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Fisher

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[54] **SWITCH HOLDER AND ACTUATING APPARATUS IN A HINGED CLOSURE APPLIANCE**

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[52] **U.S. Cl.** ..... **200/61.81,** 200/333, 200/153 T

[51] **Int. Cl.** **H01h 3/16**

[58] **Field of Search** ..... 200/61.76, 61.81, 153 T, 200/332, 333, 335, 336, 339, 61.62, 61.7

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[57] **ABSTRACT**

The embodiment of the invention disclosed herein is directed to a switch mounting and actuating assembly wherein a switch holder is provided with a plurality of spaced apart post members to receive and hold a switch body during an initial assembling operation of the switch to an appliance, such as a washing machine, or the like. The switch mounting and actuating assembly has holes formed therein to be aligned with holes formed through the switch body and which holes are ultimately aligned with apertures formed in the peripheral margin portion of an opening formed within the appliance receiving the same. An actuating member is removably pivotally secured to the switch holder and is C-shaped in configuration having a lower portion thereof extending a distance greater than the upper portion. A pad is formed at the terminating end of the lower portion and angled relative thereto to provide a slide surface upon which an actuating pin engages. The switch mounting and actuating assembly is permanently held in position in the appliance by fastening means such as rivets or the like passing through the apertures in the appliance and the holes formed through the switch body and switch holding member.

9 Claims, 6 Drawing Figures

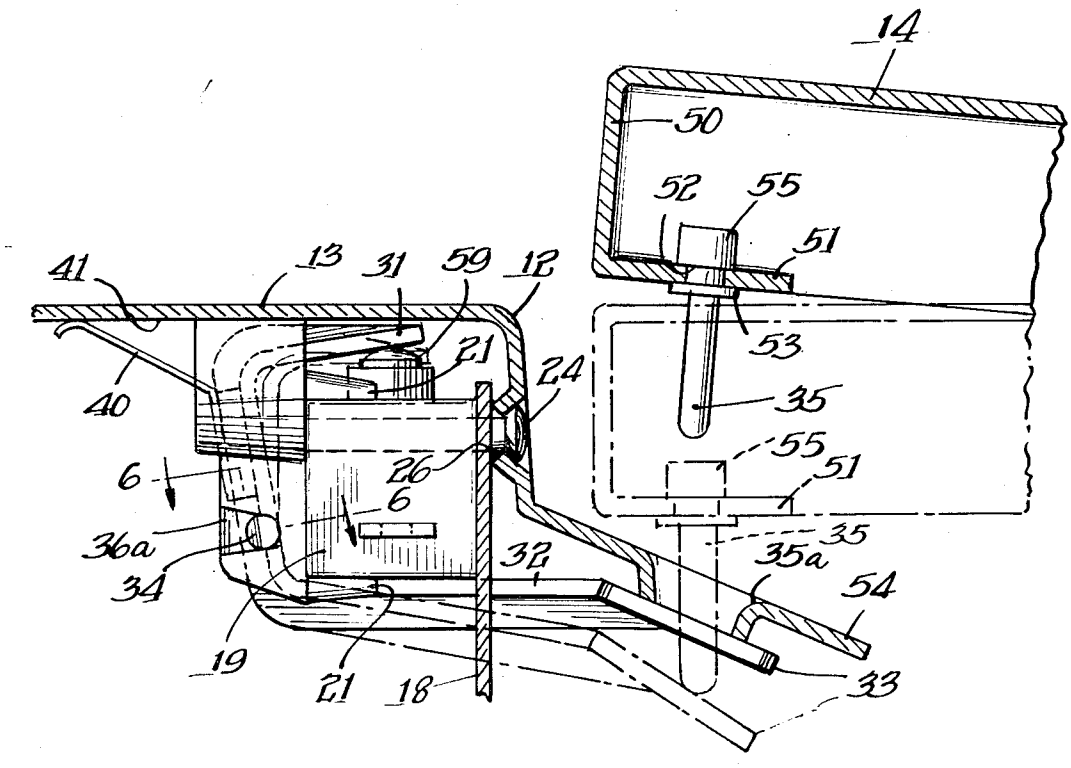


Fig. 1.

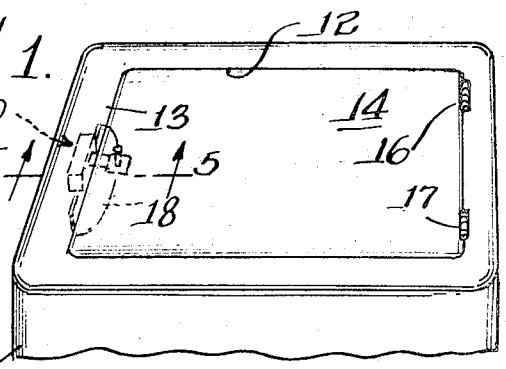


Fig. 2.

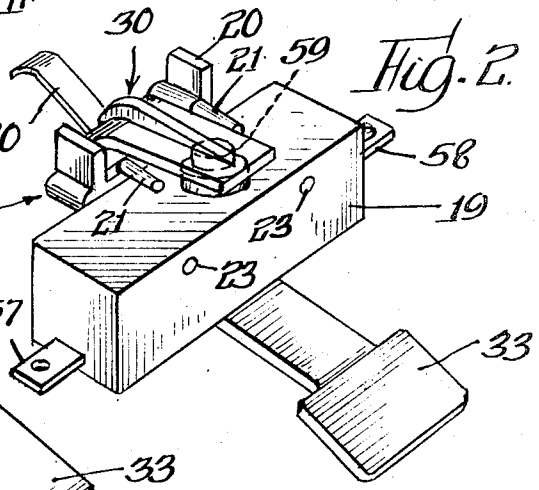


Fig. 3

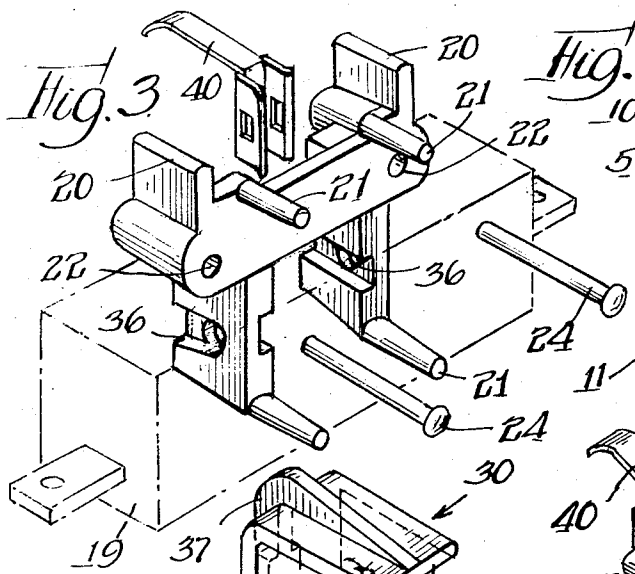


Fig. 4.

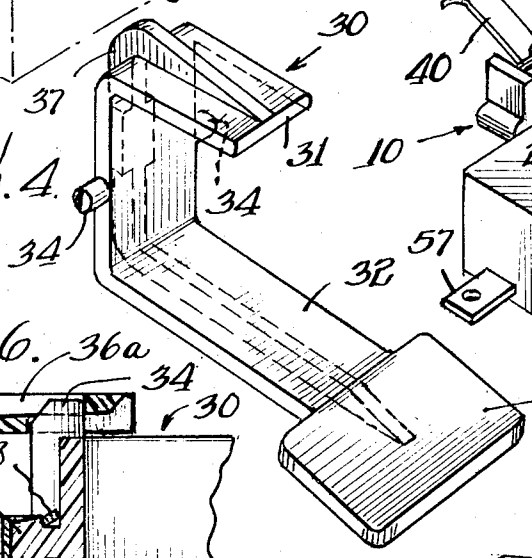


Fig. 6.

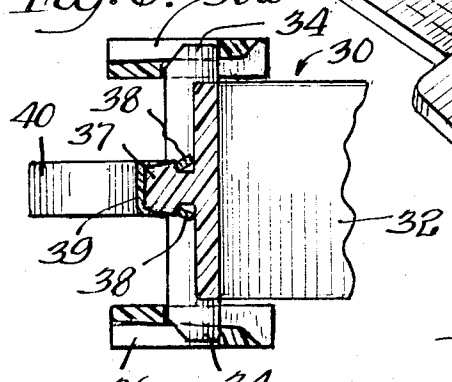


Fig. 5.

SWITCH HOLDER AND ACTUATING APPARATUS IN A HINGED CLOSURE APPLIANCE

BACKGROUND OF THE INVENTION

The embodiment of the invention disclosed herein is directed generally to switch mounting and actuating assemblies, and more particularly to a switch mounting and actuating assembly utilized in conjunction with appliances such as top-loading washing machines or front-loading dryers, or the like.

Switch mounting and actuating devices heretofore have been made from metal stamping structures which have been relatively complicated and expensive to manufacture. Furthermore, since these types of switch mounting devices are utilized in areas of high himidity, they have a tendency to rust and become weakened and/or defective as a result.

SUMMARY OF THE INVENTION

Accordingly, it is an object of this invention to provide a new and improved switch mounting and actuating assembly to be incorporated in an appliance such as a washing machine or the like.

Another object of this invention is to provide a switch mounting and actuating assembly which is formed of a plastic molded structure thereby eliminating the possibility of rust and ultimate malfunction.

Still another object of this invention is to provide a switch mounting and actuating assembly which is efficient and reliable in operation while also being inexpensive and simple to manufacture.

Briefly, the switch structure of this invention is actuated when the lid of a washing machine is closed. The structure includes a switch holder and a C-shaped actuating member which is snap-fit into a recess formed within the holder and thereby provides a pivotal connection between the two components. A return spring is also snap-fit into a recess formed in the actuating member and engages the underside of the wall-forming structure of the appliance. A switch body is placed within the holder and temporarily held in registry therewith so as to maintain holes in the switch holder and the switch body in alignment during the assembly operation. The holes are ultimately placed in registry with apertures formed in the wall structure of the appliance so that fastening means such as pop rivets, screws, or the like, may be inserted therein and locked in place.

Many other objects, features and advantages of this invention will be more fully realized and understood from the following detailed description when taken in conjunction with the accompanying drawings wherein like reference numerals throughout the various views of the drawings are intended to designate similar elements or components.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top perspective view of an appliance utilizing the switch mounting and actuating assembly which is constructed in accordance with the principles of this invention;

FIG. **2** is a perspective view illustrating a switch body inserted into the switch mounting and actuating assembly prior to securing the same into the appliance of FIG. **1**;

FIG. **3** is a perspective view illustrating the switch body in phantom line and further illustrating fastening means passing through apertures formed therein;

FIG. **4** is a perspective view of the C-shaped actuating member of the assembly of FIG. **3**;

FIG. **5** is a side elevational sectional view taken along line **5—5** of FIG. **1** illustrating the mounting of the switch and switch body in the appliance illustrated herein; and

FIG. **6** is a top sectional view taken along line **6—6** of FIG. **5.**

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Referring now to FIG. **1,** there is seen a switch mounting and actuating assembly designated generally by reference numeral **10** that is shown in connection with an appliance **11,** here being a top-loading washing machine. The switch mounting and actuating assembly **10** is placed in close proximity to an opening **12,** preferably being located at the margin portion **13** opposite that of a pair of hinges **16** and **17** associated with a cover member **14.** Also, in the illustrated embodiment, a splash shield **18** is associated with the switch mounting and actuating assembly **10** to prevent water or other moisture from splashing onto the switch structure during a washing operation.

Referring now to FIGS. **2, 3** and **4,** the switch mounting and actuating assembly **10** is illustrated as including a holder member **20** having a plurality of spaced apart post members **21** which serve to temporarily hold a switch body **19** in a position to have holes **22** of the holder **20** in alignment with the holes **23** of the switch body **19** so that a pair of screws **24** can be inserted therethrough and through apertures **26,** FIG. **5,** and the holes **22** and **23** to securely mount the switch mounting and actuating assembly and the switch body to the peripheral margin **13** of the washing machine **11.**

Associated with the mounting and actuating assembly **10** is an actuating member **30** having substantially a C-shaped configuration, from the side view, and wherein the top portion **31** is shorter than the bottom portion **32.** Also, connected to the end of the bottom portion **32** is a pad portion **33** which serves both as a striking member for a pin **35** and to close off an aperture **35***a* through which the pin passes when the cover member **14** is open. The actuating member **30** is pivotally connected to the holder **20** by cylindrical portions **34** engaging apertures **36.** The actuating member **30** is snap-fit into operating position in the holder **20** by flexure of the downwardly depending portions **36***a* of the body **20.**

To provide rigidness of the actuating member **30,** a rib **37** is formed along the outer surface thereof and is fashioned, at the bight portion, to have a recess **38** formed to receive a clip-forming portion **39** of a leaf spring **40.** The leaf spring **40** is so positioned to engage the underside **41** of the peripheral margin **13** of the washing machine to provide a continuous spring bias action of the actuating arm **30** to maintain the switch in a deactuated condition.

FIG. **5** illustrates the cover **14** as having a downwardly turned portion **50** and an inwardly turned portion **51** having an aperture **52** formed therein to receive the pin **35.** The pin **35** has a shoulder **53** and a head **55** to be positioned on opposite sides of the inwardly turned portion **51** firmly to hold the pin in position.

Furthermore, in the illustrated embodiment, the peripheral portion **13** has a downwardly sloping portion **54** through which the aperture **35***a* is formed for receiving the pin **35.** While this particular configuration of switch mounting is illustrated in the detailed disclosure, it will be understood that variations thereof may be made if desired.

The switch body **19** may take any suitable form but preferably is to have a size firmly to fit between the post members **21** for temporarily holding the switch in position during the mounting operation. The switch structure illustrated herein has snap-on terminal leads **57** and **58** and an upstanding push button **59** which is actuated by the shortened upper portion **31** of the actuating member **30.**

Most advantageously, the entire switch mounting and actuating assembly, except for the leaf spring member **40,** is made of molded plastic material and, therefore, is not subject to corrosion or rust as are metal components utilized for the same purpose. Accordingly, variations and modifications of this invention may be effected without departing from the spirit and scope of the novel concepts disclosed and claimed herein.

The invention is claimed as follows:

1. A switch operating mechanism for a switch having an actuator means which is secured to a housing having a movable lid and a stationary member wherein retaining means retains said switch on said stationary member so that said actuator means is in proximity to a first wall of said stationary member which is substantially flush with said lid when said lid is closed and said lid carries an actuating projection which extends through an opening in a second wall of said stationary member which is inclined with respect to said first wall and which has a portion that extends behind said lid when said lid is closed comprising operating means which assumes a first position when said lid is open and a second position when said lid is closed, means for pivotly mounting said operating means so that it can pivot between said first and second positions, a first leg positioned adjacent said first wall and said actuator means, a second leg, engagement means on said second leg, a third leg joining said first and second legs and resilient means disposed between said first wall and said operating means so as to bias said operating means towards said first position when said lid is closed, said first leg being positioned above said actuator means when said operating means is in said first position and so as to depress said actuator means when said operating means is in said second position and said second leg being positioned so that said engagement means provides a seal for said opening in said second wall when said operating means is in said first position and so that said engagement means engages said actuating projections on said lid when said operating means is pivoted from said first position to said second position.

2. A switch operating mechanism as claimed in claim **1** wherein said operating means is of a general C-shaped configuration and said first leg is substantially parallel to said second leg.

3. A switch operating mechanism as claimed in claim **1** wherein said operating means comprises a rib and said resistant means comprises a leaf spring having a first end which engages said first wall and a second end which is secured to said rib.

4. A switch operating mechanism as claimed in claim **3** wherein said rib extends over said third leg of said operating means and said second end of said resilient means comprises a clip which snaps over said rib so as to be retained thereon.

5. A switch operating mechanism as claimed in claim **1** wherein said engagement means comprises a pad on the outer end of said second leg which extends from said second leg at an angle to provide a slide surface for said actuating projection.

6. A switch operating mechanism as claimed in claim **1** wherein said pivotal mounting means comprises a pair of cylindrical projections on opposite side of said third leg and a pair of corresponding receptacles in said retaining means.

7. A switch operating mechanism as claimed in claim **4** wherein said operating means is of a general C-shaped configuration and said first leg is substantially parallel to said second leg.

8. A switch operating mechanism as claimed in claim **7** wherein said engagement means comprises a pad on the outer end of said second leg which extends from said second leg at an angle to provide a slide surface for said actuating projection.

9. A switch operating mechanism as claimed in claim **8** wherein said pivotal mounting means comprises a pair of cylindrical projections on opposite sides of said third leg and a pair of corresponding receptacles in said retaining means.

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