a spaced relation about the exposed portion of a binding post 18 so that upon rocking of the arm 15 laterally in one direction or the other, one side or the other of the lower end portion of the sleeve 17 will engage the binding post which is a "live" post, thereby to conduct current to binding posts 19 and 20 which are on opposite sides of the post 18. Reference is hereby made to Parsons Patent 2,344,452, dated March 14, 1944, in which description of the structure and operation of the switch parts is set forth and since such mechanism per se forms no part of the present invention, detail description thereof is not considered necessary. Suffice it to say that when the operating shank arm 15 is rocked to the right of Figure 3 to engage the "live" binding post 18, current passes through sleeve 17, a contact plate 21 and spring 22 to the post 19 and when the arm 15 is rocked to the left of Figure 3, current passes not only to the binding post 19 as described but also through a contact plate 23 and spring 24 to the binding post 20. Thus it is manifest that upon rocking the operating arm 15 in one direction, current is supplied to the binding post 19 but in the opposite direction current is supplied to both the binding post 19 and the binding post 20. It is manifest that the contact plate 21 is always urged to abut the sleeve 17 by the spring 22, whereas the contact plate 23 is positioned by abutment means on the casing normally to be spaced from the sleeve 17 and is contacted by same only upon actuation of the control knob 16 in the direction to the right of Figure 3.

A plate 25 is apertured to receive the operating arm 15 and is disposed in a position to cover the opening 14 formed in the housing part 11. A groove or recess 26 is formed on the under side of the wall 13 to accommodate the plate 25 which is held in position by the springs 22 and 24.

The arm 15 is pivotally mounted adjacent its lower or inner end upon a pin 27 which has its

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end portions disposed in aligned holes 28 formed in the side walls of the housing part 10. As indicated in Figure 4, the ends of the pin 27 are approximately flush with the outer sides of the housing part 10 so that when the housing part 11 telescopes thereunder, the ends of the pin are covered and thereby held in position. This obviates the necessity of riveting the ends of the pins 27 to retain the pin in position and thus materially simplifies and facilitates the assembly of the parts.

The housing parts 10 and 11 are held in assembled relation with the ends of the pivotal pin 27 covered as above described by spring clips S disposed at opposite ends of the casing. Each of the clips S is formed of a single stamping folded upon itself as indicated at 29 to provide a pair of arms 30 and 31 which are inclined relative to each other. The arm 30 is adapted to be disposed in the space between the telescoping portions of the housing members 10 and 11 and adjacent the lower portion of the arm 30 is an outwardly pressed abutment portion 32 which is adapted to ride in a groove 33 formed in the outer surface of the end wall of the casing portion 10. The groove 33 extends only a short distance from the lower end of the casing portion and the parts are so designed that when the stop 32 engages the inner end of the groove 33, the free end of the arm 30 will be approximately even with the upper end of the housing part 10.

Struck inwardly from the upper portion of the arm 30 is a tongue 34, the free end of which extends toward the arm 31 and is adapted to enter an aperture 35 in the end wall of the cover or casing portion 11. Manifestly during the assembly of the parts, the tongue 34 will be flexed inwardly to the plane of the arm 30 but when the free end encounters the opening 35, it will snap outwardly and abut against the lower side edge of the aperture 35 thereby cooperating with the abutment or stop 32 to hold the parts from movement. In order to disassemble the housing parts, a tool is inserted through the opening 35 from the outside to flex the tongue 34 inwardly so that the parts can be readily moved apart.

The arm 31 when connected to the casing inclines outwardly and upwardly as shown on Figure 3. For reenforcing this portion, the side edges of the arm are bent inwardly at right angles to provide flanges 36 to strengthen the same. The arm 31 terminates in an inwardly inclined portion 37 with which an end portion 38 is integral, the latter being substantially parallel to the arm 30. The end portion 38 as indicated on Figure 3, terminates adjacent the flange 12 on the cover or housing portion 11.

The assembly is adapted to be mounted in an aperture provided in a supporting panel P. Mounting may be readily effected by forcing the assembly through the panel and the arms 31 are thereby flexed or cammed inwardly until the angular portion 37 is reached. It then snaps outwardly until the end portion 38 abuts against the edge of the panel aperture. Thus the shoulder provided by the angular portion 37 cooperating with the flange 12 holds the assembly in position on the panel and resists movement in either direction. In order to remove the assembly, the arm 31 may be flexed inwardly to move the shoulder formed by the angular portion 37 substantially clear of the aperture, whereupon the assembly may be forced outwardly of the panel.

This application constitutes a division of my copending application Serial No. 543,363 filed

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July 3, 1944, issued as Patent 2,425,391, on August 12, 1947, and entitled "Hydraulic regulator mechanism for vehicle windows or the like."

The description above given has been in respect of a single spring fastener S but it is to be understood that the two fasteners are similarly constructed so that further description thereof is not considered necessary. It is to be understood that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claims.

What I claim is:

1. A switch assembly comprising a casing having a pair of telescoping members, one member fitting over the other member and having a central aperture, an operating arm extending through said aperture and having portions inside and outside the casing, the portion inside the casing having a transverse hole, the inner casing member having aligned apertures in opposite side walls thereof, a pin extending through said aligned apertures and through the hole in said operating arm thereby to provide a pivotal mounting therefor, the outer ends of said pin being substantially flush with the outer walls of the inner casing member and concealed and retained in place by the adjacent walls of the outer casing member, and means for holding said casing members together in assembled relation.

2. A switch assembly comprising a casing having a pair of telescoping members, one member fitting over the other member and having a central aperture, an operating arm extending through said aperture and having portions inside and outside the casing, the portion inside the casing having a transverse hole, the inner casing member having aligned apertures in opposite side walls thereof, a pin extending through said aligned apertures and through the hole in said operating arm thereby to provide a pivotal mounting therefor, the outer ends of said pin being substantially flush with the outer walls of the inner casing member and concealed and retained in place by the adjacent walls of the outer casing members, and a spring metal clip releasably holding said casing members in assembled relation.

3. A switch assembly comprising a casing having a pair of telescoping members, one member fitting over the other member and having a central aperture, an operating arm extending through said aperture and having portions inside and outside the casing, the portion inside the casing having a transverse hole, the inner casing member having aligned apertures in opposite side walls thereof, a pin extending through said aligned apertures and through the hole in said operating arm thereby to provide a pivotal mounting therefor, the outer ends of said pin being substantially flush with the outer walls of the inner casing member and concealed and retained in place by the adjacent walls of the outer casing member, and resilient means providing snap holding engagement between said casing members, said resilient means including spring means for mounting the assembly in a hole in a supporting panel.

4. A switch assembly comprising a casing having a pair of telescoping members, one member fitting over the other member and having a central aperture, an operating arm extending through said aperture and having portions inside and outside the casing, the portion inside the casing having a transverse hole, the inner casing

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member having aligned apertures in opposite side walls thereof, a pin extending through said aligned apertures and through the hole in said operating arm thereby to provide a pivotal mounting therefor, the outer ends of said pin being substantially flush with the outer walls of the inner casing member and concealed and retained in place by the adjacent walls of the outer casing member, and means to hold said casing members in assembled position with the outer casing member covering the aligned holes in said inner casing member, said holding means including spring arms adapted for snap holding engagement with the edge of an aperture of a supporting panel in which the assembly is mounted.

5. The combination of a pair of telescoping members, the inner member having an outwardly facing groove and the outer member having a laterally extending flange and an aperture in juxtaposed spaced relation to the groove, a one piece spring metal fastener for connecting together said telescoping members and also providing a mounting for said members within an aperture of a supporting panel, said fastener comprising a leg disposed between said telescoping members, an integral tongue projecting from one side of said leg to seat within said groove, another tongue integral with said leg projecting from the oppo-

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site side thereof and in a direction away from said flange to engage an edge of said aperture in opposition to said first tongue, a second leg integral with said first leg in the region of said first tongue and inclining away from said first leg, the outer end of said second leg being bent to form an abutting flange, said abutting flange being engageable with the inner edge of the supporting panel aperture and to cooperate with said flange in holding the telescoping members within the supporting panel aperture.

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