Nov. 7, 1950 R. E. STURMAN 2,528,800

WINDOW

Filed Oct. 13, 1945 3 Sheets-Sheet 1

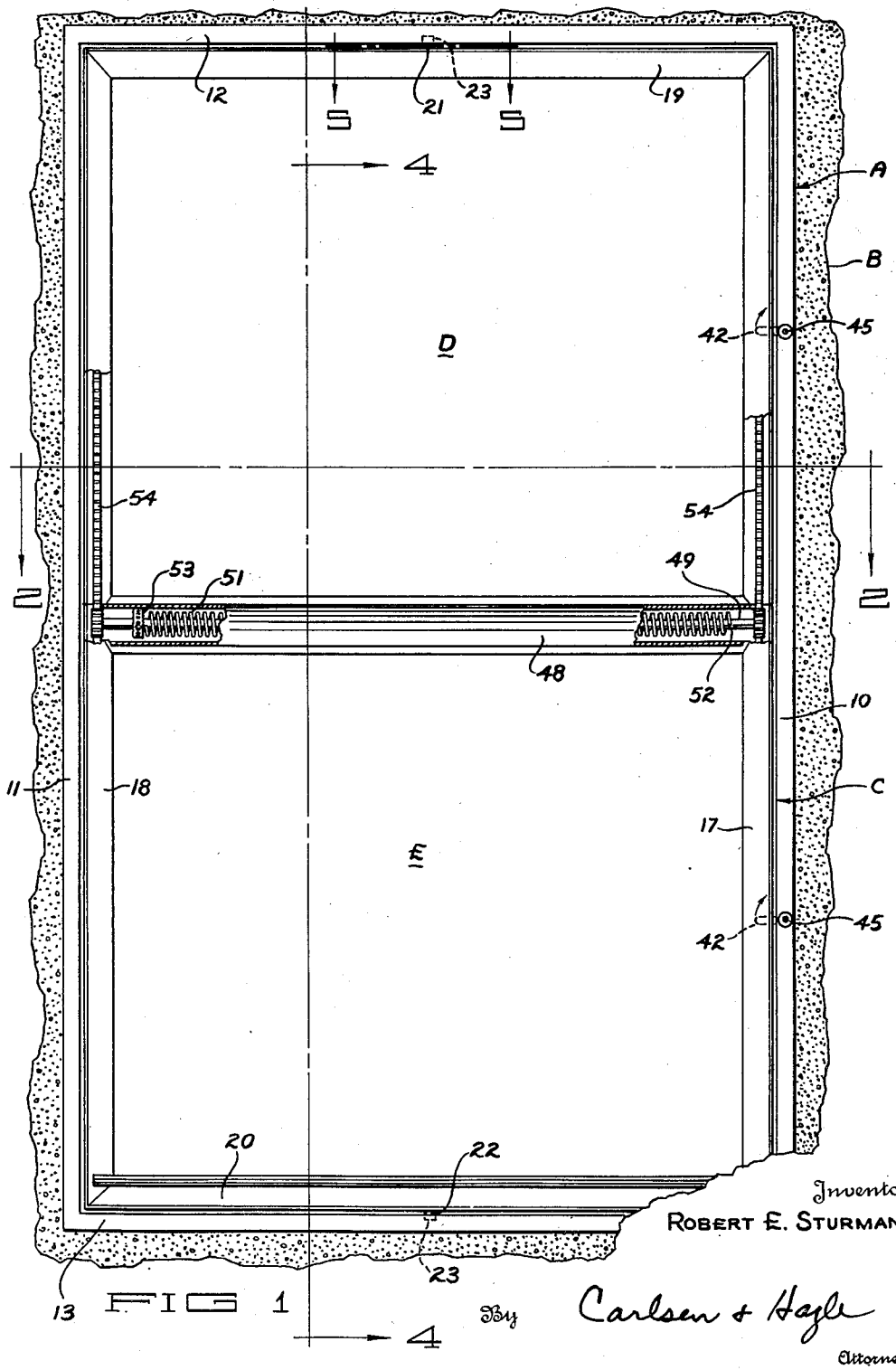


FIG 1

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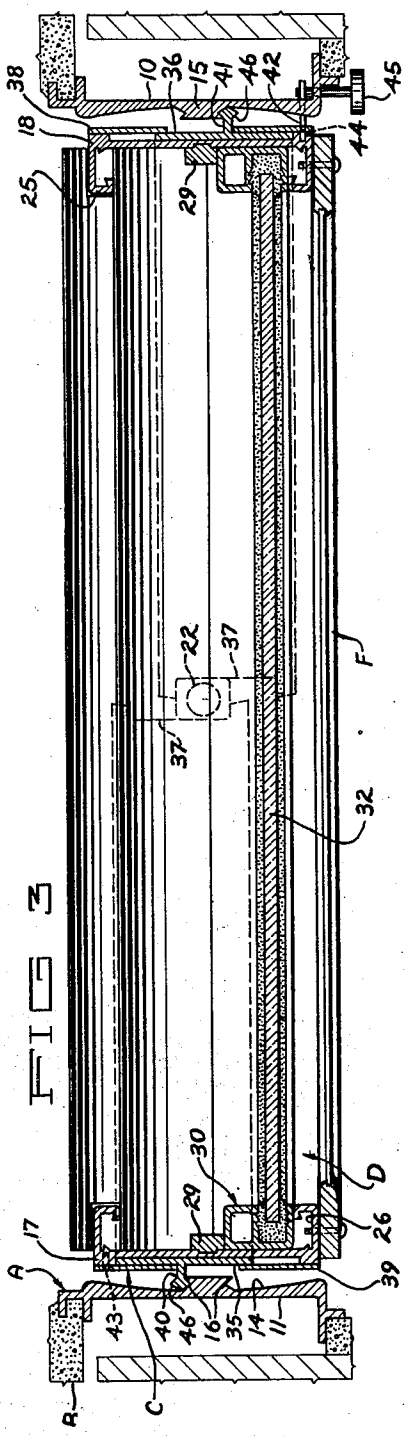


FIG 3

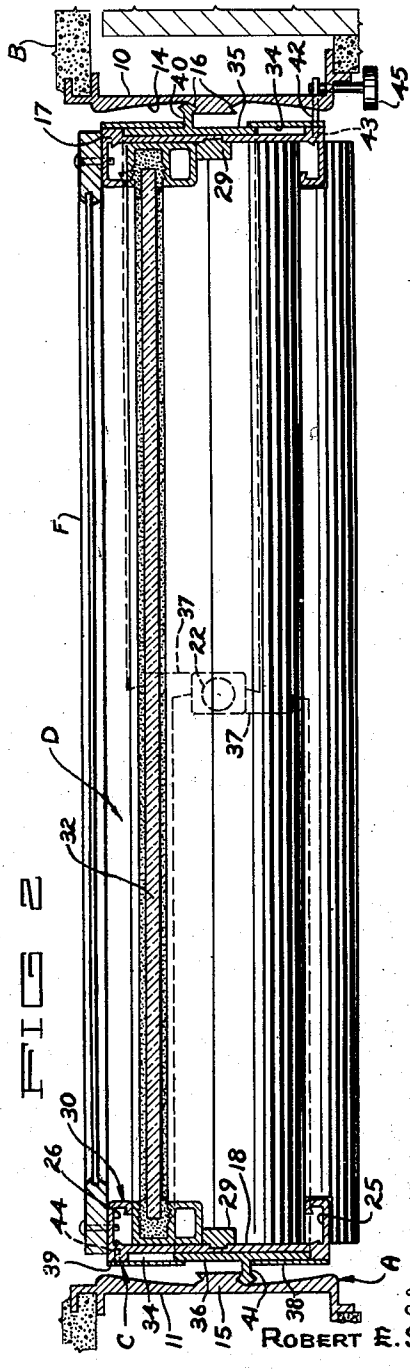


FIG 2

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WINDOW

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FIG 4

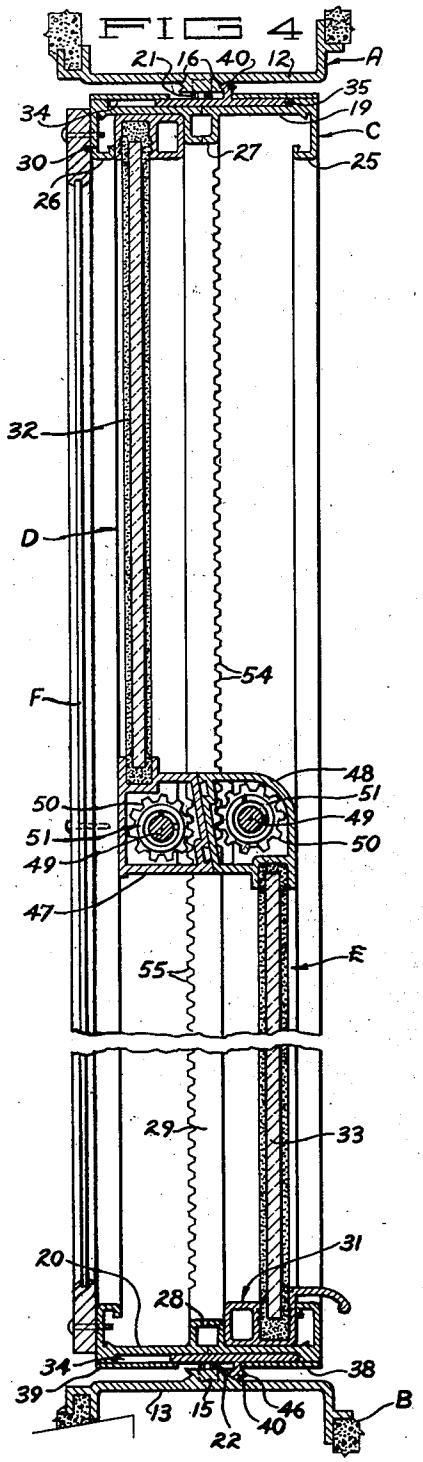


FIG 5

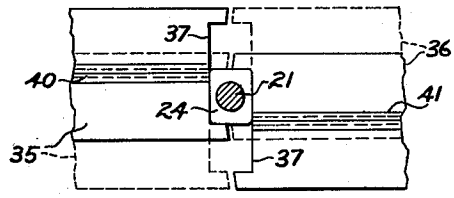
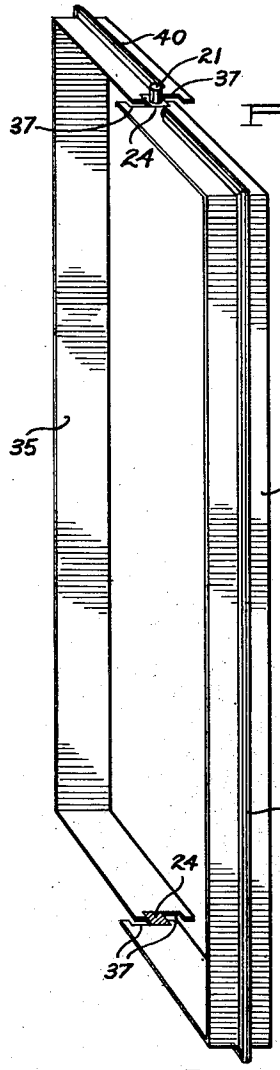


FIG 6



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Patented Nov. 7, 1950 2,528,800

UNITED STATES PATENT OFFICE

2,528,800

WINDOW

Robert E. Sturman, Minneapolis, Minn.

Application October 13, 1945, Serial No. 622,227

2 Claims. (Cl. 20—51)

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This invention relates generally to improvements in windows and more specifically to windows of the type having an inner swinging sash carrying frame pivotally supported in an outer, stationary main frame so that the inner frame may be turned as a convenience in washing outer surfaces of the sash from within the building, or for installing screens, storm sash and like operations.

The primary object of my invention is to provide a window of this character embodying improved sealing means for maintaining a weather tight seal around the inner frame and between inner and outer frames at all times. Another object is to provide a window construction wherein the inner frame may be completely closed within the outer frame and there locked in either of its two positions, so that the window cannot slam about in the wind while it is being washed or otherwise worked upon. Still another object is to provide a window construction of the foregoing nature in a simple, durable and comparatively inexpensive form.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings, in which

Fig. 1 is an inside elevation of a window constructed in accordance with my present invention.

Fig. 2 is an enlarged horizontal sectional view along the line 2—2 in Fig. 1, showing the inner or swinging frame in its normal position.

Fig. 3 is a similar view but with the inner frame swung about through one hundred and eighty degrees, disposing the outside of the frame in position for work from within the building.

Fig. 4 is an enlarged vertical section along the line 4—4 in Fig. 1, with a lower part of the window broken out.

Fig. 5 is a detail view along the line 5—5 in Fig. 1.

Fig. 6 is a perspective view of the sealing mechanism with associated pivot pins.

Referring now more particularly and by reference characters to the drawing, A designates generally the outer stationary window frame of my window, which frame is secured to and within an opening in the building wall B. Within said frame A is an inner swinging sash frame C and supported therein are the upper, outer sash D and the lower, inner sash E.

The main or outer frame A is rectangular or any suitable shape and size and comprises upright sides 10 and 11, a lintel 12 and a sill 13. As

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here shown this frame is formed of metal extrusions suitably shaped to fit the wall B and in accordance with my invention the sides 10 and 11 are arcuately concaved on their inner surfaces, and in the horizontal plane as indicated at 14 in Figs. 2 and 3 to provide clearance for the swinging sash frame C. Further in accordance with my invention, the frame A is provided with a sealing bead or rib 15 running vertically along the inner surfaces of the sides 10 and 11 and across the lower and upper surfaces, respectively, of the lintel 12 and sill 13. This bead 15 is located centrally with reference to the thickness or depth of the frame and its opposite inner and outer edges are beveled to form reentrant angular grooves 16.

The frame C is likewise formed of metal extrusions and, while smaller than the window frame in order to fit therein, also comprises upright sides or stiles 17 and 18, a header or top cross member 19 and a lower cross member 20. At the center, top and bottom of the frame C there are provided pivot pins 21 and 22 which extend respectively upwardly and downwardly therefrom. These pivot pins 21 and 22 are rotatably mounted in suitable sockets 23 provided in the underside of the lintel 12 and upper surface of the sill 13, and it will thus be seen that the sash frame C is supported for swinging movements about a central, upright axis within the frame A. As seen in Figs. 5 and 6 the pins 21 and 22 have square bases 24 which are secured to the frame C.

The frame C has flanges 25 and 26 around its inner and outer edges, and at top and bottom, in order to confine in place the upper and lower sashes D and E, and also at top and bottom the frame has centrally located and transversely extending ribs or dividing webs 27 and 28. Extending between the webs 27 and 28 are upright parting strips 29 on each side 17 and 18 of the frame C and these elements, along with the flanges 25 and 26 cooperate to form separate upright guideways for the sashes. The sashes D and E are, of course, arranged for relative upward and downward movements on these guideways and at this point it is sufficient to state that the sashes comprise, as here shown, frames 30 and 31, respectively, of metal extrusions, provided with suitable grooves in which the glass panes 32 and 33 are set.

Around the outside of the entire sash frame C, I provide a wide shallow channel indicated at 34 and in this channel I mount sliding sealing strips or bands 35 and 36 each of which is shaped to fit along one half, approximately, of the top

and bottom of the frame and its full height. The upper and lower ends of the strips **35** and **36** thus extend in opposite directions from each side of the pivot pins **21** and **22** and they are notched as indicated at **37** (Figs. 2, 3 and 6) to clear the bases **24** of the pins. The sealing strips are each narrower than the channels **34**, so that the strips may move inwardly and outwardly with respect to the building wall in these channels, and the strips are retained in place but allowed to so slide by retaining strips **38** and **39** which overlie the channels. Projecting from the center of the sealing strips **35** and **36**, and extending the full length thereof, are sealing beads or ribs **40** and **41** and these project upwardly, laterally and downwardly from the corresponding parts of the frame C in order to engage the ribs **15** around the inside of the frame A. The retaining strips **38** and **39**, which are welded, screwed or otherwise suitably secured to the frame C, are spaced apart to clear these beads **40** and **41** and allow the strips **35** and **36** to move inwardly and outwardly as described, without interference.

The parts are so fitted that, in the normal position of the window (Figs. 2 and 4) the sealing strip **35** at the one side of the window will be outwardly disposed in its channel **34**, and the bead **40** on this strip will engage the outer grooved edge of the sealing rib **16**. At the same time, the strip **36** at the opposite side of the window is oppositely positioned, inwardly in its channel **34**, and with its bead **41** in engagement with the inner grooved edge of the rib **15**. Thus it will be apparent that the sash frame C is locked against swinging movement in one direction only and by swinging it in the opposite direction, or counterclockwise as viewed in Fig. 2, the beads **40** and **41** may move away from the opposite sides of the ribs **15** and the frame may be swung through a complete half turn to the position of Fig. 3. At this point the bead **41** now engages and comes to rest against the inner grooved edge of the rib **15** and the strip **36** slides in the channel **34** a distance equal to the width of the rib **15** to compensate for the width between the grooves **16** and permit a full half turn of the window. In a similar manner the bead **40** now comes to rest against the outer grooved edge of the rib **16** at the opposite side of the window and the strip **35** slides outwardly in its channel **34** by the same amount and for the same purpose.

It will thus be apparent that the respective sealing strips **35** and **36** adjust themselves to the opposite sides of the ribs **15** and **16** and that the window in either of its positions is effectively sealed at the junction between its frames A and B. Of course, as the sash frame C reaches the position of Fig. 3 its outer side is now in position for work or washing from within the room or building. Thus a screen or storm sash, indicated in Figs. 2, 3, and 4 at F, is positioned for convenient removal and replacement. When the work is completed the frame C is returned to normal position by swinging it through a half turn in an opposite direction, or clockwise as viewed in the drawing, and back to the position of Fig. 2.

It will be noted that the frame C carrying the sash moves through a complete half turn and that the frame in either of its two positions is wholly within the window frame A. Thus the window cannot be caught by the wind and slammed about while being worked upon, and the weather is excluded at all times. I have indicated

also means for locking the window in each position and as here shown such means comprises upper and lower latches **42** oscillatably mounted at one side of the window frame A within the building and projecting into engagement with recesses **43** in one side of the frame C. By turning the latches **42**, however, they may clear the sash frame C allowing it to swing to its second position, and the latches may then engage recesses **44** in a diagonally opposite side of the frame C to hold it in this position also. For convenience the latches **42** are provided with knobs **45** for turning them and the upper and lower latches may be mechanically connected or ganged to operate simultaneously from a single knob, if desired.

To cooperate with the reentrantly angular grooves **16** the sealing beads **40** and **41** have their opposite edges beveled, as indicated at **46**, to tightly fit these grooves and so form a better seal.

The upper and lower sash frames **30** and **31** have meeting rails **47** and **48** which are hollow and in the transverse channels thus formed within the rails I provide spring counterbalancing means for the sashes. These counterbalancing means are similar to those shown in my prior patent No. 2,116,329 issued May 3, 1938 and since they are not claimed herein, will be only briefly described. Thus each comprises a shaft **49** which is journaled in the meeting rail through the hollow channel therein and carries a gear pinion **50** at each end. Coiled around the shaft **49**, inside the meeting rail, is a torsional coil spring **51** secured at one end at **52** to the shaft and secured at its other end to a collar **53** which is journaled on the shaft and made rigid to the meeting rail. The respective pinions **50** mesh with rack teeth **54** and **55** formed along opposite inner and outer edges of the parting strips **29** and the arrangement is such that the spring on the lower sash is put under increasing tension as the lower sash is lowered and the gears **50** roll along the upper rack teeth **54**. Likewise as the upper sash is lowered its gears **50** travel along the lower rack teeth **55** to turn the shaft **49** and tension the spring. The weight of the sashes is thus offset or counterbalanced by the springs, as more completely described in my patent, and the usual sash cords and weights are not necessary.

Installation of my window in present buildings may be readily made by simply securing the outer frame A in the old wooden or metal frame, after removing the old window and its stop and parting strips. In this case the flanges here shown on the frame A may be dispensed with, of course, in the interests of simplicity and compactness.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. In a window of the character described, a window frame, a sash frame arranged in said window frame and pivotally connected thereto whereby said sash frame may turn in the window frame to and between two positions approximately a half turn apart, a fixed sealing rib extending around the inside of one frame, and a sealing member on the other frame comprising two separate sections extending around the frame at opposite sides of the pivot connections

and offset oppositely in inward and outward directions with respect to said pivot connections for engaging opposite edges of the fixed sealing rib, and said sections being supported for opposite inward and outward movements to accommodate themselves to engagement with the fixed sealing rib in opposite directions as the sash frame is swung to its said two positions.

2. In a window of the character described, a window frame, a sash frame arranged in said window frame, pivot means connecting the sash frame to the window frame whereby said sash frame may turn in the window frame to and between two positions approximately a half turn apart, a fixed sealing rib extending around the inside of the window frame, and a sealing member on the sash frame comprising two separate sections extending around the sash frame at opposite sides of the pivot connections and offset oppositely in inward and outward directions with respect to said pivot connections for engaging opposite edges of the fixed sealing rib,

said sections being supported for opposite inward and outward movements to accommodate themselves to engagement with the fixed sealing rib in opposite directions as the sash frame is swung to its said two positions, the adjacent ends of the said sealing member sections being notched to clear the said pivot means.

ROBERT E. STURMAN.

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