

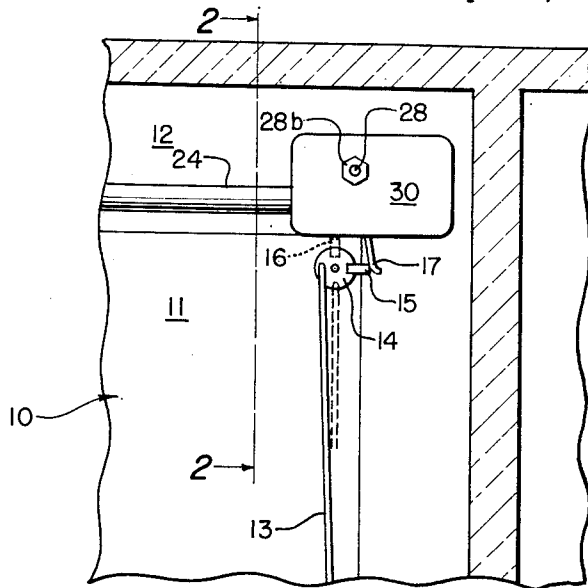
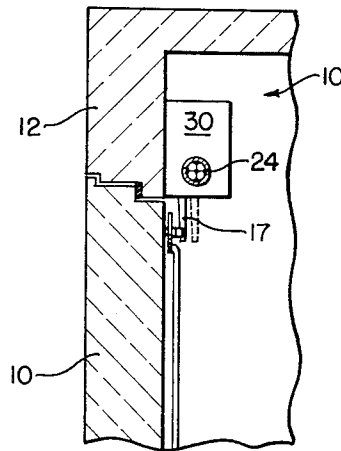
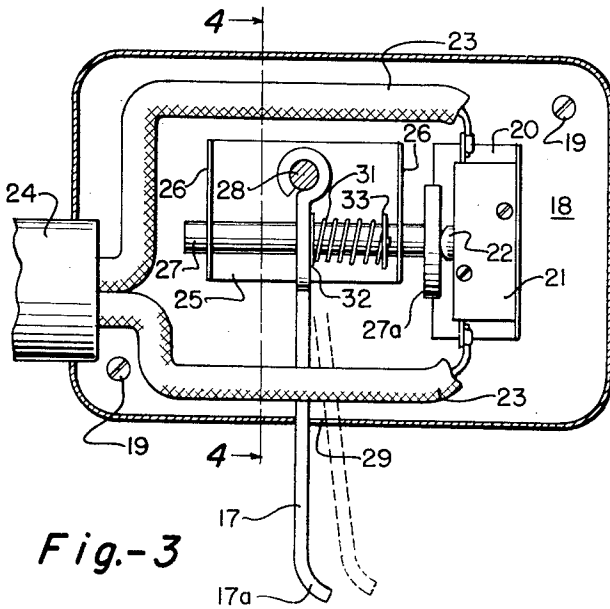
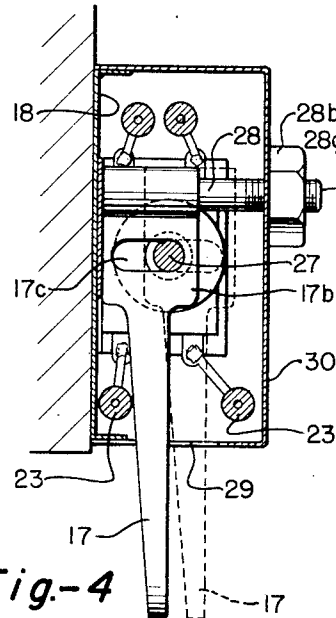
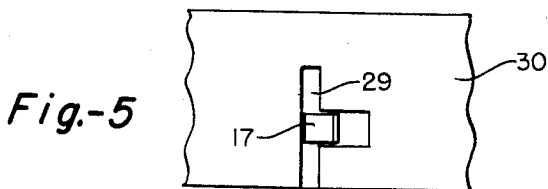
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CONTROL SWITCH

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CONTROL SWITCH

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This invention relates to a control switch. It has to do particularly with a switch capable of being actuated upon the closing of a door to a chamber or compartment such, for example, as a chamber or compartment of an incubator, for the purpose of switching on an air circulating fan and/or a humidifying device within the chamber when the door is moved into its closed position.

Various types automatically operated control switches have previously been used for switching on and off various devices upon the actuating, either the opening or the closing, of a door but for the most part, these devices have been relatively complicated and composed of many working parts which made them costly to manufacture and likely to get out of order during continued use. Because of the likelihood of their failure to function properly at all times, they were not wholly satisfactory. In the case of an incubator, where the proper incubation of eggs and the hatching thereof depend upon the condition of the temperature, air and humidity within the incubator, it is obvious that the assured and positive action of a control switch are highly important in fact essential.

One of the objects of the present invention is to provide a control switch of improved nature, of relatively simple construction and of few moving parts which is capable of positive action under any and all climatic conditions.

Another object of the invention is to provide an improved control switch having a minimum number of parts and of simple construction, thus offering fewer parts which might be attacked during changes in weather conditions.

Another object of the present invention is to provide a control switch which is actuated by a part of the latch operating mechanism for the door or closure; it being another object to provide a switch which may be set by hand at predetermined times so as to be unaffected by the movement of the door.

The foregoing and other objects and advantages of the present invention will be apparent from the following description and appended claims when considered in conjunction with the accompanying drawings wherein like reference characters designate corresponding parts in the several views.

In said drawings:

Fig. 1 is a fragmentary elevational view of the control switch and operating means embodying the present invention, taken from within a chamber or compartment looking toward the inside of the door of said chamber.

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Fig. 2 is a vertical sectional view taken substantially along the line 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a front elevational view of the control switch mechanism with the cover removed.

Fig. 4 is a vertical sectional view taken substantially along the line 4—4 of Fig. 3, looking in the direction of the arrows, with the cover in place; and

Fig. 5 is a fragmentary detail elevational view illustrating the T-slot in the removable cover.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation, and it is not intended to limit the invention claimed herein beyond the requirements of the prior art.

Referring now to the drawings, a chamber or compartment 10 is shown as being provided with a swinging door 11 having a door jamb 12 against which the door abuts when closed. The door is provided with latch mechanism 13 having at its upper end a disk 14 carrying fingers or projections 15 and 16. When the door 12 is moved to its closed position and the latch mechanism is operated by moving the door handle (not shown) to latch the door, the projection 15 is moved into contact with the control switch trigger 17 to close the circuit and operate a fan and/or humidifier, as explained below.

The control switch mechanism or assembly, as shown, comprises a base plate 18 which is preferably held to the door jamb 12 by screws 19. An angle 20 is secured to the base plate and supports a pair of similar quick-acting switch elements 21, each of which has a sensitive contact button 22. The switches are in electrical connection with a source of current through wires 23 of a cable 24 which extends into the base plate through a hole or opening in an end wall of said plate. Also mounted upon the base plate 18 is a substantially U-shaped bracket 25 having aligned openings in its upstanding walls or end flanges 26. An operating pin or plunger 27 having a disk-like head or inner end 27a, is mounted for limited reciprocating movement in the openings. A pin or bolt 28 extends upwardly from the channel or U-shaped member 25 and is threaded at 28a at its outer end. The pin or

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bolt 28 carries or supports for swinging movement, the trigger member 17 which has a curved outer end 17a. The trigger projects outwardly through a T-shaped slot 29 (see Fig. 5) in the bottom or lower wall of the removable cover 30. The cover is held in place upon the base 13 by a bolt 28 and a nut 28b.

The trigger 17 has an enlarged portion 17b provided with an elongated slot 17c through which the horizontal pin or plunger 27 extends. The trigger 17 is normally maintained at the left hand end of slot 29 as seen in Fig. 3, by a coil spring 31 which abuts or rests against a washer 32 at its left end, Fig. 1 and whose right hand end engages a washer 33 carried by the plunger 27. The washer 32 rests against the enlarged portion 17b of the trigger member and the washer 33 engages a cotter pin carried by said plunger 27. The spring 31 normally maintains the parts in the positions of Fig. 3 with the head 27a of pin 27 in contact with, but not applying pressure to, the switch contact button 22.

In Fig. 4, the trigger 17 is shown in its normal or operative position in full lines where it can be caused to travel within the leg of the T-slot in the cover 30 to actuate the switch contact button 22 when the lug or projection 15 of the door latching mechanism contacts its curved free end 17a. Thus, when the door is closed, the trigger is actuated. This in turn closes the circuit through the switches 21 to operate an air circulating fan and/or a humidifier located within the chamber or compartment 10, but not shown in the drawings. When however, it is not desired to actuate the control switch upon the closing of the door 11, the trigger 17 is moved from its full line position toward the right of Fig. 4 in the slot to the broken line position in which it is shown in this figure. In this latter position, the trigger member is out of the path of movement of the lug or projection 15, Fig. 1.

From the foregoing it will be seen that I have provided a very simple control switch structure or assembly which has a minimum number of parts, which can be manufactured at relatively low cost and which can be installed with ease and facility without necessitating any reorganization of the cabinet or compartment to which it is applied and which does not require the use of any special tools for the installation.

Having thus described the invention, what is claimed is:

1. A control switch assembly for a circulating fan for causing the circulation of air within a closed chamber provided with a door; compris-

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ing a casing having a base plate and a removable cover adapted to be mounted within the chamber adjacent an edge of the door, quick-acting switch means including a contact button located within the casing for operating the fan at predetermined times, a plunger adapted to engage said contact button for operating the quick-acting switch means when desired, a bracket secured in the casing and having spaced portions for supporting and guiding said plunger, a spring surrounding a portion of the plunger for maintaining the plunger normally in inoperative position, a trigger for operating said plunger, said trigger having an eye portion formed at its inner end and having a portion projecting outwardly through an opening in a wall of said removable cover, and means for holding the removable cover in place and including a threaded pivot pin projecting outwardly from said bracket and through a hole in the removable cover, said pin extending through the eye portion of the trigger for swingingly and slidably supporting said trigger, said removable cover wall opening having a portion permitting the trigger to be swung about said projecting pin in a direction lengthwise of the casing to energize and deenergize the quick-acting switch means and an offset portion into which the trigger may be moved bodily by sliding its eye portion on the pin crosswise of said casing.

2. A control switch assembly according to claim 1, wherein the body portion of the trigger is provided with a transverse slot through which the plunger projects to thereby permit the crosswise sliding movement of the trigger, and wherein the removable cover wall opening is substantially T-shaped.

3. A control switch assembly according to claim 1, wherein movable trigger-engaging and operating means is carried by the chamber door.

DAVID M. VAUGHAN.

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