

March 29, 1932.

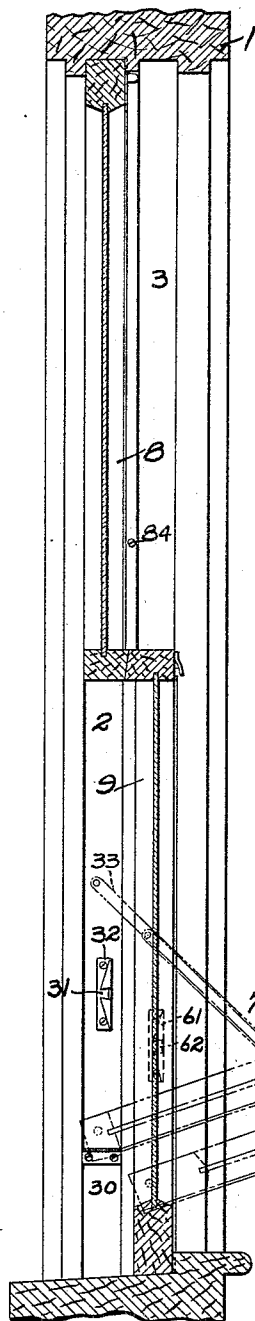
E. D. ROSS

**1,851,293**

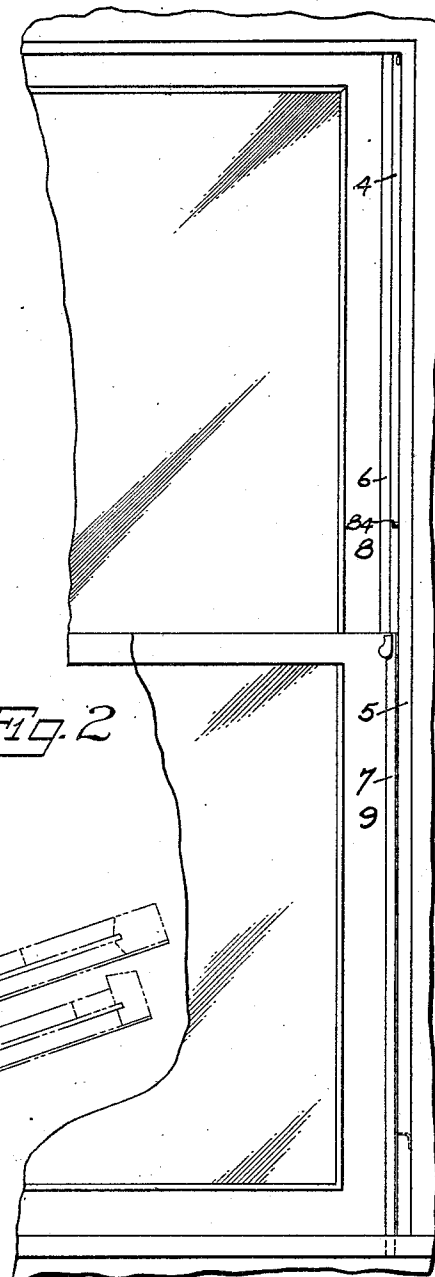
WINDOW

Filed April 17, 1930

5 Sheets-Sheet 1



*Fig. 1*



*Fig. 2*

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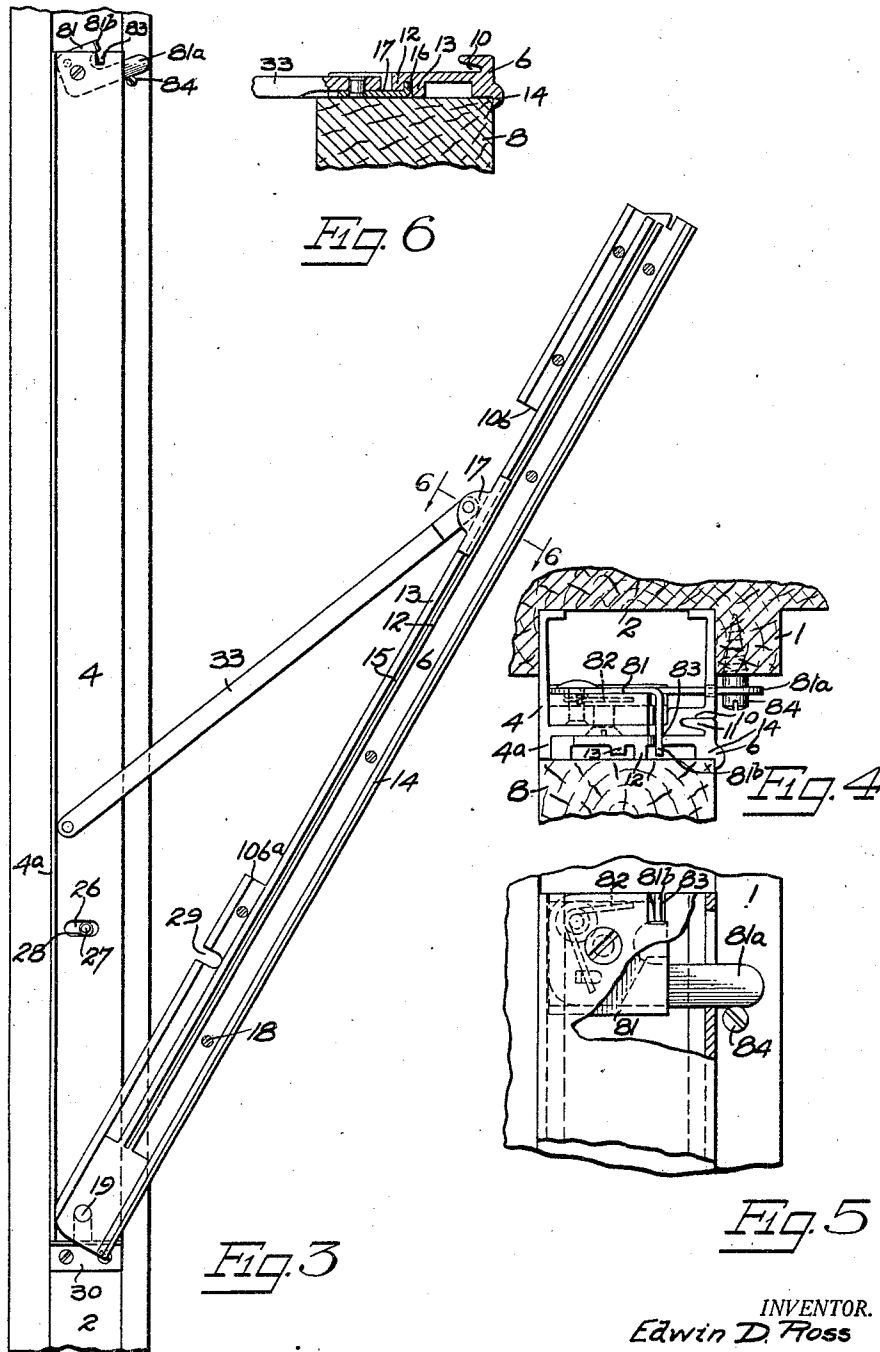
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WINDOW

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5 Sheets-Sheet 2



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WINDOW

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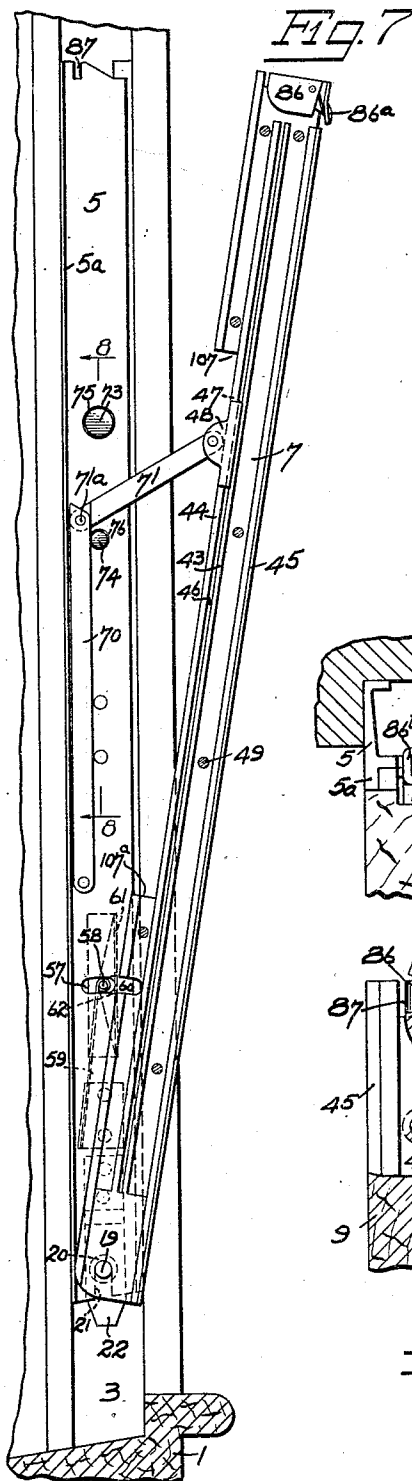


Fig. 7

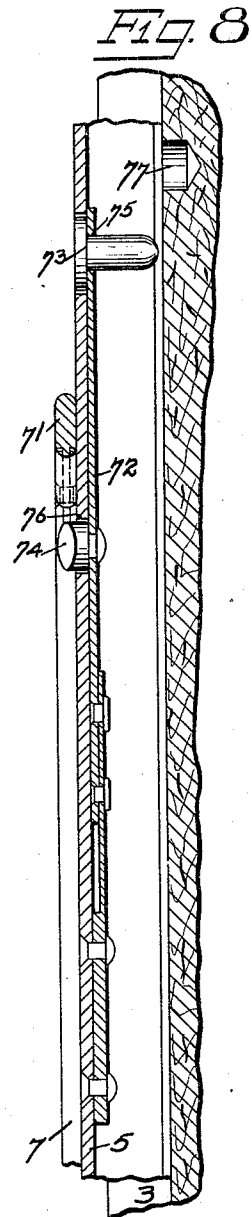


Fig. 8

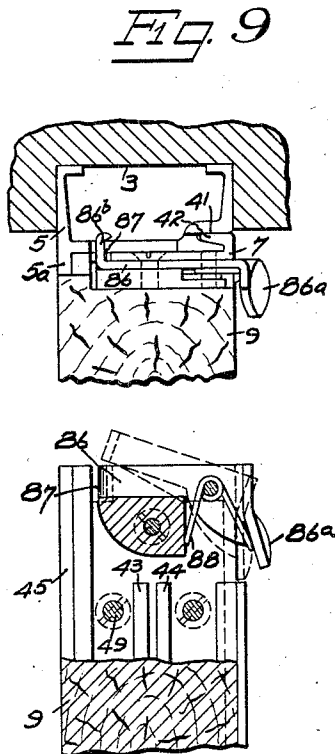


Fig. 9

Fig. 10

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WINDOW

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Fig. 11

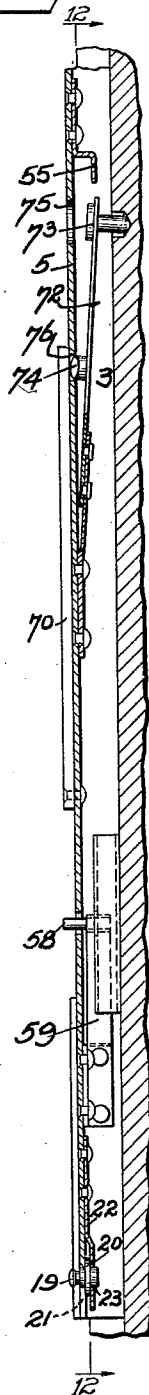


Fig. 12

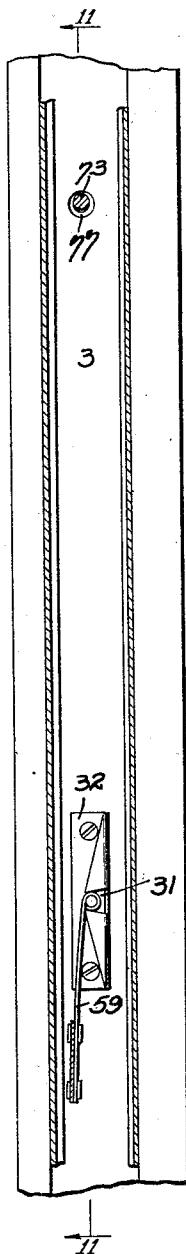


Fig. 13

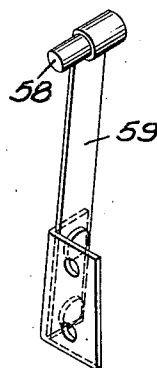
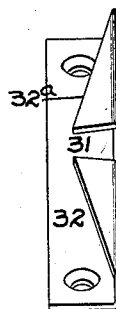


Fig. 14

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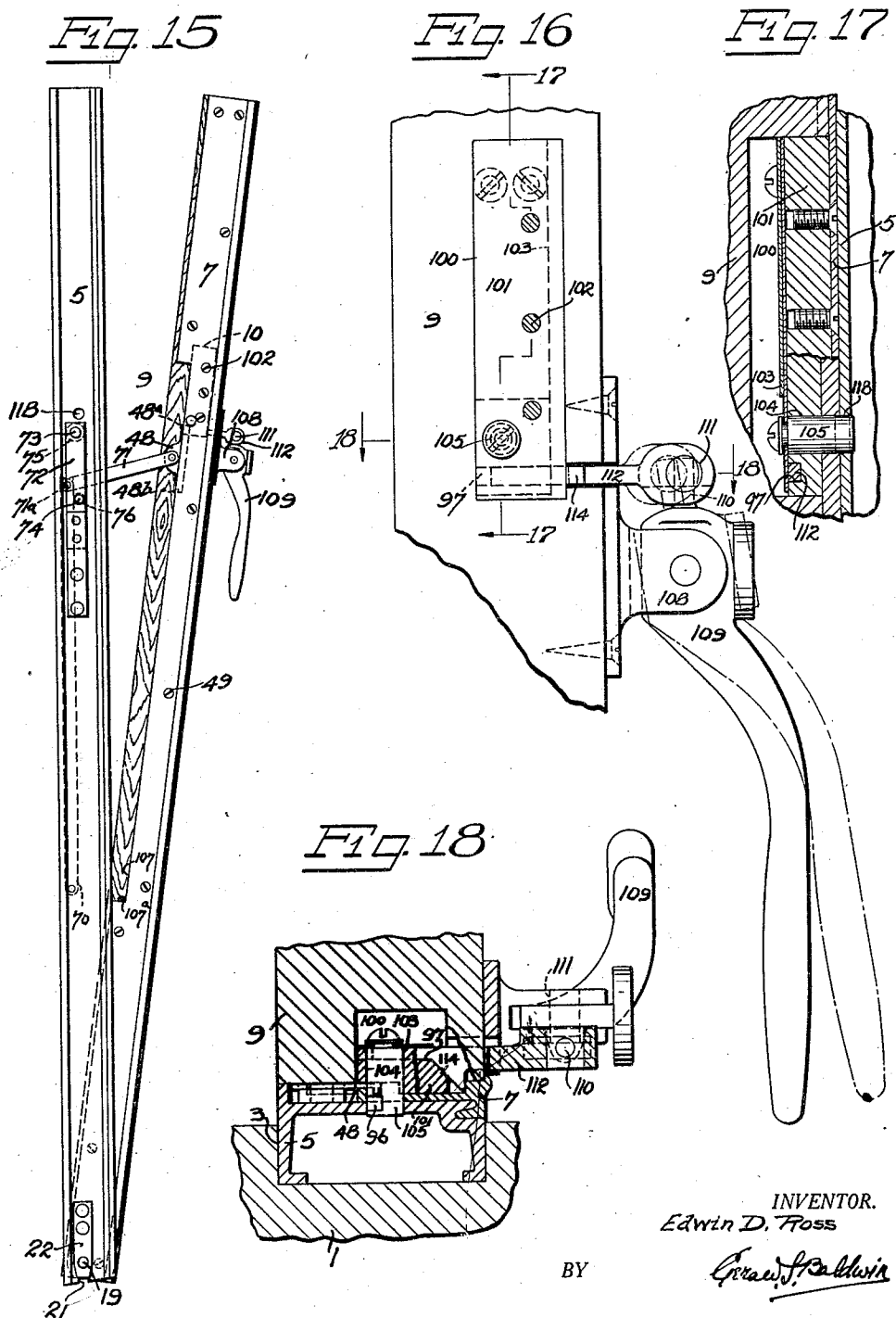
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1,851,293

WINDOW

Filed April 17, 1930

5 Sheets-Sheet 5



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## UNITED STATES PATENT OFFICE

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## WINDOW

Application filed April 17, 1930. Serial No. 445,020.

This invention relates to improvements in windows, and refers more particularly to windows having upper and lower sashes adapted to be moved vertically between  
5 stiles, and pivotally between slides movable in the stiles.

In my United States Patent No. 1,741,479 granted on December 31st 1929 I provided a window wherein the sash was pivotally  
10 mounted between vertically movable slides, wherein arms were pivoted on the slides and had extensions thereon slidable against the sash, and wherein the arms are held against pivotal movement until the slides reached a  
15 predetermined position in their stiles when they were automatically rendered free to move pivotally thereby allowing the sash to swing downwards into a substantially horizontal position; but at all other positions of  
20 the slides the arm extensions only could swing thereby materially limiting the pivotal sash movement. In practice, however, it has been found objectionable for the sash to be automatically rendered free to swing inwardly when a predetermined slide position  
25 is reached, as this sometimes occurs when pivotal sash movement is neither expected nor desired.

This invention aims, among other things, to provide a window wherein it is necessary to exert positive pressure against projections extending through the slides to release the pivoted arms and thus permit considerable  
30 pivotal sash movement.

Another object of the invention is to provide a window in one form of which means are provided for holding the sash both in alignment with its slides, and also in a slightly  
35 inclined position.

With these and other objects and advantages in view which will become apparent as the specification proceeds, the invention is hereinafter more fully described with the aid of the accompanying drawings, in which:  
40

Figure 1 illustrates a sectional elevation of the invention wherein the sashes are also indicated in their substantially horizontal positions, and  
45

Figure 2 shows a partial front elevation of  
50 Figure 1.

Figure 3 is a side elevation of a guide and sash plate employed for holding one side of the upper sash.

Figure 4 is an enlarged plan view looking onto the upper extremity of one side of the  
55 upper sash and its slide when the former is vertically positioned.

Figure 5 is an enlarged detail showing the latch by which the upper sash is retained in  
60 vertical position.

Figure 6 is an enlarged section on the line 6—6 of Figure 3.

Figure 7 is a side elevation of a guide and sash plate employed for holding one side of the lower sash, and the latter in ventilating  
65 position.

Figure 8 is a section on the line 8—8 of Figure 7.

Figure 9 is an enlarged plan view showing the upper extremity of one side of the lower  
70 sash when the latter is vertically positioned, and one form of means for locking the sash in alignment with one of its slides, and

Figure 10 is an enlarged detail showing the same form of locking arrangement.  
75

Figures 11 and 12 show sections on the lines 11—11 and 12—12 of Figures 12 and 11 respectively, and depict the slide holding arrangement for the lower sash when the latter and its arms are moved outwardly from the  
80 slides.

Figures 13 and 14 are enlarged details.

Figure 15 is an elevation of the outer side of a slide and a sash plate and sash in ventilating position, with another form of sash  
85 locking device thereon.

Figure 16 is an enlarged detail of the sash locking device shown in Figure 15.

Figures 17 and 18 are sections on the lines 17—17 and 18—18 of Figure 16.  
90

Referring to the drawings, 1 designates a window frame having outer and inner stile grooves 2 and 3 formed therein. Vertically  
95 slidable in the grooves 2 and 3 are upper and lower slides 4 and 5 respectively both of which are substantially of channel section and have their open sides outwardly disposed. On the inner sides of the slides 4 and 5 are sash plates 6 and 7 respectively which are pivotally and removably mounted  
100

on their slides adjacent their lower extremities. Between the sash plates 6 an upper sash 8 is rigidly secured, and between the sash plates 7 a lower sash 9 is similarly mounted.

5 The slides 4 and 5 each have inwardly projecting flanges 4a and 5a respectively which extend the full length of their rear margins. Against these flanges 4a and 5a the rear sides of the sash plates 6 and 7 respectively rest  
10 when their sashes 8 and 9 are vertically disposed, and in the front faces of the slides 4 and 5 adjacent their inner margins grooves 10 and 41 are formed throughout their length to receive outwardly and rearwardly extending  
15 projections 11 and 42 on the plates 6 and 7 respectively, so that the cooperating portions 10 and 11, and 41 and 42, function as weatherstripping when the sashes are vertically disposed.

20 Intermediately of their length and width the sash plates 6 and 7 each have, on their inner sides, a pair of parallel and longitudinal ribs 12 and 13, and 43 and 44, respectively. The front ribs 12 and 43 extend inwardly  
25 further than the rear ribs 13 and 44. Longitudinally of these sash plates adjacent their inner sides stepped projections 14 and 45 are also formed to receive the front vertical corners of the sashes 8 and 9, the sides of which  
30 also rest against the front ribs 12 and 43.

Between each pair of ribs 12 and 13, or 43 and 44, a longitudinal slot 15, or 46, is formed in which an outwardly projecting tongue 16, or 47, integral with a sliding member 17, or 48, is arranged.

35 The members 17 and 48 lie substantially parallel with the sides of the sashes 8 and 9 respectively, and are of such thickness that they may move freely between the latter and the inner ribs 13 and 44. 18 and 49 indicate  
40 screws extending through the sash plates 6 and 7 into the sashes 8 and 9 respectively. The rear margins of the sash plates 6 and 7 are cut away at 106 and 107 intermediately of  
45 their length for purposes hereinafter set forth.

As the pivotal mounting of the upper and lower sash plates on their slides is identical I will now describe in detail the mounting  
50 of the lower sash plates 7 on their slides 5, reference being had to Figures 7 and 11 of the drawings.

Extending outwardly from the sash plates 7 adjacent their lower extremities are hinge  
55 pins 19 having annular flanges 20 around them a short distance from their outer ends; these flanges are also spaced from their sash plates 7. Each slide 5 is longitudinally  
60 slotted at 21 for a short distance from its lower extremity and within each substantially channel shaped slide 5 a flexible member 22 is secured through which an aperture 23 is formed. When the sash 9 and its plates 7 are mounted between their slides 5 the inner  
65 side of each flange 20 bears against the

outer side of the central portion of one of the slides 5 and the outer ends of the hinge pins 19 extend into the apertures 23 in the flexible members 22. In order to remove the sash 9 all that need be done is to press the flexible member 22 outwardly so that the pins 19 become disengaged from the apertures 23; the sash may then be moved downwardly relative to the slide 5 and the pins 19 then move out of engagement from the slots 20.

70 Within the channel-shaped portion of the slides hooks 24—as shown in Figure 11—are provided to receive one end of conventional sash cords—not shown. Through the slides 4 and 5 intermediately of their length slots 26 and 57 are formed through which locking  
80 pins 27 and 58 project. The method of supporting these pins is identical in both sashes and is clearly shown in Figures 11, 12 and 13.

85 It consists in the provision of resilient members 28 and 59 secured within the slides, and the said members at their free ends encircle the said locking pins. In the rear margins of the sash plates 6 and 7 recesses 29 and 60 are formed which are so positioned that when the sash plates are vertically disposed their bases force the pins 27 and 58 rearwardly against the tension of the resilient members 28 and 59, but when the sash plates 6 and 7 are moved  
95 forwardly at an angle to their slides 4 and 5 the pins are also moved forwardly by the resilient members 28 and 59 which support them. On the opposed faces of the stile grooves 2 and 3 opposed catches 32 and 61 are secured which have slots 31 and 62 respectively therein. These slots are adapted to receive the pins 27 and 58 and hold the slides 4 and 5 against vertical movement; that is, of course, provided the sashes and sash plates are moved pivotally when the slides are at  
100 such heights that the pins will engage their respective slots.

Extending inwardly from the opposed faces of the stile grooves 2 are stops 30 with which the lower extremities of the slides 4 come into contact when in their bottom position. The catches 32 are usually so positioned that the pins 27 will engage the slots 31 when the slides 4 rest against the stops 30.

110 Pivotaly mounted on the inner sides of the slides 4 intermediately of their length are arms 33 having the sliding members 17 pivotally attached to their opposite extremities. These arms are so placed that when the sash plates 6 are in their normal vertical positions the said arms lie in the cut away intermediate portions 106 of the sash plates 6. As the sash 8 and sash plates 6 swing inwardly the tongues 16 of the members 17 travel downwardly in the sash plate slots 15 until the arms 33 strike the rearwardly projecting  
125 shoulders 106a formed at the lower ends of the cut away portions 106, thereby preventing further pivotal movement of the sash plates 6.  
130

Pivotally mounted on the inner sides of the slides 5 intermediately of their length are arms 70 which extend upwardly from their pivotal ends and have pivoted extensions 71 connected to them by pins 71a in alignment with the axes of the arms 70. The latter and their extensions are so placed that when the sash plates 7 are in their normal positions the said arms lie in the cut away portions 107 of the slides 7. The sliding members 48 are pivotal on the outer extremities of the extensions 71 so that their tongues travel longitudinally of the slots 46 as the sash 9 and sash plates 7 are moved pivotally.

Secured within the channel shaped slides 5 are resilient members 72 each of which has two inwardly extending projections 73 and 74 thereon. The projections 73 are located adjacent the free extremities of their members and normally lie in apertures 75 formed in the inner sides of the slides 7. These projections 73 also project outwardly through the said members 72 and terminate adjacent the opposed faces of the stile grooves 3. The projections 74 extend inwardly from the intermediate portions of the said members 72 through openings 76 formed through the inner sides of the slides 5. The projections 74 normally lie adjacent the front of the arms 70 and prevent them from moving pivotally. In the opposed faces of the stile grooves 3 holes 77 are formed so that when the slides 5 have been moved to a predetermined vertical position the projections 73 may be pressed outwardly so that their outer extremities enter the holes 77; when this occurs the projections 76 also move outwardly sufficiently to permit the arms 70 to pass them. Then, of course, the sash plates 7 and sash 9 are free to move pivotally downwards about their pins 19 into their substantially horizontal positions.

The latches 80 for the upper sash consist of catches 81, pivoted within the channel shaped slides 4, which are normally held in the position shown in Figure 5 by springs 82. When the fingerholds 81a integral with the said catches are moved upwardly the engaging portions 81b, also integral with the said catches, become disengaged from recesses 83 formed in the upper extremities of the sash plates 6. 84 denotes a screw which may be arranged to project from the window-frame 1 so that when the sash 8 has been lowered a given distance the sash plates 6 are automatically released by the catch engaging portions 81b.

The latches shown in detail in Figures 9 and 10, which are sometimes employed for holding the lower sash plates in alignment with the lower slides consist of catches 86 pivoted on the said sash plates. Integral with the catches 86 are fingerholds 86a and engaging portions 86b; moreover the latter normally lie in recesses 87 formed transverse-

ly of the upper margins of the said slides 5, and are held therein by springs 88 which form portions of the said latches.

From the foregoing it will be clearly seen that the upper slides 4, sash plates 6 and sash 8 may be moved vertically in the stile grooves 2 in the normal manner; that the catches 81 may be released at any vertical position of the slides 4 so that the sash 8 may swing inwardly on the slides; and that the slides 4 remain vertically movable whether the sash 8 is in alignment with them or not until the pins 27 engage the slots 31 in the catches 32. Moreover the tapered margins 32a of the latter are so shaped that the pins 27 automatically engage the slots 31 as soon as the pins and slots come opposite one another provided the sash 8 has been moved into an inclined position.

The lower sash 9 and sash plates 7 may be moved into the ventilating position shown in Figure 7 at any position of the slides 5 in the stile grooves 3, but until the pins 73 are in alignment with the stile groove holes 77 the projections 74 cannot be moved inwardly to release the arms 70 and permit their pivotal movement.

In both the upper and lower sash mounting arrangements longitudinal slots 15, or 46, arm formed in the inner sides of the sash plates 6, or 7, in which the tongues 16, or 47, are adapted to slide as the arms 33, or 71, or 71 and 70 move pivotally.

Referring now to the sash locking arrangement shown in Figures 15 to 18 inclusive. In the outer sides of the sash 9 and covered by its sash plates 7 are apertures 100, in which a block 101 is arranged. Each of the latter is held in position against its sash plate 7 as by screws 102. Longitudinally on the inner side of the block 101, that is on the side of the latter remote from its sash plate, a flat spring 103 is arranged which has one extremity secured to the said block. Movable through an opening 104 through the block is a locking member 105 which projects beyond the latter and has a recess 96 formed transversely across it adjacent its outer extremity. The inner end of the locking member 105 is secured to the free end of the spring 103.

Transversely of the underside of the block 101 a slot 97 is formed which is tapered at its inner end so that that extremity of the slot is deeper than its outer portion. The free extremity of the spring 103 extends across the open side of the slot 97.

Mounted on the front of the sash 9 and on each side thereof are bearings 108 in which handles 109 are pivotally mounted. Extending upwardly from each handle is a cylindrical element 110 which projects radially through a pin 111 on which an arm 112 is rotatably mounted. A portion of the underside of the latter is cut away to clear the element



110 and permit the said arm limited rotary movement of its pin 111.

The outer extremity of the arm 112 extends into the slot 97 and the opposite side thereof rests adjacent the spring 103. Intermediate of the length of the arm a wedge-shaped dog 114 is formed thereon which is adapted to coact with the tapered portion of the slot 97 so that as the arm is moved rearwardly it also is caused to turn about the element 110 thereby moving the free end of the spring 103 away from the block 101. This movement obviously draws the locking member 105 inwardly relative to the block 101 and sash plate 7.

The locking member 105 normally extends across the path of travel of the sliding member 48 and projects through an aperture 118 in the slide 5 thus holding the latter and the sash plate 7 against independent movement. When the handle 109 is raised and the arm 112 moved rearwardly the locking member is moved inwardly sufficiently for the slide 5 to be released and also for the recess 106 in the said locking member to come into alignment with the sliding member 48 so that a portion of the latter may pass therethrough. The upper and lower margins 48a and 48b of the member 48 rest adjacent the lower and upper sides respectively of the locking member 105 when the sash is in ventilating and closed positions respectively. Therefore when the sash is in ventilating position the locking member prevents the sash from moving towards its closed position and the projection 74 which limits the movement of the extension 71 in a downward direction prevents the sash from swinging further downwardly, thus the sash is held substantially immovable in ventilating position in part by the locking device now described. Accidental releasing of the sliding members 48 can only occur when the handle 109 is accidentally raised, since the spring 103 always returns the locking member 105 into such position that its recess 96 is out of alignment with the sliding member 48 and into engagement with the slide aperture 118.

While in the foregoing the preferred embodiments of the invention have been described and shown, it is understood that the construction is subject to such further alterations and modifications as fall within the scope of the appended claims.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a window, the combination of a frame having stile grooves therein, slides vertically movable in said grooves, the latter having holes formed in their bases, a sash pivoted between said slides, arms pivoted on said slides, extensions on said arms, said extensions being slidable on said sash sides and adapted to move pivotally on said arms at any vertical position of said slides, means

adapted to hold said arms against pivotal movement, resilient members secured to said slides on which said arm holding means are secured, said members tending at all times to remain in such position that their arm holding means prevent pivotal movement of the arms, and outward projections on said resilient members terminating adjacent the stile groove bases which prevent said members from being moved outwardly so that the arms are released until the slides are moved to such a position that the outward projections are in alignment with the holes formed in the stile groove bases which may then receive them.

2. In a window, the combination of a frame having stile grooves therein, slides vertically movable in said grooves, a sash pivotally mounted between said slides, arms pivoted on said slides, extensions pivoted on said arms having their opposite extremities slidable on said sash, said extensions being adapted to move pivotally on said arms at any vertical position of said slides so that limited pivotal sash movement may be obtained, flexible members mounted on said slides having projections thereon, said slides having apertures therethrough, one projection on each member being adapted to extend through one aperture in its slide and prevent pivotal movement of the arm mounted thereon, and the other projection on each member being opposite another slide aperture and also extending outwardly, and said sash grooves having opposed holes formed therein so that when the sash is at a predetermined height said other projections may be moved outwardly by pressure exerted on them through the slide apertures in registry with them thereby causing the said other projections to enter the stile groove holes, and this movement causing the arm engaging projections to release said arms.

3. In a window, the combination of a frame having stile grooves therein, slides vertically movable in said grooves, a sash, sash plates secured to the vertical margins of said sash, hinge pins extending outwardly from the lower margins of said sash plates, said slides having longitudinal slots formed therein which extend upwardly from their lower extremities, flanges on said pins intermediate of their length adapted to rest against the outer sides of said slides, and resilient members on the outer slide sides having apertures therethrough adapted to encircle the outer extremities of said hinge pins so that when said resilient members are flexed outwardly they become disengaged from the hinge pins and the sash may be moved downwardly so that the pins are moved out of the slide slots.

4. In a window, the combination of a frame having stile grooves therein, slides vertically movable in said grooves, said slides

having openings therethrough, resilient members on the outer sides of said slides, pins mounted on the free extremities of said resilient members and extending through said slide openings, catches secured to said stile grooves having slots therein, sash plates pivoted on said slides having recesses formed in their outer margins adapted to hold said pins against the tension of the resilient members when the sash plates are in alignment with the slides, and said pins being adapted to be moved inwardly by said resilient members relative to their slides when the sash plates are inclined so that the pins engage the catch slots when the pins and slots are in horizontal alignment, said sash plate secured to the slide, hinge pins extending outwardly from the lower margin of the sash plate, said slides having longitudinal slots formed therein which extend upwardly from their lower extremity, a resilient member encircling the end of the hinge pin so that when said resilient members are flexed outwardly they become disengaged from the hinge pins and the sash may be moved downwardly so that the pins are moved out from the slide slot.

5. In a window, the combination of a frame having stile grooves therein, slides movable vertically in said grooves, sash plates pivotally mounted between said slides, a sash held between said sash plates, said sash plates secured to the slide, hinge pins, having flange portions thereon, extending outwardly from the lower margin of the sash plate, said sash having longitudinal slots formed therein which extend upwardly from their lower extremity, a resilient member encircling the ends of the hinge pins, a catch pivoted on one of said slides, a fingerhold on said catch extending forwardly from the slide and adapted to be moved upwardly into releasing position, one of said sash plates having a recess formed therein to receive said catch so that said sash may be held in alignment with the slides, and an element projecting from the frame adapted to engage the fingerhold of the catch and move it pivotally upwards relative to its slide as the slides and sash are moved downwardly in the frame, thereby releasing the sash so that it may be pivotally moved when the slides reach a predetermined vertical position.

6. In a window, the combination of slides adapted to be moved vertically in stile grooves, sash plates pivoted on said slides, hinge pins, having flange portions thereon, extending outwardly from the lower margin of the sash plate, said slides having longitudinal slots formed therein which extend upwardly from their lower extremities, a resilient member encircling the end of the hinge pins, a sash held between the sash plates and having an aperture formed therein under one sash plate, a sliding member slidable longitudinally between the sash and the last named

sash plate, a locking member movable at right angles to the direction of movement of the sliding member in the sash aperture and through the adjacent sash plate, said locking member having a transverse groove formed therethrough which may be brought into alignment with the sliding member and thereby permitting passage of the latter past the locking member, means for moving the latter, and an arm pivoted on one slide which is connected to said sliding member.

7. In a window, the combination as described in claim 6, wherein the slide adjacent the locking member has an aperture therein into which the said locking member normally extends when the sash and slides are in alignment with one another.

8. In a window, the combination of slides adapted to be moved vertically in slide grooves, sash plates pivoted on said slides, a sash held between said sash plates and having an aperture therein under one of the latter, a block in said aperture secured to the adjacent sash plate, a locking member slidable through said block and the adjacent said plate, a spring secured to the side of the block remote from the sash plate to which it is secured, one extremity of said locking member being secured to said spring, the adjacent slide having an aperture therethrough into which said locking member projects when the sash is in alignment with the slides, a sliding member slidable longitudinally between the sash and the sash plate through which the locking member projects, said locking member having a transverse recess formed therethrough, the passage of the sliding member past said locking member being normally obstructed by the latter, a handle pivoted on said sash, means connected to said handle for moving the locking member against the tension of the spring when the handle is moved in one direction so that the locking member recess comes into alignment with the sliding member so that the latter may pass therethrough and the locking member movement also causing said member to disengage the slide aperture, and arm pivoted on one slide, and means connecting said arm with said sliding member.

9. In a window, the combination of a frame having stile grooves therein, slides vertically movable in said grooves, a sash secured to the slides, hinge pins, having flange portions thereon, extending outwardly from the lower margins of the sash, said slides having longitudinal slots formed therein which extend upwardly from their lower extremities, a resilient member encircling the end of the hinge pin, arms pivoted on said slide, extensions pivoted on said arms, having their opposite extremities slidable on said sash, said extensions being adapted to move pivotally on said arms at any vertical position of said slides so that limited pivotal sash move-

ment may be obtained, flexible members mounted on said slides having projections thereon, said slide having apertures there-through, one projection on each member being adapted to extend through one of the apertures in its slide and prevent pivotal movement of the arm thereon, and the other projection on each member being opposite another slide aperture and also extending outwardly, said sash grooves having opposed holes formed therein so that when the sash is at a predetermined height said other projections may be moved outwardly by pressure exerted on them through the slide apertures in registry with them, thereby causing said other projections to enter the stile groove holes, and this movement causing the arm engagement projection to release said arms.

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