

[54] **REFRIGERATOR DOOR SWITCH HAVING VERTICAL DRAIN PASSAGE**

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

[58] **Field of Search** 200/5 A, 50, 18, 61.62, 200/61.69, 61.7, 153 T, 159 R, 168 R, 168 G, 5 E, 159 A, 160, 302, 303, 306, 328, 340

[56] **References Cited**

UNITED STATES PATENTS

2,832,850	4/1958	Mekelburg.....	200/5 D
3,406,270	10/1968	Sho	200/153 T
3,446,467	5/1969	Bailey	200/168 C
3,674,970	7/1972	Bedocs.....	200/168 C

3,676,626	7/1972	Mitchell.....	200/153 V
3,789,176	1/1974	Pick.....	200/168 G

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[57] **ABSTRACT**

A door switch for a refrigerator having a freezing chamber. The switch comprises at least two push buttons and an integrally constructed outer casing having a flange portion, at least two cylindrical portions extending perpendicularly from the flange portion and laterally spaced from each other, and a main body portion integrally connected to the ends of the cylindrical portions opposite to the flange portion. The two push buttons extend through the flange portion into the cylindrical portions. Water-draining passages are formed between the flange portion and the main body of the switch casing, adjacent the cylindrical portions, for draining water running out of the freezing chamber downwardly through the switch casing.

1 Claim, 3 Drawing Figures

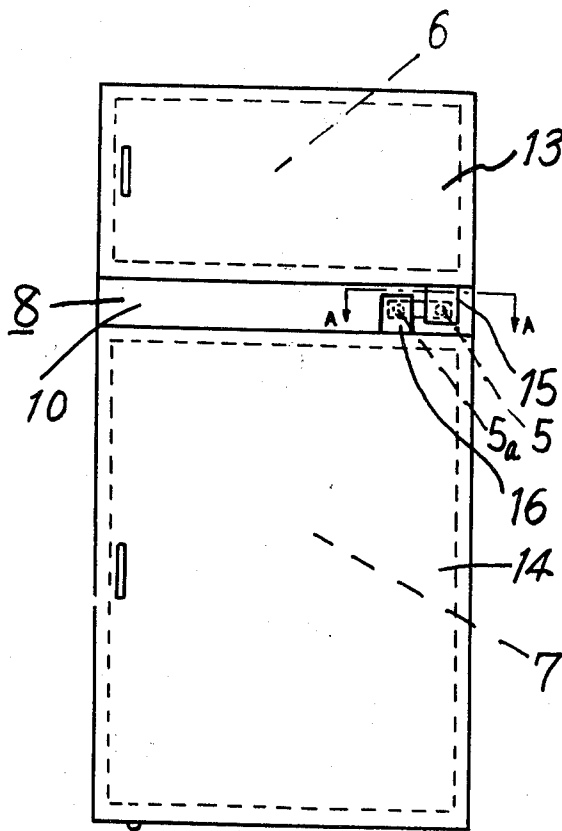
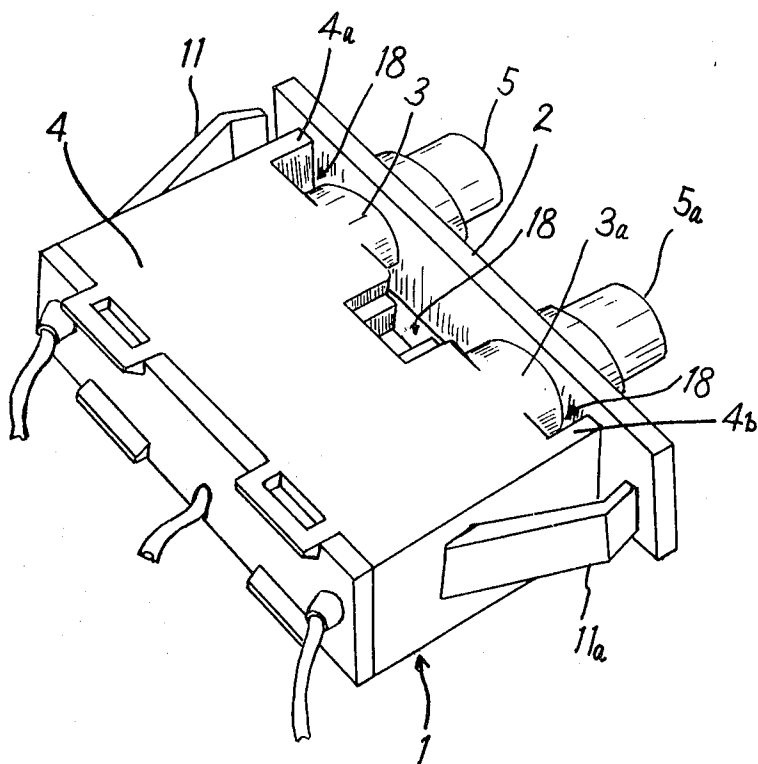


Fig 3



REFRIGERATOR DOOR SWITCH HAVING VERTICAL DRAIN PASSAGE

BACKGROUND OF THE INVENTION

This invention relates generally to door switches and, more particularly, to door switches for use in refrigerators having freezing chambers.

The door switch in a refrigerator with a freezing chamber normally operates a fan motor when the door of the refrigerator is closed, and it stops the fan motor and turns on a lamp illuminating inside of the refrigerator when the door is opened. In refrigerators having freezing chambers, the freezing chamber is ordinarily provided above the refrigerating chamber, and ice-making trays are provided in the freezing chamber. When the trays are filled with water and initially inserted into the freezing chamber, a portion of the water frequently drips out of the ice-making trays. Thus, if the door switch is installed in its normal location, i.e., in a separating wall between the freezing chamber and the refrigerating chamber, the water that drips out of the ice-making trays may get inside the door switch, thus causing an electric shock hazard.

SUMMARY OF THE INVENTION

It is, therefore, a primary object of the present invention to provide an improved door switch for use in a refrigerator with a freezing chamber, which is so constructed that any water dripped thereon can be readily drained downwardly therethrough to prevent intrusion of the water inside the door switch.

Another object of the invention is to provide an improved door switch for use in a refrigerator having a freezing chamber, wherein draining of water through the switch can be achieved without requiring additional parts, thus minimizing the manufacturing cost of the door switch.

Still another object of the invention is to provide an improved door switch for use in a refrigerator having a freezing chamber which facilitates manufacture and assembly of the switch while minimizing the possibility of water getting inside the switch.

An additional object of the invention is to provide such an improved refrigerator door switch which is self-mounting so that the switch can be mounted in a selected position without requiring mounting screws or the like.

These and other objects of the present invention are achieved by an improved refrigerator door switch which comprises an integrally constructed outer casing having a main body portion, a flange portion, and at least two laterally spaced members interconnecting the main body portion and the flange portion, with at least two push-buttons extending through said flange portion into said interconnecting members, and with water-draining passages formed between said flange portion and said body portion of the casing and adjacent the interconnecting members for draining water running out of the freezing chamber downwardly through the casing.

The nature, principle, and utility of the present invention will be more clearly understood from the following detailed description of the invention when read in conjunction with the accompanying drawings, wherein like parts are designated by like reference numerals.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a front view of a refrigerator having a freezing chamber, wherein a door switch is installed in a separating wall between the freezing chamber and the refrigerating chamber;

FIG. 2 is a sectional view, on an enlarged scale, taken along the line A—A in FIG. 1; and

FIG. 3 is a perspective view of a door switch according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIGS. 1 through 3, there is illustrated a door switch according to the present invention which comprises a switch casing 1 having a flange portion 2, two cylindrical portions 3, 3a parallelly extended from the flange portion 1 in spaced apart relationship, and a main body 4 integrally coupled to the ends of the two cylindrical portions 3, 3a. In the cylindrical portions 3 and 3a, push buttons 5 and 5a are inserted for actuating two push-button switches, one for the freezing chamber and the other for the refrigerating chamber, contained within the switch casing 1.

As clearly shown in FIG. 1, the door switch is installed in a recessed portion 9 of a separating wall 8 between the upper freezing chamber 6 and the lower refrigerating chamber 7, with the flange portion 2 of the switch casing 1 abutting the outer surface of the front panel 10 of the separating wall 8 as shown in more detail in FIG. 2. In this case, two resilient self-seizing strips 11 and 11a provided on opposite ends of the switch casing 1 are urged against the inner walls 12, 12 of the recessed portion 9, whereby the door switch can be installed in its position without requiring any screws or the like, by merely snapping the switch into the recess 9.

On the door 13 for the freezing chamber 6 and the door 14 for the refrigerating chamber 7, there are provided flanges 15 and 16, respectively, at positions corresponding to the push buttons 3 and 3a, so that when either one of the doors 13 or 14 is closed, the corresponding flange 15 or 16 depresses the corresponding push button 3 or 3a, and when the door is opened, the push button thus depressed is released.

In accordance with an important aspect of the present invention, a plurality of water-draining passages 18 are formed through the switch casing 1 at spaced positions between the inner surface 17 of the flange portion 2 and the main body 4. More specifically, in the illustrative embodiment of the invention, two of the draining passages 18 are provided between the cylindrical portions 3 and 3a and a pair of end ribs 4a and 4b extending between the main body 4 and the flange portion 2, outboard of the cylindrical portions 3 and 3a. A third passage 18 of a larger size is provided between the two cylindrical portions 3 and 3a, again in the region between the inner surface 17 of the flange portion 2 and the main body 4 of the switch casing 1. It should be particularly noted that all the drain passages 18 extend entirely through the switch casing 1 in the vertical direction.

The illustrative door switch is installed in the separating wall 8 between the freezing chamber 6 and the refrigerating chamber 7; consequently, when water runs out of the ice-making trays in the freezing chamber 6, or when the chamber 6 is washed with water, a portion

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of the water flows from the freezing chamber 6 along the front panel 10 of the separating wall 8 to the gap between the inner surface 17 of the flange portion 2 of the switch casing 1 and the front panel 10. However, because of the provision of the water draining passages 18 at positions adjacent to the inner surface 17 of the flange portion 2 of the switch casing 1, any water flowing into the gap between the inner surface 17 of the flange portion 2 and the front panel 10 is immediately drained downwardly through these water-draining passages 18, and the possibility of water getting inside the switch casing 1 is thereby minimized along with the hazard of electric shock. It should be noted that the push-button receiving parts of the switch casing 1 are formed into cylindrical configurations 3 and 3a, as described above, to guide the water into the water draining passages 18.

Although the invention has been described with respect to a preferred embodiment thereof; it will be apparent to those skilled in the art that various modifications and alterations can be carried out without departing from the spirit and scope of the invention. For example, the end ribs 4a and 4b interconnecting the

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flange portion 2 and the main body 4 could be eliminated if desired.

I claim

1. In combination with a refrigerator having a refrigerator door and a freezing chamber door, a door switch comprising the combination of:

a. a casing having a main body portion, a flange portion and at least two laterally spaced members interconnecting said main body portion and said flange portion, said laterally spaced members forming at least one vertical water-draining passage between said flange portion and said main body portion of said casing for draining water running out of said freezing chamber downwardly through said casing, and

b. at least two push buttons mounted on the opposite side of said flange portion from said main body portion and extending into said laterally spaced members for operating switches within said casing, one of said push buttons engaging the refrigerator door and the another of said push buttons engaging the freezing chamber door.

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