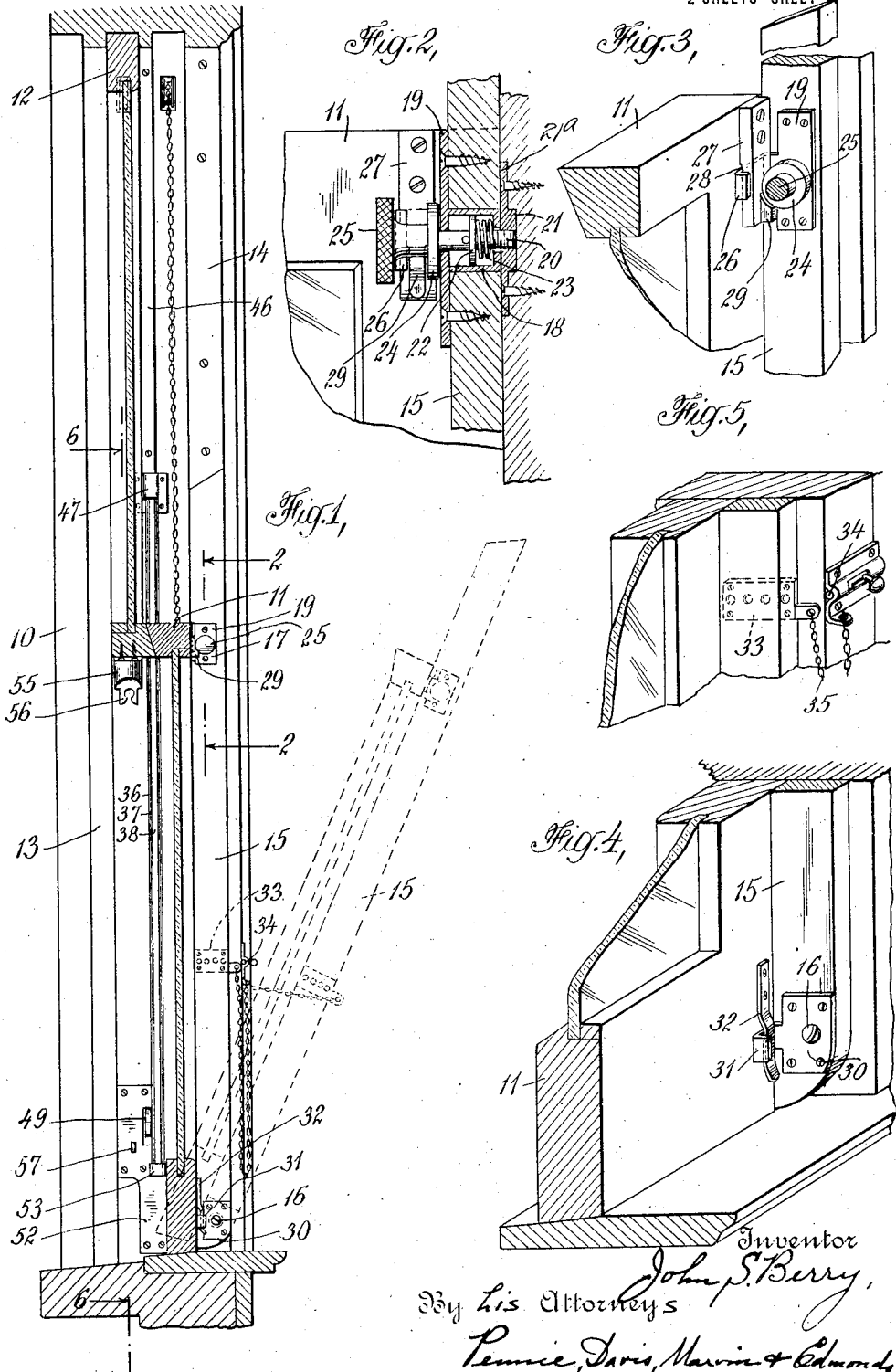


J. S. BERRY.
WINDOW STRUCTURE.
APPLICATION FILED SEPT. 15, 1919.

1,391,237.

Patented Sept. 20, 1921.

2 SHEETS—SHEET 1



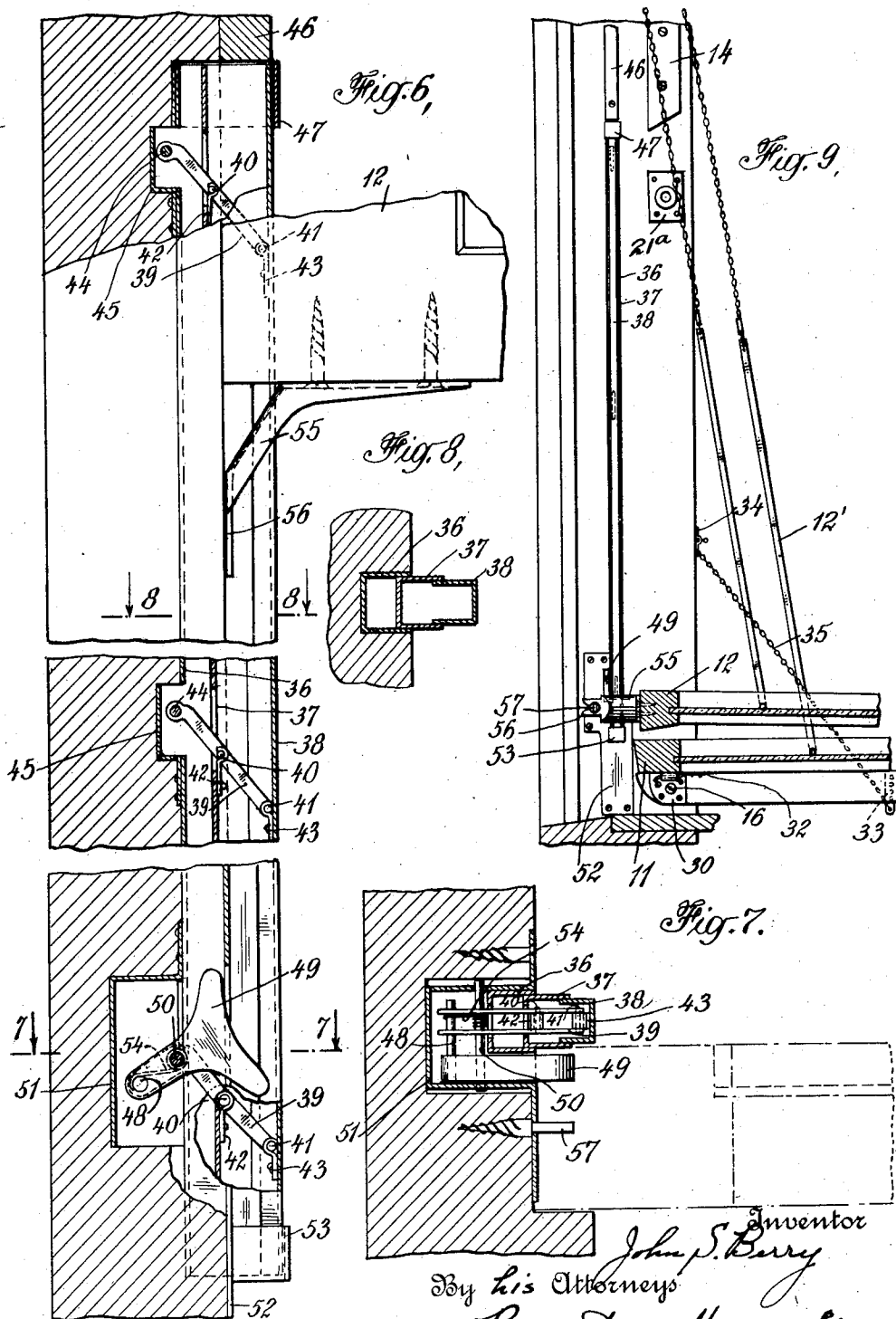
Inventor
John S. Berry,
By His Attorneys
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UNITED STATES PATENT OFFICE.

JOHN STONE BERRY, OF PLAINFIELD, NEW JERSEY.

WINDOW STRUCTURE.

1,391,237.

Specification of Letters Patent. Patented Sept. 20, 1921.

Application filed September 15, 1919. Serial No. 323,838.

To all whom it may concern:

Be it known that I, JOHN S. BERRY, a citizen of the United States, residing at Plainfield, in the county of Union, State of New Jersey, have invented certain new and useful Improvements in Window Structures; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to window structures of the type in which the sashes may be tilted into a substantially horizontal position within the building for cleaning and other purposes.

Window structures of this general type are shown in United States Letters Patent Nos. 1,155,200 and 1,158,887, granted to me on September 28, 1915, and November 2, 1915, respectively. The latter of these two patents shows pivot devices mounted at the bottom of the side frames of a window casing and adapted to be employed in connection with the lower or inner sash to permit it to be tilted inwardly, and at the same time to be automatically held in the pivot device when in tilted position. In order to permit the upper or outer sash to be tilted inwardly, it is necessary that the parting strip between the two sashes be moved out of the way, and in the patent referred to above an arrangement for this purpose is shown, this arrangement being claimed in Patent No. 1,155,200, the application of which was filed as a division of the application of Patent No. 1,158,887. The arrangements shown in these patents comprise collapsible parting strips adapted to be depressed in suitable grooves in the two sides of the window casing by means actuated by the downward movement of the upper sash. The means for actuating each parting strip is also provided with a pivot member which engages a cooperating member on the sash to form a pivot-axis for the sash.

It is an object of the present invention to improve the various features of prior structures and particularly those shown in my patents mentioned above. In Patent No. 1,158,887, the pivot devices for the lower

sash are attached to the window frame and the front guiding strips or beading are intended to be loosened in any convenient manner to permit the sash to be swung out of the frame. In accordance with the present arrangement the inner guides for the lower sash are each made in two parts, an upper section which is permanently attached to the window casing, and a lower section which is pivoted at the bottom so that it may be swung inwardly on a horizontal pivot. Each of these lower sections is provided with catches adapted to cooperate with corresponding devices on the lower sash, so that the latter may be clamped to the two movable guide sections and swung downwardly with the latter. While it is intended for the purpose of cleaning the outside of the pane, that the sash shall be tilted into a substantially horizontal position, it is also possible to tilt the sash through a relatively small angle to permit ventilation of the room by upwardly directed air currents passing through the relatively narrow opening between the bottom of the upper sash and the inwardly tilted top of the lower sash. The present invention also provides an arrangement for holding the lower sash at various inclinations to control the amount of air which shall be permitted to enter the room.

The present invention also provides an improved construction of the parting strips between the two sashes and the mechanism by which the parting strips are automatically actuated by the downward movement of the upper sash, so that the parting strips are out of the way when the upper sash is drawn to the bottom of the window casing to be swung inwardly to permit the outside of the pane to be washed.

The particular nature of the invention, as well as other objects and advantages thereof, will appear more clearly from a description of a preferred embodiment as shown in the accompanying drawings, in which—

Figure 1 is a vertical section through a window casing having the present improvements applied thereto;

Fig. 2 is an enlarged view in section along the line 2—2 of Fig. 1, showing one of the latching devices;

Fig. 3 is an external view of the locking device of Fig. 2 with the head of the screw cut off to show the construction more clearly;

5 Fig. 4 shows the cooperating latching devices employed at the bottom of the lower sash;

Fig. 5 shows one of the devices employed for holding the bottom sash in slightly tilted position for the purpose of ventilation;

10 Fig. 6 is a view, partly in longitudinal section along the line 6—6 of Fig. 1, of one of the parting strips of the present invention, together with its actuating mechanism;

15 Fig. 7 is a transverse sectional view of the actuating mechanism along the line 7—7 of Fig. 6;

Fig. 8 is a transverse sectional view of the 20 parting strip along the line 8—8 of Fig. 6, and

Fig. 9 shows the positions occupied by the two sashes when both of them are tilted inwardly.

25 Referring to the drawings in which similar reference characters denote similar parts throughout the several views, 10 indicates a window casing which may be of any suitable construction, and having slidably mounted therein a lower sash 11 and 30 an upper sash 12, each suspended by the usual weighted cords which in the present case are connected to the sashes by means of metal strips 12¹. By this arrangement 35 the points of attachment of the cords may be placed relatively near the bottom of the sashes to permit the sashes to be tilted inwardly. Were the cords attached near the 40 tops of the sashes in the usual manner they would not ordinarily be long enough to permit such tilting before the weights reach the top of the window frame. The outer guide strips or beading 13 for the upper sash may be of the usual wooden or metallic 45 type, since they are not modified in accordance with the present invention.

The guide strips or beading for the inside of the lower sash are each composed of two sections; a section 14 of ordinary 50 wooden or metallic construction, permanently attached to the window casing, and a section 15 pivoted at its lower end to the window casing by means of a screw 16. The upper end of the section 15 is preferably beveled to engage the correspondingly 55 beveled lower end of the fixed section 14. For the purpose of holding the movable section in its normal position in alinement with the fixed section, there is provided a latch 17 shown most clearly in Fig. 2. This 60 device comprises a cylindrical housing 18 adapted to be set into the strip 15 and provided with a face plate 19 by which it may be attached to the strip. Mounted in the 65 inner end of the housing 18 and the face

plate 19 is a screw 20 adapted to enter a threaded lug 21 carried by a plate 21^a attached to the face of the window casing. By making the lug of the same diameter 70 as the housing 18 a hole of the required size may be bored through the strip 15 and into the window casing, thus enabling the housing and lug to be set in alinement when inserted into the registering holes. The 75 shank of the screw within the housing is provided with a shoulder 22 against which a spring 23 presses for forcing the screw outwardly when it is withdrawn from the lug 21. The head of the screw is formed 80 of an inner shoulder portion 24 for a purpose to be hereinafter described, and a milled portion 25 by which the screw may be manipulated.

In addition to their function as a means for locking the movable sections 15 of the 85 guide strips in place on the window casing, the devices described above also serve as means for latching the lower sash in position upon the sections 15, so as to permit the sash to move with the sections when they 90 are tilted inwardly. For this purpose the face plate 19 of each device is provided with an extension 26 forming a channel adapted to receive a lug 27 attached to the inner 95 face of the lower sash at its upper edge. This lug is provided with a shoulder 28 adapted to engage the upper edge of the extension 26 when the sash is in its lowermost position. The lug 27 is also provided with 100 a projection 29 having an upper curved face adapted to cooperate with the shoulder 24 on the head of the screw when the screw is withdrawn from its normal locking position. When the screw is in locking position 105 as shown in Fig. 2, that is, when the beading 15 is in normal position, locked to the window casing, the projection 29 is free to pass between the shoulder 24 and the milled portion 25 of the screw to permit the lower sash to be lifted. 110

For clamping the bottom of the lower sash to the movable guide strips 15, there is attached to the lower end of each strip a 115 member 30 which may also serve as a bearing plate for the pivot screw 16. The member 30 is provided with an offset portion 31 adapted to form one member of a latch, the cooperating member of which is in the form 120 of a tongue 32 attached to the inner face of the lower sash, as shown most clearly in Fig. 4.

The devices thus far described constitute means for holding the movable guide strips 15 in normal position in the window casing, 125 and also provide devices for latching the lower sash to the guide strips when it is desired to tilt the sash inwardly. The invention also contemplates the employment of the tilting devices for the purpose of securing ventilation of the room, and ordinarily 130

for this purpose the lower sash will be opened only a slight distance. To hold the sash in any desired position of adjustment, there is attached to each of the guide strips
 5 15 on the face lying against the window casing a member 33, provided with a number of holes into which may be inserted a bolt 34 mounted on the edge of the window casing. The member 33 and also the casing of the
 10 bolt 34 may be provided with lugs to which is attached a chain 35, as shown in Fig. 9, for limiting the inward movement of the guide strips and lower sash to hold them in substantially horizontal position when washing the pane.

In order to permit the upper sash to be tilted inwardly, it is necessary to provide an arrangement whereby the parting strips between the sashes may be depressed within
 20 the window casing. For this purpose there is placed within a groove in each of the sides of the window casing a metallic channel member 36. A second channel member 37 is fitted within the channel member 36, and a
 25 third channel member 38 is fitted within the member 37, producing, as shown most clearly in Fig. 8, a telescoping arrangement which when collapsed will cause both of the members 37 and 38 to lie within the member
 30 36 to permit the upper sash to be tilted inwardly. The channel members 37 and 38 are connected to each other and to the channel member 36 by means of links 39, each composed of two parallel portions connected together
 35 by pins 40 and 41, which fit within corresponding bearings 42 and 43 on the channel members 37 and 38, respectively, the former member being slotted to permit the link to extend through the same. The
 40 inner end of the link extends through a slot in the bottom of channel member 36 and is pivoted as at 44 to the sides of a housing or bearing member 45 which projects from the bottom of the channel 36 and is fitted in a
 45 suitable recess cut in the window casing. There may be as many links as desired, but in the illustrated embodiment of the invention, three such links have been shown. The portion of the parting strip composed
 50 of the channel members 36, 37 and 38 need not extend to the top of the window casing, and as shown most clearly in Fig. 1, the upper section 46 of the parting strip may be of the customary wooden or metallic construction. A housing 47 incloses the ends of the
 55 movable members of the parting strip and also serves as a seat upon which rests the lower end of the upper section 46.

The structure of the links 39 and the
 60 method of connecting them to the telescoping members of the parting strip avoids the use of rivets or pins extending through the sides of the members and which might interfere with the movement of the members
 65 by catching on the edges of other members.

The housings 45 protect the ends of the links that extend beyond the inner channel members 36, and also serve as means by which these members may be fastened to the window casing, as well as to receive the pivot
 70 pins for the inner ends of the links.

The construction of the parting strip also eliminates the use of separate strips for the intermediate member as in my prior structures. The intermediate strip is now formed
 75 as a channel member, which simplifies and cheapens the construction, while adding strength and assuring a more rigid structure, and also making it possible to use the links 39 with their advantages.

It is intended that the parting strips shall be extended or collapsed by means actuated by the upper sash when it is drawn to the bottom of the window casing. For this purpose each link 39 at the bottom of each parting
 80 strip is provided with an extension which, by means of a pin 48, is connected to the inner end of an arm 49 rotatively mounted upon the pivot 50 which carries the link. The pivot pin 50 is mounted in the
 85 sides of a housing 51 set in a recess in the window casing. The face plate of this housing is extended downwardly as at 52 to cover the lower end of the groove in the window casing which is not occupied by the parting
 90 strip. The housing is provided with an extension 53 which serves as a guide for the lower end of the parting strip similar to the member 47 at the top of the strip. A spring
 95 54 is provided for driving the arm 49 and has one end coiled about the pin 50 and secured to the rear of the channel member 36 for the purpose of holding the coiled portion in fixed position, while the other end is caught over pin 48 and serves to drive the
 100 arm.

Attached to the bottom of the upper sash at each side thereof is a member 55, having its lower portion 56 lying close to the casing in position to engage and swing the arm 49
 110 as the upper sash is drawn to the bottom of the casing. This portion of member 55 is provided with a slot which is adapted to fit over a stud 57, preferably in the form of a screw inserted into the casing and projecting through an aperture in the face plate of housing 51, instead of being formed integrally therewith. The outer end of the stud
 115 is of rectangular cross-section so that as the upper sash is drawn down, the stud will enter the slot in portion 56, but when the sash is tilted inwardly, the stud will occupy such a position in the slot as to hold the upper
 120 sash in place as shown most clearly in Fig. 9.

In the operation of the devices described
 125 above, whenever it is desired to tilt the sashes inwardly for cleaning or other purposes, the lower sash 11 is drawn to the bottom of the window casing, in which position the clip 32 will engage the cooperating mem-
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ber 31 on each of the guide strips 15, and when the screws 20 are loosened to permit the guide strips to be swung inwardly, the projections 29 at the top of the sash will lie
 5 beneath the shoulders 24 on the screws, as shown most clearly in Fig. 3, which represents the relative arrangement of the parts at this stage of the operation. The shoulders 28 are in engagement with the tops of
 10 extensions 26. The lower sash is thus prevented from moving upon the guide strips 15, and all of these parts may be tilted inwardly either to a substantially horizontal position as indicated in Fig. 9, which is the
 15 position in which they will be placed for cleaning purposes, or they may be swung inwardly just enough to be held by the bolts 34 in corresponding holes of the members 33, in case it is desired to provide an opening be-
 20 tween the upper and lower sashes to provide for the entrance of air for ventilation.

In order to swing the upper sash inwardly, it is drawn to the bottom of the window casing, and as the portions 56 of members 55 en-
 25 gage the projecting ends of arms 49, the latter will be swung from the normal position in which they are held by their springs 54, as shown in Fig. 6, into a position in which the lower links 39 will be swung inwardly to
 30 draw the channel members 37 and 38 into the channel member 36. When the sash is tilted the portions 56 remain in engagement with the arms 49 to hold the latter in the position to which they were swung when the
 35 sash was lowered. The movement imparted to the channel members 37 and 38 by the lower links will produce a corresponding movement of the other links 39 until the members 37 and 38 are telescoped within the chan-
 40 nel member 36 to permit the upper sash to be tilted inwardly. At the same time the slotted extensions 56 at the bottom of the upper sash have engaged the studs 57, so that this sash may be swung about the studs
 45 as a pivot into the position shown in Fig. 9 to permit the outer face of the pane to be cleaned, or to open the entire window for entrance of air, particularly in hot weather. In this connection, it may be noted that the
 50 arrangement of the present invention does not in any way interfere with window screens that may be placed upon the outside of the window casing.

When it is desired to restore the sashes
 55 to normal condition, the upper one is swung into its vertical position and then lifted toward the top of the window casing. As the members 55 pass out of engagement with the arms 49, the springs 54 restore the latter to
 60 the position shown in Fig. 6, and at the same time withdraw the channel members 37 and 38 of the parting strips from the channel member 36, so that they are in position to guide the upper sash as it is raised to-
 65 ward the top of the window casing. The

operation of restoring the parting strips to their normal position is entirely automatic, and if, for any reason, the springs 54 should fail to perform their function when the sash is raised, the members 55 will strike the in-
 70 clined faces of the upper portions of arms 49 and swing them into the position shown in Fig. 6, so that the parting strips will be forced out into their normal position. There is thus a positive collapsing and restoring
 75 action in case the springs should fail to function.

After the upper sash has been restored to normal position, the lower sash is swung into a vertical position, and when the screws
 80 20 are engaged with the plates 21^a on the window casing, the shoulders 24 of the screws will be withdrawn from engagement with the projections 29 so that this sash may thereafter be lifted as desired. 85

I claim:

1. A window structure comprising a casing, a sash slidably mounted in the casing, guide strips at the inner side of the sash movably
 90 mounted on the casing, means for holding the strips in place on the casing, members mounted on said strips and having extensions in parallelism with the plane of said window, members mounted on said sash adapted to engage with said extension mem-
 95 bers, thereby affording a connection between said sash and strips and means for locking said sash and strips in their coöperating position.

2. A window structure comprising a cas- 100
 ing, a sash slidably mounted in the casing, guide strips at the inner side of the sash each composed of an upper portion fixed to the casing, and a lower portion movably mount-
 105 ed on the casing, means for holding the movable portions in alinement with the fixed portions comprising a thumb screw carried by said movable portion, plates mounted on said movable portions and having extensions in parallelism with the plane of said win-
 110 dow, members mounted on said sash adapted to engage with said extensions, thereby affording a connection between said sash and movable strips, and means for locking said sash and movable strips in their coöperating
 115 position, said means comprising shoulders provided on said members adapted to engage said extensions and limit the downward movement of said sash, and projections provided on said members adapted to en-
 120 gage the head of said thumb screw and limit the upward movement of said sash.

3. A window structure comprising a cas-
 ing, a sash slidably mounted in the casing, inner guides for the sash pivotally attached
 125 at their lower ends to the casing, a housing in each of said guides near its upper end, a member slidably mounted in the housing and provided with a screw at one end and an enlarged portion at the other end, a mem- 130

ber attached to the casing adapted to receive the screw, a spring within the housing for forcing the member out of the housing when the screw is disengaged from the member on the casing, a channel member extending outwardly from the housing, a latching member attached to the sash adapted to enter the channel member and provided with a shoulder adapted to engage the edge of the channel member to limit the movement of the sash in one direction, and a lug adapted to cooperate with the enlarged portion of the member slidably mounted in the housing when this member is forced outwardly by the spring to prevent movement of the sash in the opposite direction, whereby the sash is locked upon the guides to move therewith when they are swung out of the plane of the casing about their pivots.

4. A window structure, comprising a casing, a sash slidably mounted in the casing, parting strips for the sash, each comprising a channel member mounted in a groove in the side of the casing, a second channel member mounted within the first-named channel member, a third channel member mounted within the second channel member, a plurality of arms, each pivotally attached to the bottom of each channel member for holding the members in parallel relation, the bottoms of the first and second channel members being provided with apertures through which the arms pass, and means connected to one of the arms and adapted to be engaged by the sash in its descent for drawing the second and third channel members within the first channel member, whereby the parting strip is removed from engagement with the sash, so that the latter may be tilted out of the plane of the casing.

5. A window structure, comprising a casing, a sash slidably mounted in the casing, parting strips for the sash, each comprising a plurality of telescoping channel elements, members connected to the several channel elements for holding them in parallel relation, an arm connected to the inner end of one of the members and projecting into the path of the sash, a spring associated with the arm for normally holding the channel elements extended, and means attached to the bottom of the sash for actuating the arm to overcome the effect of the spring and collapse the channel members, so that the sash may be swung out of the plane of the casing.

6. A window structure, comprising a casing, a sash slidably mounted in the casing, parting strips for the sash, each comprising a plurality of telescoping channel elements, members connected to the several channel elements for holding them in parallel relation, means connected to one of the members and adapted to be engaged by the sash in its descent for collapsing the elements of the strip,

a stud projecting from each side of the casing in the path of the sash, and means attached to the bottom of the sash and adapted to cooperate with the studs in forming pivots about which the sash may be swung out of the plane of the casing when the elements of the parting strips are collapsed.

7. A window structure, comprising a casing, a sash slidably mounted in the casing, parting strips for the sash, each comprising a channel member mounted in the groove in the side of the casing and provided with extensions projecting into the casing from the bottom of the member, a second channel member mounted with its base within the open side of the first channel member, a third channel member mounted with its open side within the open side of the second channel member, a plurality of links, each composed of a pair of arms passing through apertures in the bases of the first and second channel members, pivotal connections between the links and the extensions of the first channel member, and the bases of the second and third channel members, the link nearest the bottom of the casing being provided with an extension, an arm mounted on the inner pivot of said link and connected to the extension and projecting into the path of the sash, and means attached to the bottom of the sash adapted to engage the arm to swing the bottom link to collapse the second and third channel members within the first channel member to remove the parting strip from engagement with the sash to permit the latter to be swung out of the plane of the casing.

8. A window structure comprising a casing, a sash slidably mounted in the casing, said sash being mounted to swing out of its normal plane, guide strips at the inner side of the sash mounted to be moved out of the plane of the casing and means for automatically establishing a connection between the sash and strips when said sash is slid into a predetermined position.

9. A window structure comprising a casing, a sash slidably mounted in the casing, guide strips at the inner side of the sash movably mounted on the casing, means for holding the strips in place on the casing, and means associated with said holding means adapted to lock said sash and strips in co-operative relation upon releasing of said holding means.

10. A window structure comprising a casing, a sash slidably mounted in the casing, guide strips at the inner side of the sash movably mounted on the casing, means for holding the strips in place on the casing, and means for automatically establishing a connection between said strips and each corner of the sash upon relative movement of said parts into cooperative relation.

11. A window structure comprising a cas-

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ing, a sash slidably mounted in the casing, guide strips at the inner side of the sash movably mounted on the casing, means for holding the strips in place on the casing, 5 members mounted on said strips, and members mounted on the sash adapted to engage with said first members, thereby affording a connection between said sash and strips, and means for preventing disengagement of said members and thereby locking said sash and 10 strips in their cooperative position.

In testimony whereof I affix my signature.

JOHN STONE BERRY.