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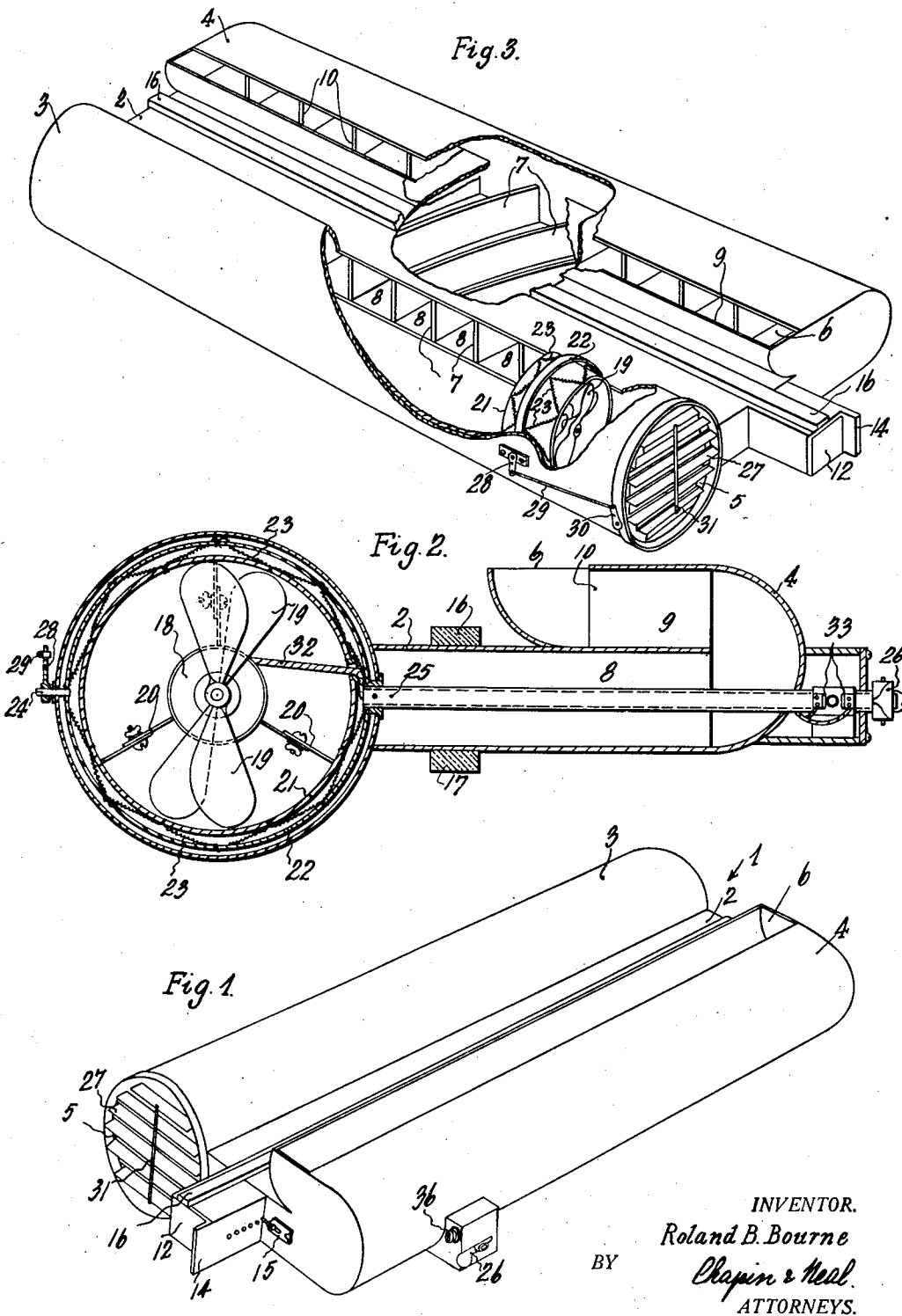
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WINDOW VENTILATOR AND SILENCER

Filed March 28, 1930

2 Sheets-Sheet 1



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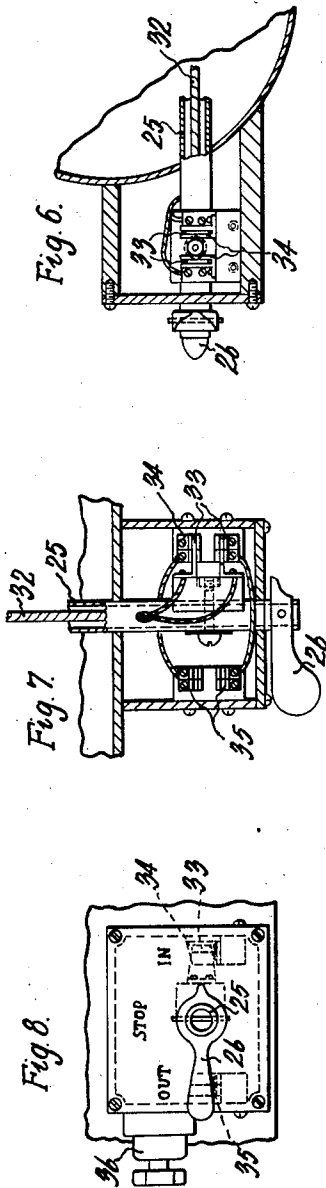
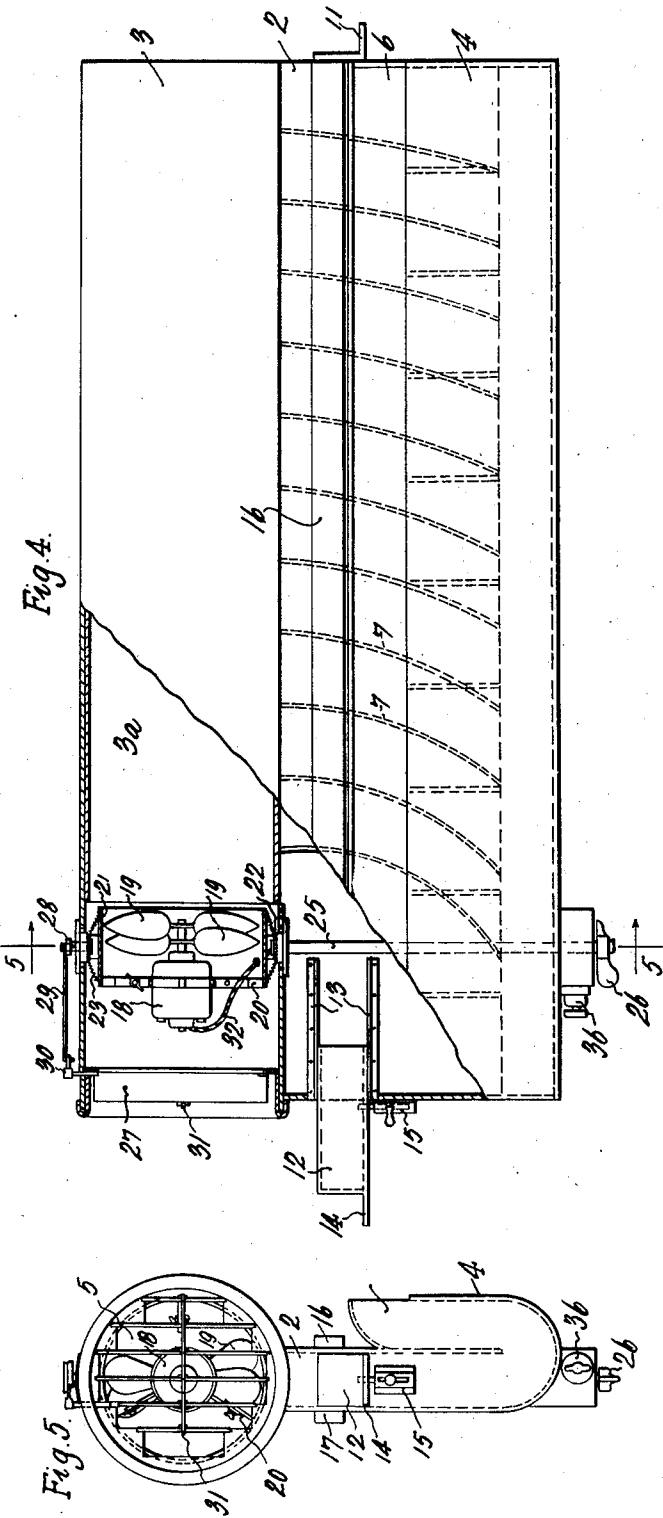
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UNITED STATES PATENT OFFICE

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WINDOW VENTILATOR AND SILENCER

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8 Claims. (Cl. 98—94)

This invention relates to a silencing ventilator arranged to extend from the inside to the outside of a building and provided with means for controlling the admission or expulsion of air to and from the building while at the same time excluding extraneous noise.

The present embodiment of my silencing ventilator is adapted more particularly for being mounted in the opening of a partially raised window so as to rest at one side upon the window sill and to be held in place by the window closed above it. It is preferably provided with an extensible filler portion adapting it to fit tightly between window frames of different widths, and also with appropriate sealing surfaces for contact with the window and its sill so as to pack the joints tightly against leakage of air and sound. The conducting air passages through the ventilator take a circuitous course and the walls thereof are suitably lined with sound absorbing material, all contributing to the prevention of noise passing through the ventilator.

The objects of the present improvement are to provide controlling means for the ingress or egress of air which may be conveniently regulated on the inside of the building; to provide air driving means within the ventilator so arranged as to generate a minimum amount of noise and to have what little noise is thus generated excluded from the building; and in general to provide a simple, compact structure which may be manufactured at low cost and serve the purposes required.

Referring to the drawings:

Fig. 1 is perspective view of the entire ventilator looking from the top;

Fig. 2 is an enlarged view in transverse section through the ventilator, showing the mounting of the fan blower;

Fig. 3 is another perspective view of the ventilator with portions thereof cut away to show the air conducting passages;

Fig. 4 is a top plan view of the ventilator with a portion thereof cut away;

Fig. 5 is an end elevation looking from left to right in Fig. 4; and

Figs. 6, 7 and 8 are different views of the circuit switch for the fan motor.

In the drawings, the ventilator as a whole is made in the form of a hollow casing 1, comprising a rectangular intermediate section 2, an exterior cylindrical cylindrical section 3, and an interior hood-like section 4. The cylindrical exterior section 3 is closed at one end and at the other end has an opening 5 at the outside of the

building. The interior hood section 4 has inside the building a slotted opening 6 extending for its entire width along the top, as shown in Fig. 1. Within sections 2 and 4 there are formed by means of partitions 7, 9 and 10 (see Fig. 3), a plurality of circuitous air conducting passages 8 which lead from the hollow cylindrical section 3 to the inside opening 6. The cylindrical section 3 of the casing serves as a manifold for the air passages 8. As shown in Fig. 2, said air passages 8 lead horizontally from the manifold section 3 to the hood section 4 and therein take an ogee course upwardly to the inside opening 6, as shown in Fig. 4. The lower vertical partitions 7 are curved at different degrees of arc to conduct the air from the somewhat narrower space 3a within the section 3 to the wider space within the section 4. As shown in Fig. 2, the horizontal partition 9 divides the section 4 into upper and lower portions, in the upper portion of which are mounted the vertical partitions 10 to complete the air passages 8. As will be clear from Fig. 2 and Fig. 3, the partitions 7 and 10 do not extend into the curved portion of section 4, this portion thus forming an intermediate manifold, and similarly partitions 10 stop short of the opening 6 forming an inner manifold at this point.

The intermediate rectangular section 2 is provided at one end with an angle member 11 to engage the side of the window frame, and at the other end thereof is provided with an extensible filler portion or block 12, which is telescopically slidable in guides 13 within said section, and has at its outer end an angle member 14 for engaging the other side of the window frame. As shown in Fig. 1, this extensible filler block is arranged to be locked into its different positions for adjustment by means of a latch device 15. At the top and bottom of the intermediate section 2 are felt strips 16 and 17 (see Figs. 1 and 2) to engage respectively with the bottom of the window and with the sill for sealing tightly the joints therewith when the ventilator is mounted in place.

In the exterior manifold section 3 and at one end thereof near the outside opening 5 is mounted an electrically operated fan blower, the motor casing of which is indicated at 18 and the blades at 19. Preferably two sets of blades are provided to increase its efficiency at low speed. The low speed blower is desirable because it produces less vibration and noise. The motor casing 18 of the fan is preferably mounted by being hung through radial straps 20 and inner ring

21 from an outer gimbal ring 22. The means for suspending the inner ring 21 from the outer gimbal ring 22 may be rubber bands or springs 23, as shown. By this method of mounting the fan blower and its motor, little or no vibration thereof will be transmitted to the casing of the ventilator; and by locating the fan in the exterior section of the ventilator near the outside opening, the slight noise generated thereby will be dissipated like other extraneous noises in transmission through the air conducting passages 8.

In order to cause the fan blower to drive the air inwardly or outwardly, the support for the same (namely gimbal ring 22) is pivotally mounted in the casing 3, so that the fan may be revolved through 180 degrees and thus reversed in position. The gimbal ring 22 at one side has a pivot stud 24 bearing in the casing and at the other side a hollow shaft 25 with its bearing in the casing. The inner end of hollow shaft 25 has secured thereto a handle 26, whereby it may be turned with the gimbal ring and fan motor.

The outside opening 5 of the exterior section 3 is preferably provided with shutter closures 27 so as to exclude dust and dirt from entering the ventilator when desired. These shutter closures are so connected that they are automatically opened whenever the fan is functioning either to drive air in or out through the ventilator, and are closed whenever the fan is in neutral position. The connection for this automatic action is by means of a crank 28 fixed on the end of the gimbal ring stud 24 and a link 29 from said crank 28 to a shutter crank 30 fixed to one of the shutter pivots. It will be understood that each of the shutter strips 27 is pivotally mounted at its inner edge in the casing 3 and that all of the outer edges of said strips are linked to move together by a rod 31 in the same manner as an ordinary house shutter.

Current conducting wires 32 for the fan motor extend therefrom through the hollow shaft 25 to the interior casing 4 and are there appropriately connected to the circuit switch contacts, as shown in Figs. 6, 7 and 8. The outer end of the shaft 25 adjacent the handle 26 is provided with knife switch contacts 33 adapted to engage with terminals 34 and 35 from an outside electrical source and (as shown in Fig. 8) the switch handle 26 will close said contacts with one or the other of said terminals whether thrown to the "in" or to the "out" position. The "in" position of the switch handle 26 is such that the shaft 25 will have positioned the motor for driving air inwardly through the ventilator into the building and the "out" position for the handle 26 is such that the motor will drive the air outwardly. The "stop" position of the handle 26 places the motor at 90 degrees from either of its active positions, and therefore in a neutral position; and since at the same time the switch is open at this position, the motor will not be operating. This "stop" position for the handle 26 is also that which closes the shutters 27, whereas in either of the "in" or "out" positions, with the fan functioning, the shutters are open. A master switch 36 may be provided for shutting off the motor current when desired, irrespective of the position of the motor.

The construction of silencing ventilator as described provides a simple and convenient means for positively controlling the ventilation of an outside room in a building and without the

objectionable necessity of having an open window on a noisy street. Under some conditions of use, the outside air will normally seek entrance into a room; at other times, it will tend to flow outwardly. The present apparatus may be conveniently adjusted from inside the room to accommodate itself to either state of conditions, as well as to entirely shut off the flow of air when desired.

What I claim is:

1. A silencing ventilator for windows and the like comprising a casing adapted for mounting between a window and its sill and having an exterior section with an opening outside the window and an interior section with an opening inside the window, a plurality of sound deadening circuitous air passages in said casing communicating between said outside opening and said inside opening, a fan blower mounted for being reversed in position in said exterior section so as to drive air in either direction through said casing, and manually controlled means operable from the inner side of said casing for adjusting said fan blower into either of its positions.

2. A silencing ventilator for windows and the like comprising a casing adapted for mounting between a window and its sill and having an exterior section with an opening outside the window and an interior section with an opening inside the window, a plurality of sound deadening circuitous air passages in said casing communicating between said outside opening and said inside opening, a fan blower supported in a reversible mounting in said exterior section, and manually controlled means operable from the inner side of said casing for reversing the mounting of said fan blower to drive the air in either direction through said casing.

3. A silencing ventilator for windows and the like comprising a casing adapted for mounting between a window and its sill and having an exterior section with an opening outside the window and an interior section with an opening inside the window, a plurality of sound deadening circuitous air passages in said casing communicating between said outside opening and said inside opening, said exterior section providing a manifold chamber for said air passages and having a shutter closure for the outside opening at one end of said manifold chamber, a fan blower supported in a reversible mounting in said manifold near said outside opening and adapted to be swung into a position for driving the air inwardly, a position for driving the air outwardly and a neutral position, connecting means between said fan blower mounting and said shutter closure arranged to open said shutter when the fan blower is driving the air either in or out and to close said shutter when the fan blower is in neutral position, and manually controlled means operable from the inner side of said casing for adjusting said fan blower to any of its positions.

4. A silencing ventilator for windows and the like comprising a casing adapted for mounting between a window and its sill and having an exterior section with an opening outside the window and an interior section with an opening inside the window, a plurality of sound deadening circuitous air passages in said casing communicating between said outside opening and said inside opening, said exterior section providing a manifold chamber for said air passages and having a shutter closure for the outside opening at one end of said manifold chamber, an electric

- motor operated fan blower supported in a reversible mounting in said manifold chamber near said outside opening and adapted to be swung into a position for driving the air inwardly, a position for driving the air outwardly and a neutral position, connecting means between said fan blower mounting and said shutter closure arranged to open said shutter when the fan blower is driving the air either in or out and to close said shutter when the fan blower is in neutral position, and manually controlled means operable from the inner side of said casing for adjusting said fan blower to any of its positions, and a circuit switch for the motor circuit of said fan blower operated by said manually controlled means so as to close the circuit when said fan blower is in position to drive the air either in or out and to open said circuit when the fan blower is in neutral position.
- 20 5. A silencing ventilator for windows and the like comprising a casing adapted for mounting between a window and its sill, said casing including an outer manifold section, an inner manifold section and an intermediate manifold section, all said manifold sections being unobstructed, an opening for the outer manifold section, an opening for the inner manifold section, a plurality of independent sound attenuating passages positioned between and connecting the outer manifold with the intermediate manifold and a plurality of independent sound attenuating passages positioned between and connecting the intermediate manifold with the inner manifold.
- 35 6. A silencing ventilator for windows and the like comprising a casing adapted for mounting between a window and its sill, said casing including an outer section forming an elongated manifold extending across the width of the casing, an opening at one end of said outer section, an inner section forming an elongated manifold extending across the width of the casing, an opening for said inner section extending across the width of said manifold, an intermediate section forming an elongated manifold extending across the width of the casing, a plurality of partitions forming a plurality of independent sound attenuating passages between the outer and intermediate manifolds and a plurality of partitions forming a plurality of independent sound attenuating passages between the intermediate and inner manifolds.
7. A silencing ventilator for windows and the like comprising a casing adapted for mounting between a window and its sill, said casing including a cylindrical section positioned outwardly of the window and extending across the width of the casing and having an opening at one end, a plurality of sound attenuating passages extending inwardly from said cylindrical section and terminating in an upwardly directed manifold chamber positioned inwardly of the window, and a plurality of sound attenuating passages extending outwardly from said chamber and opening upwardly at a point adjacent the inner side of the window.
8. A silencing ventilator for windows and the like comprising a casing adapted for mounting between a window and its sill and having an exterior section with an opening outside the window and an interior section with an opening inside the window, a plurality of sound deadening circuitous air passages in said casing communicating between said outside opening and said inside opening, a closure for said outside opening, a reversible fan blower mounted in said exterior section so as to drive air in either direction through said casing, and manually controlled means operable from the inner side of said casing for adjusting said blower for inward or outward operation or in a neutral inoperative position and means connecting said manually controlled means and said closure for moving the closure to closed position when the blower is in its inoperative position.

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