

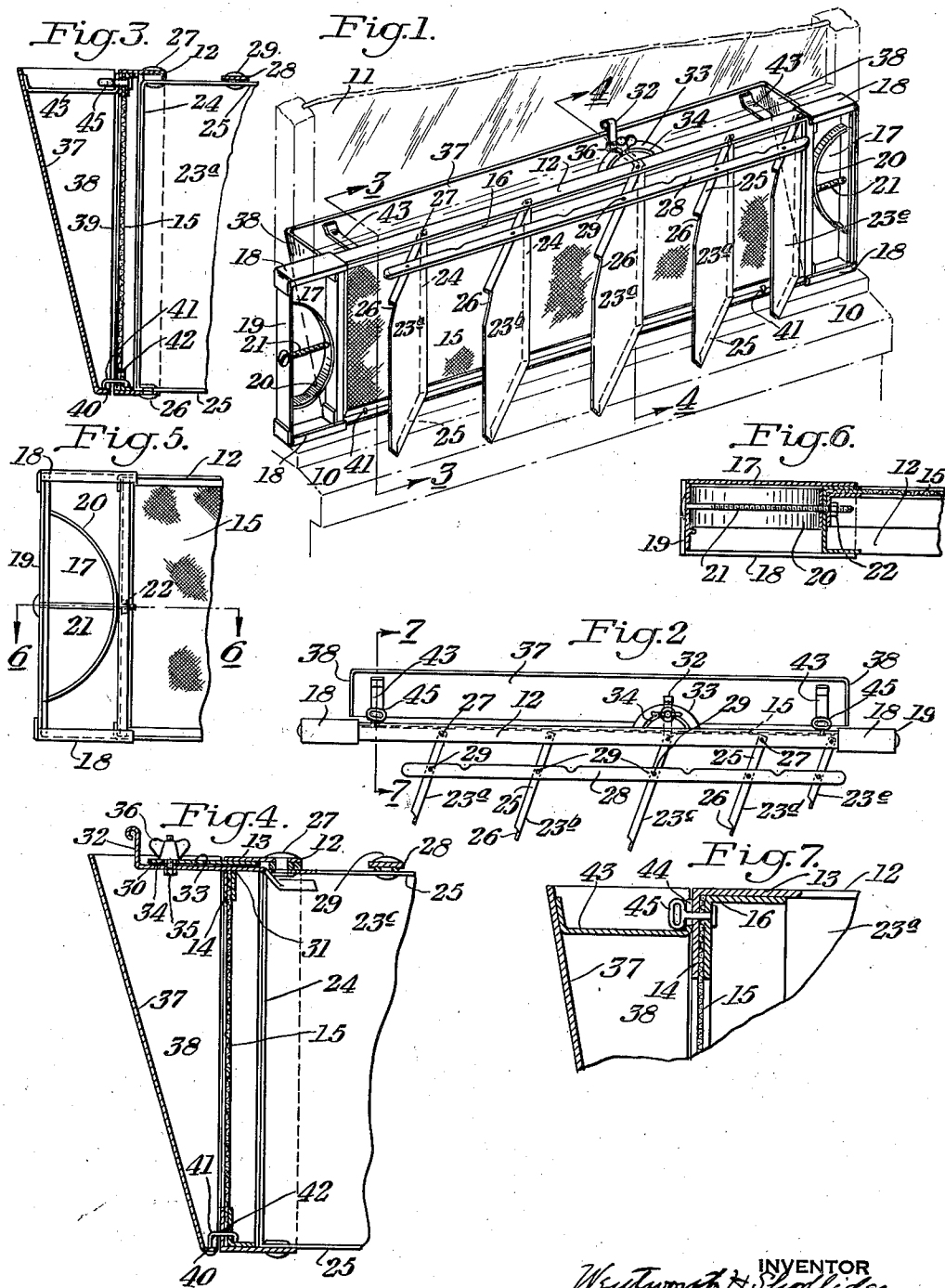
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VENTILATOR UNIT

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VENTILATOR UNIT

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My invention relates to ventilators, such as those intended to be removably installed in a window under the partially raised sash.

One of the objects which I have in view is the provision of such a device which will function either to draw fresh air into the room or will evacuate air from the room in accordance with the manner in which the pivotally mounted vanes are adjusted.

To accomplish this object I provide the ventilator with a series of vanes pivotally mounted on vertical axes and arranged when in their shut position to close the ventilator frame against the passage of air, but when swung into their open or partially open position to direct the currents of air either into the room or from the latter as may be desired.

Owing to the novel character of the vanes in my ventilator when they are swung into position either slanted in the direction from which the wind is blowing or at right angles to the ventilator frame, the currents of air are intercepted and directed into the room, but when positioned to travel away from the direction from which the wind is blowing, the air is drawn by suction from the room.

I attain greatly improved results by making the vanes of different widths, increasing the width of the vanes from the ends of the ventilator toward its center, or from one end.

Again I improve this function of the ventilator by providing a ventilator frame of the proper width to fit under the window sash and make the vanes of such relative width and so mount them that they extend beyond the window frame and the face of the building so as to intercept currents of air traveling substantially parallel with the wall of the building.

Another object which I have in view is the provision as part of the ventilator unit of means for deflecting upwardly the currents of air entering the room, thus avoiding direct drafts. I accomplish this purpose by mounting on the inner side of the ventilator frame an inclined deflector, preferably with triangular ends, which is preferably detachably mounted in place and in such manner as to prevent rattling in the wind.

Another object which I have in view is the provision of a light weight, inexpensive, strong ventilator unit, which is preferably made of sheet metal and which may be quickly and conveniently mounted in place in a window frame and as quickly and conveniently removed without the

use of tools and by unskillful persons and which will efficiently ventilate the room.

Other objects and other novel features of construction and also of arrangement of parts will appear from the following description.

In the accompanying drawing wherein I have illustrated a practical embodiment of the principles of my invention, Fig. 1 is a perspective view showing my improved ventilator unit mounted in a window frame beneath a partially raised sash.

Fig. 2 is a plan view of the ventilator unit removed from the window.

Fig. 3 is an enlarged sectional view taken along the line 3—3 in Fig. 1.

Fig. 4 is an enlarged sectional view taken along the line 4—4 in Fig. 1.

Fig. 5 is a broken side elevation showing the end portion of the ventilator frame and one of the end extensions which enables the frame to be fitted in window frames of different widths of opening.

Fig. 6 is a horizontal section taken along the line 6—6 in Fig. 5.

Fig. 7 is an enlarged and broken section taken along the line 7—7 in Fig. 2.

Referring to the drawing, 10 represents the window sill, and 11 designates the window sash which for the sake of more clearly showing the ventilator unit is illustrated in dotted lines.

12 represents the frame of the ventilator, which may be conveniently formed by bending up into rectangular form a length of light angle iron, with one flange 13, forming the perimetral wall of the frame while the other flange 14 is at the inner or room side of the frame and extends inwardly toward the center of the latter.

The frame is preferably provided with a wire mesh or other screen 15 whose edges are held in the frame as by the angle iron fillet 16 which is attached, as by rivets, to the frame 12.

At one or both ends the frame is provided with any convenient type of slidable extension whereby the frame may be adjusted to fit under any width of window sash and suitably engage the vertical sash channels in the frame.

Thus I have shown an extension bent up of sheet metal having a solid unit wall 17, a forwardly extending flange 18 at the top and bottom which slide on the top and bottom surfaces of the frame and an end flange 19 which fits in the window channel. The front edges of the flanges 18 are bent vertically to hold the extension slidably on the frame 12.

20 represents a bowed leaf spring whose ends

bear against the flange 19 of the extension and whose center bears against the end of the frame 12. 21 represents a through bolt whose head is fixed in the flange 19 of the extension and which extends slidably through holes in the center of the spring 20 and the end of the frame 12, a nut 22 being mounted on the inner end of the bolt 21 to limit the outward movement of the extension relative to the frame 12.

Thus the frame may be fitted into window frames of a wide range of different widths and the springs will hold the frame in place and prevent rattling.

23a, 23b, 23c, 23d, and 23e represent a plurality of thin vanes, preferably formed of sheet metal, and having vertical rear edge flanges 24 and top and bottom flanges 25. The front or free ends of the vanes are unflanged and their top and bottom corners are preferably trimmed off on a bias as at 26 so that the vanes will properly overlap and lie flat when in their shut position.

The rear ends of said vanes fit into the frame between the top and bottom flanges 13 of the latter and the vanes are pivotally mounted to swing on vertical axes relative to the frame 12 and outside of the screen 15, as by means of pintle rivets 27 which extend through the flanges 13 of the frame and the flange 25 of the frame.

The vanes are yoked together, so as to swing in unison, as by the link 28 which is secured as by pintle rivets 29 to the top flanges of the vanes a short distance outwardly from their axes of movement. The vanes are short enough to allow the link to nest in between the tops of the vanes of the flange of the frame when the vanes are shut.

The top of one of the vanes, as for instance 23c, is provided with a rearwardly extending arm or lever 30 which extends through a horizontally elongated slot 31 in the flange 14 of the frame and is provided at its inner end with an upturned handle 32. Secured to the back of the frame 12 is the horizontally disposed arcuate segment plate 33 around the curved edge of which the handle 32 moves. The plate is provided with a curved slot 34 concentric with the axis of movement of the vane 23c and the lever 30 is provided with a threader stud 35 which extends upwardly through said slot and is provided with a thumb nut 36, so that by tightening the nut 36 the vanes may be locked against movement relative to the frame.

It will be noted that the vanes are not of the same width but are of progressively increased width from the ends toward the center.

This is a very important improvement, as the vanes are thus rendered more efficient.

Assuming that the wind be blowing from the left in Fig. 1, the vanes being directed in that direction as shown, it is evident that inasmuch as the vane 23b is wider than the vane 23a, and moreover the vane 23d is wider than the vane 23b, each vane will engage the currents of air without mutually blanketing each other and thus a greater volume of air will be deflected inwardly into the room.

Again, if the wind be blowing from the right in Fig. 1 with the vanes in the position shown, the progressively increasing width of the vanes will greatly magnify the sucking action of the wind currents and thus withdraw a much larger volume of air from the room.

Where prevailing winds in a given region are substantially constant in one direction, it will be evident that the vanes may be progressively increased in width in one direction only—that in which the winds blow. But for general use it is

preferable to have the vanes increase in width from either end. However, the former arrangement is within the scope of my invention.

By providing a relatively narrow frame which fits under the sash and is of corresponding width therewith, the relatively wide vanes will, when open or partially open, extend substantially beyond the window frame and beyond the vertical wall of the building for an appreciable distance, and thus be more effective in introducing currents of air into the room or withdrawing air therefrom.

It is common practice in house rooms and in offices to employ inclined deflectors mounted on the inside sill of the window and arranged to direct upwardly entering currents of air, so that the occupants of the room, especially those near the window, will not be subjected to a draft.

Such deflectors, although sometimes loosely referred to as "ventilators" are not such but simply deflectors for partially opened windows. Such deflectors are inconvenient and usually unsightly. I have therefore combined in a single unit a deflector and a ventilator.

Thus I form preferably of sheet metal or other light weight material an inclined wall 37 having triangular ends 38 whose front edges are flanged inwardly as at 39. The bottom edge of the wall is provided with a narrow forwardly extending flange 40 which is in the same vertical plane as the flanges 39.

When the deflector is in position these flanges fit flat and snugly against the bottom bar and the vertical side bars of the frame 12.

Adjacent each end I provide the bottom flange 40 with a forwardly extending hook member 41 which is arranged, as shown in Figs. 3 and 4, to hook into a hole 42 punched horizontally through the lower member of the frame 12.

Adjacent each end a latch 43, formed by bending up a strip of metal having some resiliency, has one end fixed to the wall 37 while its other end is bent upwardly and forked as at 44 so that it may be slipped over the elongated head of a pin 45 pivotally mounted as in the top bar of the frame 12. Thus in mounting the deflector in place the hook members 41 are first engaged in the holes 42 in the frame and the upper end of the deflector is then swung forwardly toward the frame until its latches 43 engage the pins 45 whose heads are turned vertically as shown in Fig. 7. The pins are then turned so that their heads are horizontal, as shown in Fig. 3, and the deflector is thus mounted in place.

When it is desired to dismount the deflector, the pins are turned back into the position indicated in Fig. 7 when the deflector may be lifted from its place.

Careful and prolonged tests of my improved ventilator unit have proven it efficient in the manner and ways herein described.

It will effectually ventilate a room without drafts and will not rattle. It may be quickly and conveniently installed and removed. It may be manufactured in strong and durable form at a relatively small price.

It is obvious that my improved ventilator unit may be used not only in windows but in any ventilating opening.

When the vanes are in their closed position, owing to their overlapping relation and also to the fact that they are within the frame, the ventilator is storm-proof.

What I claim is:—

1. In a ventilator of the character described, the combination of a frame, a plurality of ventilating vanes mounted in said frame and arranged to swing on vertical axes, the width of said vanes increasing progressively from the end of the frame, and means for causing the vanes to move in unison.

2. In a ventilator of the character described the combination of a frame, a plurality of ventilating vanes mounted in said frame and arranged to swing on vertical axes, the width of said vanes increasing progressively from the ends of the frame toward the center thereof, and means to cause the vanes to swing in unison.

3. In a ventilator of the character described, the combination of a frame, a plurality of vanes mounted in said frame and arranged to swing on vertical axes adjacent one of the vertical edges

of the vanes whereby when the vanes are swung outwardly they extend materially beyond the outer surface of the frame for the purpose described, the width of said vanes increasing from one end of the frame, and means to cause the vanes to swing in unison.

4. In a ventilator of the character described, the combination of a frame, a plurality of vanes mounted in said frame and arranged to swing on vertical axes adjacent one of the vertical edges of the vanes whereby when the vanes are swung outwardly they extend materially beyond the outer surface of the frame for the purpose described, the width of said vanes increasing progressively from both ends of the frame, and means to cause the vanes to swing in unison.

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