

Dec. 14, 1943.

H. K. ADAMS

2,336,765

VENTILATOR

Filed May 16, 1942

2 Sheets-Sheet 1

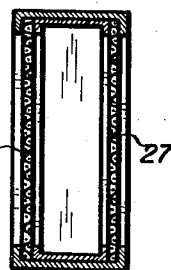
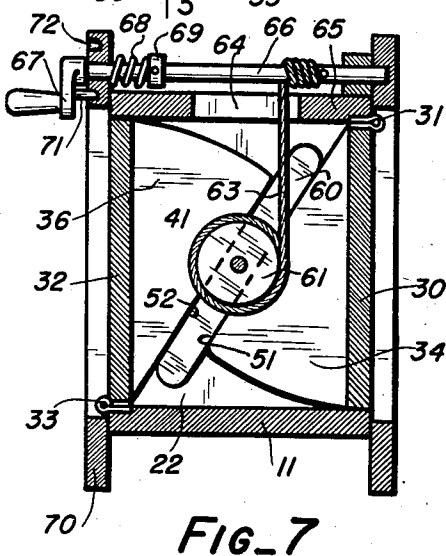
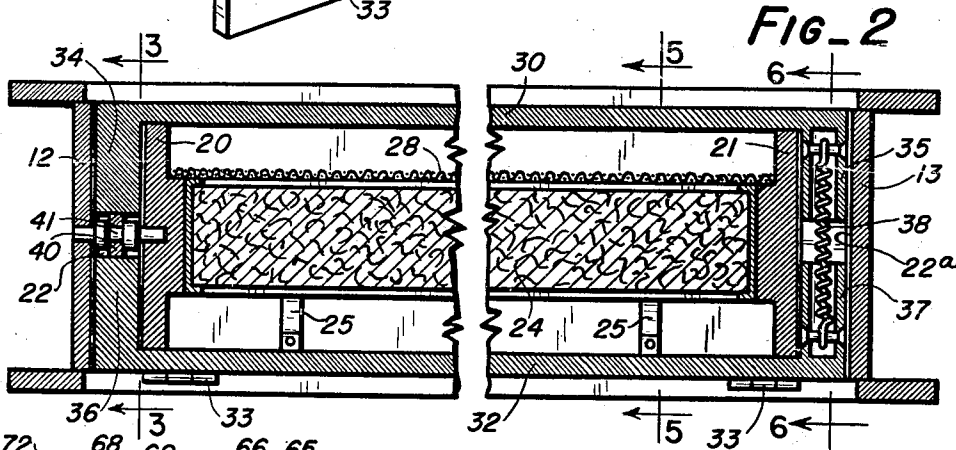
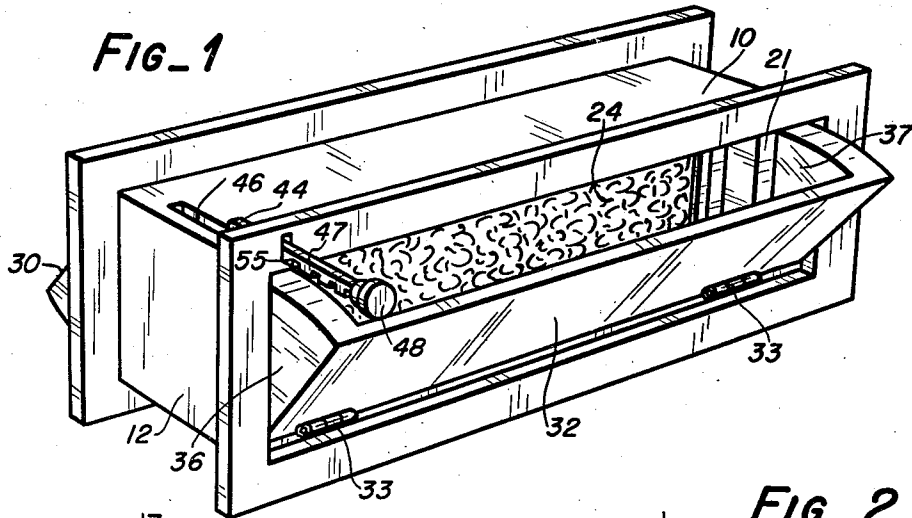


FIG. 8

Fig_9

HARRY K. ADAMS
INVENTOR

INVENTOR

BY *Herbert E. Smith*

ATTORNEY

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2 Sheets-Sheet 2

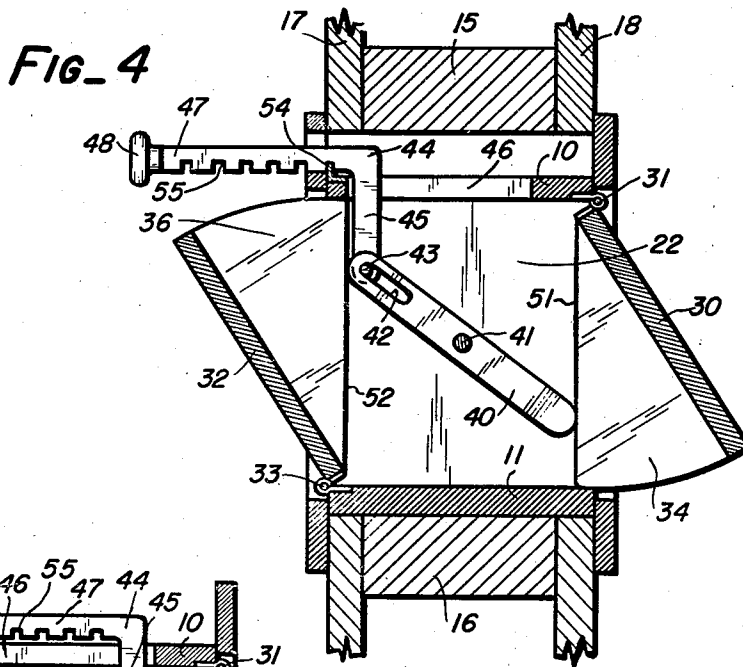


Fig_3

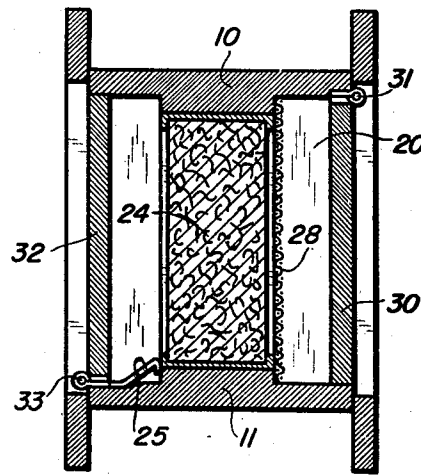
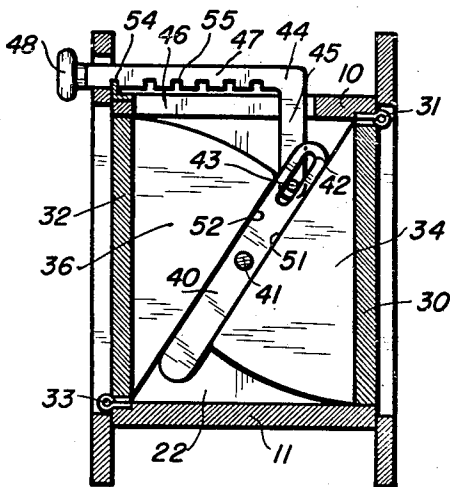


Fig_5

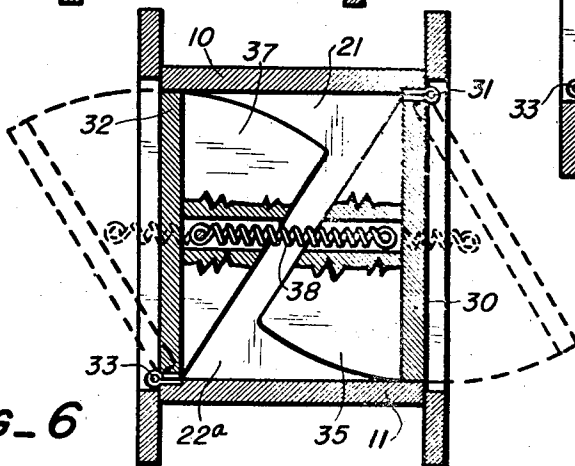


FIG_6

HARRY K. ADAMS
INVENTOR

INVENTOR

BY Herbert E. Smith

ATTORNEY

UNITED STATES PATENT OFFICE

2,336,765

VENTILATOR

Harry K. Adams, Grand Coulee, Wash.

Application May 16, 1942, Serial No. 443,192

3 Claims. (Cl. 98—118)

This invention relates to an improved ventilator and is more particularly applicable to ventilators and control means therefor.

It is an important object of my invention to provide a simple and efficient ventilator and control means, which ventilator may be incorporated in a wall in a simple manner and which will withstand varying weather conditions to remain in a functioning condition over long years of use.

Another object of my invention is to provide a novel control means for opening and closing shutters of a ventilator.

A further object of the invention is the provision of a simply and easily operated cam and follower for controlling the function of shutters of a ventilator.

Still another and further object of my invention is the incorporation of all the foregoing objects in a single device, which device may be easily constructed and readily installed or mounted for use.

The foregoing objects and others ancillary thereto I prefer to accomplish as follows:

According to a preferred embodiment of my invention, I have devised a ventilator useful for permitting the passage of air through walls. Shutter means serve for the purpose of limiting or closing the ventilator when that is desired. The shutters also function as directing vanes during the passage of air through the ventilator opening for the most efficient and draftless distribution of air throughout the space to which the ventilator communicates. The shutters also shield the ventilator passage from the elements in the case of external wall mountings. My shutter arrangement also serves as a blackout or light shield to prevent the emanation of light from within a structure ventilated according to my invention, even though there may be light therein blazing brightly. Adjacent the outer face of the opening I mount a shutter that is directed to protect the opening from the weather, and an inner shutter hinged oppositely to the outer shutter serves to direct incoming air upwardly as it leaves the ventilation opening to prevent drafts. For the operation of this shutter I employ a centrally pivoted cam which cooperates with followers on the shutters to open them and permit them to close, the shutters being normally biased by spring means to their closed position. I have also arranged the cam followers on the shutters to serve as a windstop and to prevent the entrance of insects and the like.

Provision is also made for the use of positive air filters which preferably may be of the type

used in air conditioning heating systems and which collect the dust present in air in passage as well as pollens, gases, bacteria, and other air borne substances. These filters may include a viscous type of cartridge or may be a combination thereof including a charcoal unit or similar gas absorbing structure, any of which permits fairly free flow of air without causing heavy drafts to be injected into a room or area in the event of strong wind on the side of the structure being ventilated.

The novel features that I consider characteristic of my invention I have set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which

Figure 1 is a perspective view of my ventilator as it appears when disassociated from a wall,

Figure 2 is a longitudinal sectional view, looking downward, of my ventilator, intermediate its horizontal edges,

Figure 3 is a vertical cross-sectional view of my ventilator, taken on line 3—3 of Figure 2,

Figure 4 is a cross-sectional view similar to the showing of Figure 3, but with the shutters in the open position,

Figure 5 is a vertical cross-sectional view taken on line 5—5 of Figure 2,

Figure 6 is a vertical cross-sectional view taken on line 6—6 of Figure 2,

Figure 7 is a vertical cross-sectional view through a modified form of my ventilator, taken on a plane similar to the showing of Figure 3, and

Figures 8 and 9 are cross-sectional views through alternative forms of filter cartridges that may be employed in my ventilator.

In the preferable form of my invention, I employ top and bottom walls 10 and 11, and end walls 12 and 13, which are joined together to form a tunnel or passage which may be built into the wall and through which air may pass. In such an instance, as shown in Figure 4, the top and bottom walls 10 and 11 are placed between lateral structural members 15 and 16 that are shown to have inner and outer wall sheathing 17 and 18.

Adjacent each lateral end of the opening defined by walls 10, 11, 12 and 13 are upright partitions 20 and 21 that are spaced from end walls 12 and 13, respectively, a slight distance. In the openings defined by top and bottom walls 10 and

11 and partitions 20 and 21, I mount a filter cartridge 24, which may be removably held in place by spring catch detent 25. Filter cartridge 24 is shown as being of the type filled with fibrous or stringy filtering material. Alternative forms of filter cartridges are disclosed in Figures 8 and 9, wherein the former has baffling vanes 26 and the latter has a pair of spaced screens or fabric filter sheets 27. The use of such filter inserts is optional and they may be used or omitted as warranted by conditions to be accommodated. I also close the opening occupied by the filter pad by a screen 28 useful for preventing the ingress of insects, rodents, vermin and the like.

Each end of the tunnel defined by the top walls 10 and 11 and the end walls 12 and 13, is closed by a shutter. In the preferable form of installation, the external shutter 30 is hinged at 31 on the upper edge of the opening. The inner shutter 32 I hinge in an opposite manner at 33, adjacent the bottom edge of the opening. Thus, while the external shutter 30 serves to shield the opening from rain, snow, wind and the elements, the internal shutter, when in the open position, serves as an air deflector to direct the passing air upwardly into the room being ventilated.

On each end of the outer shutter 30 is a wing 34 or 35 which slips into the space 22 or 22a between end wall 12 and partition 20 and end wall 13 and partition 21, respectively. Similarly, the inner shutter 32 has end wings 36 and 37, which are inserted into the spaces 22 or 22a, respectively, at either end of the air passage or tunnel. Between the opposed wings 35 and 37, and anchored at each end thereto, is the coiled spring 38 which tends to bias the wings and also the shutters to the closed position.

In the opposite end of the structure and between the wings 34 and 36 is a centrally pivoted double cam lever 40 mounted on the pin 41 for swinging movement. At one end the cam 40 has a slot 42 which is engaged by pin 43 carried on the L-shaped drawbar 44, thus constituting a lost motion connection of these parts. The lower leg 45 of the drawbar passes through a slot 46 in the top wall 10 of the ventilator housing. The divergently disposed leg 47 of the drawbar terminating in a knob 48 is directed through the wall in which the ventilator is placed or mounted and serves as a convenient means for manually swinging the cam 40 about its axis. The ends of cam 40 abut and press against the faces 51 and 52 of the wings 34 and 36, respectively.

A latching lip 54, engageable by any of the notches 55 on arm 47 of the drawbar, serve to latch the drawbar in a desired or predetermined position. By pulling the drawbar outwardly from the wall from the position shown in Figure 3 to that shown in Figure 4 the cam 40 will be caused to swing axially and to exert pressure against the spring biased shutters 30 and 32 and to simultaneously swing the outer shutter open and force the inner shutter to the open position, whereupon air may then pass through the ventilator.

The wings 34, 35, 36 and 37 fit closely to spaces 22 or 22a, into which they are insertable, for the purpose of preventing leakage of wind, dust, insects, etc. therethrough.

To close the shutter the drawbar 47 is disengaged from the latch lip 54 and the urgency of the spring 38 will draw the shutters inwardly toward each other and at the same time cause the cam 40 to return to its normal or "at rest"

position, simultaneously returning the drawbar to the position of Figure 3.

An alternative manner of operating the shutters is shown in Figure 7. In this case the cam lever 60 has attached thereto a spool or drum 61 which is mounted in a recess in a partition of the ventilator housing. Wrapped around the drum 61 and anchored at one end thereto is the draft cable or cord 63. The cable 63 is passed upwardly through a slot 64 in the headboard 65 of the ventilator housing and anchored to a rod 66 which is journaled for rotation in any suitable manner.

Rod 66 has a crank 67 to facilitate its rotation, and is pressed to the right in Figure 7 by the spring 68, between collar 69 and the inner face of the trim member 70. A pin 71 upon the crank may be inserted in an opening 72 and serves to anchor the crank and the rod 66 from undesired rotation when it is desired to latch the shutters in either the open or closed position. It will be obvious that rotation of crank and the shaft 66 will cause certain of the cord or cable 63 to unwind from the spool 61 and be wrapped about rod 66. Similarly, the cable will be rewrapped about drum 61 when the crank is released for rotation to its initial starting point.

A particular and desirable feature of my invention is to associate the above described invention directly and as a unit with the usual window frame common to building structures. In this adaptation a window structure of any desired design may be constructed and having the usual glazed sash and preferably double sash for the insulation value and such sash need not be arranged for the usual purpose to insure ventilation but need only be provided with means for access at intervals for cleaning purposes. All ventilating will be accomplished by the device of this invention which may be unitary with the usual window frame and disposed directly below the window sill and between downwardly extending side rails in such manner that during installation of the window frame the ventilating unit is also and automatically incorporated into a wall structure.

While I have shown throughout the drawings and spoken throughout this description of the use of shutters which are not transparent, it will be apparent that this invention is equally suitable in larger openings and with transparent sash, as in windows. Thus, the invention may serve not only for the purposes of ventilation, but also as a double sash or as storm sash.

Although I have shown and described certain specific embodiments of my invention, I am fully aware that many modifications thereof are possible. My invention, therefore, is not to be restricted, except insofar as is necessitated by the prior art and by the spirit of the appended claims.

Having thus described my invention, I claim:

1. Ventilator means for an opening, comprising: a housing including top and bottom and end walls joined together to define a tunnel, a pair of hinged shutters one for each end of said tunnel, said shutters being hinged to swing away from the ends of said tunnel in opposite directions in parallelism to each other, means biasing said shutters to their closed position, an upright partition in each end of the tunnel spaced from the ends thereof, a cam follower on each end of each said shutters and positioned within the space between the end walls and the adjacent upright partition at each end

of the tunnel, a rotatable member having a cam operable upon each cam follower of one pair to press the shutter with which it is associated away from its closed position, and means for rotating said rotatable member.

2. Ventilator means for an opening, comprising: a housing including top and bottom and end walls joined together to define a tunnel, a pair of hinged shutters one for each end of said tunnel, said shutters being hinged to swing away from the ends of said tunnel in opposite directions in parallelism to each other, means biasing said shutters to their closed position, an upright partition in each end of the tunnel spaced from the ends thereof, a cam follower on each end of each said shutters and positioned within the space between the end wall and the adjacent upright partition at each end of the tunnel, a rotatable member having a cam operable upon each cam follower of one pair to press the shutter with which it is associated away from its closed position, a drawbar connected with one of the cams of the rotatable member to cause said member to be swung about its axis, and means for retaining said drawbar in an adjusted position.

3. Ventilator means for an opening, comprising: a housing including top and bottom and end walls joined together to define a tunnel, a pair of hinged shutters one for each end of said tunnel, said shutters being hinged to swing away from the ends of said tunnel in opposite directions in parallelism to each other, means biasing said shutters to their closed position, an upright partition in each end of the tunnel spaced from the ends thereof, a cam follower on each end of said shutters and positioned within the space between the end wall and the adjacent upright partition at each end of the tunnel, a rotatable member having a cam operable upon each of an opposed pair of cam followers to press the shutters with which they are associated away from the closed position, a spool on said rotatable member having a draft cord coiled thereabout and anchored at one end thereto, and means associated with the free end of said draft cord to draw the same, whereupon said spool and the associated rotatable member are caused to swing about their axes.

HARRY K. ADAMS.