

May 9, 1933.

G. C. BREIDERT

1,907,727

VENTILATOR

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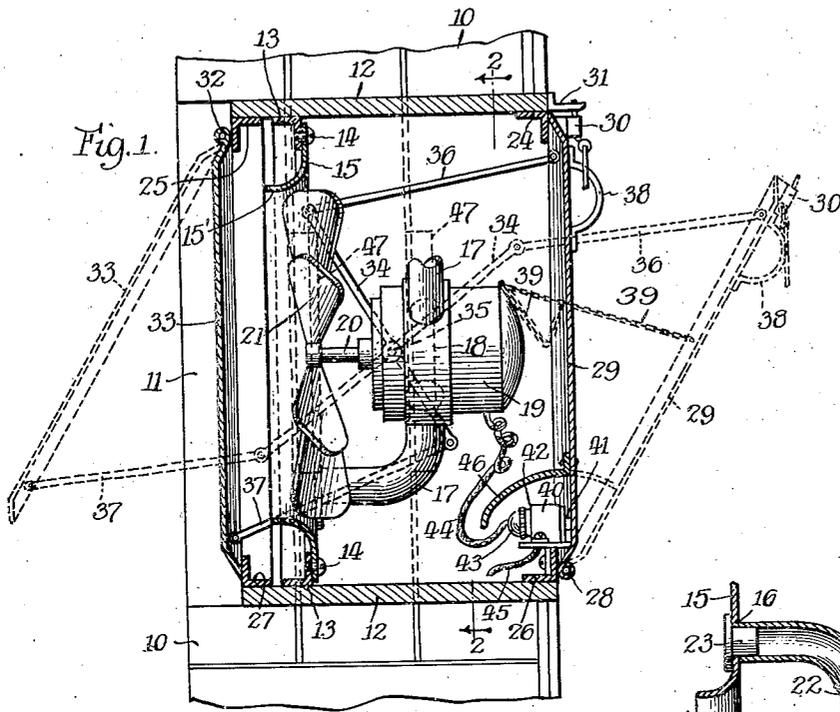


Fig. 1.

Fig. 2.

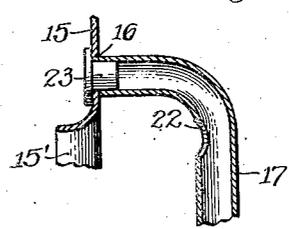


Fig. 3.

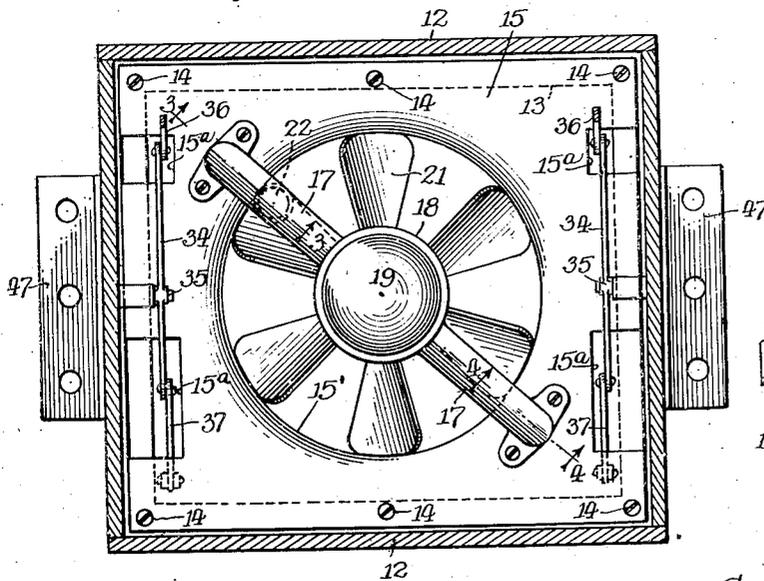
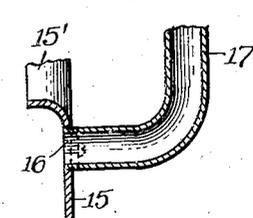


Fig. 4.



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UNITED STATES PATENT OFFICE

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VENTILATOR

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This invention relates to the art of ventilation, and has reference more particularly to ventilators of that type wherein a positive movement of the air is effected through the agency of an electrically driven fan.

More specifically, the present improvement relates to a type of ventilator known as "wall" ventilators, which are characterized by the provision of a casing adapted to be fitted to and occupy an opening of corresponding shape and size in the external wall of a room (such as a kitchen) to be served by the ventilator, an electrically driven fan mounted within the casing, outer and inner doors or shutters respectively controlling the outer and inner open ends of the casing, and operating mechanism connecting the outer and inner doors or shutters in such a manner that when the inner door or shutter is opened the outer door or shutter is correspondingly opened, and when the inner door or shutter is closed the outer door or shutter is correspondingly closed. Ventilators of this type are typically illustrated in Letters Patent to Nielsen 1,696,922, January 1, 1929, and to Labanauskas 1,607,541, November 16, 1926; and a similar ventilator not employing a fan is typically illustrated in Letters Patent to Henriksen 1,470,262, October 9, 1923.

When the ventilator is in operation, both doors or shutters are, of course, open; and experience has shown that in the practical use of these ventilators, especially those which employ a motor-driven fan which may cause a very slight vibration of the wall itself and the ceiling, particles of plaster and the like are sometimes jarred loose from the wall or ceiling and fall into the hinge joint of the inner door or shutter, thereby obstructing the full closing movement of the latter, and this, through the connections to the outer door, at the same time prevents the complete closing of the outer door. This, in turn, may give rise to objectionable drafts of cold air when the ventilator is not in use, and permits rain and snow to beat into the casing around the imperfectly closed outer door. The principal object of the present invention has been to provide an improvement which will obviate the above noted

fault in the operation of ventilators of this type.

In the accompanying drawing I have illustrated one practical form of the invention, and referring thereto:—

Fig. 1 is a vertical section through a building wall showing my improved ventilating appliance mounted in an opening thereof, with the fan and motor appearing in elevation;

Fig. 2 is a vertical section at right angles to that of Fig. 1, taken on the line 2—2 of the latter;

Fig. 3 is a sectional detail taken on the line 3—3 of Fig. 2;

Fig. 4 is a sectional detail taken on the line 4—4 of Fig. 2.

Referring to the drawing, 10 designates a fragment of a building wall and 11 a rectangular opening therein, in which is mounted a rectangular casing 12 snugly fitting the opening. Fitted within and secured to the top, bottom and side walls of the casing 12 is a rectangular angle bar frame 13, and secured to the latter as by screws 14 is a rectangular panel 15 having a fan opening bounded by an outwardly directed flange 15'. In the panel 15 at diagonally opposite points are holes 16 (Fig. 3), and attached to the panel with their outer ends registering with the holes 16 are a pair of tubular arms 17, which, at their inner ends, are secured to or integral with a ported ring or saddle 18 that supports a fan motor housed within a protective hood or casing 19; and fast on the mature shaft 20 of the motor is a direct driven propeller fan 21 occupying the panel opening. The tubular arms 17 not only form a support for the motor and fan, but also function as a cooling device for the motor, for which purpose the inner ends of the arms communicate through ports in the ring 18 with the interior of the protective hood 19, and the upper arm is formed with a hole 22 (Fig. 3) located behind the peripheral portion of the fan. As shown in Fig. 3, the outer end of the upper arm 17 is closed, as by a plug 23, so that the cooling air induced by the fan flows upwardly through the lower panel hole 16, the lower arm 17, the motor

hood, and the upper arm 17 to and through the hole 22. This combined motor-supporting and cooling feature is not claimed herein, but forms the subject-matter of Letters Patent 1,779,657, granted to my assignee, Ilg Electric Ventilating Company, October 28, 1930.

Attached to the under side of the top wall of the casing 12 at the ends of the latter are angles 24 and 25, and attached to the inner side of the bottom wall of the casing 12 at corresponding ends of the latter are similar angles 26 and 27. Hinged at 28 to the angle 26 is an inner sheet-metal door 29 carrying on its upper end an ordinary spring pull latch 30 that cooperates with a latch catch 31 which may be secured to the top wall of the casing 12 or to the building wall above said casing, to lock the door 29 in closed position. Pivoted at 32 to the angle 25 is a depending outer door 33, the lower edge of which, in the closed position of the door, overlaps and abuts against the angle 27.

To effect simultaneous opening movements and simultaneous closing movements of the two doors, I preferably employ a simple lever and link connection on each side of the fan motor, each of said connections comprising a lever 34 pivoted at 35 to a side wall of the casing 12, and links 36 and 37, the link 36 connecting the upper end of lever 34 with the door 29 near the upper end of the latter, the link 37 connecting the lower end of the lever 34 with the door 33 near the lower end of the latter. The door 29 is equipped with a handle 38 for manually opening and closing the same. To the inner side of the door 29 is attached a chain 39 anchored to the motor casing 19 and serving to limit the extent of opening movement of the door 29 in an obvious manner.

To permit the free operation of the levers 34 and links 37, the vertical edges of the panel 15 are notched as shown at 15^a in Fig. 2.

To render the fan motor automatic in the matter of starting and stopping, I preferably include in the circuit of the motor a switch which is automatically closed when the doors are opened to start the motor in operation, and automatically opened when the doors are closed to arrest the running of the motor. Any adaptable form of switch for this purpose may be employed, and the same is preferably controlled by the inner door 29, when the latter is employed. With the details of the switch the present invention is not concerned, and in Fig. 1 I have shown a switch box 40 mounted on the angle 26 and equipped with a switch actuating arm 41 that projects into the path of the lower portion of the door 29 slightly above the hinge of the latter, the arm 41 being spring-actuated outwardly. In one side of the switch box is a socket 42 cooperating with plug 43 of the circuit lead 44 of the motor. 45 designates the circuit lead

entering the switch box from a battery or other source of current. When the door 29 is closed, the switch arm 41 is pressed inwardly, breaking the circuit; and when the door is opened, the arm 41 is spring-actuated outwardly, closing the circuit. This automatic switch is also a protective device to prevent the motor running when the doors are closed, which would overheat the motor and cause injury thereto since there is no air circulation through the cabinet when the doors are closed.

One important advantage of the described construction resides in the easy removability of the fan and motor for inspection or repairs. By unhooking the chain 39 the door 29 may be lowered to fully expose the front opening of the casing, and then by pulling out the switch plug 43 and removing the screws which attach the arms 17 to the panel 15, the motor, fan and motor-supporting arms may be bodily removed as a unit through the front opening. Or, where the arms 17 may be cast with or permanently united to the panel 15, by removing the screws 14 the assembly, including the panel, may be removed.

An additional safety feature which constitutes the chief novel feature of my present improvement resides in a shield or guard 46 that is attached to the inner side of the door 29 a slight distance above the hinge of the latter, and, when the door is open, overhangs the joint between the lower edge of the door and the casing guarding the joint against particles of plaster and the like that might drop thereinto from the wall, and thus insuring the complete closing of the door when the device is not in use.

In cases where this ventilator is installed in a wall during the erection of the latter, the opposite side walls of the casing are preferably equipped with a pair of thin flexible sheet-metal wings 47 which lie within the vertical joints between adjacent bricks or blocks of the wall, and very effectively anchor the casing in place.

I claim—

In a ventilating appliance of the character described, the combination of a wall having an opening, a casing fitted to said opening, a fan and fan motor in said casing, a door hinged at its lower end to said casing, and a guard mounted on the inner side of said door and having a free portion overhanging the hinge joint between said door and casing.

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