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VENTILATOR

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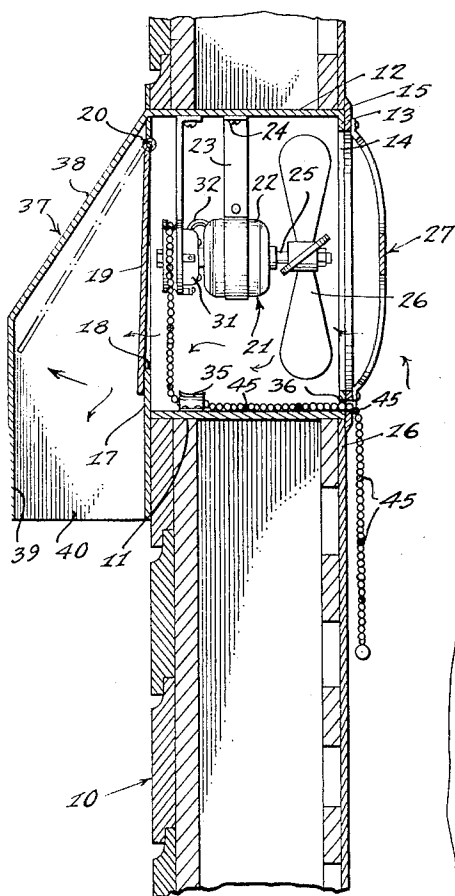


Fig. 2

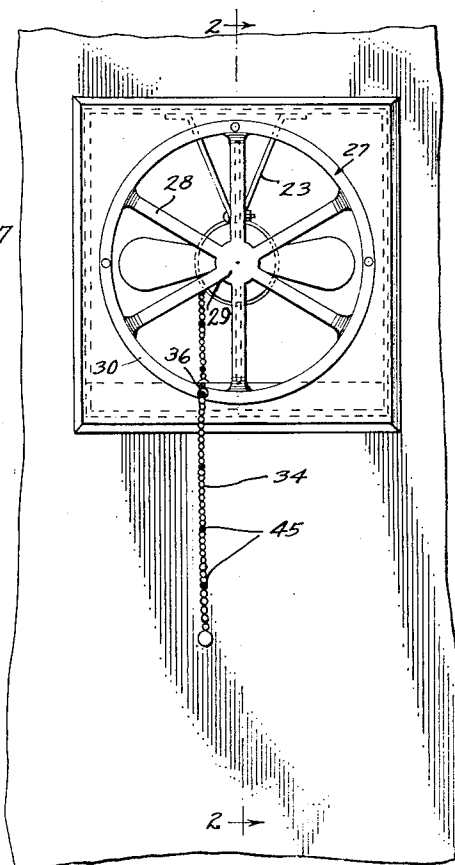


Fig. 1

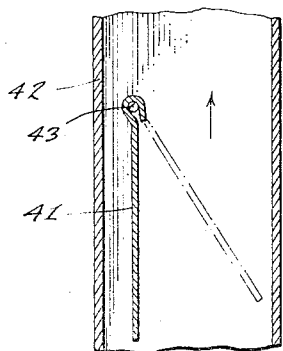


Fig. 4

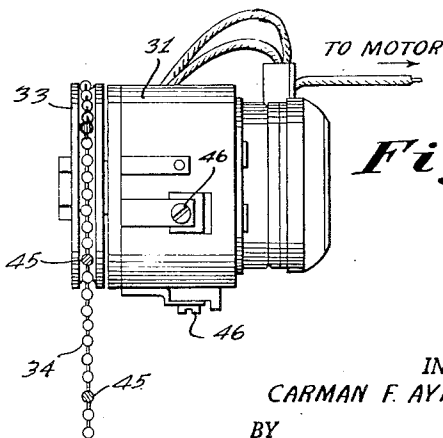


Fig. 3

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VENTILATOR

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2 Claims. (Cl. 161—1)

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This invention relates to a ventilator designed particularly for bathrooms, kitchens or the like.

An object of this invention is to provide a ventilator in the form of a fan adapted to be mounted in the wall of a building, and provided with a duct on the outside which may be opened or closed by means of a valve or plate. In the present form of the invention, the valve or plate is closed by gravity so that no cold air from the outside may pass through the opening and about the fan when the fan is not operating.

Another object of the invention is to provide a ventilator having an air circulating duct and a motor driven fan for effectively moving air through the duct, and in which a time switch is electrically connected with the motor to automatically break the circuit upon the elapse of a predetermined length of time, which may be varied through selective setting of the time switch.

Another object of this invention is to provide a ventilator of this kind which can be readily mounted in the wall of a building and is of such width as to be substantially entirely contained within the wall.

A further object of this invention is to provide a ventilator of this kind which is of simple construction and can be produced at a relatively small cost.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a detail inner side elevation of a ventilator constructed according to an embodiment of this invention,

Figure 2 is a sectional view taken on the line 2—2 of Figure 1,

Figure 3 is an enlarged detailed side elevation of the switch connected with the motor, and

Figure 4 is a fragmentary vertical section of a check valve associated with an air heating or circulating system for cutting off the flow of air when the ventilator is operating.

Referring to the drawings, the numeral 10 designates generally the outer wall of a building which is formed with an opening 11 therethrough. The opening 11 is square in configuration and a similarly shaped housing 12 is mounted within the opening 11, although openings and housings of shapes other than that shown will serve equally well.

The housing 12 has an inner wall 13 provided

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with an opening 14 and a securing plate 15 is fixed to the wall 13 and engages partly over the inner surface 16 of the wall 10.

The housing 12 also includes an outer wall 17 provided with an opening 18, and the opening 18 is adapted to be normally closed by a gravity closing valve plate 19 pivoted at its upper end or edge as at 20 to the wall 17.

A fan generally designated as 21 is disposed within the housing 12 and includes a motor 22 which is suspendingly disposed within the housing 12 from a suspension bracket 23 secured by fastening means 24 to the inner side of the top wall of the housing 12. The fan motor 22 has secured to the motor shaft 25 thereof a fan blade member 26 which is adapted to draw air from the interior of the building and force the air through the housing 12 to the outside of the building.

A guard plate 27 is secured to the inner side of the housing 12 and in the present instance is constructed in the form of a dished member formed with radial arms 28 secured to a central member 29 and an annular rim 30.

The motor 22 is connected to a time switch 31 by conductors 32, and the switch 31 is provided with a rotatable circuit closer and breaker part 33. Time switches suitable for the present invention are old and well known, and many types may be purchased upon the open market. One such type, as indicated generally in the drawings, is manufactured by Eagle Signal Corporation, Moline, Illinois, catalogue No. AB22A6 and further indicated in the trade as the "Eagle Manuflex Timer." Specifically, the circuit closer and breaker 33 has rotatable mechanism for operating the closer and breaker to closing position upon manual rotation of said mechanism in a setting direction to selectable setting positions, and timing means for returning the rotatable mechanism from its setting position to a zero position, the rotatable mechanism being operable upon reaching such zero position to operate the closer and breaker to circuit breaking position. A ball chain 34 is trained partly about the operator 33 which is constructed in the form of a grooved wheel, and the chain 34 is then extended through a guide loop 35 which is fixed to the bottom wall of the housing 12 and extended forwardly through the front wall 13 as indicated at 36, and is then disposed in dependent relation on the inner side of the wall 10, so that a downward pull on the chain will turn the part 33 and close the circuit through the motor 22.

The chain 34 includes distinctively colored balls

45 which are spaced predetermined distances one from the other so that the lengths of chain between the colored balls represent periods of time that the motor will run, depending upon the amount of chain pulled through the opening 36, since the amount of rotation imparted to the part 33 will determine the length of time that the circuit which operates the motor will remain closed, the circuit being broken when the part 33 returns to its normal or stopping position.

The air which is forced outwardly through the housing 12 is directed downwardly by means of a hood 37 which is secured to the outer side of the housing 12. The hood or duct 37 includes a downwardly and outwardly inclined wall 38 and a vertical outer wall 39 which is secured to side walls 40. The hood 37 may be extended to any desired length or position below the housing 12.

Where the building is provided with a heating system of the warm air circulating type it is desirable to provide a damper in the heat duct or register supplying heat to the room which will nearly shut off the flow of warm air through the duct during operation of the fan, as the air in the room can be more quickly changed if the amount of air pulled into the room by the fan is somewhat restricted. This can be accomplished by a check valve or flipper 41 which is mounted in the warm air duct 42, as shown in Figure 4.

The check valve 41 is pivotally mounted on a pintle 43 extending horizontally through the duct 42 a slight distance from one of the vertical walls of the duct, so that the check valve will be pulled closed by the suction of the fan trying to pull air into the room, but will open automatically by gravity when the suction or pull generated by the fan ceases through stopping of the motor 22.

In addition to increasing the efficiency of ventilating system, the check valve 41 prevents the inflow of objectionally cold air, as when the heating plant is not up to heating temperature.

In the use and operation of this invention, the ventilator, including the housing 12, is mounted within the wall 10 as shown in Figure 2. When it is desired to ventilate the room the chain 34 is pulled downwardly closing the switch 31. The motor 22 will rotate the fan blades 26 to force the air from the interior of the room associated with the wall 10 through the housing 12 and out through the duct or guard 37. The force of the moving air will cause valve plate 19 to swing to its dot and dash position so that the air can readily be exhausted from the room and discharged outside the building.

It will thus be seen that I have provided a ventilator which is manually activated but is automatically de-activated after a predetermined operational cycle, the length of the cycle being variable and readily and accurately predetermined, as well as changeable during the cycle. In addition, the louvers are operated automatically for controlling the entrance of drafts into the room while the ventilator is inactive, and of the intake of air through the hot air system when the ventilator is installed in a building using that type of heating system.

The time switch 31 is provided with terminal screws 46 for connection with the current supplying lines.

I do not mean to confine myself to the exact

details of construction herein disclosed, but claim all variations falling within the purview of the appended claims.

Having thus described my invention, what I claim is:

1. The combination with a circuit closer and breaker adapted to be mounted overhead, rotatable mechanism for operating said closer and breaker to closing position upon manual rotation of said mechanism in a setting direction to selectable setting positions, timing means for returning said rotatable mechanism from its setting position to a zero position, said rotatable mechanism being operable upon reaching such zero position to operate said closer and breaker to circuit breaking position, of a rotatable pulley operatively connected to said rotatable mechanism for rotating the latter in its setting direction, and a flexible member having one end depending from said pulley and having the other end partially trained over said pulley and secured to the latter, said flexible member being provided with a plurality of colored elements arranged in spaced relation inwardly of said one end, spacing between adjacent colored elements representing the time interval of rotative return travel of said rotatable mechanism.

2. The combination with a circuit closer and breaker adapted to be mounted overhead, rotatable mechanism for operating such closer and breaker to closing position upon manual rotation of said mechanism in a setting direction to selectable setting positions, timing means for returning said rotatable mechanism from its setting position to a zero position, said rotatable mechanism being operable upon reaching said zero position to operate said closer and breaker to circuit breaking position, of a rotatable pulley operatively connected to said rotatable mechanism for rotating the latter in its setting direction, and a chain having one end depending from said pulley and having the other end partially trained over said pulley and secured to the latter, said chain being provided with a plurality of colored balls arranged in spaced relation inwardly of said one end, the spacing between adjacent colored balls representing a time interval of rotative return travel of said rotatable mechanism.

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