March 25, 1924. 1,488,162

G. H. MILLER

VENTILATOR

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Fig. 5.

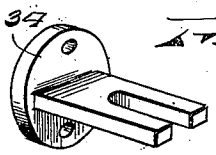
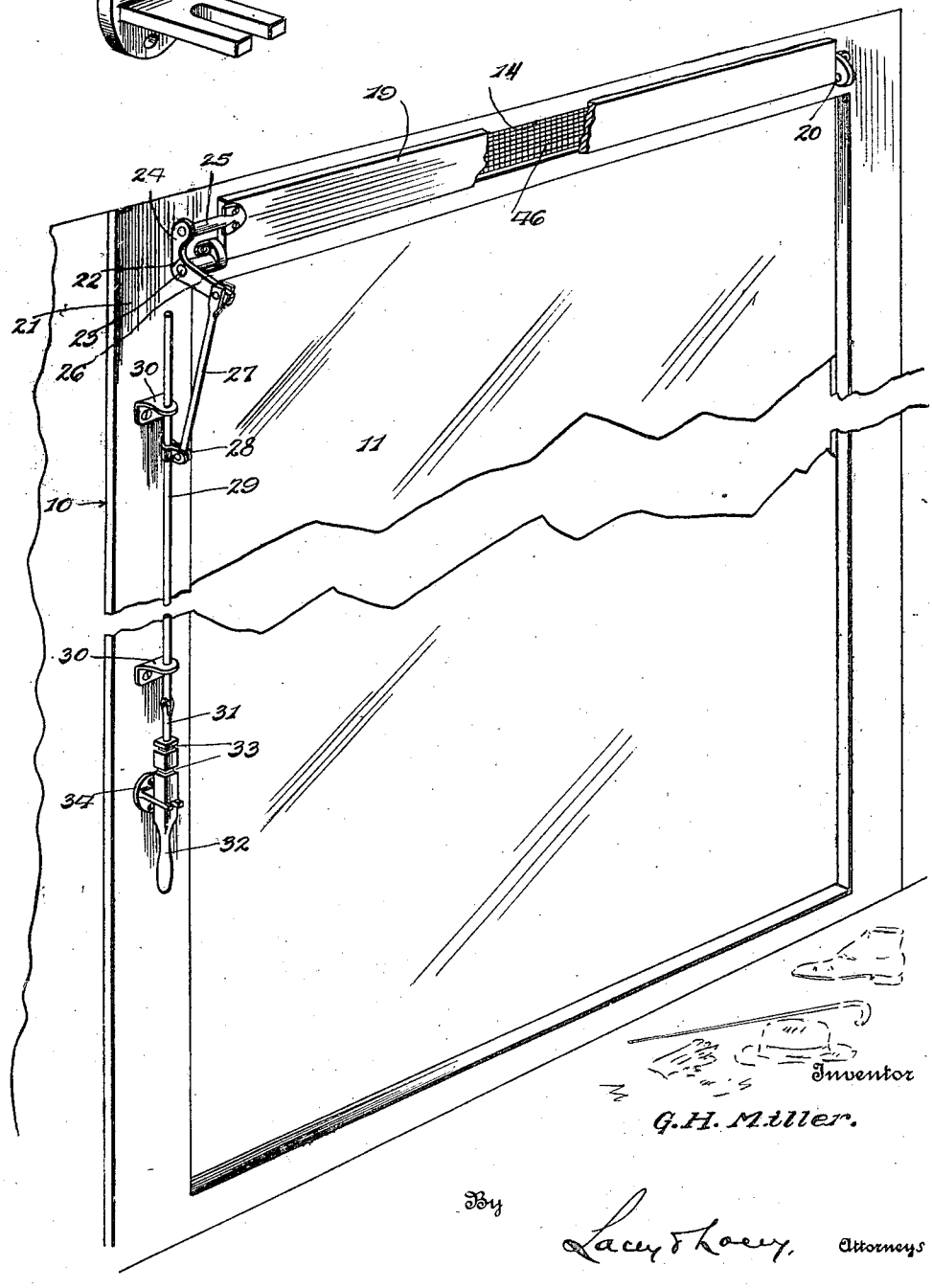


Fig. 1.



Inventor

G. H. Miller.

By Lacey & Lacey. Attorneys

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Fig. 2.

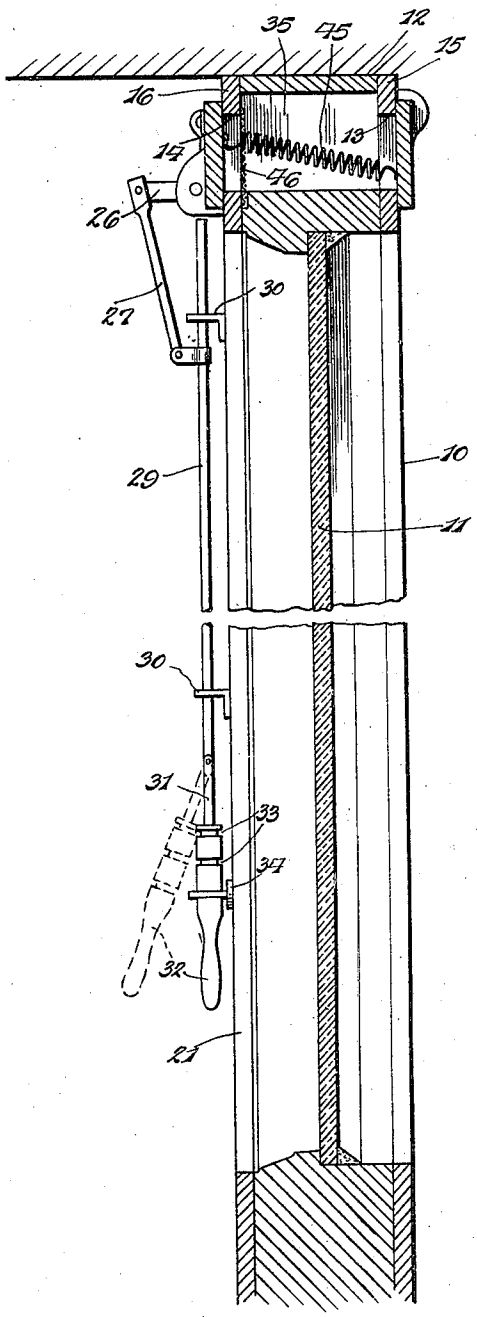


Fig. 3.

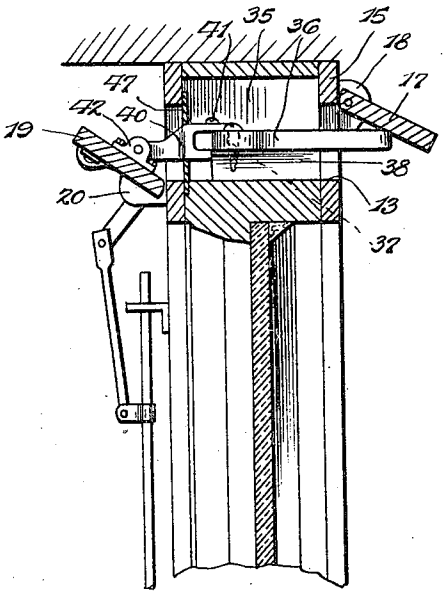
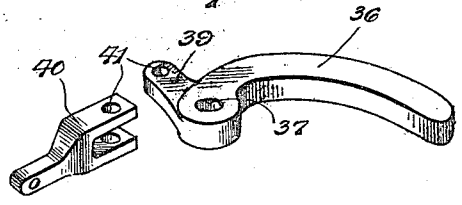


Fig. 4.



Inventor

G. H. Miller.

By Lacey & Lacey. Attorneys

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UNITED STATES PATENT OFFICE.

GEORGE HENRY MILLER, OF LOWELL, MASSACHUSETTS.

VENTILATOR.

Application filed November 26, 1921. Serial No. 517,849.

To all whom it may concern:

Be it known that I, GEORGE H. MILLER, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Ventilators, of which the following is a specification.

My invention relates to ventilators in general and more particularly to ventilators for stores or buildings with large windows that cannot be readily opened. The invention may, however, be equally well applied to doors and windows in offices, as well as factories and dwelling houses.

It is a well known fact that in ill ventilated rooms, moisture collects and condenses on window panes, ceilings and walls when the temperature is different on the inside and outside thereof, and there is no escape for the moisture in the room. The condensed water will gradually form large drops, which fall down upon the wares in the store and may in this manner cause great damage to fabrics and food stuffs, etc.

The object is now to provide a ventilator, which, aside from keeping the air in a sanitary condition and fit for respiration, will permit moisture or steam to escape before condensing and at the same time will prevent snow or rain from entering the building, even while the ventilator is open, and also keep out flies and other annoying insects.

In the accompanying drawings one embodiment of the invention is illustrated:

Figure 1 shows a perspective view of a large plate glass window with the ventilator attached;

Figure 2 is a vertical section of the window with the ventilators closed;

Figure 3 is a fragmentary vertical section showing the ventilator open;

Figure 4 is a perspective view of some of the details; and

Figure 5 is a perspective view of a detail.

The sash of the window, represented by the numeral 10, carries a plate glass 11 and is supposed to extend to near the ceiling of the room. Between the top of the sash and the ceiling and as close to the latter as possible, a box-like structure 12 extending across the greater width of the sash is furnished. This box-like structure may be constructed as a separate unit or form a continuation of the sash itself. The main thing, however, is that it is enclosed on all sides and is provided with longitudinal openings 13 and 14 in the outer and inner walls 15 and 16 respectively of the structure.

On the outer side wall 15 is provided a shutter 17 which is hinged as at 18 at the upper edge thereof and is intended to entirely close the opening 13 in this wall.

A similar shutter 19 is provided for the opening 14 in the inner wall 16 but this shutter is hinged at its lower edge as at 20, so as to open downwardly, instead of upwardly as is the case of the outer shutter 17.

On the upright post 21 of the sash 10 a bell crank 22 is journaled at 23 and one of its arms 24 has hinged connection with a transverse arm 25 on the inner shutter 19. The other arm 26 of the bell crank is journaled to the extreme end of a link 27, the opposite end of said link being hinged at 28 to a guide rod 29 running in bearings 30 attached to the post 21 and parallel with the side thereof. Below the lower bearing 30 a short link 31 is hinged to the lower end of the guide rod 29, which link is provided with a handle 32 having two or more notches 33 for engaging in the bifurcated bracket 34. It will now be seen that with the shutter 19 in closed position as illustrated in Figure 1, the lower-most notch 33 in the handle 32 will engage in the bracket 34 and thus keep the shutter 19 closed. The uppermost notch 33 in the handle corresponds to the fully open position of the shutter 19 and one or more intermediate notches correspond to the intermediate positions of the shutter.

Within the chamber 35 formed in the box-shaped structure 12 is provided a horizontally swinging arm 36 fulcrumed at 37 on a bearing piece 38 secured on the bottom of the chamber 35. This bearing piece 38 preferably extends outwardly so as to be flush with the outside of the wall 13 to provide a support along the greater portion of the bottom surface of the arm 36. This arm has a transverse finger 39 which is journaled in the connecting piece 40 as at 41, which connecting piece in its turn is hinged to a small bracket 42 on the inner side of the inner shutter 19. With both shutters closed, the arm 36 is housed within the chamber 35, but when the inner shutter 19 is open as best seen in Figure 3, the arm 36

swings outwardly through the opening 13 in the outer wall and, upon contacting with the inner side of the shutter 17, it compels the latter to rise outwardly and uncover the opening 13.

To assure that the shutters will tightly close the openings, I provide one or more tension springs 45 which have their ends attached to the shutters 17 and 19. In some cases it might be preferable to supply individual springs for each of the shutters, which springs in that case would have their inner ends secured to some suitable staple in the chamber 35.

In Figures 1 and 2 is shown a screen 46 for keeping flies and other insects out of the room. This screen covers the entire opening in the inner wall 16 and may also be supplied for the opening in the outer wall thereof, not here shown in the drawings. Around the shank of the connecting piece 40, a rubber packing 47 is provided in order to leave no access for insects from the outside.

The operation of the device is as follows:

To open the shutters from the closed position illustrated in Figures 1 and 2, it is only necessary to lift the handle 32 out of its engagement in the bracket 34 and pull thereon so that the guide rod 29, together with the connecting link 27, is drawn downward, thereby swinging the shutter 19, through the intermediary of the bell crank 22 and the transverse arm 25, downwardly. Simultaneously the connecting piece 40 actuates the swinging arm 36, which, through its engagement with the face of the shutter 17, will swing the latter outward. The advantage of having the shutter 17 hinged at its upper edge will now be understood, as snow or rain from the outside will be prevented from entering through the chamber 35 past the shutter 19 into the room. It will also be readily understood that, if the temperature in the room is greater than on the outside, an air current, carrying with it all the moisture, will pass through the inner opening 14 to chamber 35 and outer opening 13 into the outer atmosphere, thereby removing all steam or moisture in the room and preventing its condensation.

Having thus described the invention what is claimed as new is:

1. A ventilator comprising a box-shaped frame having a transverse passage opening at opposite sides of the frame, a shutter on each side of the frame covering said openings, said shutters each having hinged connection with said frame along diagonally opposite edges of said openings respectively, means for swinging one of said shutters, and a two-armed lever mounted in the frame to swing in a plane at right angles to the plane in which said first shutter swings, said two-armed lever having linked connection with the first shutter and loose abutment connection with the other of said shutters.

2. A ventilator comprising a box-shaped frame having a transverse passage opening at opposite sides of the frame, a shutter on each side of the frame covering said openings, said shutters each having hinged connection with said frame along diagonally opposite edges of said openings respectively, a two-armed lever fulcrumed in said frame with its axis at right angles to said opposite edges of the openings, one arm of said lever having hinged connection with said first shutter, the other arm of the lever abutting against the other of said shutters to swing the latter when actuated by said first shutter.

3. A ventilator comprising a box-shaped frame, the inner and outer walls of said frame being each provided with a longitudinal opening, a shutter hinged along the lower edge of the opening in said inner wall, a second shutter hinged along the upper edge of the opening in said other wall. a two-armed lever fulcrumed in said frame around a vertical axis, one of the arms of said lever having hinged connection with said first shutter and the other arm of said two-armed lever having substantially horizontal abutting engagement with said other shutter, and means for manipulating one of said shutters to simultaneously operate the other of the shutters through the intermediary of said two-armed lever.

In testimony whereof I affix my signature.

GEORGE HENRY MILLER. [L. S.]