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V. PETILLI

AUTOMATIC WINDOW VENTILATOR

Filed June 26, 1928

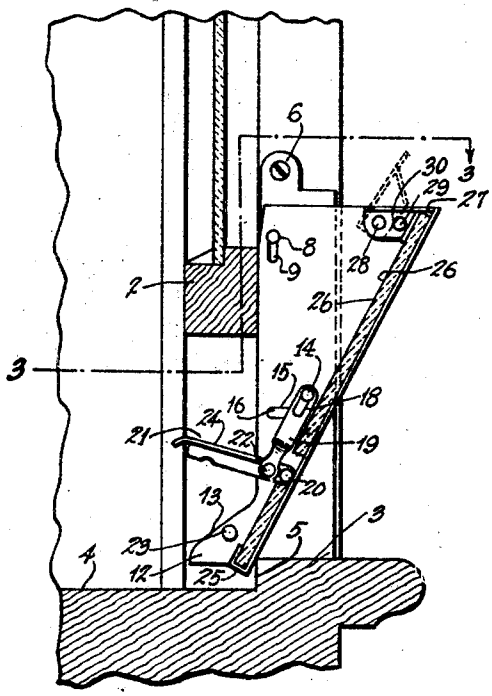


Fig 1

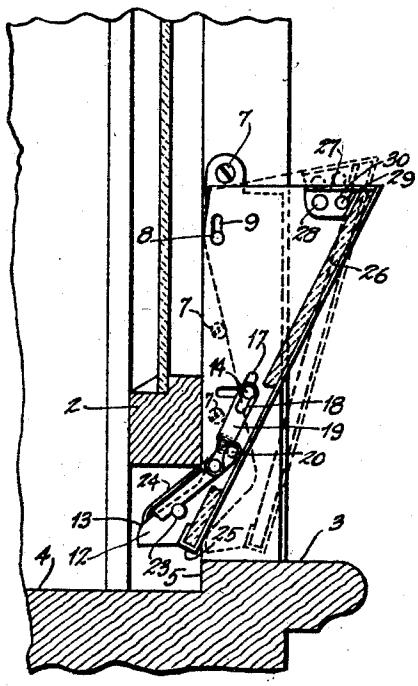


Fig. 2

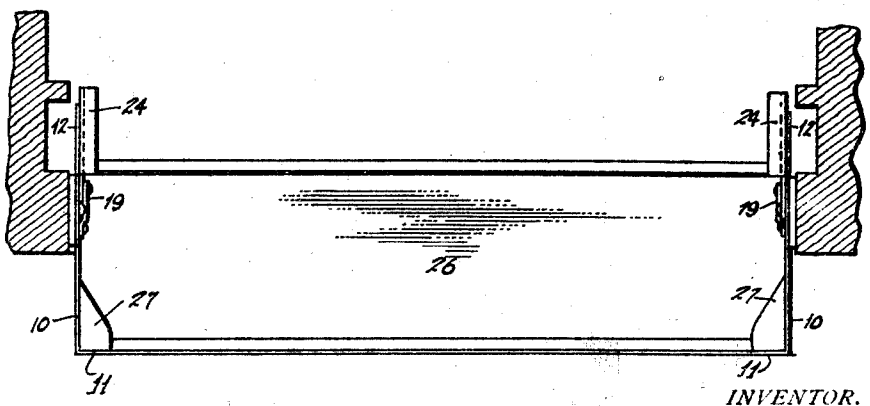


Fig. 3

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UNITED STATES PATENT OFFICE.

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AUTOMATIC WINDOW VENTILATOR.

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The present invention relates to automatic window ventilators and is more particularly directed to an improvement upon the structure illustrated in the patent to Daniel J. De Grasse, No. 1,651,259, and issued November 29, 1927. In the said De Grasse patent, an automatic window ventilator is disclosed of a character adapted to be associated with double hung vertically slidable windows. The ventilator is mounted upon the casement or frame of the window for movement in a vertical direction and also for swinging movement on a horizontal axis. By the arrangement disclosed in the patent, the raising of the lower sash permits the ventilator to swing by gravity into a position to underlie the lower edge of the lower sash and extend downwardly over the step of the window sill so that rain cannot beat into the window under the edge of the ventilator as is generally the case in other types of ventilator. When the window is closed, however, the lower edge of the lower sash engages a trigger which causes the ventilator to be elevated into a position wherein its lower edge is above the step of the sill so that upon continued lowering of the sash, the sash is adapted to act upon cam like surfaces with which the deflector is provided for the purpose of springing the deflector out of the path of the sash to permit the sash to be fully closed.

The structure disclosed in the De Grasse patent is a practical and efficient one, but experience in the manufacture of these ventilators has convinced me that they can be more economically constructed and can be so organized as to operate more smoothly and efficiently in the performance of their functions. Hence the present invention.

In the De Grasse structure, an important element resides in the movement of a link associated with the trigger and by virtue of which link the ventilator is raised and lowered and supported for swinging movement. The link of the patent is pivoted directly to the frame or casement of the window and extends for the greater portion of the height of the ventilator. It is pivoted on a screw adjacent the top of the ventilator and which screw extends into the window frame and its lower end is secured to the trigger to which I have referred. I have discovered that this link may be made of less than half the length contemplated by De Grasse and may be pivoted to a screw or rivet associated with an angle slot operating through each side plate of the ventilator. Considerable material is not only saved by the new construction, but the ventilator operates more smoothly when improved as stated. Furthermore, in the De Grasse arrangement, the ventilator is mounted directly upon the window frame. This necessitates considerable care in locating the pivots during the installation of the structure and requires the employment of skilled labor for this purpose. In accordance with the present invention, the ventilator is mounted upon what I term mounting plates to which all parts of the construction are secured and these mounting plates are adapted, in turn, to be secured to the frame of the window.

By mounting the whole construction upon mounting plates of appropriate length, the plates may be merely brought into position and secured to the frame of the window without the exercise of any skill whatever. In other words, in mounting the construction of this invention no care need be exercised as to the placement of the pivots, screws, etc., because all movable parts of the structure are fixed to the mounting plates by accurately positioned pivots permanently associated with the plates so that it is only necessary to mount the plates in position and the pivots must necessarily be correctly disposed with reference to one another.

Features of the invention, other than those specified, will be apparent from the hereinafter detailed description and claims, when read in conjunction with the accompanying drawing.

The accompanying drawing illustrates one practical embodiment of the invention, but the construction therein shown is to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 shows a ventilator embodying the present invention associated with a window. The figure is a vertical section and shows the ventilator in the position which it occupies when the window is open.

Figure 2 is a view similar to Figure 1, but illustrating the sash in another position.

Figure 3 is a plan section taken on the line 3—3 of Figure 1.

Referring to the drawings, 1 designates a conventional window frame having therein a

vertical sliding sash 2 and embodying an inner sill 3, an outer sill 4 and an intermediate step or abutment 5.

The two lateral halves of the ventilator are identical except for the fact that they are made right and left and therefore the description of one lateral half will suffice for both. Thus, referring to the drawings, 6 designates a mounting strip or plate. This strip is of metal and is of a height slightly in excess of the overall height of the ventilator proper. It is provided with holes adapted to receive screws 7, whereby it may be readily secured to the window frame as shown.

Mounted on the mounting strip 6 in rigid position thereon is a stud 8 provided with an enlarged head, and this stud is adapted to extend through a substantially vertical slot 9 in the corresponding side plate 10 of the ventilator. Each side plate is of substantially triangular contour and is provided at its inner edge with a right angle flange 11. It is further formed adjacent its lower end with an outward extension 12, the upright edge of which is curved as shown at 13. Also rigid with each mounting strip 6 is a headed stud 14 which extends through an angle slot 15. One leg 16 of the angle slot 15 extends substantially horizontal while the other leg 17 extends substantially vertical. The stud passes through the slot 15 and also extends through a slot 18 in the upper end of a link 19. The head of the stud 14 is sufficiently large to hold the link 19 and the plate 10 closely to the mounting strip 6.

Rigidly mounted upon the plate 10 at some little distance below the slot 15 is a headed stud 20 which stud forms a pivot for a trigger 21 to which the lower end of the link 19 is secured by a rivet 22.

The trigger 21 is adapted for pivotal movement about its pivot 20 from one extreme position shown in Figure 1 to the other extreme position shown in Figure 2, a stop 23 being provided to limit the latter position. When in such latter position, the upper face of the trigger lies alongside of the edge 13. In order that such upper face may be smooth and will not unduly wear the window sash by which it is adapted to be engaged, it is preferably provided with a laterally extending flange 24 which produces a flat broad surface for engagement with the sash.

At the extreme bottom of each plate 10 a socket 25 is formed by bending up the plate as shown and these sockets of both plates are adapted to cooperate with the flanges 11 to support a glass panel which extends transversely of the window and seats in said sockets and bears against the flanges at its opposite ends. This glass panel serves the purpose of the air deflecting element of the ventilator and is designated 26 in the drawings.

To hold the upper portion of the panel in engagement with the flanges 11, retainers 27 are provided. One of these retainers 27 is pivoted to each of the end plates 10 by means of a pivot 28 and the retainers are normally locked in a position to hold the glass in place by means of a pressed out boss 29 on the plate extending into a perforation 30 of the retainer. This arrangement forms a resilient lock which precludes inadvertent pivotal movement of the retainer.

The normal position of the parts is as shown in Figure 1 where the lower sash is shown as raised. Under this condition of things, the weight of the glass panel and the end plates 10 cause the parts to gravitate into a position wherein the lower edge of the panel will overlie the step or abutment 5 and preclude rain from beating in under the ventilator on to the inner sill 3. The weight of all the movable parts is at this time carried by the studs 8 and 14. These studs engaging with the upper ends of the slots 9 and 17. When it is desired to close the window, the lowering of the sash 2 will cause the lower rail of the sash to engage with the triggers 21, and as the sash continues to descend, each trigger will be swung downwardly. During this downward swinging movement of the trigger, it functions as a lever having a fulcrum 22 which is supported by the link 19 suspended from the stud 14. Thus, the downward swinging of the trigger brings about an upward movement of its pivot 20 which necessarily results in an elevation of the end plate 10 to which said pivot is rigidly secured so that by the time the sash has been lowered to the position shown in Fig. 2 to bring the trigger into engagement with the stop 23, each side plate will have been elevated to the full line position of Fig. 2 wherein its lower end will be above the surface of the inner sill 3. As the window continues to descend further relative pivotal movement of each trigger is arrested by the stop 23, so that the upper surfaces of the triggers become cam surfaces acted upon by the lower edge of the sash, so that as the sash further descends the side plates are swung in a counter-clockwise direction about the axis of the studs 8 until the parts partake of the dotted line position of Fig. 2 wherein all parts of the ventilator will have been removed from the path of the sash to permit the sash to be completely closed.

During these operations to which I have referred, the elevation of the plates under the action of the trigger will have caused the end plates to be guided by movement of the slot 17 with respect to the stud 14 of each of them and after the side plates are partially elevated the horizontal leg 15 of each angle slot will coact with the stud 14 to further elevate and guide the end plate in their swinging move-

ment, into fully elevated position. Thus, when the sash is completely closed, the parts will partake of the dotted line position of Figure 2 and will remain in this position until the sash is again raised whereupon the operations described will be reversed under the force of gravity until the parts reassume the relative positions shown in Fig. 1.

With the arrangement which I have described, the operation is unusually smooth, since the forces are applied in a most efficient manner to accomplish the work for which they are intended. I call particular attention to the relatively short links 19, which, through their use, permit of a very compact and smoothly operating arrangement practically devoid of lost motion during operation.

In the manufacture of ventilators in accordance with the present invention, the end plates 10, links 19 and triggers 24, together with the studs, stops and pivots 8, 14, 20, 22 and 23 are all assembled with respect to the mounting strips 6 which are made of such length and so proportioned that the mere positioning of these mounting strips on a window frame with the lower end of each strip resting on the sill 3 will, of itself, bring about a proper positioning of all the operating parts, with respect to the window sash.

In order to mount the ventilator on the window frame, it is therefore only necessary to bring the mounting strips into position and to insert the screw 7 to secure the strips to the frame. This work can be done by unskilled labor and greatly expedites and economizes in the installation of the construction. Furthermore, by mounting all the parts upon fairly heavy plates, adequate anchorage for the studs is provided and a more rigid and durable construction results.

It will of course be understood that the glass panel is associated with the side plates after they have been secured to the window frame by simply swinging up the retainers 27 which can be returned to retaining position after the panel is in position and will permit of removal of the panel whenever this is desired as for example when washing the window.

I have so shown the device of the drawings that the swinging movement ventilator is accomplished by engagement between the sash and the trigger, but, if desired, the edges 13 of the end plates may be shaped as to coincide with the upper faces of the triggers, so as to also be engaged by the sash when the triggers are against the stops 23, so that the swinging movement of the ventilator is accomplished by engagement of the sash directly with the edges 13.

It will be apparent that the ventilator of this invention is entirely automatic and that the mere act of raising and lowering the window sash brings about movement of the ventilator from functioning to non-functioning position and vice versa.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. A ventilator for windows embodying a pair of vertically movable and swingable end plates, each of which is provided in its upper portion with a substantially upright slot and in its intermediate portion with another slot, studs adapted to be rigidly mounted with respect to a window frame and extends through said slots, an air deflecting element supported at its opposite ends by said end plates and adapted to extend transversely of the window frame, a trigger pivoted to each end plate and adapted to extend into the path of a window sash of said frame when the sash is elevated, and a link pivoted to each trigger and also pivoted to the stud which extends through the intermediate slot of the corresponding end plate.

2. A ventilator for windows embodying a pair of vertically movable and swingable end plates, each of which is provided in its upper portion with a substantially upright slot and in its intermediate portion with another slot, studs adapted to be rigidly mounted with respect to a window frame and extends through said slots, an air deflecting element supported at its opposite ends by said end plates and adapted to extend transversely of the window frame, a trigger associated with each end plate with one end of the trigger pivoted to its corresponding end plate, and a link associated with each trigger and pivoted thereto intermediate the ends of the trigger, the other end of the link being pivotally secured to the stud which passes through the intermediate slot of the corresponding end plate.

3. A ventilator for windows embodying a pair of swinging and vertically movable plates, each plate having a pair of slots, one being normally vertical and the other being an angle slot with its legs substantially horizontal and vertical, a stud extending through each of said slots and adapted to be mounted rigidly with respect to an associated window frame, an air deflecting panel carried by said end plates and extending between them across the window frame opening, said plates and panel being movable downwardly under the action of gravity and then swingable in one direction under the action of gravity, a lever pivoted to each end plate, and a link connection between each lever and the stud which extend through the angle slot of the corresponding end plate, said levers being positioned to extend into the path of the sash to be engaged thereby when the sash is lowered to swing the levers on the fulcrums afforded by their pivotal connection with the links for the purpose of bodily elevating the end plates and panel, and means for arresting the pivotal movement of said levers with respect to

the end plates to bring about swinging movement of the side plates upon continued lowering of the window sash.

4. A ventilator for windows embodying end plates, each of which is provided with slots positioned in their upper and intermediate portions, a wind deflecting panel supported by said end plates, a mounting strip associated with each end plate and each of which mounting strips is provided with upper and lower studs extending through the slots of the end plates, said mounting plates being adapted to be secured to a window frame, a lever pivotally secured to each end plate, and a link connection between each of said levers and the lower stud of the corresponding mounting strip.

5. A ventilator for windows embodying mounting strips adapted to be rigidly secured to the opposite sides of a window frame, studs rigid with each mounting strip and positioned in vertically spaced relation thereon, end plates, one of which is associated with each mounting strip and each of which is provided with slots through which the studs of the mounting strip extend, a trigger pivoted to each plate and adapted to extend into the path of the window sash, a link connection between each trigger and the lower stud of the corresponding mounting strip to cause an elevation of the end plates when the associated window sash is lowered to engage with and depress said levers, means to be engaged through the continued lowering of the sash to swing the levers and all other parts of the ventilator out of the path of the window sash to permit of the complete closing of the latter, and a wind deflecting panel supported by said end plates, said end plates being adapted to gravitate when the window sash is elevated into a position wherein the lower portion of the panel will underlie the lower edge of the sash and overlap the step in the window sill.

In testimony whereof I have signed the foregoing specification.

VINCENT PETILLI.