D. E. SHRAUGER.

VENTILATION WINDOW HEAD.

APPLICATION FILED NOV. 11, 1916.

1,236,013. Patented Aug. 7, 1917

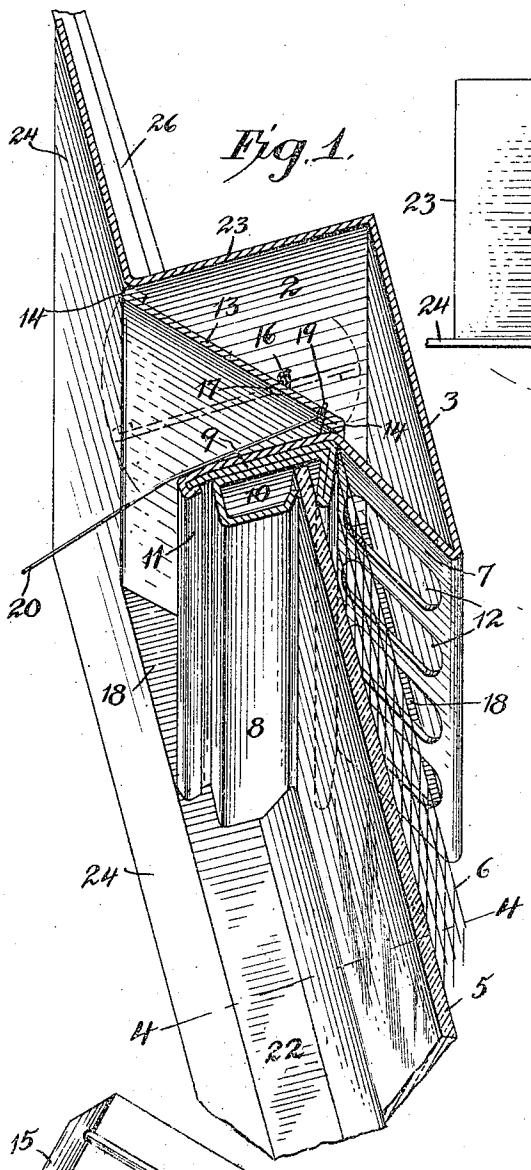


Fig. 1.

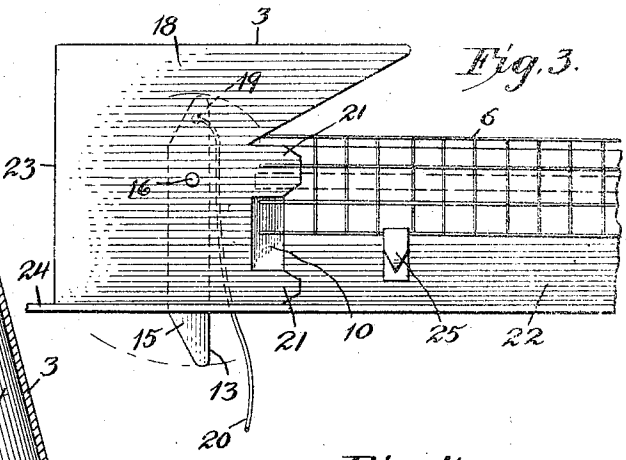


Fig. 3.

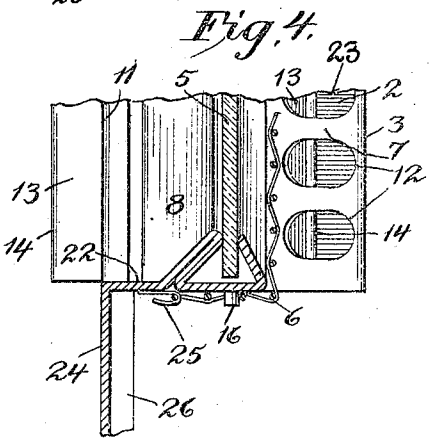


Fig. 4.

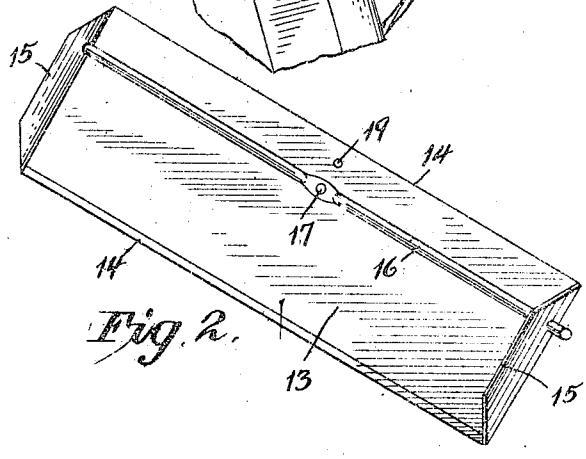


Fig. 2.

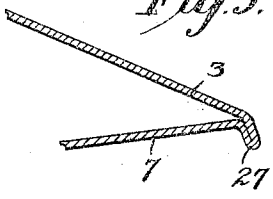


Fig. 5.

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UNITED STATES PATENT OFFICE.

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VENTILATION WINDOW-HEAD.

1,236,013. Specification of Letters Patent. Patented Aug. 7, 1917.

Application filed November 11, 1916. Serial No. 130,733.

To all whom it may concern:

Be it known that I, DARIUS E. SHRAUGER, a citizen of the United States of America, residing at Atlantic, in the county of Cass and State of Iowa, have invented certain new and useful Improvements in Ventilation Window-Heads, of which the following is a specification.

My invention relates to a ventilation device conveniently applied at the top of roof or wall windows in which the lighting panes are set fixed in the frames. However, the contrivance is applicable to any exterior window or door, forming a finishing hood or cornice thereon, and it may be placed alone in any roof or vertical wall. Further objects of my improvement are, first, to provide a sheet-metal ventilation head conveniently supplemental to a line of sheet-metal windows now being manufactured and marketed; second, to construct such an air inlet or outlet, that is storm proof whether opened or closed; third, to provide a closure that will normally stand open, with facilities to automatically and manually adjust the amount of opening and to releasably set the closure as desired; and, fourth, to facilitate the depletion of the force of and dissipate the inward currents of air, to avoid cold drafts from the ventilating head. All of which objects are attained by the structure and mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective and vertically-sectional view of a fragment of a steep-roof window having such a ventilation head; Fig. 2, a perspective view, at reduced scale, of the whole closure or damper removed from the head; Fig. 3, a side elevation of the top or head portion of such a window laid down horizontally; Fig. 4, a cross-section through the window jamb, looking toward the head, taken on the broken line 4—4, in Fig. 1; and Fig. 5, is a detail cross-section, showing an added integral drip made on the lower edge of the face wall of the head, for windows set in flat roofs. Similar numerals refer to similar parts throughout the several views.

A chamber 2, is disposed lengthwise of the head of the window; it has sectional capacity much larger than the aggregate of cross-sectional area of its external air passages 12; and it is inclosed by sheet metal walls as follows: The type of sheet-metal window shown, has a marginal flange or casing 24 clear around, adapted to be laid under the roof covering 26, so that the jambs 22, in this case, stand upward and outward from the outer face of the roof. The top wall 23 of the chamber has such a flange 24 coincident with and connected to that of the window frame; and this top wall is of greater width than the jambs 22, to effect the greater outward projection of the head and for other purposes hereinafter explained. An adjacent portion of this metal sheet is bent downwardly to form the face wall 3 of the chamber and head. The face wall stands in a plane parallel with the pane of glass 5 of the window and its wire cloth guard 6, which it overlaps downwardly and from which it is spaced outwardly flatwise. An outwardly and downwardly inclined perforate planceer plate 7, having the openings 12, for the passage of air, has its outer lower edge connected to the lower edge of the face wall 3; and for slopes of roof so nearly level as to change the inclination of this planceer the drip 27 is added at the junction of the face wall and this planceer. An opposite inner upper edge portion 9 is bent inwardly to overlap the drainage head 8 which forms the through gutter 10 of the regular glazed frame top, as shown in Figs. 1 and 3; the inner terminal edge 11 of this sheet 9 is bent closed around the inner edge of the top plate of the regular window head, to make a complete and finished connection, as shown.

The end walls 18 and 18 are shaped, as best shown in Fig. 3, to perfectly close the lateral ends of the chamber by suitable tight jointing at their angular connections with the other walls. The lower edges of these ends are shaped with the projecting tabs or ears 21 and 21, to overlap on the outsides of the jambs 22, to which they are suitably fastened to further secure the chamber structure on the top of the window frame.

The body-plate 13 of the closure or damper is made from a single sheet of metal. The edges 14 and 14 are doubled upon themselves for smoothness and strength and the ends of the plate are stiffened by bending a portion of each to form the upstanding flanges 15 and 15. The body is further stiffened by the pivoting-rod 16 disposed longitudinally on top of the plate, fastened thereon by the central bolt 17 and the ends of the rod are disposed through the end flanges 15. The projecting ends of this

pivot-rod are disposed in perforations through the end walls of the head and turn therein to pivot the closure damper which is disposed full length of the chamber. The pivot-rod is disposed off of the longitudinal center of the damper plate, nearest to its outer edge, so that the inner edge or major flap normally falls to open the duct and inner mouth of the chamber. In the central perforation 19, at the outer edge of the plate, an end of the operating line 20 is attached. By a pull on this line the damper is opened to any degree desired and so retained by making the free end of the line releasably fast to any stationary object by any suitable means.

Drawn close, as shown in Fig. 1, for windows set in vertical walls, or for roofs of ordinary pitch, the damper is inclined outwardly; its outer edge or major flap overlapping the inner edge of the perforate planceer plate 7, to render the head absolutely storm proof. At any open position, between closed and that indicated by the broken lines in Fig. 1, it will be observed that the damper divides the inner mouth of the chamber into upper and lower openings or air passages of which the upper is always the largest. If by further slacking the line, the damper is let to fall beyond the position indicated by the broken lines, where it is parallel with the lower wall or floor 9 of the chamber, then the inner major part of the damper plate progressively closes only the lower opening; finally the major part of the plate strikes the closed edge 11 on the regular window head, thus closing the lower portion of the duct or opening entirely; in which case the only open passage is over the damper, around through the upper part of the chamber. Obviously, when the major flap is swung up from the lower lip, either by the operating line or by the pressure of an entering air current, the minor flap acts to decrease the size of that part of the duct leading over the damper, until the damper has attained the position indicated by the broken lines.

The chamber serves either as an inlet or as an outlet air duct, according to conditions; or with the damper properly adjusted, under some conditions it becomes both at the same time: As an inlet duct the chamber increases in capacity from the air passages 12 to the discharging mouth which opens into the room; this is true, if the damper is opened to the position indicated by the broken lines in Fig. 1, or when released to fall clear down onto the bottom 11 of the mouth. Passing through this space of inwardly-increasing size, an entering current of air is allowed to expand and its forward force becomes dissipated before it is discharged into the room. The damper, properly adjusted, according to the strength of the air current, splits and baffles the air current, assisting to retard and dissipate its inward force. If the damper is dropped clear down against the lower lip 11 of the mouth, giving only a single discharge opening, but a longer route, it remains in this position, unless the inwardly moving current becomes too strong; a very strong inwardly-moving current in the chamber will automatically raise the wider inner part of the damper and thus relieve the pressure by escape through the added lower portion of the inlet. By fastening the operating line so that the inner edge of the damper rests close to but does not touch the lower lip of the mouth, then the damper will automatically and noiselessly adjust itself to variable strong inwardly-moving currents of air caused by turbulent winds; thereby evading a draft-producing drive through a too small restricted escape opening. As the space between the inclined perforate inlet plate 7 and the pane of glass is left open at the ends, the sides of the window frame, hard winds rarely act directly into the air passages 12. For barns or other outbuildings, where the noise is not objectionable, the damper is simply fully released for ventilation, or closed by the line when desired. If conditions are such as to afford a plenum of air in the room, opening the damper to any desired position will allow a free outward escape. When the pressure outside and inside are not far from being equal, that is balanced, opening the damper a small distance allows an outflow of warm air over the damper and an inflow of fresh cooler air through the lower opening.

If the damper is open any distance, there will be air movement through the chamber, either passing in or out or, in both directions. The operator stationed inside immediately under the mouth of the chamber, with the released line in hand may set the damper at such position as gives the desired result; it being easy at this station for the operator to judge of the effect of the different adjustments.

I claim:

1. A ventilation head, comprising an external air inlet, an internal mouth of larger capacity than said inlet, an interposed communicable air duct of increased capacity from said inlet toward said mouth, a plate damper mounted eccentrically and axially-horizontal across said duct with its major flap disposed inwardly through said mouth and adapted to fall to the lower lip thereof to close only a lower part of said mouth and duct and adapted to be raised from said lower lip by strong inwardly passing currents of air, to open the lower part of the mouth and duct, while the minor flap is simultaneously swung to decrease the area of

cross-section of that part of the duct carrying a portion of the air current over the damper, and whereby the entering air current is baffled and split into upper and lower divisions and the capacity of the duct is thus adjusted to accord with the strength of the entering current.

2. A ventilation head, comprising an external air inlet, an internal air-discharging mouth of capacity larger than said inlet, an air duct leading from said inlet with enlarged capacity toward said discharging mouth, a damper eccentrically pivoted in said duct to fall and close only a portion thereof, and disposed to be reversely turned to completely close said duct.

3. A ventilation head, comprising an external air opening, an internal mouth larger than said opening, an interposed connecting duct of capacity increased from said opening toward said mouth, a plate damper having an eccentric horizontal axis mounted across said duct to dispose the major flap of the damper inwardly through said mouth to adapt it to swing against either the lower or upper lip thereof, and a downwardly disposed operating line attached to the outer or minor flap of the damper, to draw it down onto the bottom of the duct to simultaneously swing the major flap up against the upper lip of the mouth to close the head, to set the damper at an intermediate position in its range of movement and thus divide the head and mouth into upper and lower ducts with separate inner openings adapted to carry air currents in either or opposite directions, and to limit the descent of said major flap to normally stand clear of said lower lip and inclined to partially close said lower duct, where it is adapted to be swung by an entering current of air to more widely open said duct.

4. A ventilation head, comprising a floor imposed on a window head, a top wall of greater outstanding width than said floor and spaced above to inclose an air-duct chamber and form an inwardly opening mouth therefrom, in combination with an outside face wall extended downwardly from the top wall to below the floor and spaced away from the outer edge thereof, a perforate external air inlet plate inclined downwardly and outwardly from the outer edge of said floor to the lower edge of said face wall, end walls shaped and fastened to close the lateral ends of said chamber and having downwardly-disposed extensions to overlap and fasten to the jambs of the subjacent window.

5. A ventilation head, comprising a rectangular floor, a roof or top wall of greater outstanding width than the floor, the top wall and floor spaced apart to accommodate an intervening air duct chamber and form an inwardly-opening mouth between their inner edges, and suitable end walls to the chamber, in combination with an outside face wall extending downwardly from the top wall to below the floor and spaced from the outer edge thereof, a perforate external air-inlet plate inclined upwardly and inwardly from the lower edge of the face wall to the outer edge of said floor, and a damper plate pivotally disposed in the chamber to close its inner edge against the top of said mouth and its outer edge onto the inner upper edge of said perforate inlet plate.

In testimony whereof I have affixed my signature.

DARIUS E. SHRAUGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."