

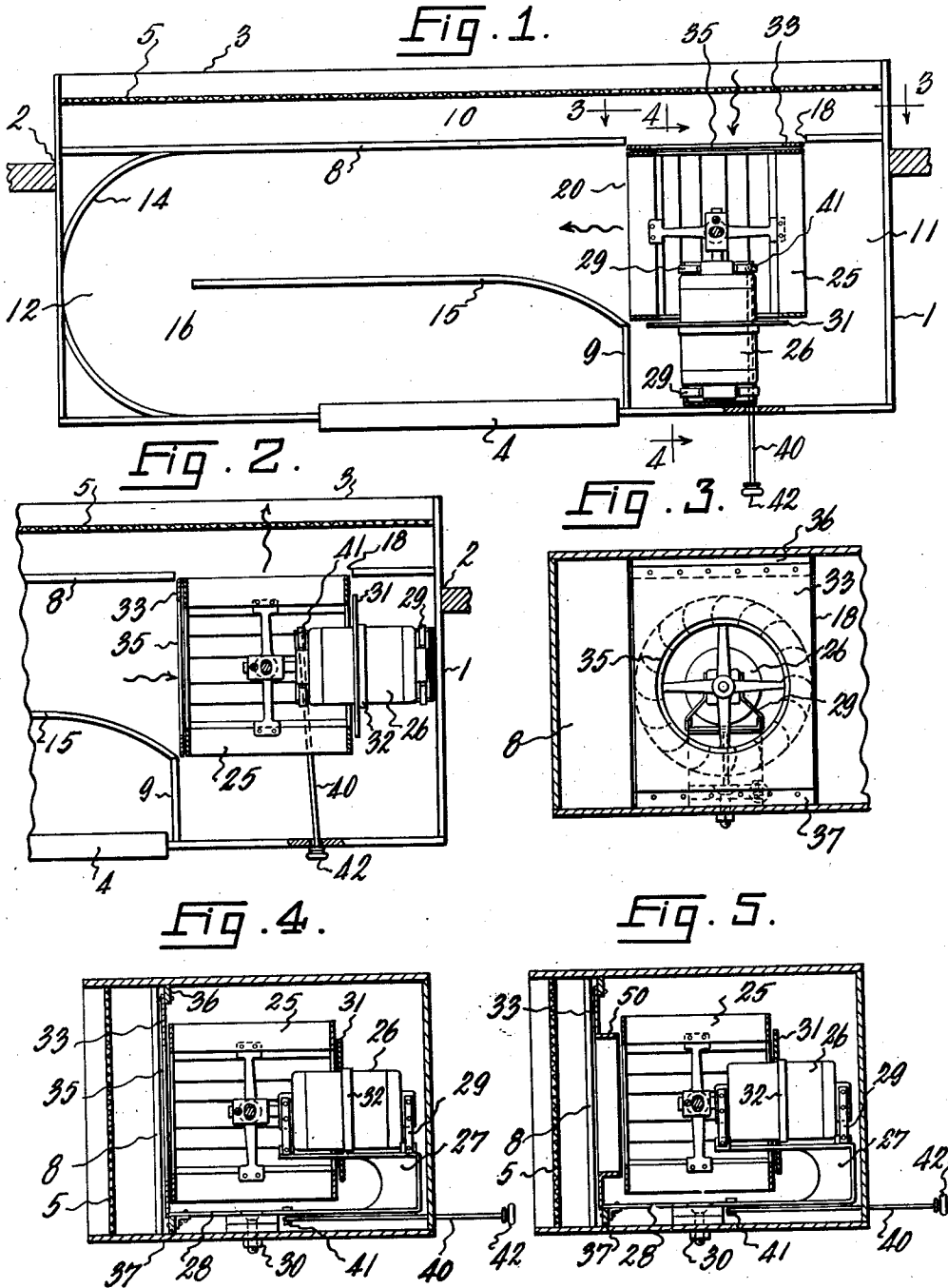
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WINDOW SILENCER

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WINDOW SILENCER

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This invention relates to silent ventilators of the type adapted to be set into a wall opening such as an open window. These devices are used to provide a supply of air to a room and at the same time to exclude from the room street noises and the like. To be efficient in the handling of air, such devices generally employ centrifugal fans.

It has been found that, under some circumstances, it is undesirable to draw air from the outside into a room, especially when the temperature of such air is high. This is particularly true in cases where the wall of the building is exposed to direct sunlight for a substantial period. Under such conditions the air contiguous to the wall of the building is at a relatively high temperature, and the drawing of such air into a room raises the temperature of the latter to an uncomfortable degree. In the case of small ventilating units serving a room such as a small office it is impracticable to cool this air or to dehumidify or otherwise condition it. It is satisfactory however, to obtain the air supply from the interior of the building, especially in the case of office buildings, which generally have large corridors and lobbies, and this source of air is preferable during such periods as the air obtainable through the window or other wall opening is subject to objectionable temperature conditions.

It is therefore desirable to provide means for reversing the flow of air through the ventilator-silencer. When a centrifugal fan blower is used it has heretofore been impossible to accomplish this result except by means of elaborate mechanisms and bulky constructions.

It is the principal object of this invention to provide a simple means for reversing the direction of air flow through a device of this character employing a centrifugal fan blower.

Other and further objects will be apparent from the following specification and claims.

In the accompanying drawing which illustrates one embodiment of the invention,

Fig. 1 is a plan view of the device, the top of the casing being removed, showing the parts in position to drive air into the room;

Fig. 2 is a similar view of the blower portion of the device with the parts in position to drive air in the reverse direction;

Fig. 3 is a section substantially on line 3—3 of Fig. 1;

Fig. 4 is a section substantially on line 4—4 of Fig. 1; and

Fig. 5 is a view similar to Fig. 4 but showing a modified arrangement.

Referring to the drawing, 1 designates a generally rectangular casing set into a wall opening indicated at 2. The casing is provided with an outside opening 3 and an inside opening 4 where-by air may enter and leave the device. An air filter 5 is arranged across the outside opening to clean the air as it enters the casing.

The interior of the casing is divided into three chambers by vertical partitions 8 and 9 positioned at right angles to each other and extending from the top to the bottom of the casing, forming an outer air receiving chamber 10, a blower containing chamber 11 and a sound attenuating chamber 12. The latter is provided with curved vertical partitions 14 and 15 forming a curved tortuous sound attenuating passageway 16. The walls of the various compartments and passageways are lined with suitable sound absorbing material not shown.

The partition 8 is provided with a rectangular opening 18 which opens from chamber 10 to chamber 11 and partition 9 is provided with a rectangular opening 20 which opens from chamber 11 to chamber 12 and passageway 16. As shown the openings 18 and 20 are closely adjacent and at right angles to each other but they need not necessarily stand at right angles to each other as long as the vertical edges of the openings are all elements of the same imaginary cylinder.

The centrifugal blower generally indicated at 25 is positioned in chamber 11 and is secured on the shaft of a motor 26, supported on a bracket 27 formed on a bed plate 28. The motor is preferably mounted on the bracket 27 by means of vibration proof suspensions 29.

The bed plate 28 is pivotally mounted on the bottom of the casing as at 30 so that it may be rotated about a vertical axis whereby the face of the blower may be placed in co-planar relation with either of the rectangular openings 18 and 20. In order to prevent short circuiting of the blower a generally circular rear baffle plate 31, fitted around the motor and bracket 27, is fixed to the motor 26, as by a collar 32, and a rectangular front baffle plate 33 is formed integral with, or fixed to the forward edge of bed plate 28. Baffle plate 33 is formed with circular opening 35, coaxial with the blower, the baffle plates 31 and 33 being positioned closely adjacent the ends of the blower. The rear plate 31 prevents entrance of air to the interior of the blower from the chamber 11. The front baffle plate is of a size and shape to fill either of the openings 18 or 20 and provide a proper opening 35 through which the blower may draw air.

Plate 33 is preferably provided at its top and bottom edges with felt gaskets 36 and 37 whereby a snug fit is secured between the plate and the top and bottom members of the casing.

5 With the blower positioned as shown in Fig. 1 the air will be drawn from chamber 10 and discharged into chamber 11 and passageway 16 and thence into the room through opening 4 as indicated by the arrows. With the blower positioned as shown in Fig. 2 the air flow will be reversed, the air being taken from the room through passageway 16 and expelled into chamber 10 and discharged through opening 3.

10 Suitable means are provided for changing the position of the blower such as a push and pull rod 40 pivotally connected at its inner end by an off center pin 41 to the bed plate 28. The rod 40 extends through the front of the casing and is provided on its outer end with a hand knob 42.

20 It is not necessary to use the exact arrangement of the blower within the chamber 11 shown in the drawing. The essential feature of the invention is the use of the baffle plates 31 and 33 both of which move with and are always in proper relation to the blower to make it possible to automatically change the shape of the openings 18 and 20 whereby efficient sucking and expelling of air is obtained. In cases where the horizontal projection of the blower instead of being square is a rectangle with its short side represented by the length of the fan blades, proper closure of the openings 18 and 20 may be accomplished as shown in Fig. 5 in which the forward baffle plate 33 is spaced a sufficient distance away from the blower 25 to make the horizontal projection of both fan and plate square. The plate 33 is provided with a short cylinder 50 having a diameter equal to opening 35 and extending from the plate to a plane closely adjacent the front end of the blower.

40 I claim:

1. A ventilating unit of the character described comprising a casing, an airway formed in and extending through said casing, the airway including an outer chamber, a blower chamber and a sound attenuating chamber, a centrifugal blower pivotally mounted in the blower chamber and means to modify the shape of the openings from the blower chamber to the adjacent chambers whereby air may be drawn from either of said chambers and be discharged into the other of said chambers.

50 2. A ventilating unit of the character described comprising a casing, an airway extending through the casing and including an outside

chamber containing air filtering means, a blower chamber, and a sound attenuating chamber, an opening from the outer chamber to the blower chamber and an opening from the blower chamber to the sound attenuating chamber, a centrifugal blower pivotally mounted in the blower chamber adjacent said openings and means movable with the blower to modify the shape of said openings to permit the blower to take or discharge air through either of said openings.

10 3. A ventilating unit which comprises a casing having at least two chambers separated by a partition, an opening through said partition, a centrifugal blower pivotally mounted adjacent said opening, the shape of the opening conforming to the discharge requirements of the blower, a plate mounted adjacent the intake end of the blower and movable therewith, the outer edges of said plate being shaped to substantially close the partition opening, an opening in said plate shaped to conform to the intake requirements of the blower, a plate closing the opposite end of the blower to prevent short circuiting of the blower, and means to move the blower about its pivot to selectively take or discharge air through the partition opening.

20 4. A ventilating unit which comprises a casing adapted to be fitted in a wall opening, said casing having an outside opening and an inside opening, a partition in said casing forming the outer portion of the casing into an outer chamber, a second partition in the casing forming the inner portion into a blower chamber and a sound attenuating chamber communicating with said inside opening, an opening in the first partition leading from the outer chamber to the blower chamber, an opening in the second partition leading from the blower chamber to the sound attenuating chamber, both said partition openings conforming in shape to the discharge requirements of a centrifugal blower, a centrifugal blower pivotally mounted in the blower chamber to selectively take or discharge air through either of the partition openings, a plate mounted adjacent the intake end of the blower and movable therewith, the outer edges of said plate being shaped to substantially close that portion of the opening through which the blower is selectively positioned to take air, said plate being provided with an opening shaped to conform to the intake requirements of the blower, and a plate closing the opposite end of the blower to prevent short circuiting of the blower.

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