May 13, 1952 C. J. WILHELMI 2,596,801

VENTILATOR MECHANISM

Filed Dec. 3, 1946 2 SHEETS—SHEET 1

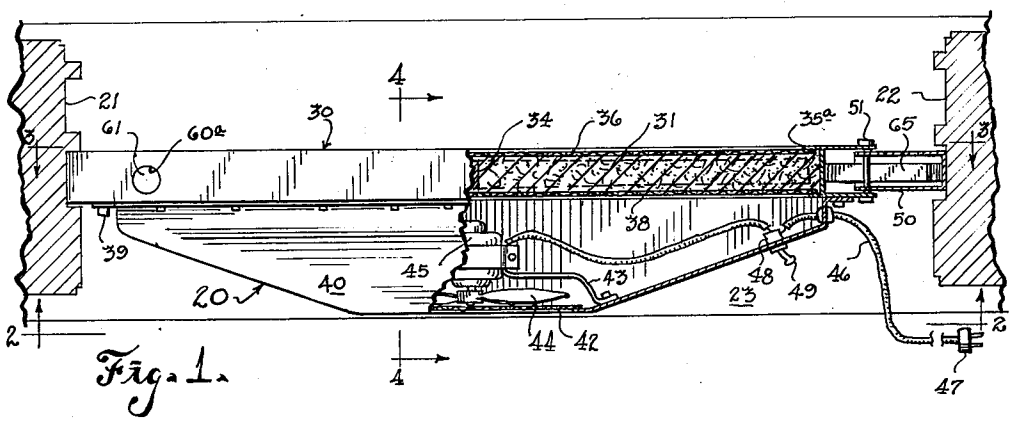


Fig. 1.

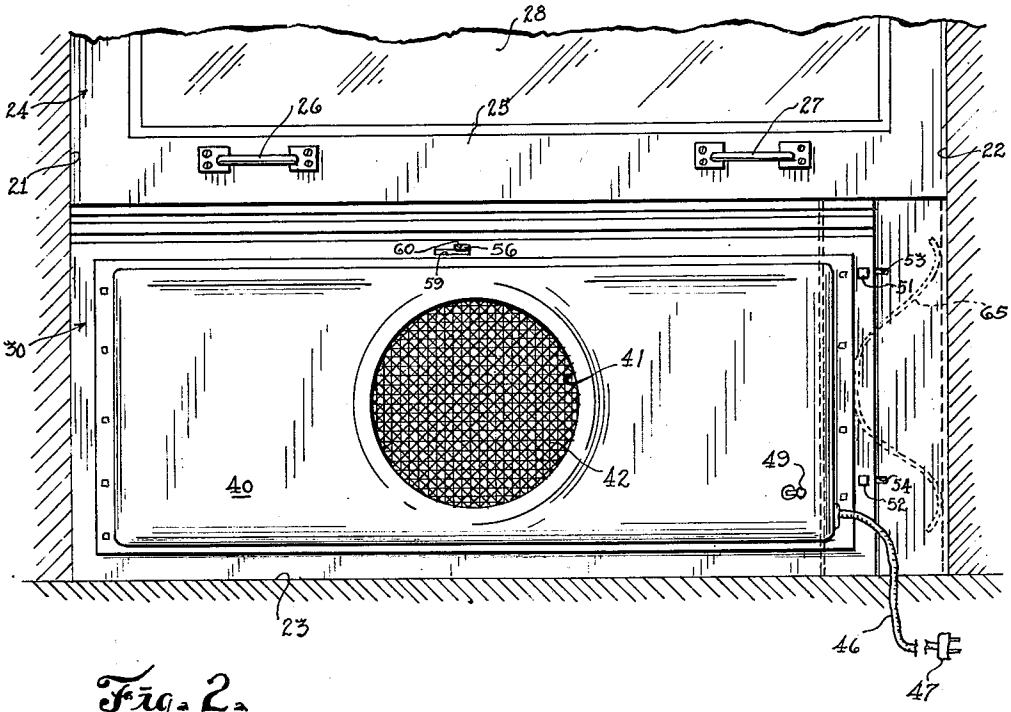


Fig. 2.

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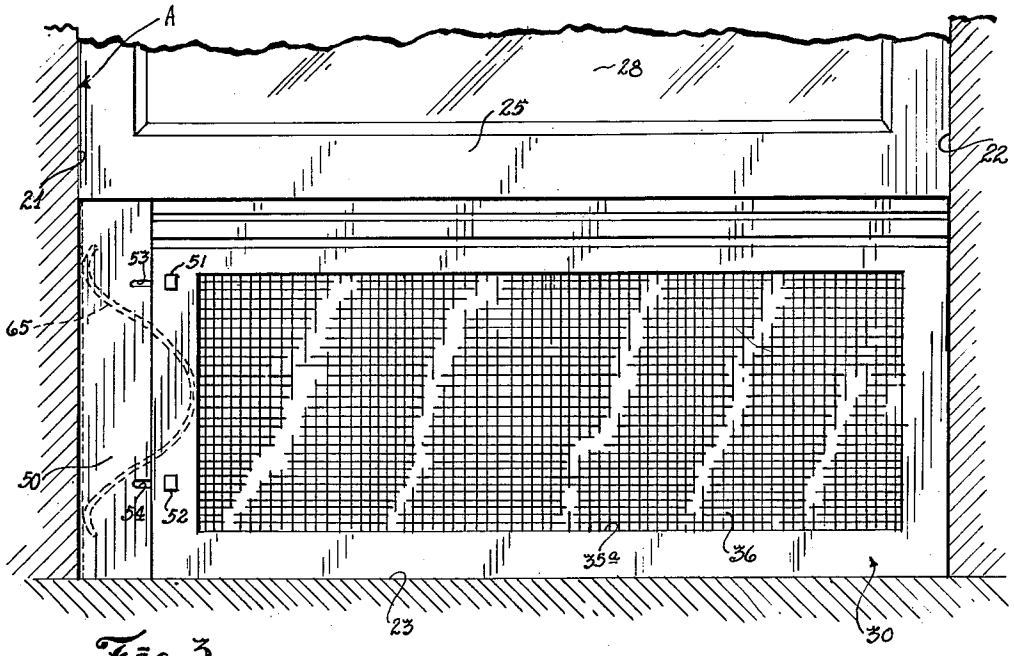


Fig. 3.

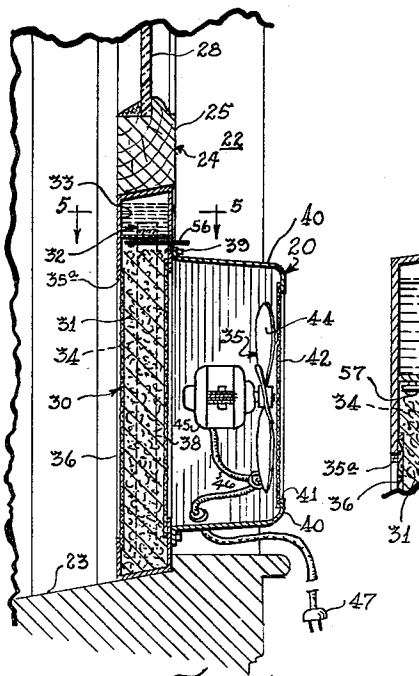


Fig. 4.

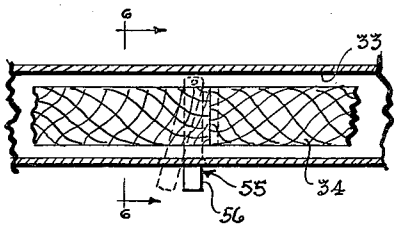


Fig. 5.

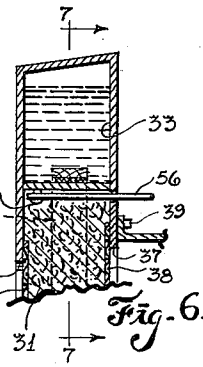


Fig. 6.

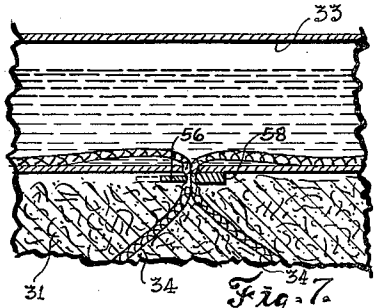


Fig. 7.

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VENTILATOR MECHANISM

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Application December 3, 1946, Serial No. 713,634

2 Claims. (Cl. 261—97)

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The invention relates to ventilators and is particularly concerned with portable ventilators of the type adaptable to be placed in a conventional window opening and incorporating air filtering and humidifying means.

The invention seeks, as a principal object and accomplishment, to provide a ventilator such as contemplated herein and characterized by a combination of parts arranged to more satisfactorily perform the various functions required of them and adapted to provide a compact assembly which will successfully combine the factors of structural simplicity, efficiency and durability, and yet be economical to manufacture.

Another object and accomplishment of the invention is to improve the construction of ventilators as contemplated herein with respect to efficiency of operation and to ready adaptability of the ventilator to placement in or removal from a conventional window opening without alteration of the window opening or requirement of tools; and to this end, a feature of the invention is to provide a ventilator comprising a ventilator body extending between the sides of a window frame and from the sill to the bottom of a stile of a window which is raised partially in the frame, said ventilator body having incorporated therein a suitable air filter material through which flowing air from the outside must pass and a humidifier means comprising a water tank as part of the body framework and wick means extending from the said tank through the air filter material whereby suitable moisture will be caused selectively to be carried from said water tank into the path of flowing air, thereby to humidify the incoming flowing air as desired, and said ventilator also having a fan means adaptable to draw air from the outside through said filter material and humidifier and thereafter cause the air to be blown into the room.

The invention also comprehends the provision of a ventilator embodying the principles as hereinbefore set forth but characterized by the absence of fan means, the ventilator body in this instance being placed in a window opening where there is naturally a strong draft, thereby eliminating the necessity of mechanical means to draw the air inwardly.

A further object of the invention is the provision of a ventilator, such as contemplated herein, wherein there is provided air humidifying means which may selectively be caused to operate or to be shut off, as desired, said means being so constructed as to eliminate the usual inefficient water pans as found in prior art structures.

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Yet another and essential object of the ventilator such as contemplated herein is the provision therein of means whereby the ventilator body may be made in standard sizes and yet be adaptable to be placed in windows of different size.

Additional objects, features and advantages of the invention disclosed herein will be apparent to persons skilled in the art after the construction and operation are understood from the within description.

It is preferred to accomplish the various objects of this invention and to practice the same in substantially the manner hereinafter fully described and as more particularly pointed out in the appended claims, reference being had to the accompanying drawings which form a part of this specification, wherein:

Figure 1 is a top plan view of a ventilator embodying the present invention and having parts thereof shown in section to more clearly show the construction thereof:

Figure 2 is a side elevational view of the ventilator depicted in Figure 1 and being taken substantially on the plane of the line 2—2 in Figure 1;

Figure 3 is a side elevational view of the ventilator depicted in Figure 1 and being taken substantially on the plane of the line 3—3 in Figure 1;

Figure 4 is an end sectional view of the ventilator depicted in Figure 1 and being taken substantially on the plane of the line 4—4 in Figure 1;

Figure 5 is a fragmentary sectional plan view of a portion of the ventilator and being taken substantially on the plane of the line 5—5 in Figure 4;

Figure 6 is a fragmentary sectional view of the ventilator taken substantially on the plane of the line 6—6 in Figure 5; and

Figure 7 is a fragmentary sectional view of the ventilator taken substantially on the plane of the line 7—7 in Figure 6.

The drawings are to be understood as being more or less of a schematic character for the purpose of illustrating and disclosing a typical or preferred form of the improvements contemplated herein, and in the drawings like reference characters identify the same parts in the several views.

Referring to the drawings, specifically Figs. 1, 2, 3 and 4, I have illustrated the ventilator mechanism with which the subject invention is particularly concerned and designated in its en-

tirety by the numeral **20**, as being adjunctively employed to and placed in a conventional window frame designated in its entirety by the letter A and comprising, in general, side members **21** and **22**, and a sill member **23**. Disposed within and carried by said frame is a conventional double-hung window frame **24** having a stile **25** fitted with suitable handles **26** and **27** and a conventional glass pane **28**.

Suffice it to say, since the invention is not particularly concerned with the precise construction of the window frame and its associated members, they will not be further described in detail. It is to be understood that details of these members may be modified to suit particular conditions, and may in some cases be other types of windows, and I do not wish to be limited to the details of the construction of these elements as set forth.

Having thus described the general environment surrounding the ventilator mechanism with which the present invention is particularly concerned, the specific construction and the cooperating functions of the parts of said ventilator mechanism will now be described in detail.

In the exemplary embodiment of the invention depicted in Figs. 1, 2, 3 and 4, the ventilator mechanism **20**, in general, comprises a ventilator body **30** extending between the sides **21** and **22** of the window frame and from the sill **23** to the bottom of the stile **25** of the window frame **24** which is shown raised partially in the frame, said ventilator body **30** having incorporated therein a suitable air filter material **31** through which flowing air from the outside must pass and a humidifier means designated in its entirety by the numeral **32** and comprising a water tank **33** as part of the body framework and wick means **34** extending from said tank through the air filter material **31** whereby suitable moisture will be caused selectively to be carried from said water tank into the path of flowing air, thereby to humidify the incoming flowing air as desired, and said ventilator mechanism also having a fan means designated in its entirety by the numeral **35** and which is adaptable to draw air from the outside of the building through said filter material and humidifying means and thereafter cause the air to be blown into the room.

The ventilator body **30** preferably is made of extruded metal shapes suitably formed and welded together by any approved practice to define a substantially rectangular shaped body approximately the thickness of a conventional double hung window frame.

In order to facilitate passage of air through the ventilator body, I provide a substantially rectangular opening **35***a* on the surface of the body facing the exterior of the building, the said opening being provided with a closure member **36** comprising wire intertwined in any approved pleasing design to define a rectangular sheet of metallic mesh suitably secured to the marginal portions of the opening **35***a*. It is notable that an opening **37** similar to and opposite to the opening **35***a* is provided on the surface of the body facing the interior of the building and has a similar wire mesh closure member **38**.

Disposed within the ventilator body **30** in the path of flowing air passing through the body there is provided suitable air filter material **31** which may comprise any of the conventional filter materials employed for purposes as contemplated herein, such as, for example, steel wool, spun glass, oil treated fiber etc.

Secured to the surface of the body facing the interior of the building by suitable screws, as at **39**, is an air funnel **40** shaped and constructed substantially as shown in Figs. 1, 2 and 4, and having an opening **41** fitted with a suitable closure member **41** comprising wire intertwined in any approved pleasing design to define a circular sheet of metallic mesh suitably secured to the marginal portions of the opening **41**.

Carried by the air funnel **40** by a suitable bracket as at **43** is the fan means **35** comprising a suitable fan blade **44** operatively disposed adjacent the interior surface of the closure member **41** and driven by a suitable electric motor **45**, which derives its source of power through a conventional electrical cord as at **46** having a male plug member **47** adapted to be fitted into a convenient female electrical wall socket member (not shown). It is preferred to have the motor of the two speed type and as a means of controlling the speed and operation of said motor, I employ a conventional three point switch as at **48**, the knob **49** of which may assume three positions, such as, for example, a high speed position, a low speed position, and a stop position.

It is notable that the ventilator mechanism contemplated herein may be made in standard sizes and yet be adaptable to be placed in windows of different sizes, thereby greatly reducing its cost in manufacture and increasing its versatility in use. This is advantageously accomplished by the provision of a movable extension piece **50** (Figs. 1, 2 and 3) of extruded metal formed of substantially U-shape and carried by one end of said body **30** for sliding movement by suitably removable lugs **51** and **52** which are adaptable to be received into slotted apertures **53** and **54**, respectively. In order to keep the extension piece **50** in its extended position in contact with the side member **22** of the window frame, I provide a suitable spring means as at **65** adaptable to engage the body **30** and the extension piece **50**, as shown.

It is contemplated to make the extension piece **50** of different sizes so that a proper sized extension piece **50** determined by the size of window opening may be secured to the body **30**. Thus, it can be seen that the width of the entire mechanism can be adjusted within a certain range with one extension piece which will adapt the mechanism to fit all windows within said range of adjustment and, if it is desired to have the ventilator mechanism placed in a window beyond said first range of adjustment, another extension piece **50** of different size can be employed which will provide a new range of adjustment for windows within said second range of adjustment.

In combination with the aforementioned features of the ventilator mechanism as contemplated herein, there is provided the humidifier means as at **32**. It has long been recognized by eminent medical authorities that controlled humidity in the air we breathe is absolutely necessary to healthy living. Heretofore, in ventilators of the prior art, the humidifying means employed in such devices was not controlled, but merely consisted of pans of water over which the flowing air passed, thereby permitting the air to absorb moisture. In the present invention humidity of the air may be controlled selectively and more efficiently since the moisture is conveyed directly into the path of flowing air. This is admirably and advantageously accomplished by the present invention by the provision of a water tank **33**

as part of the structure of the body **30**, said water tank having disposed therein in contact with the water contained therein so that it can absorb said water, a wick means **34** of suitable conventional interwoven cloth material and extending substantially from the center of said water tank diagonally downwardly and outwardly into the portion of the body **30** containing the filter material **31** and into the direct path of flowing air, the wick means **34** conveying moisture from said water tank along its entire length where it can be efficiently absorbed by the flowing air as it passes through the ventilator body **30**.

In order that the humidity may be controlled, I provide a shut-off device designated in its entirety by the numeral **55** (Figs. 5, 6 and 7) and comprising a handle lever **56** pivotally secured to the underside of the water tank by a suitable rivet at at **57** and adapted to selectively contact and wedge said wick means **34** between itself and a suitable metal block **58**, thereby to squeeze said wick means tightly at the point of contact and prevent moisture to be conveyed to portions of the wick means located in the direct path of flowing air. It will be observed in Fig. 2 that the handle **56** projects outwardly of the body **30** through a slotted hole **59** to within reach of the operator. The slotted hole **59** is provided with a recess **60** into which the handle lever **56** is received to lock the handle in its shut-off position. When it is desired to have more moisture in the air, the handle lever **56** is pressed downwardly slightly and moved toward the left in the slotted hole **59** as seen in Fig. 2, thereby releasing the wedging effect of the handle lever **56** against the wick means **34** which will permit moisture to be conveyed to the portions of the wick means located in the path of flowing air where the moisture will then be efficiently absorbed by the air as it passes through the ventilator body **30**. Water may be placed into the water tank through the opening **60***a* (Fig. 1) which may be provided with a suitable cork stopper **61**.

Thus, it can be seen that the humidifying mean of the present invention is not only efficient, but may be controlled to fit the requirements as to amount of humidity. Moreover, the humidifying means is further adaptable to ease the suffering of persons afflicted with asthma, hayfever and other like ailments by the placement of chemicals, pine solutions, etc. into the water which will be caused to be absorbed by the flowing air and transmitted into the room, thereby to ease the breathing of the afflicted person. In such cases, it is notable that the device not only properly humidifies the air and causes the chemicals to be absorbed by the air, but filters the air as well to remove substantially all foreign matter aggravating to all persons afflicted with such ailments such as pollen, dust and the like. Accordingly, it will be observed that the present ventilator mechanism may not only be employed for general use in a home, but may be advantageously employed with equal success in hospitals, sanitariums, rest resorts and the like.

The ventilator mechanism may be enameled in any of the usual present day color schemes and character of ornamentation or, in some cases, it may be desirable to make the entire mechanism of metals such as stainless steel, Monel metal or brass.

The invention further comprehends the provision of a ventilator mechanism embodying the principles as hereinbefore set forth, but characterized by the absence of fan means, the ventilator body **30** in this instance being placed in a window opening where there is naturally a strong draft, thereby eliminating the necessity of mechanical means to draw the air inwardly. This is advantageously accomplished by merely removing the screws **39** which will permit the air funnel to be removed from the ventilator body **30** and since the fan means **35** is carried by the air funnel **40**, it also will be removed in the same operation.

From the foregoing disclosure, it can be observed that I have provided a ventilator mechanism which efficiently fulfills the objects thereof as hereinbefore set forth and provides numerous advantages which may be summarized as follows:

(1) Structurally simple, efficient and durable;

(2) Economical to manufacture and readily adaptable to mass production manufacture;

(3) Readily adaptable and adjustable to fit into window openings of different sizes; and

(4) Filters the air as well as providing controlled humidification of the air.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but wish to avail myself of all changes within the scope of the appended claims.

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

1. In a ventilator mechanism comprising a ventilator body having an opening at each side and provided with air filter means and arranged to permit the flow of air therethrough, a liquid container carried by the top portions of the body and having a slotted aperture disposed in the central regions of the lower wall thereof, means comprising two wicks having end portions extending through said slotted aperture and into said liquid container respectively at each side of the central regions thereof while the balance of each of said wicks is arranged to extend downwardly and diagonally within the air filter means and into the path of the flowing air, said wick means being arranged to absorb the liquid within the container and convey the same along its entire length into the path of the flowing air where said liquid may be absorbed into said air, and lever means including a stationary member carried by said body and disposed adjacent said slotted aperture, said lever means being arranged for manual operation to compress portions of said wick means against said stationary member whereby to restrict and prevent the liquid from being conveyed into the path of flowing air by said wick means, said body having mechanical means whereby air will be caused to be drawn through the ventilator body and into the room sought to be ventilated.

2. A ventilator mechanism comprising a ventilator body having an opening at each side and provided with air filter means and arranged to permit the flow of air therethrough, in combination with a liquid container carried by the top portions of the body and having a slotted aperture disposed in the central regions of the lower wall thereof, means comprising two wicks having end portions extending through said slotted aperture and into said liquid container respectively at each side of the central regions thereof while the balance of each of said wicks is

arranged to extend downwardly and diagonally within the air filter means and into the path of the flowing air, said wick means being arranged to absorb the liquid within the container and convey the same along its entire length into the path of the flowing air where the liquid may be absorbed into said air, and lever means including a stationary member carried by said body and disposed adjacent said slotted aperture, said lever means being arranged for manual operation to compress portions of said wick means against said stationary member to restrict and prevent the liquid from being conveyed into the path of flowing air by said wick means.

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