

Jan. 19, 1965

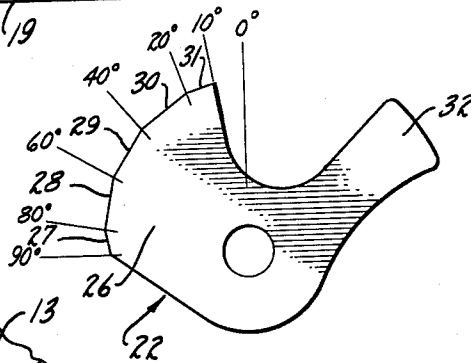
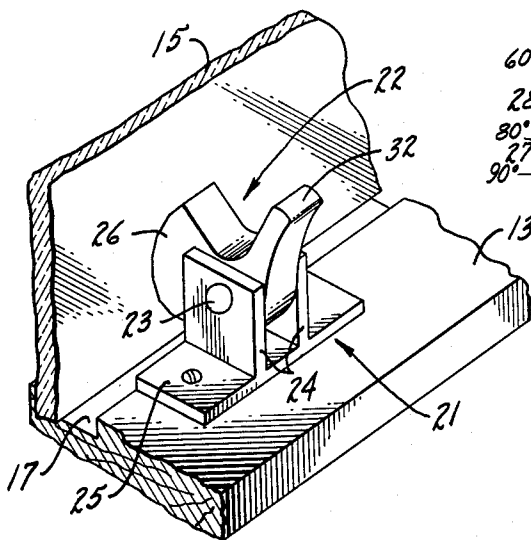
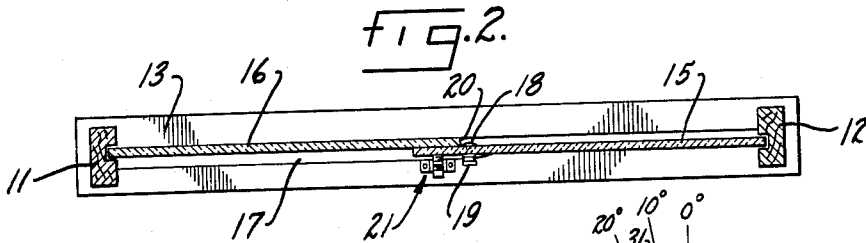
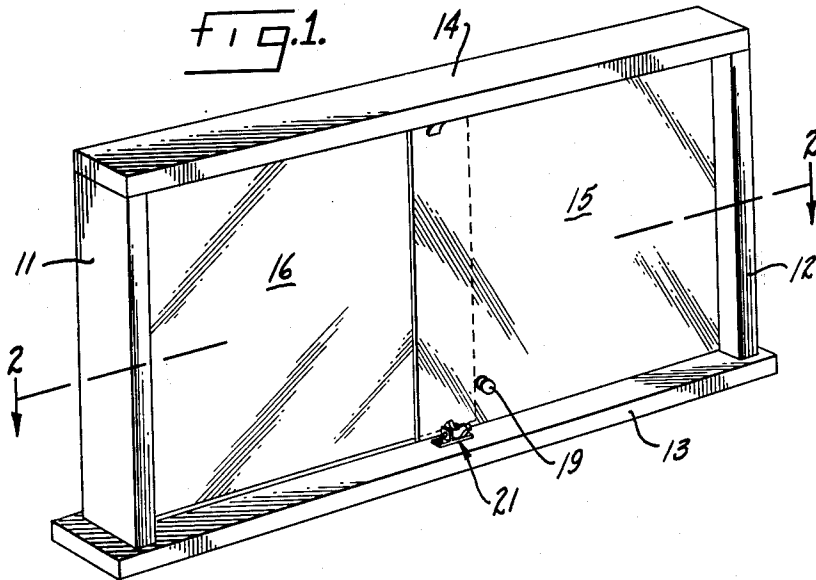
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3,166,347

LOCK FOR SLIDING WINDOWS

Filed Oct. 30, 1961

2 Sheets-Sheet 1



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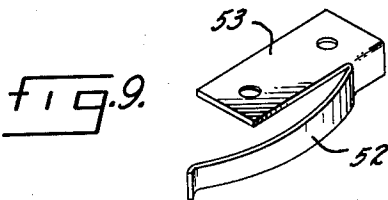
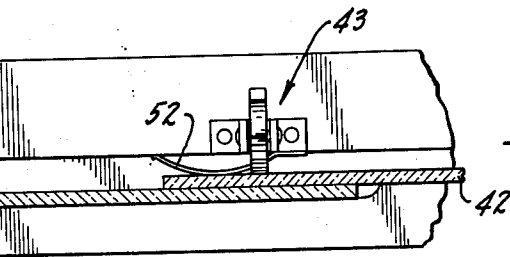
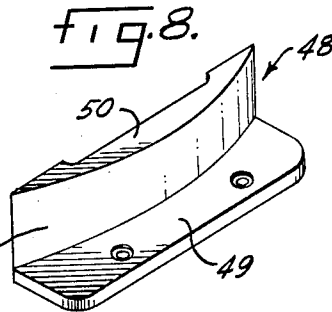
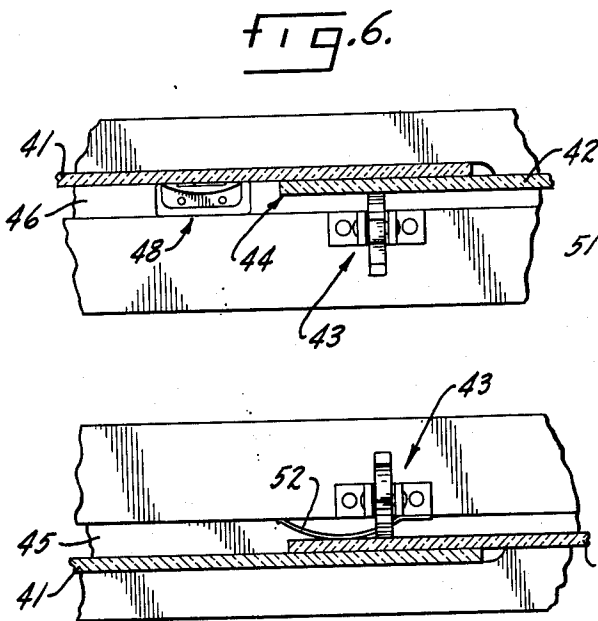
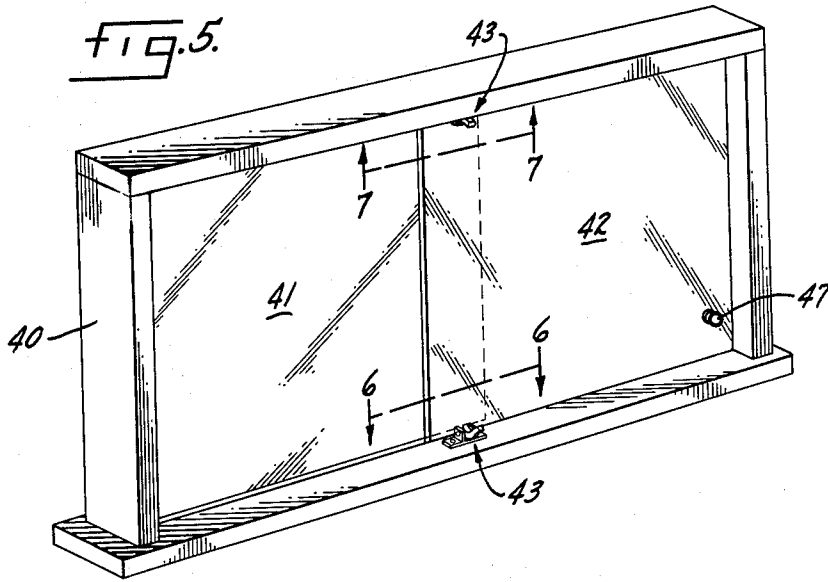
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2 Sheets-Sheet 2



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3,166,347

LOCK FOR SLIDING WINDOWS

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Filed Oct. 30, 1961, Ser. No. 148,459

4 Claims. (Cl. 292-202)

My invention relates to locking devices for sliding windows.

The prime object of my invention is to provide a simple, economical and effective device for locking sliding windows.

Another object of my invention is to provide a device of the character described, that can be easily installed on windows of various thicknesses and in different positions on a window without requiring special adjustments for each thickness of window pane material or position of the device.

Still another object of my invention is to provide a device of the character described, that functions to lock the window in any position from fully closed to fully open.

A further object of my invention is to provide a device of the character described, with a plurality of flat bearing surfaces being spaced at various radial distances from a pivot and rotatable around said pivot so as to provide a snubbing surface parallel to and in contact with the pane material.

In the drawings:

FIGURE 1 is a perspective view of a typical sashless window structure with the locking device installed;

FIGURE 2 is a sectional plan view taken along lines 2-2 of FIGURE 1;

FIGURE 3 is an enlarged fragmentary perspective view of the locking device and sashless window structure showing one of the flat snubbing surfaces in contact with the window pane;

FIGURE 4 is a side elevation of the locking element;

FIGURE 5 is a perspective view of a modified form of the invention;

FIGURE 6 is a sectional illustration of the invention as illustrated in FIGURE 5 and taken along the section lines 6-6 of FIGURE 5;

FIGURE 7 is a sectional view of the upper portion of the construction illustrated in FIGURE 5 and taken along the section lines 7-7 of FIGURE 5;

FIGURE 8 is a perspective view of a guiding element utilized with the embodiment of FIGURES 5, 6 and 7; and

FIGURE 9 is a perspective view of a spring element utilized in the embodiment of FIGURES 5, 6 and 7.

Referring now by characters of reference to the drawings, it is seen that the locking device is particularly adapted for use with a sashless sliding window structure of the type shown in FIGURE 1. As is conventional, the window structure includes vertical jambs 11 and 12, a sill 13, a headpiece 14, sliding pane 15 and fixed pane 16.

In this form of window structure illustrated in the drawings, the movable pane 15 is adapted for sliding movement between an open position in which the pane 15 overlies pane 16 and a closed position, as illustrated in the drawings. Pane 15 is mounted for sliding movement in grooves in the sill 13 and headpiece 14. The groove 17 in the sill may be enlarged alongside the stationary pane 16 so that when the pane 15 is moved to the open position, it is spaced a small distance from the stationary pane 16. In order to facilitate such spacing as well as to cooperate with the locking device hereinafter described, the movable pane 15 may have a small projection 18 thereon, which projection 18 is held by the manipulating knob 19. The projection 18 may be so positioned on the movable pane 15 that when the movable pane 15 is in the closed position, as illustrated in FIGURE 2, and

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when the overlapping portions of the two panes are flush with one another, the projection 18 is abutable against the exposed and opposed vertical edge 20 of the stationary pane 16. The knob 19 and projection 18 may be affixed to the movable pane 15 by means of a threaded bolt passed through a bore in the movable pane 15.

In order to hold the movable pane 15 in the fully closed position, a locking device generally designated as 21 is positioned on the sill 13 and is operative to force the movable pane 15 tightly into sealing and locking engagement with pane 16 in a manner to be described more fully hereinafter.

It should be understood that while the locking device as set forth herein is particularly suitable to this form of sliding window construction, it may, under certain circumstances, be applied to other sliding window constructions.

The locking device 21 is fastened to the window sill by screws, nails or other suitable fasteners.

The locking device consists of an element 22 made of nylon or other plastic which is mounted on and rotates around a pin 23 which is supported by one or more upstanding brackets 24 mounted on a base 25 which is attached to the sill 13. In the embodiment illustrated, element 22 is positioned to rotate about a horizontal axis.

The element 22 is of irregular shape defined by a pair of flat parallel sides 26 which are normal to its pivotal axis, a plurality of flat snubbing surfaces 27, 28, 29, 30 and 31 forming ends of the element parallel to and at varying radial distances from the axis of rotation, and an extension piece 32 for use as a handle extending generally in the opposite direction from the pivotal axis as the snubbing surfaces.

The snubbing surfaces 27, 28, 29, 30 and 31 as shown in FIGURE 4 are located in the upper quadrant of a circle described normal to the axis of rotation of the element 22, with the lower edge of each snubbing surface merging with the upper edge of the snubbing surface below defining a corner which is slightly rounded, the lower edge of each surface being located at a decreasing radial distance from the axis of rotation of the element and the plane of each snubbing surface forming an included obtuse angle with the plane of the adjoining snubbing surface, the included obtuse angle between surfaces being on the order of 150°. As is seen in the drawings (FIGURE 4), the snubbing surface at each corner and of greater radial spacing than its adjacent snubbing surface is generally perpendicular to the radius from the axis of rotation and extended to that corner.

To lock the window the element 22 is rotated about its pivotal axis so that the snubbing surfaces move in a downwardly direction until the snubbing surface 27 nearest to the pivotal axis assumes a position parallel to the inner window pane 15. If the lowest snubbing surface does not come in contact with the inner window pane then the downward rotation of the element is continued until another snubbing surface 28 farther removed from the pivotal axis assumes a position parallel to the inner window pane. This downward movement of the snubbing surfaces is continued until a snubbing surface assumes a position parallel to and in contact with the inner window pane. This contact by the snubbing surface forces the inner window pane into contact with the outer window pane 16 and thus prevents movement of the pane 15.

The window is unlocked by rotating the element 22 so as to move the snubbing surfaces 27, 28, 29, 30 and 31 in an upward direction and away from contact with the inner window pane thus releasing the inner window pane and leaving it free to slide.

The particular locking device illustrated and described herein is highly advantageous in that precise positioning

of the device relative to the sliding pane is unnecessary. It need only be located in general proximity to the pane 15 for the reason that when positioned at varying distances from the pane 15, one or the other of the several snubbing surfaces on the locking elements are properly spaced for locking engagement with the window. Each of the plurality of flat surfaces provides a relatively large bearing area against the window pane. The slight variance in the angular position between the snubbing surfaces enables easy movement of the locking element from one locking position to another. For example, if one flat surface is disposed adjacent to the movable pane and in relatively loose engagement therewith, movement of the locking element to the next snubbing surface is easily accomplished in that the junction between the adjacent snubbing surfaces easily moves past the pane. As is seen in FIGURE 4, the radial distance from the center of the snubber to a corner between adjacent surfaces is never greater than any radial distance from the center of the snubber to any point on the further of the two surfaces defining the corner. Thus, the corners slide easily across the window pane when the snubber is moved from a position where one surface engages the pane to a position where the next surface engages the pane.

The particular construction described is also advantageous from the standpoint of durability. In this connection, a slight enlargement of the pane holding grooves due to repeated use, or loosening of the bracket holding screws after a long period of use does not disadvantageously affect the operation of the device, in that the locking element may be simply rotated to the next locking position, thereby disposing the next snubbing surface in engagement with the movable pane in the locked position of the window. In this same connection, while precise positioning of the device relative to the panes is unnecessary in initial installation, it is advantageous to so position the device as to attempt to initially use one of the first snubbing surfaces during the initial phase of use of the structure.

FIGURES 5 through 9 inclusive represent a further embodiment of the invention. In these figures, the frame 40 is essentially the same as that of FIGURE 1, with a fixed pane 41 and a movable pane 42. In these figures, locking devices 43, similar in all respects to that shown in FIGURES 2-4, are disposed on the sill and the upper frame member or lintel so as to frictionally engage both the upper and lower portions of movable pane 42 and force the same tightly against the end portion of the fixed pane as at 44 to create a tight glass to glass seal.

Both the groove 45 in the upper frame member and the groove 46 in the lower frame member are wider than the combined thicknesses of the fixed pane and movable pane so that when the locking devices 43 are released, the movable pane 42 may be moved away from and spaced from the pane 41.

A manipulating handle or knob 47 is fixed to that end of the movable pane 42, which is remote from fixed pane 41 in the totally closed position.

A guide piece 48 is positioned in the lower groove 46 adjacent the fixed pane 41 and serves to keep the lower portion of pane 42 spaced from pane 41 in the partially or fully opened position. As seen in FIGURE 8, this guide piece includes a base 49 which is adapted to be recessed into the bottom of groove 46 and fixed thereto. It also includes an upstanding portion 50 which presents an arcuate surface 51 to the pane 42. The surface 51 is sufficiently close to the fixed pane that the movable pane glides smoothly thereover when it is freed for movement away from the fixed pane. This surface comprises a distance which is substantially less than a semicircle.

In the closed position of pane 42, the edge thereof is opposed to the arcuate surface 51. As this pane is opened, its edge slides smoothly around the arcuate surface, thus spreading the two panes until the side of the movable pane slides over the surface 51.

A spring arm 52 is positioned in upper groove 45 and biases the upper portion of pane 42 toward the fixed pane, when the panes are fully closed or partially open. This spring arm 52 may be integral with a base 53 which is adapted to be positioned between the base of the upper locking device and fixed unitarily therewith to the upper frame member. The spring arm preferably has a curvilinear form, as is seen in FIGURES 7 and 9 so that the medial, bowed portion of the arm contacts the movable pane.

In FIGURES 5-9, the locking devices are shown positioned the same as in FIGURE 1, but are preferably positioned to the right of the position illustrated and outside of the exposed side edge of the fixed pane 41. This position is preferable when two pairs of fixed and movable sashes, as shown herein, are positioned side by side with an air space between pairs for insulation purposes. This position makes it easier to reach the locking devices for the outer pair, as well as facilitating removal of the panes.

In the form of the invention of FIGURES 5-9, the movable pane is prevented from endwise sliding movement because of the pressure of the locking devices 43 and the opposed surface 51. When the locking devices are released, the spring 52 holds the panes against one another to minimize rattling. As the movable pane is opened, it glides over surface 51, which spaces the lower portions of the panes, the spring 52 tending to keep the upper portions in contact. When the movable pane is fully opened, it may be fully away from the spring 52.

When the pane 42 is moved to the closed position, it is contacted by spring 52 and moved toward the fixed pane.

In FIGURES 5 through 9, the use of the spring arm 52, guide surface 51 and locking devices enhance the manufacturing process in that they enable the use of simpler upper and lower guiding grooves, than previous sliding window constructions having glass to glass seals.

The form of the grooves to receive the panes illustrated in FIGURES 5-9 may, if desired, be utilized with the form of the handle and locking device illustrated in FIGURES 1-4.

In all of the embodiments illustrated herein, the locking devices may be used to hold the movable panes in a partially open position, as for example, by forcing the movable pane against surface 51 in FIGURES 5-9, or the projection 18 against the fixed pane in FIGURES 1-4.

Whereas I have shown and described an operative form of the invention, it should be understood that this showing and description thereof should be taken in an illustrative or diagrammatic sense only. There are many modifications in and to the invention which will fall within the scope and spirit thereof and which will be apparent to those skilled in the art. The scope of the invention should be limited only by the scope of the hereinafter appended claims.

I claim:

1. A window snubbing device including a supporting bracket and a rigid snubbing element supported for rotation about an axis on said bracket, handle means for rotating said element, said element having a plurality of flat surfaces extending generally parallel to said axis and connected to form corners between adjacent surfaces, each of said surfaces being located at varying radial distances from the axis of rotation of said element, the included angle defined by said adjacent surfaces at said corners being an obtuse angle, the angle between adjacent surfaces and the distances of adjacent surfaces from said axis of rotation being such that said element may have one flat surface engaged with a window pane and then be rotated to a position disposing an adjacent surface of greater radial distance adjacent said pane and in pressure engagement therewith without substantial obstruction from said corner in moving between said positions, the snubbing surface at each corner and of greater

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radial spacing than its adjacent snubbing surface being generally perpendicular to the radius at that corner.

2. The structure of claim 1 wherein said supporting means includes a bracket having a flat surface adapted to be fixed to one flat surface of said window frame, said bracket having upstanding ears supporting a pivot pin, said snubbing element being mounted on said pivot pin for rotation.

3. The structure of claim 1 wherein all of said surfaces are located in one quadrant of a circle described about said axis of rotation and the included angle between adjacent surfaces is on the order of 150 degrees.

4. A window structure comprising a pair of relatively slidable window panes positioned in groove means in a window frame, said panes partially overlapping one another when in the closed position and substantially overlying each other in the open position, snubbing means for holding said panes in a selected position, said snubbing means including a supporting bracket and a rigid snubbing element supported for rotation about an axis on said bracket, handle means for rotating said element, said element having a plurality of flat surfaces extending generally parallel to said axis and connected to form corners between adjacent surfaces, each of said surfaces being located at varying radial distances from the axis of rotation of said element, the included angle defined by said

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adjacent surfaces of said corners being an obtuse angle, the angle between adjacent surfaces and the distances of adjacent surfaces from said axis of rotation being such that said element may have one flat surface engaged with a window pane and then be rotated to a position disposing an adjacent surface of greater radial distance adjacent said pane and in pressure engagement therewith without substantial obstruction from said corner in moving between said positions, the snubbing surface at each corner and of greater radial spacing than its adjacent snubbing surface being generally perpendicular to the radius at that corner.

References Cited in the file of this patent

UNITED STATES PATENTS

1,451,359	Campbell	Apr. 10, 1923
2,423,015	Goepfrich et al.	June 24, 1947
2,700,801	Pierson	Feb. 1, 1955
2,900,679	Migneault et al.	Aug. 25, 1959
2,988,787	Migneault et al.	June 20, 1961
3,015,134	Migneault et al.	Jan. 2, 1962

FOREIGN PATENTS

228,928	Australia	June 30, 1960
879,552	Great Britain	Oct. 11, 1961