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PORTABLE VENTILATOR HAVING ADJUSTABLE MOUNTING MEANS

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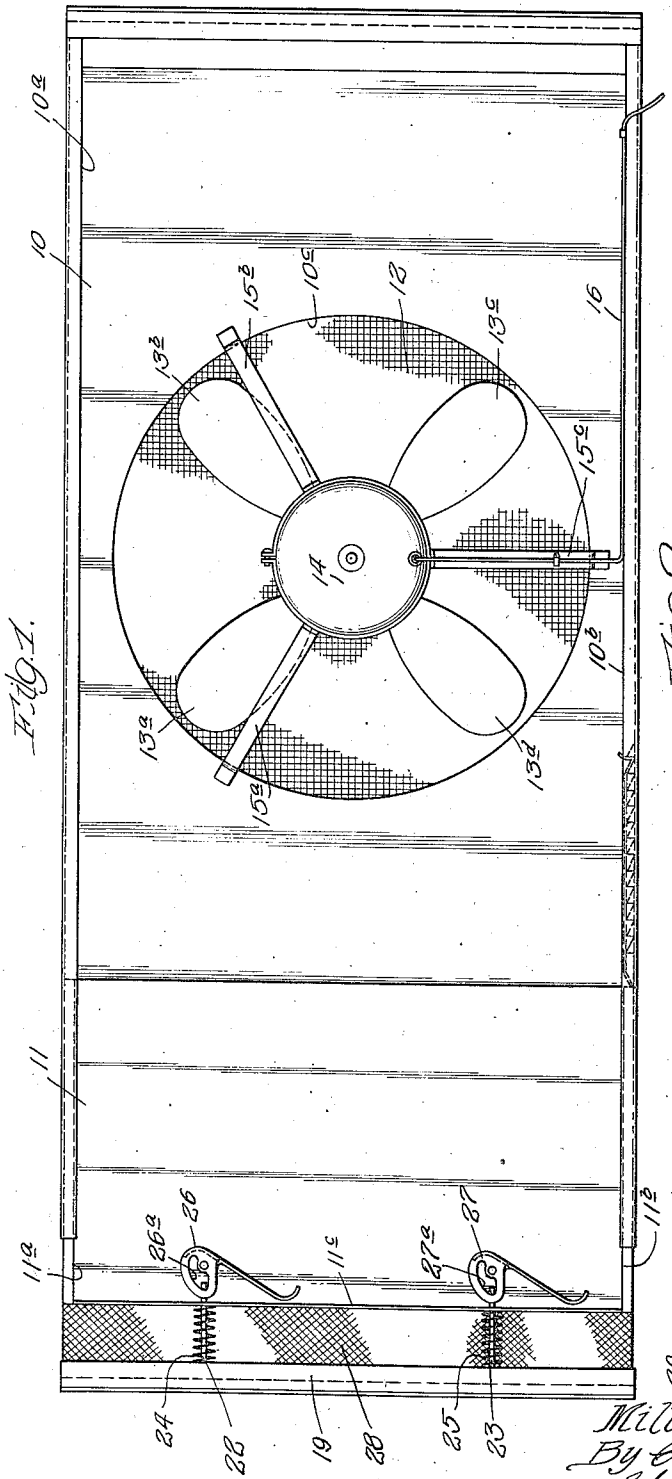


Fig. 1.

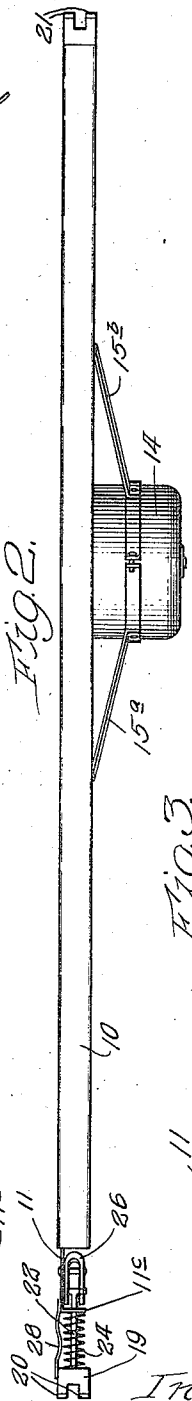


Fig. 2.

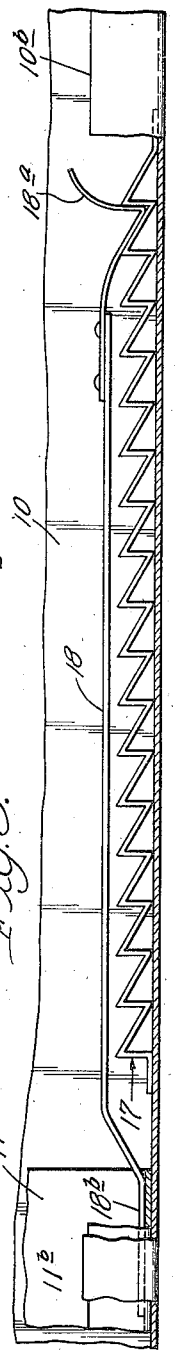


Fig. 3.

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PORTABLE VENTILATOR HAVING ADJUSTABLE MOUNTING MEANS

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4 Claims. (Cl. 98—94)

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This invention relates to a portable ventilator, and more particularly to a motor-operated ventilator arrangement adapted to be conveniently moved from window to window.

One feature of this invention is that it provides an improved ventilator; another feature of this invention is that it provides forced ventilation with all the efficiency of a built-in power ventilator; still another feature of this invention is that it may be quickly and easily moved from window to window; yet another feature of this invention is that the ventilator fits securely into the openings at the top or bottom of windows with frames of different widths; and a further feature of this invention is that the ventilator may be very easily and conveniently placed in and removed from operative position, yet firmly and securely holds in place when in operative position. Other features and advantages of this invention will be apparent from the following specifications and the drawing, in which:

Figure 1 is an elevational view of the side of the ventilator which faces into the room when it is in use; Figure 2 is a top plan view of the ventilator shown in Figure 1; and Figure 3 is an enlarged fragmentary detailed view, partly in section, showing the locking means.

Motor-operated or forced ventilation arrangements are much more satisfactory than merely opening a window. By the use of such a ventilator a room may be quickly and conveniently cleared of smoke or cooking odor, for example; or fresh air may be drawn into the room regardless of whether or not there is sufficient wind to create a natural draft. It is for this reason that factories, restaurant kitchens, and the like are generally provided with forced ventilation arrangements. The provision of a plurality of such arrangements throughout the home would be too expensive for the ordinary person, however, and it is to fill the need for such ventilation in the home that I have developed the portable ventilator here disclosed and claimed.

It is quite easy to lift the lower sash of a window, or drop the upper sash, and slip in a ventilator. Ordinary ventilators not carrying a motor-driven fan have heretofore been made with two body portions sliding or telescoping in each other so that the width of the ventilator may be adjusted to the width of different window frames. Since hot air and fumes rise to the top of the room, however, it is generally desirable to provide forced ventilation at the top of the window; and heretofore this has been possible only when once has been willing permanently to install a ventilator at the top of one window, as by screwing it or nailing it in place.

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My improved portable ventilator can be used equally well at either top or bottom of a window; and, when used at the top of the window, the ventilator holds itself in place firmly, without the use of any screws or other fastening means, and yet can be very quickly and easily removed.

I follow prior ventilator construction to the extent of providing two main body members having a certain amount of sliding movement with respect to each other, so that the ventilator can be widened or narrowed to fit different width window frames; and I provide an appropriate ventilating opening in at least one of these body portions, and mount an electric fan in operative relation to such opening. I have gone beyond anything in the prior art, however, by providing a pressure member at one end of the ventilator which has at least limited movement toward and away from the end of the body member on which it is mounted; by providing spring means for urging this pressure member away from the adjacent body member; by providing locking means of a particular type for locking the body members in desired relative position; and by providing manually operable means for contracting the springs or rendering the spring means ineffective when the ventilator is being installed in or removed from a window.

Referring now more particularly to the specific embodiment of my invention illustrated in the drawing, the ventilator is shown as comprising two principal body parts 10 and 11. The top and bottom edges of each of these members are turned over to provide channel portions 10*a* and 10*b*, on the one hand, and 11*a* and 11*b* on the other hand. Reference being had particularly to the left side of Figure 1, it will be seen that these channel portions interengage to permit a sliding or telescoping relative movement between the body members. That is, if it is desired to increase the width of the ventilator, the member 10 could be kept in the same position and the member 11 moved to the left, speaking with respect to the position of the parts as shown in Figure 1.

The body member 10 is provided with a circular opening here identified as 10c, which may for example have a diameter of eight or ten inches. In order to prevent insects from getting into the house this opening is shown as provided with a screen 12. A fan comprising the blades 13*a*—*d* and the motor 14 is mounted in operative relation to this opening by means of a supporting

spider comprising the arms 15*a*—*c*, the ends of these arms being mounted on the member 10 just beyond the periphery of the opening. This fan is adapted to have its motor energized through a connecting electrical cord 16, which may be provided with appropriate switch and plug means, these not being shown here since they form no part of the present invention.

In order to hold the body members 10 and 11 in desired position relative to each other when the ventilator is in use, I provided locking means which may be best seen in Figure 3. This locking means comprises a ratchet rack 17 mounted on the member 10 in the lower channel thereof; and a cooperating engaging member 18 having one end, here identified as 18*a*, formed as a tooth to engage the teeth of the ratchet 17, and its other end, here identified as 18*b*, fastened on the member 11. It will be readily apparent that the body members may be pulled apart easily at any time, the engaging member merely idling along the rack teeth during such action; but that any attempt to force the body members together again is prevented by engagement of the end portion 18*a* with one of the rack teeth. When it is desired to do so, of course, this locking engagement may be interrupted by reaching in and pulling up the end 18*a*, whereupon the body members can be slid together. The locking arrangement may also, of course, be duplicated in the other edge or channel.

At one end of one of the body members, here shown as the left end of the member 11, I provide a pressure member 19. The outer or left hand edge of this member, and the right hand edge of the body member 10, are here shown as provided with rubber pressure surfaces here identified as 20 and 21, respectively. These surfaces are designed to engage and grip the side surfaces of the window frame in which the ventilator is installed. If desired, these rubber friction surfaces can be replaced by serrated metal gripping surfaces which bite into the wood of the window frame and provide an even more positive grip. The pressure member 19 has two T-shaped rod members 22 and 23 rigidly mounted therein, these rod members passing slidably through openings in the flange 11*c* of the body member 11. Between such flange and the pressure member 19, and surrounding the rod members 22 and 23, are springs 24 and 25 urging the pressure member away from the end of the body member on which it is mounted.

A pair of manually operable eccentric members, here identified as 26 and 27, are pivotally mounted on the body member 11, with eccentric or spirally formed slots 26*a* and 27*a* engaging the heads of the members 22 and 23. In the position shown in the drawings the pressure member 19 is at the limit of its possible outward movement. If the eccentric members are operated, however, the action of the slots pulls the pressure member in closer to the end of the body member on which it is mounted. The parts must be so designed that this range of movement is slightly greater than the spacing of the teeth in the rack of the locking means; and the heads of the rod members must be capable of free movement in the eccentric members when these members are in the position shown in the drawings. In order to close the opening between the pressure member 19 and the adjacent end of the body member 11, I provided a strip of flexible material, as cloth, here identified as 28.

When it is desired to place the ventilator in the top of a window, for example, the eccentric members are turned counter-clockwise until the pressure member is at its innermost position, the springs being compressed and ineffective to move the pressure member outwardly. Then the upper sash of the window is lowered, the ventilator placed in position up against the top of the window frame, and its sections or body portions pulled apart until engagement of the surfaces 20 and 21 with the sides of the window frame prevent further outward movement. The ventilator is then held in place with one hand and the eccentric members 26 and 27 turned to the position shown in the drawing. This frees the springs, and their force causes the pressure surfaces 20 and 21 to engage the sides of the window frame with sufficient force to hold the ventilator in position. The upper sash is then raised until it touches the lower edge of the ventilator, the cord plugged into any convenient outlet, and the fan turned on to provide the desired ventilation.

Whenever it is desired to move the ventilator it is only necessary to hold it in position with one hand while the springs are rendered ineffective by operation of the eccentric members 26 and 27, whereupon the ventilator can be easily lifted out of the window. Either before or immediately after it is lifted out, the lock means may be manipulated to permit the body members to slide together to the position shown in Figure 1, thereupon the ventilator is ready to be immediately installed in another window. This provides a portable ventilator which may be easily, conveniently, and quickly moved from window to window in the home or office. In the home, for example, the ventilator may be used in the kitchen window while supper is being prepared; in a front room window during the evening; and in a bedroom window during the night. The advantage of forced ventilation of any room in the house may thus be achieved with only a single window ventilator.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims.

I claim:

1. A portable ventilator of the character described, including: a first closure section; a second closure section, said sections having interengaging portions arranged for telescoping relative movement between the sections; a ventilating opening in at least one of the sections; a power driven fan mounted on the section having the opening therein with its fan portion adjacent the opening; locking means for holding said sections in desired relation to each other, this means comprising a ratchet rack on one of the closure sections and a yielding engaging element on the other closure section; a pressure device mounted on the outer end of one of said closure sections and movable with respect thereto; flexible means connecting the pressure device and the closure section on which it is mounted; spring means for urging said pressure device away from the closure section on which it is mounted; and means for rendering the spring means ineffective, this means comprising an eccentric arm.

2. In a portable ventilator, a first closure section, a second closure section, said sections having interengaging means along their longitudinal edges to enable the sections to be longitudinally

movable with relation to each other, a ratchet rack in the edge portion of one of said sections, a resiliently mounted tooth in the edge portion of the other section adapted to move with it along the rack to lock the sections apart, a pressure bar mounted on the outer end of one of said sections and movable with respect thereto, spring means for urging said pressure bar away from the section on which it is mounted, means for selectively rendering the spring means ineffective and simultaneously drawing the pressure bar inwardly, whereby the two sections may be roughly adjusted in a window opening by moving them apart until their ends approximately contact the sides of the window opening and then releasing the selective means to cause the pressure bar to move outwardly under the spring action and complete the gripping action of the ventilator in the window opening, said selective means including a swingable arm having an eccentric slot.

3. A portable ventilator of the character described, including a first closure section, a second closure section, said sections being relatively movable, locking means for holding said sections in roughly adjusted position in a window opening, a pressure bar mounted on the outer end of one of said closure sections and movable with respect thereto, spring means for urging said pressure bar away from the closure section on which it is mounted and means for selectively rendering the spring means ineffective, whereby the closure sections may be roughly adjusted in a window opening by the locking means and finally firmly held in the window opening by releasing the selective means, said last mentioned means including a rotatable arm having a cam slot therein.

4. A portable ventilator of the character described, including a first closure section, a second closure section, said sections being relatively movable, locking means for holding said sections in roughly adjusted position in a window opening,

a pressure bar mounted on the outer end of one of said closure sections and movable with respect thereto, spring means for urging said pressure bar away from the closure section on which it is mounted and means for selectively rendering the spring means ineffective, whereby the closure sections may be roughly adjusted in a window opening by the locking means and finally firmly held in the window opening by releasing the selective means, said locking means including a ratchet rack on one of the closure sections and a yielding element on the other closure section, said spring means including a rod having a lateral projection, and said selective means including an arm having a cam slot receiving said lateral projection.

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