

[54] OVEN HOOD WITH AUTOMATIC SWITCH

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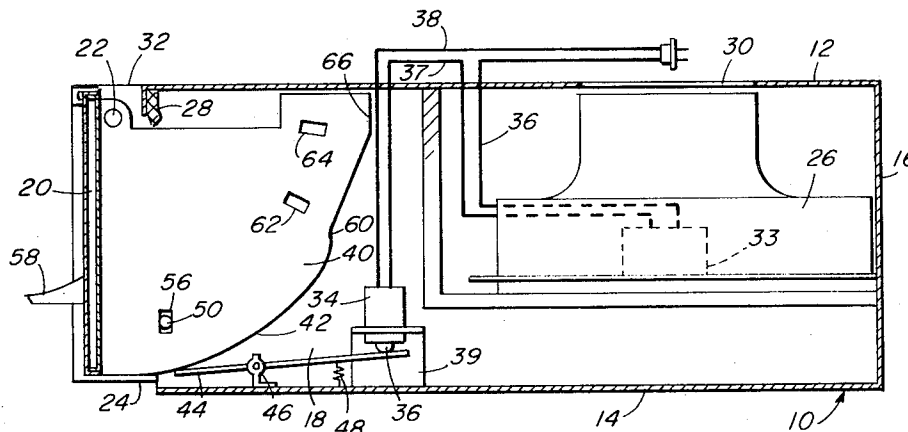
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[57]

ABSTRACT

An exhaust hood for use with an oven or the like comprising a shell having a pivotly mounted faceplate carrying on its inner side a cam having an edge of irregular surface contour, a switch in the shell electrically connected between an external source of power and an exhaust fan within the shell, and a pivoted switch actuator or cam follower which at one end engages the irregular surface of the cam and at its other end engages the switch for controlling the switch in correspondence with the position of the actuator on the cam surface.

7 Claims, 4 Drawing Figures



OVEN HOOD WITH AUTOMATIC SWITCH

BACKGROUND OF THE INVENTION

In the manufacture of exhaust hoods of the character described, such hoods normally comprise a shell or housing having at the front thereof a faceplate which is hingedly mounted so that the faceplate may be lifted to expose the interior of the hood and to provide access thereto so that changing of a filter, cleaning, or adjusting is made relatively simple. In such devices, a switch is usually mounted on or adjacent the faceplate to provide means whereby the exhaust fan within the hood can be turned on and off.

However, it will be apparent that in such conventional prior art structures, cleaning or other procedures taking place within the interior of the hood might inadvertently or accidentally occur while the exhaust fan is being operated. This would easily result in personal injury.

SUMMARY OF THE INVENTION

The above and other disadvantages in conventional hoods of the character described are overcome in the present invention wherein the faceplate is provided with automatic switching mechanism whereby the exhaust fan will be activated only when the faceplate is open partially to a predetermined extent which is not sufficient to allow easy personal access into the interior of the hood, and will become automatically disconnected from the energizing circuit when the faceplate is open sufficiently to permit access for such cleaning or other operation to take place.

This is accomplished in the present invention by a cam which has an irregularly contoured surface and which is mounted on the inner surface of the faceplate for movement therewith, and a cam follower switch actuator which at one end rides on the cam surface and at its other end engages a switch which connects an external source of electrical energy to the fan. The cam surface is contoured such that the switch will remain open in all positions of the cam and faceplate except in one position where the cam is provided with an indent or notch in its contour, this position corresponding to the position desired of the faceplate when the fan is to be operated. In this position of the cam, the actuator will fall into the indent and allow the switch to be closed, thus turning the fan on.

Continued further opening of the faceplate will cause consequent movement of the switch actuator in a manner which will again open the switch so that the fan motor will be de-energized when the faceplate is open to an extent which permits personal access to the interior of the hood.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, wherein

FIG. 1 is a front elevational view of a hood embodying the invention;

FIG. 2 is a front-to-rear vertical sectional view of the hood showing the novel switch-operating means;

FIG. 3 is an elevational view of the spring detent device; and

FIG. 4 is a view similar to FIG. 2 showing the faceplate in "switch on" position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more particularly to the drawings wherein like characters of reference designate like parts throughout the several views, the hood 10 includes a shell or housing having a top 12, a bottom 14, a back wall 16 and sidewalls 18. In the front of the housing is a faceplate 20 which is hinged at its top edge as shown at 22 so that it may be pivoted about the longitudinal axis of the hinge 22 when manually lifted. The faceplate 20 is shown closed in FIGS. 1 and 2, and is open in FIG. 4.

The hood 10 is particularly intended for use with an oven or the like (not shown) which produces hot combustion products, for example, which must be exhausted. Such products normally will enter the hood 10 through a vent 24 in the bottom wall 14 near the front end of the housing rearwardly of the faceplate 20. A fan 26, which is shown schematically in FIGS. 2 and 4, will when operated function to draw the combustion or other products from the vent 24 through a filter 28 and then will exhaust the filtered products through a vent 30 in the rear or top wall of the housing.

When the fan is not operating, the combustion products will rise vertically from vent 24 and will pass out through a top vent 32.

The fan 26 includes a motor 33 which is adapted to be connected to an external source of electrical energy through a switch 34 via wires 36, 37 and 38. Switch 34 in conventional hoods is a manually operable device located in a convenient position such as on the faceplate or adjacent external portion of the housing.

However, in accordance with the present invention, the switch 34 is located within the hood and is automatically operable in response to manual movement of the faceplate. The hood is completely off in the condition shown in FIG. 2, faceplate 20 being closed, switch 34 off and fan motor 33 deenergized. Switch 34 is a type which is provided with a button 36 adapted, when pressed, to open the electrical circuit. When button 36 is released, the circuit is closed to energize the fan motor 33 as will be described. Switch 34 may be supported upon bottom wall 14 or sidewall 18 by means of a bracket 39 or the like.

To operate the switch 34 there is provided a plate-like cam 40 which is fixed to the inner surface of the faceplate 20 adjacent one end thereof. Cam plate 40 has on its inner edge an irregularly contoured surface which includes a major surface 42 which is an arc of a circle having hinge 22 as its center.

Bearing against surface 42 is one end of a spring-held actuator 44 which is fulcrumed in a bearing bracket 46 fixed upon the bottom or sidewall. A spring 48 attached to the opposite side of the actuator may be employed to ensure constant engagement of the actuator upon the cam surface 42. However, spring 48 may not always be necessary and the spring tension in the switch may be sufficient to retain the end of the actuator 44 against surface 42. The other end portion of actuator 44 is retained in engagement with the button 36 of switch 34 and, in this position of the actuator, depresses the button, opening the switch and the associated electrical circuit.

Resilient yieldable means is provided for yieldably retaining the faceplate 20 in place and comprises a spring-actuated pin 50 (FIG. 3) which is contained in a housing 52 mounted on the side wall 18 of the hood housing. The cam plate 40 is located sufficiently close enough to the wall 18 that it engages the indexing pin 50 and urges it inwardly of its housing 52 against the tension of a spring 54.

However, when the faceplate 20 is in its closed position as shown in FIG. 2, the pin 50 will engage a small aperture or detent 56 in the cam plate 40. Forceful movement of the faceplate upwardly about hinge 22 will cause the pin 50 to be depressed and allow the cam plate 40 to move with the faceplate 20.

This will cause the actuator 46 to ride along the arcuate edge surface 42 until it engages a notch 60. Aligned with notch 60 is a second detent 62 in cam plate 40. Thus, when the actuator 44 drops into notch 60, the indexing pin 50 will be urged by spring 54 into detent 62, which action can be felt by the operator. At the same time, the opposite end portion of the actuator 44 is moved by spring 48 in a direction away from the switch 34. This causes the switch 34 to operate to close the electrical circuit to the fan motor 33. Activating the fan 26 will cause the faceplate to be opened to a point where the hood is most efficient with respect to air movement before the fan motor is actually switched on.

It will be understood, therefore, that opening of the faceplate to the limited extent described will turn the fan on. However, the faceplate at this time is only open a relatively small amount which is not sufficient to permit a user to readily and easily insert a hand into the interior of the hood. It will also be understood that if the faceplate 20 is returned to closed position as shown in FIG. 2, this will cause the actuator 44 to return to the arcuate edge surface 42 of the cam plate 40, pivoting in a manner which will depress switch button 36 to open the switch 34 and stop operation of the motor 33 and fan 26. Thus, this mechanism overcomes the possibility of closing the faceplate with the fan continuing to operate.

A third detent 64 is provided in the cam plate 40 to be engaged by the spring-urged pin 50 when the faceplate 20 is in wide open position. When this occurs, the actuator 44 has progressed out of notch 60 and along the cam surface to another high spot or contour 66 where the switch 34 will be kept open. Thus, access to the interior of the hood may be readily and easily achieved with complete assurance that the fan 26 will not be operated.

From the foregoing it will be apparent that the objectives of this invention have been achieved by the described structure wherein a hood fan or blower is operated in response to positioning of the hood faceplate whereby human injury is avoided by rendering the fan automatically inoperable when the faceplate is open sufficiently to allow access to the interior of the hood.

It is to be understood, however, that various modifications and changes may be made by those skilled in the art without departing from the spirit of the invention as expressed in the accompanying claims. Therefore, all matter shown and described is to be inter-

preted as illustrative and not in a limiting sense.

I claim:

1. An exhaust hood comprising a housing including a pivotal faceplate, a fan within the housing, switch means for connecting the fan to an external source of electrical power, movable means connected to the interior side of the faceplate and movable in response to pivotal movement of the faceplate, connecting means connected between said movable means and the switch means and operable in response to movement of the movable means to operate the switch means in response to such movement.

2. An exhaust hood as set forth in claim 1 wherein said movable means is a cam rotatable in a vertical plane to a plurality of predetermined positions, the connecting means is a member held constantly in engagement with the cam, and the switch means is operable in response to positioning of the cam as determined and translated to the switch means by said member.

3. An exhaust hood as set forth in claim 2 wherein restraining means is maintained in engagement with said cam for yieldably retaining said faceplate in adjusted position.

4. An exhaust hood comprising a housing including a faceplate movable from a closed position to a wide open position through at least one intermediate position, a fan in said housing, switch means for connecting the fan to an external source of electrical power, and switch-actuating means connected between said switch means and said faceplate for operating said switch in response to movements of the faceplate into and out of said positions, said restraining means comprising a disc-like member fixed to the faceplate and extending inwardly of the housing adjacent a portion thereof, and spring means carried by said portion of the housing and engaging said member.

5. An exhaust fan as set forth in claim 4 wherein said member is provided with indexing means corresponding to selected positions of the faceplate, and said spring means is located to engage said indexing means in response to movement of the faceplate.

6. An exhaust fan comprising a housing including a faceplate movable from a closed position through at least one intermediate position to a wide open position, a fan in said housing, switch means for connecting the fan to an external source of electrical power, and switch-actuating means connected between said switch means and said faceplate for operating said switch means in response to movements of the faceplate into and out of said positions, said switch-actuating means comprising a cam plate fixed to the faceplate and having an irregular surface contoured to correspond to said positions of the faceplate, and a pivotal actuator having a first end portion in engagement with said irregular surface and an opposite end portion connected with said switch means for actuating the switch in response to movement of the first end portion of the actuator as it is moved by said irregular surface when the cam plate is moved.

7. An exhaust hood as set forth in claim 6 wherein restraining means is located between said cam plate and an adjacent portion of the housing for yieldably retaining the faceplate in adjusted position.

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