Sept. 13, 1932. C. H. HUCKE 1,876,942

OPERATING MEANS FOR VENTILATING SASHES

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FIG. 1

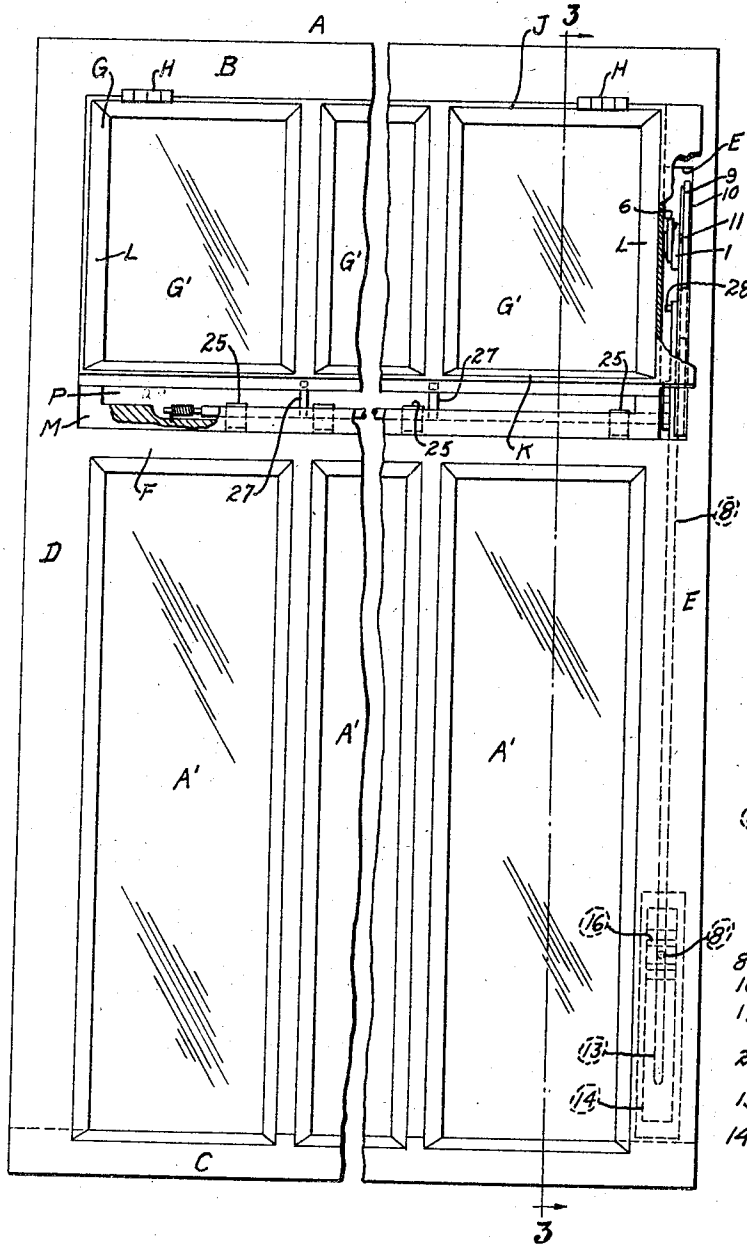
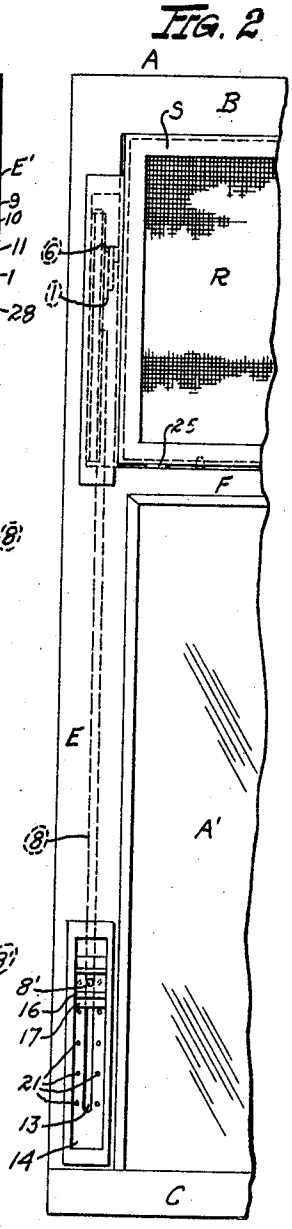


FIG. 2



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FIG. 3

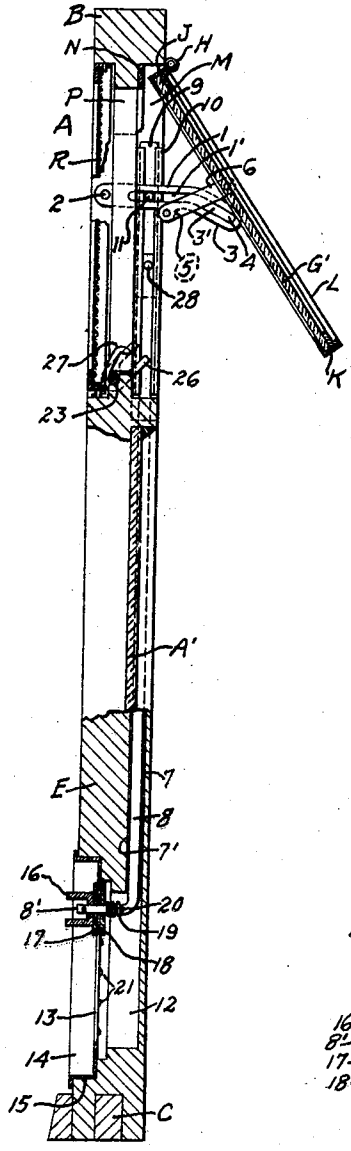


FIG. 4

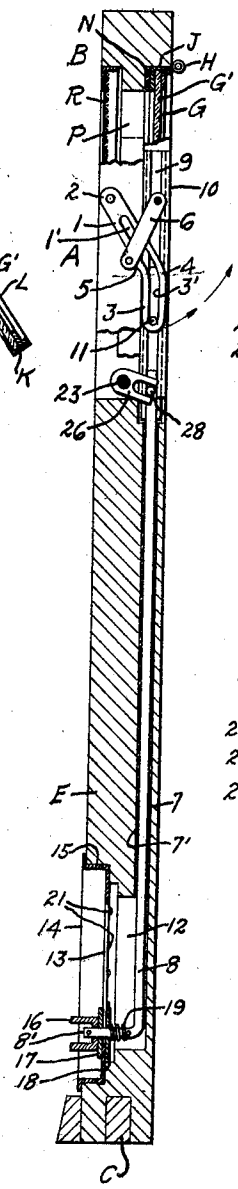


FIG. 5

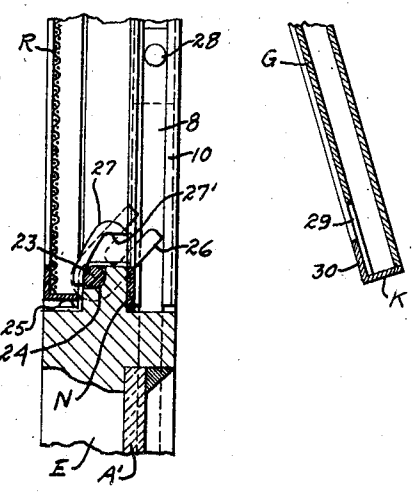


FIG. 6

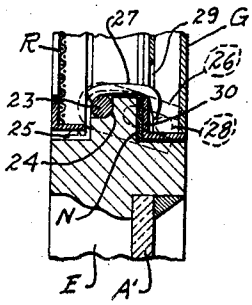
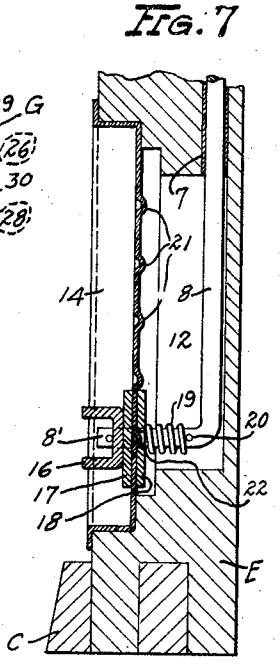


FIG. 7



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UNITED STATES PATENT OFFICE

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OPERATING MEANS FOR VENTILATING SASHES

Application filed March 23, 1929. Serial No. 349,339.

This invention relates generally to ventilating sashes of the type comprising an adjustable closure element incorporated as an operative part of a standard window sash, either of the sliding, swinging, or pivoted variety, and more specifically to operating means for imparting movement to the adjustable closure element of such a ventilating sash, the predominant object of the invention being to provide operating means adapted for use in association with a ventilating sash of the type referred to, which is extremely simple in construction and inexpensive to manufacture.

Another important object of the invention is to provide operating means for the closure element of a ventilator sash which is so constructed that a single operation of the operating element of the operating means will, when the ventilating sash is in an open position, move same to a closed position, lock the ventilating sash, and seal same so as to make the joints at the marginal edges thereof weatherproof. Also, when the ventilating sash is in a closed position, a single operation of the operating element of the operating means thereof will unseal the ventilating sash, unlock same, and move it to an open position.

Fig. 1 is a fragmentary elevation of a ventilating sash provided with operating means constructed in accordance with this invention, as said sash will appear when viewed from without a room with which the sash is associated.

Fig. 2 is an elevation of a fragment of the sash shown in Fig. 1 as same will appear when viewed from within a room with which the sash is associated.

Fig. 3 is a vertical section on line 3—3 of Fig. 1, showing the adjustable closure element of the ventilating sash in an open position.

Fig. 4 is a view similar to Fig. 3 but showing the closure element in a closed position.

Fig. 5 is an enlarged fragmentary vertical section showing the means for sealing the closure element to render same weatherproof.

Fig. 6 is a view of the sealing means illustrated in Fig. 5 but showing same as it will appear when the closure element is being sealed thereby.

Fig. 7 is an enlarged fragmentary vertical section showing the operating element of my improved operating means.

In the drawings, A designates a standard window sash of the sliding variety, which is equipped with an upper rail B, a lower rail C, and stiles D and E. F designates a dividing rail which extends horizontally of the sash A at a point spaced downwardly from the upper rail B.

G designates the adjustable closure element or ventilator sash of the sash A, said adjustable closure element G being hinged at its upper edge to the sash A by hinges H, and being comprised of an upper rail J, a lower rail K, and stiles L. The upper rail B, the stiles D and E, and the dividing bar F of the sash A are cut away to provide a rectangular recess M in which the adjustable closure element is seated when same is in a closed position, and interposed between said closure element when same is in a closed position and the vertical walls of said rectangular recess is a gasket N of suitable weatherstripping material, which serves to insure a weathertight joint between the elements referred to.

The closure element G is arranged at a rectangular opening P and is adjustable on its hinges so that the same may be moved to position to control passage of air through said opening, and to prevent passage through said opening of flies and other insects I preferably employ a screen R. The screen R includes a rectangular frame S which is seated in a suitable recess adjacent to the rectangular opening P, so that no portion of the screen extends outwardly beyond the adjacent outer face of the sash A, and said frame is removably secured in place in said recess in any suitable manner.

The sash A is, of course, provided with the usual pane, or panes, of glass A′ secured in place in the ordinary manner, and the adjustable closure element G is likewise provided with one or more panes of glass G′.

Referring now to my improved means for imparting movement to the adjustable closure element G with respect to the sash A, 1 desig-

nates an arm pivoted at one of its ends to the stile E in the manner illustrated at the point designated by the reference character 2 in Figs. 3 and 4 of the drawings. This arm 1, at the end remote from the pivotally attached end thereof, is provided with a portion 3 which is arranged at an angle with respect to the remainder of said arm, and an enclosed slot or guideway 4 is formed in said arm which extends from a point close to the outer end of the angularly arranged portion 3 to a point spaced inwardly a slight distance from the pivot at the point 2. The shape of the slot or guideway 4 conforms to that of the arm 1; that is to say, said slot or guideway comprises a portion 1′ which extends longitudinally of the main portion of the arm 1, and an angularly arranged portion 3′ which is a continuation of the portion 1′ and extends longitudinally of the angular portion 3 of said arm 1. At its lower edge and at a point approximately midway of the length thereof the arm 1 is provided with a downwardly extended ear 5, and 6 designates a link which is pivotally attached at one of its ends to the ear 5 and at its opposite end to the closure element G.

Arranged for longitudinal movement within a tubular element 7 arranged in a vertically disposed opening 7′ in the stile E (Figs. 3 and 4) is an operating rod 8, said rod being secured at its upper end by a suitable means to a flat bar 9 which is mounted for vertical movement in a guideway 10. The guideway 10 is secured against a side wall of a recess E′ (Figs. 1 and 2) located adjacent to the recess M, and a pin 11 carried by the flat bar 9 extends outwardly therefrom and projects into and through the slot or guideway 4 formed in the arm 1.

At its lower end the operating rod 8 is provided with a portion 8′ which is bent at an aproximate right angle to the main body portion of the rod, and this bent portion is extended outwardly through an elongated opening 12 formed in the stile E of the sash A and through an elongated slot 13 formed in the inner wall of a depressed plate 14, which is secured to the stile E and is seated in a recess 15 formed in said stile E adjacent to the elongated opening 12 (Figs. 3 and 4). Mounted on the bent portion 8′ of the operating rod 8 at the outer end thereof is an operating element 16, the inner face of said operating element being spaced slightly from the outer face of the depressed and slotted inner wall of the plate 14, and a plate 17 being interposed between said operating element and said outer face of said depressed and slotted inner wall of said plate 14. Loosely mounted on the bent portion 8′ of the operating rod 8 and arranged in contact with the face of the inner depressed wall of the plate 14 opposite to that with which the plate 17 contacts is a second plate 18. This latter plate is urged toward the depressed inner wall of the plate 14 by a coil spring 19, the opposite ends of which contact respectively with the plate 18 and a pin 20 carried by the operating rod portion 8′. The inner depressed wall of the plate 14 is provided with one or more vertical rows of inwardly projected nubs 21, and the plate 18 is provided with one or more apertures 22 alined vertically with the row or rows of nubs 21. By referring to Fig. 7 it will be noted that the operative element is substantially flush with the adjacent face of the sash A.

In view of the arrangement just described it is plain that when the operating element 16 is grasped and moved vertically to impart like movement to the operating rod 8, the plate 18 will yield because of the presence of the coil spring 19, so that said plate may pass over the nubs 21. It is likewise obvious that as the aperture or apertures 22 in the plate 18 register with the nubs 21 during such movement of the operating rod, the spaced nubs will be successively projected into said apertures. It follows, therefore, that the operating rod 8 may not be accidentally moved vertically to any substantial degree, for if such movement were initiated it would continue only until the aperture or apertures in the plate 18 registered with one or more of the nubs, when such nubs would extend into the aperture or apertures and arrest the movement of the operating rod.

Extended longitudinally of the dividing rail F of the sash A is a rock shaft 23, said rock shaft being arranged within a recess 24 formed in said dividing rail and being rotatably maintained in position therein by suitable straps 25 (Figs. 5 and 6). At one end of the rock shaft 23 a bifurcated element 26 is rigidly fixed thereto, and spaced longitudinally of the rock shaft are positioned sealing members 27 which are rigidly fixed to the rock shaft and move therewith. 28 designates a pin which extends outwardly from the flat bar 10 already referred to, said pin being adapted, on downward movement of the bar 10 in response to movement of the operating rod 8, to pass between the spaced legs of the bifurcated element 26 in a manner to engage said legs and impart downward and outward movement to the outer portion of the bifurcated element, whereby rocking motion will be imparted to the rock shaft 23. The closure element G is provided with openings 29 (Fig. 5) into which the nose portions of the sealing members 27 pass when the closure element is moved to a closed position, the inclined faces 27′ of the nose portions of said sealing members contacting with and passing behind the upwardly extended leg of the angle member 30 at the bottom of the closure element, whereby said closure element will be drawn into very close contact with the gasket arranged about the opening P in the sash A to

seal said sash and thus render same weatherproof. At the end of the rock shaft opposite from the end thereof at which the bifurcated element 26 is located, I provide a torsional spring 23′ which tends to rotate the rock shaft in the direction indicated by the arrow in Fig. 5.

When in the use of my improved ventilating sash it is desired to move the adjustable closure element from a closed to an open position, the operating element 16 will be grasped and moved upwardly. This, of course, will result in the operating rod 8 and flat bar 10 receiving like upwardly movement, and as a result thereof the pin 28 extending from said flat bar will move the bifurcated element 26 from the position in which it is shown in Fig. 4 to that in which it is shown in Fig. 5. In consequence of such movement of the bifurcated element, the rock shaft 23 will be rocked to cause the sealing members 27 to be raised from the position in which they are shown in Fig. 6 to that position in which said sealing members are shown in Fig. 5, in which latter position the closure element will be unsealed. On continuation of the upward movement of the operating rod 8 the pin 11 will contact with the wall 4ª of the slot or guideway 4, and because said pin is guided so that it travels in a true vertical path, the lower portion of the arm 1 will be cammed outwardly as designated by the arrows in Fig. 4, whereby the closure element G which is connected to said arm by the link 6 will be moved outwardly to the open position in which same is shown in Fig. 3.

When the closure element G is in an open position and it is desired to move same to a closed position, the operating rod 8 will be moved downwardly, thus causing the pin 11 to move against the face 4ᵇ of the slot or guideway 4 in a manner to cam the outer portion of the arm 1 downwardly and inwardly and thus move the closure element to a closed position. The final movement of the pin 11 takes place after the arm 1 reaches the position in which it is shown in Fig. 4, and said final movement comprises passage of the pin downwardly through the portion 3′ of the slot or passageway 4. During such passage of the pin 11 the pin 28 will pass between the legs of the bifurcated element 26, and will move said bifurcated element downwardly to the position in which it is shown in Fig. 4, whereby the sealing members will engage and seal the closure element G.

From the foregoing it is plain that during a single operation of the operating element 16 the closure element G is unsealed, unlocked, and raised, or lowered, locked, and sealed, depending on the direction of movement of said operating element, for it is plain that when the pin 11 is located in the portion 3′ of the slot or guideway 4, the closure element may not be moved on its hinges to an open position as the presence of the pin in said portion 3′ of the slot or guideway will prevent the arm 1 being swung on its pivot 2.

By referring to Fig. 1 it will be noted that the arm 1 and the adjacent elements associated therewith are arranged in the recess E′ formed in the stile E, and also that said closure element G is provided with a flange G′ which, when the closure element is in a closed position, covers the recess E′ as shown in Fig. 1. In view of this arrangement, it is plain that when the closure element G is in a closed position, as shown in Fig. 4, the arm 1 and link 6 will be folded together, and will be positioned within the recess E′, so that said elements are entirely out of the weather, hence ice and snow may not accumulate on the arm and link referred to so as to interfere with the ready operation thereof. Also, because I employ the tubular member 7 within which the rod 8 operates, close contact may be obtained between said tubular member and rod, hence passage of air from the outside of the sash A longitudinally of the rod 8 is prevented.

Due to the fact that the outer face of the operating element 16 is substantially flush with the adjacent face of the sash A, said sash may slide relative to an associated sash without said operating element striking said associated sash.

I claim:

1. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising a member pivoted to said sash, means for connecting said pivoted member to said closure element, and a manually operated member arranged in cooperative engagement with said pivoted member, said pivoted member having a portion cooperative with said manually operated member to provide locking means for the closure element and a portion cooperative with said manually operated member to impart movement to said closure element to open or close same, substantially the entire operating device being located within the depth of said window sash when the closure element is in its closed position.

2. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising an arm pivoted at one of its ends at a fixed point to said window sash, said arm being provided with a guideway, an operating member supported by and mounted for movement with respect to said window sash, an element associated with said operating member and extended into said guideway, and means pivoted to said closure element for connecting said arm to said closure element, substantially the entire operating device being located within the depth of said

window sash when the closure element is in its closed position.

3. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising an angular arm pivoted at one of its ends at a fixed point to said window sash, said arm being provided with a guideway, an operating member supported by and mounted for movement with respect to said window sash, an element associated with said operating member and extended into said guideway, and means pivoted to said closure element for connecting said arm to said closure element, substantially the entire operating device being located within the depth of said window sash when the closure element is in its closed position.

4. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising an angular arm pivoted at one of its ends at a fixed point to said window sash, said arm being provided with an angular guideway, an operating member supported by and mounted for movement with respect to said window sash, an element associated with said operating member and extended into said guideway, and means pivoted to said closure element for connecting said arm to said closure member, substantially the entire operating device being located within the depth of said window sash when the closure element is in its closed position.

5. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising an angular arm pivoted at one of its ends at a fixed point to said window sash, said arm being provided with an angular guideway, an operating member supported by and mounted for movement with respect to said window sash, an element associated with said operating member and extended into said guideway, means pivoted to said closure element for connecting said arm to said closure element, and rockable sealing means adapted to engage said closure element and draw same into close contact with adjacent portions of the window sash, substantially the entire operating device being located within the depth of said window sash when the closure element is in its closed position.

6. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising an angular arm pivoted at one of its ends at a fixed point to said window sash, said arm being provided with an angular guideway, an operating member supported by and mounted for movement with respect to said window sash, an element associated with said operating member and extended into said guideway, means pivoted to said closure element for connecting said arm to said closure element, and rockable sealing means provided with an inclined face adapted to engage said closure element and draw same into close contact with adjacent portions of the window sash, substantially the entire operating device being located within the depth of said window sash when the closure element is in its closed position.

7. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising an angular arm pivoted at one of its ends at a fixed point to said window sash, said arm being provided with an angular guideway, an operating member supported by and mounted for movement with respect to said window sash, an element associated with said operating member and extended into said guideway, means pivoted to said closure element for connecting said arm to said closure member, and sealing means for sealing the closure element, said sealing means including a rock shaft, a member mounted on said rock shaft for engaging said closure element, and means whereby motion is imparted to said rock shaft by said operating member, substantially the entire operating device being located within the depth of said window sash when the closure element is in its closed position.

8. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising an angular arm pivoted at one of its ends to said window sash, said arm being provided with an angular guideway, an operating member supported by and mounted for movement with respect to said window sash, an element associated with said operating member and extended into said guideway, means connecting said arm to said closure member, and sealing means for sealing the closure element, said sealing means including a rock shaft, a member mounted on said rock shaft for engaging said closure element, a bifurcated element associated with said rock shaft, and an element associated with said operating member adapted to cooperate with said bifurcated element to impart movement to said rock shaft, substantially the entire operating device being located within the depth of said window sash when the closure element is in its closed position.

9. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising an arm pivoted at one of its ends to said window sash, said arm being provided with a guideway, an operating member supported by and mounted for movement with respect to said window sash, an element associated with said operating member and extended into said guideway, means connecting said arm to said closure element,

and means for preventing accidental movement of said operating member, said means comprising a guiding member having projections formed thereon, and a spring pressed element provided with an aperture, said spring pressed element being movable with said operating member into registration with the various projections on said guiding member, substantially the entire operating device being located within the depth of said window sash when the closure element is in its closed position.

10. An operating device for a closure element mounted for movement with respect to a window sash by which same is supported, comprising a movable member, means for connecting said movable member to said closure element, and a manually operated member movable with respect to and in cooperative engagement with said movable member, said movable member having a portion cooperative with said manually operated member to provide locking means for the closure element and a portion continuous with the first mentioned portion cooperative with said manually operated member to impart movement to said closure element to open and close same, substantially the entire operating device being located within the depth of said window sash when said closure is in its closed position.

In testimony that I claim the foregoing I hereunto affix my signature.

CHARLES H. HUCKE.