Sept. 8, 1936. R. H. MONEY 2,053,373

ELECTRIC SWITCH DEVICE

Filed June 13, 1933

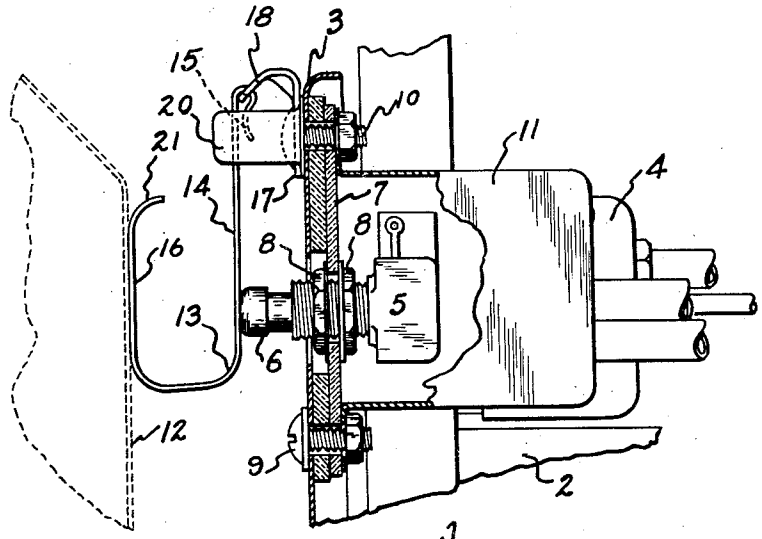


Fig. 1.

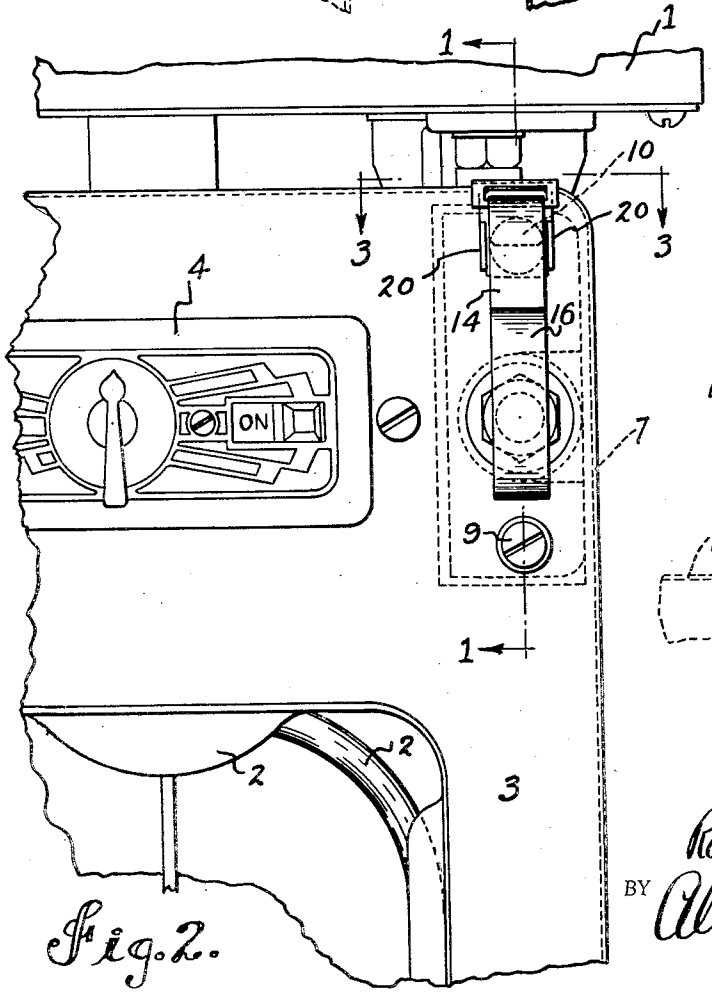


Fig. 2.

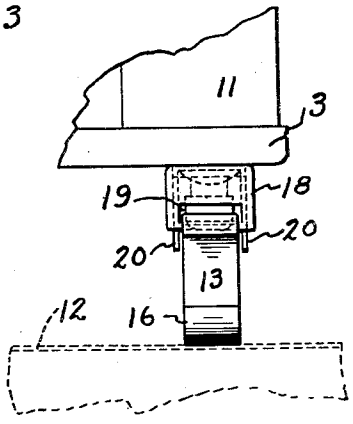


Fig. 3.

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ELECTRIC SWITCH DEVICE

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5 Claims. (Cl. 200—54)

My invention relates to switching means operable in connection with moving members, such as doors and the like, but I shall describe it in connection with refrigerator devices, it being understood, however, that my invention is not limited thereto, but is applicable to other constructions presenting the same or similar problems.

In the manufacture of electric refrigerators, the convenience of the housewife is subserved by providing a light within the refrigerator which operates automatically so as to be turned on and off with the opening and closing of the door, or doors, of the refrigerator. For this purpose a snap switch may be provided, connected into the circuit of the light and arranged to be actuated by the door.

For manufacturing reasons it is not, however, convenient or economical to build such a switch into the refrigerator cabinet. It is greatly preferred to build it as a part of the mechanical unit with which the refrigerator is equipped. This not only facilitates mass production of such units, but also enables units to be used without change in cabinets of varying size, style, or design. Building the switch, however, as a part of the mechanical unit construction has the disadvantage that its ultimate placement may vary with respect to the door of the cabinet, and also that cabinets even of the same style and design may vary slightly as to the interfitting of their parts, and more specifically that the doors even of similar cabinets may not always close to exactly the same point. The sealing strip of the refrigerator may be thicker on some cabinets than on others, or it may become thinner with wear, to the extent of permitting the door to close further. Hence, for these and for other reasons, it is not very practicable to have the door directly actuate the switch, but so far as I am aware there have not hitherto been any proposals to solve these problems.

It is an object of my invention to provide a switch construction which can be made as a part of the mechanical unit construction of the refrigerator, together with means to be engaged by the door for actuating the switch. It is another object of my invention to provide actuating means which are resilient in construction, and which therefore take care of the variations in the operation of the door, which may occur as between different cabinets, or in any given cabinet under varying conditions of age or use. It is another object of my invention to provide a means for causing the door to actuate the switch, which means make it unnecessary for the door directly to contact the switch, and also make it unnecessary to provide on the door a pad, or other device, to protect the finish or surface of the door, or any adjustment device to make sure that the door will satisfactorily operate the switch. It is also an object of my invention to provide actuating means which are resilient enough to protect the finish and surface of the door. Broader aspects of my invention have to do with the provision of a switch and controlling means, the switch being arranged for actuation by a moving member, and a control means being such as to compensate for sporadic discrepancies in the action of the moving member, and in the attainment of these broader aspects of my invention my construction is not limited to switches for refrigerators.

These and other objects of my invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe the aforesaid exemplary embodiment. Reference is had to the drawing, wherein

Figure 1 is a side view of my switch and associated mechanism, with parts in section.

Fig. 2 is a front elevation of a portion of the evaporator and face plate of an exemplary refrigerator showing my switch and associated mechanism mounted thereon in a convenient position.

Figure 3 is a plan view of the switch actuating mechanism which I employ.

In the practice of my invention, I provide a snap switch or other suitable switch for the purpose, together with means for mounting it in a position near the door, or other moving member which is to actuate the switch. I then provide an actuating means in the nature of a resilient member interposed between the switch and the door or moving means. Preferably this member will be resilient, and preferably also it will be detachable, for certain purposes hereinafter to be set forth. Preferably also it will be hinged so that it can be moved out of the way for access to the switch.

In the drawing I have indicated at 1 a member to which the evaporator of the refrigerator is mounted. This member may be a stationary or removable part of the refrigerator cabinet, or it may be such other supporting means as desired. An evaporator, indicated generally at 2, is mounted to this supporting means, and it may have a face plate indicated at 3 perforated to permit the insertion of the usual trays in the evaporator. I have shown a means indicated generally at 4 for the control of the action of the refrigerator unit,

such means usually comprising both a switch for the compressor motor and a means for varying the action of an automatic temperature maintaining means.

The switch for the light is indicted at 5. This switch may be of any desired type. I have shown a plunger type switch having a plunger 6, but any of the other usual so-called "momentary" switches may be employed. The particular switch shown by me is mounted to a face plate by means of nuts 8, and this plate in turn is mounted to the front panel member 3 by means of bolts 9 and 10. The switch may, if desired, be provided with a housing 11 held by the same bolts, and the wires to the switch will enter this housing in the usual way. I have shown in dotted lines at 12 a portion of the door of the refrigerator in closed position, and it will be seen that, due to the way in which I have mounted my switch, this door does not approach the plunger 6 close enough to actuate it directly.

Next I provide an actuating member indicated generally at 13. In the preferred and simplest form of my invention this is a strip of resilient metal having a base portion 14, and a portion at one end which is bent over as at 15 to form a hinge and suspending member. The other end of the operating device is bent over reversely as at 16 to form a portion interspaced from the portion 14, and resiliently connected thereto. This operating member is suspended from a bracket indicated generally at 17, which bracket is formed from a substantially T-shaped piece of metal, the base of the T being turned over as at 18 to form a portion for the engagement of the member 15 of the operating device. The portion 18 is slotted as shown at 19 in Fig. 3 for the reception of the end of the operating device. I also prefer to bend up the two arms of the member 17 as shown at 20 to provide side guides for my operating device.

It will now be clear that the member 13, interposed between the door 12 and the plunger 6, permits the actuation of this plunger when the door is closed. By reason of the hinging of the member 13 it can move with the door, as shown, when engaged thereby, and by moving to the right in Fig. 1 as the door closes, it depresses the plunger 6 sufficiently to actuate the switch. It is resilient, and thereby it compensates for changes in the relationship of the door and the switch, which may occur due to the use of different cabinets, or due to variations in the construction of similar cabinets, or changes in the operation of the parts of any given cabinet throughout a period of use. The parts of the operating device are also bendable to make adjustments therein; and I preferably bend over the end of the member 13 as shown at 21 in a rounded formation so that no sharp corner will be presented to the door even if a considerable distortion of the member 13 is made for the sake of adjustment.

My operating device 13 is also removable from the bracket member 17, which is an added safeguard in the shipment of refrigerators. Moreover, if the lamp is removed from its socket, and the member 13 unhooked and taken out of the refrigerator, the automatic operation of the light may be discontinued without unnecessary continued operation of the switch. It will be understood, of course, that there is provided for the lamp a suitable socket, not shown, located in a desired portion of the refrigerator and connected by suitable leads to the power line and to the switch 5.

It will be understood that modifications may be made in my invention without departing from the spirit thereof.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a switching mechanism, the combination of a switch, moving means for actuating said switch, a fixed member, and a resilient member having a hook for removable hinged mounting upon said fixed member and interposed between said switch and said moving means, said resilient member adapted to have an arcute movement about said hinged mounting upon actuation by said moving means.

2. In a switching mechanism, the combination of a switch, moving means for actuating said switch, a fixed member, and a member having a hook for removable hinged mounting upon said fixed member, said member when so mounted, lying between said switch and said moving means for transmitting the motion thereof to said switch, said member by virtue of its mounting being completely removable when the operation of said switch upon movement of said moving means is not desired.

3. In combination with a switch and a door, a bracket, a U-shaped member pivotally mounted from said bracket and having interspaced arms resiliently connected together, said member being interposed between said door and said switch to cause said door to actuate said switch when said door is moved into and out of closed position, said pivotal mounting comprising a hook whereby said member is removable from said bracket.

4. An actuator member for interposition between a switch and a movable member to transmit motion from said movable member to said switch, comprising a fixed member, and a substantially U shaped member of resilient material and having a hook, whereby it is independently hinged upon said fixed member, and readily removable therefrom.

5. An actuator member for interposition between a switch and a movable member to transmit motion from said movable member to said switch, said switch being provided with a bracket, comprising a substantially U shaped member of resilient material having a hook portion formed upon one arm of said U, said hook portion adapted to act as a hinge when hooked on said bracket, said U shaped member being readily unhookable from said bracket.

ROLAND H. MONEY.