J. SIEGFRIED.

WINDOW.

APPLICATION FILED MAY 2, 1919.

1,423,629.

Patented July 25, 1922.

2 SHEETS—SHEET 1.

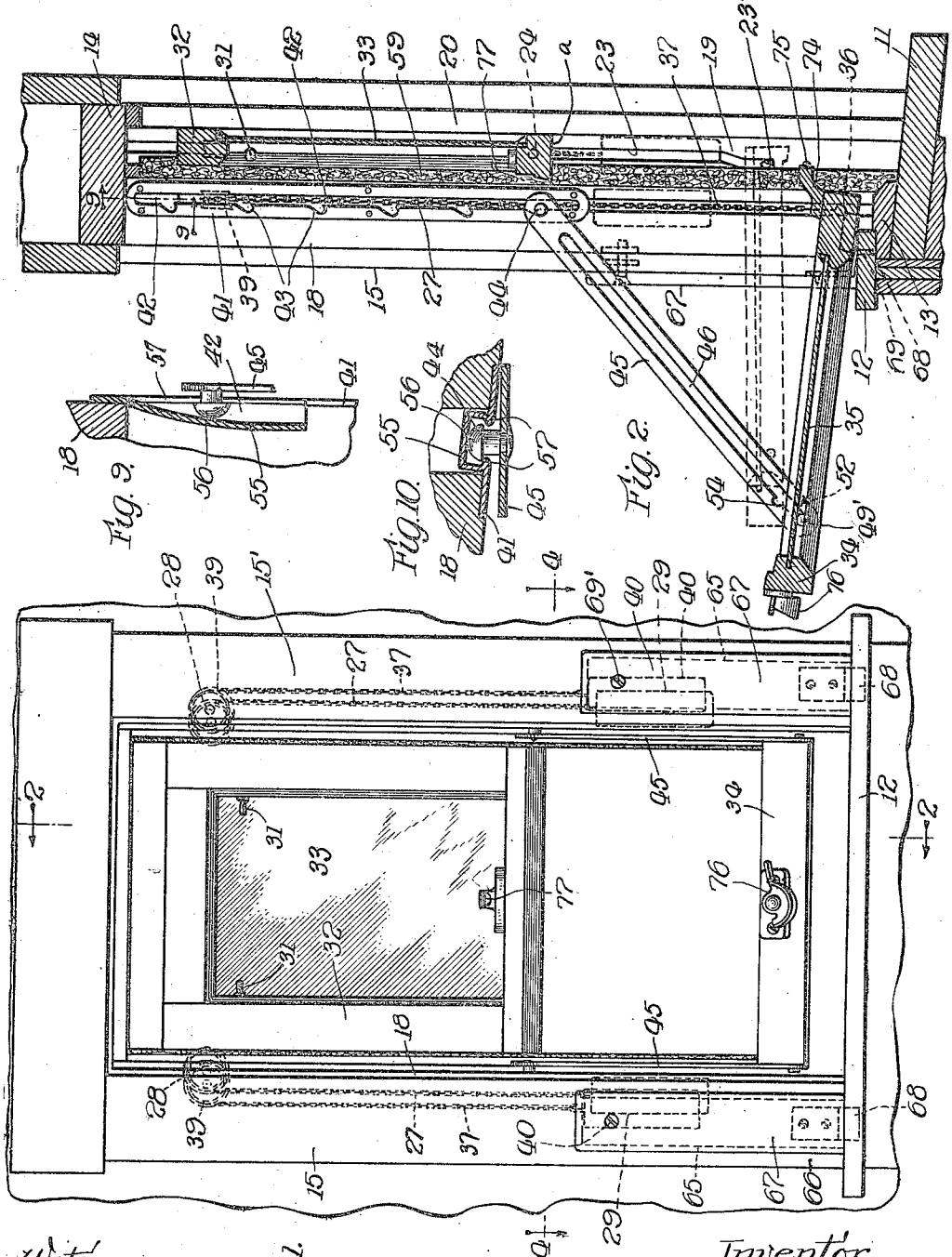


Fig. 1.

Fig. 2.

Fig. 9.

Fig. 10.

Witness:
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Inventor:
Joseph Siegfried
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2 SHEETS—SHEET 2.

Fig. 4.

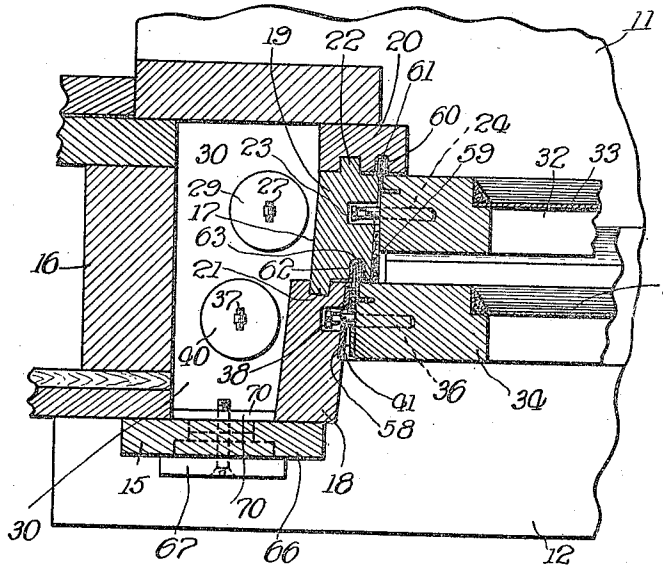


Fig. 3.

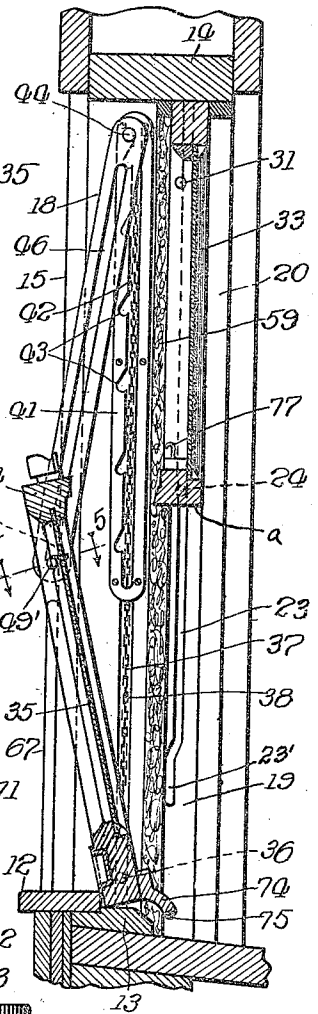


Fig. 5.

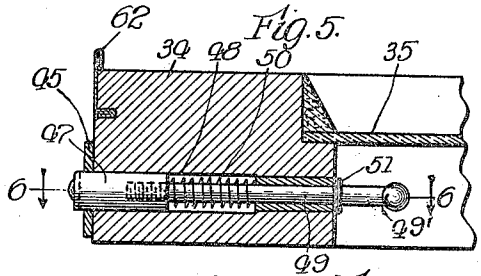


Fig. 6.

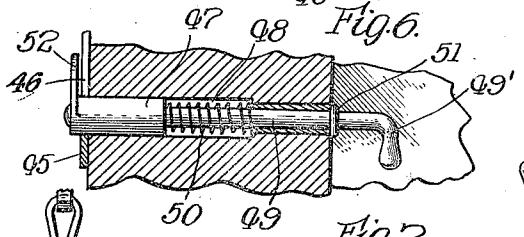


Fig. 7.

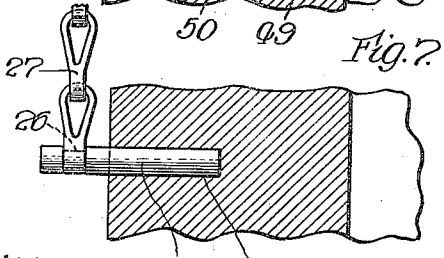


Fig. 8.

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UNITED STATES PATENT OFFICE.

JOSEPH SIEGFRIED, OF LAFAYETTE, INDIANA, ASSIGNOR OF ONE-FOURTH TO JOSEPH HELD, OF WEST LAFAYETTE, INDIANA, AND ONE-FOURTH TO CHRIST HELD, OF LAFAYETTE, INDIANA.

WINDOW.

1,423,629. Specification of Letters Patent. Patented July 25, 1922.

Application filed May 2, 1919. Serial No. 294,161.

To all whom it may concern:

Be it known that I, JOSEPH SIEGFRIED, a citizen of Germany, and a resident of Lafayette, in the county of Tippecanoe, State of Indiana, have invented certain new and useful Improvements in Windows, of which the following is a specification.

My invention relates to windows and covers several improvements in construction, arrangement and operation.

My invention is particularly adaptable in windows of the sliding type. It has been quite difficult, particularly for the housewife, to wash windows of this type from the inside of the house. One of the main objects of my invention is therefore to provide such construction and arrangement as will enable the upper and lower sashes of a window to be swung inwardly in convenient position for washing. By means of my construction and arrangement the upper and lower sashes can be raised or lowered in the ordinary manner and can also be swung downwardly to be in horizontal position on the window sill and entirely within the room so as to be readily accessible.

The construction and arrangement involving swinging of the windows in addition to their vertical movement accomplishes another very important feature, namely the ability to adjust the windows themselves for proper ventilation of the room, thereby eliminating the necessity of special window ventilators.

Another important object of my invention is to provide such construction and arrangement that the sashes can be readily bodily removed from the window frame without the necessity of taking off guide strips or other window parts.

Another object of the invention is to provide improved and simple construction and arrangement for sealing the window against the weather, thereby avoiding the necessity of storm windows.

The above and other features of my invention are clearly illustrated on the accompanying drawings, in which—

Fig. 1 is a front elevational view of a window with the lower sash swung down,

Fig. 2 is a sectional view on the plane 2—2 of Fig. 1,

Fig. 3 is a similar sectional view showing the lower sash only partly swung,

Fig. 4 is an enlarged horizontal sectional view through one side of the window frame and window sashes, the sashes having been shifted vertically to bring their weight chain engaging points in the section plane,

Fig. 5 is an enlarged sectional view on the plane 5—5 of Fig. 3,

Fig. 6 is a sectional view on plane 6—6 of Fig. 5.

Fig. 7 is an enlarged vertical sectional view taken at the lower corner of one of the windows showing the pivot connection between the window and the weight chain,

Fig. 8 is an enlarged view showing a modified construction at the end of a weight receiving cord,

Fig. 9 is an enlarged sectional view on plane 9—9 of Fig. 2, and

Fig. 10 is an enlarged sectional view of the construction shown in Fig. 9.

The frame of the window shown comprises the outer sill or ledge 11, the inner sill 12, the seating board 13 for the lower sash, the top board 14, and the side wall structures designated as a whole 15 and 15′. As the construction and arrangement of the window side mechanism is the same at each side of the window I shall apply reference characters to only one side structure, it being understood that the same references apply to the opposite side.

Referring particularly to Fig. 4 each side structure has inner and outer parts or wall structures 16 and 17 respectively. Each outer wall structure comprises a pulley stile 18 for providing guiding means for the lower sash, an outer pulley stile 19 for providing guiding means for the upper sash, and a weather strip stile 20. The board 19 has tongue and groove connections 21 and 22 with the stile 18 and board 20 respectively, these connections securely holding the stiles together and sealing them against the entrance of cold or dust.

Running lengthwise of each stile 19 from the top close to the bottom thereof is a groove or channel 23 into which channels trunnion pins 24 at the lower end of the upper sash are extended, these pins being loosely engaged in pockets 25 formed in the sash so that they can be readily withdrawn. At each side of the window the outer end of the trunnion pin is provided with a circumferential groove 26 to receive the end link of

a weight supporting cord or chain 27. (Fig. 7). The chains extend upwardly in the channels 23, and at the upper end of such channels the chains extend around pulleys 28, the other ends of the chains connecting with weights 29 which are in the chambers 30 formed between the outer and inner walls 16 and 17 of the frame sides. At the upper end of the upper sash and extending through the side walls thereof are the bolts 31 which are of the well known construction, springs inside of the pockets for the bolts tending to shift the bolts outwardly to hold their outer ends in the channels 23. These bolts and the trunnion pins 24 extend into the channels and hold the upper sash in its vertical path during the ordinary raising and lowering thereof. The upper sash is of ordinary construction comprising the rectangular frame 32 and the window frame 33.

The lower sash comprises the rectangular frame 34 and the window pane 35, and at each lower corner of the sash there is a trunnion pin 36 similar to the pin 24 for the upper sash already described, these pins for the lower sash being engaged by the ends of chains 37 which extend upwardly in the channels 38 of the side boards 18 where at the upper ends of these boards they pass around pulleys 39 and at their other ends support the weights 40 in the chamber 30. Secured to the inner face of each side board 18 in front of the channel 38 therein, and countersunk so as to be flush with the inner face of the board, is an escutcheon plate 41. These plates extend downwardly from the top of the frame to a short distance below the center line of the window, and each plate has a centrally extending slot 42 from which pockets or notches 43 open into the front section of the strip. These slots and notches co-operate with the pins or studs 44 extending laterally from the upper ends of the supporting brace bars 45, there being a brace bar at each side of the frame. Each brace bar has a longitudinally extending slot 46 which at its lower end receives the end of a bolt 47 extending through the upper corner of the lower sash, the construction and arrangement of these bolts being clearly indicated in Figs. 5 and 6. The bolt is slidable in a pocket 48 in the sash side wall and the stem 49 extends inwardly therefrom and terminates in a handle 49′ at the inner side of the sash wall, a compression spring 50 tending to force the bolt 47 outwardly, but a flange 51 on the stem limiting such outward movement. Secured to the outer end of each bolt and extending radially therefrom is a latch plate 52 whose purpose will be presently described.

The bolts 47 together with the bolts 36 at the lower corners of the lower sash engage in the channels 38 and hold the lower sash to its vertical path during ordinary raising and lowering of the sash.

Describing now the operation, the brace bars 45 will normally be parallel and coincident with the escutcheon plates 41 and the bolts and pins of the sashes will be in their respective channels 23 and 38 and the sashes can then be raised and lowered in the ordinary manner. Supposing it is desired to position the lower sash so that it may act as a ventilator at the same time preventing the entrance of rain or snow. The bolts 47 are first pulled inwardly, and the purpose of the detent plates 52 now become apparent. When the lower sash is at vertical position in the window frame, these plates are turned a distance so as to bring their ends behind the rear section of the escutcheon plate 41, and the bolts are then prevented from being withdrawn. Just before withdrawing the bolts for the purpose of swinging the lower sash, the bolts are slightly turned to bring the detent plates into parallelism with the escutcheon plate slots 42, and then the bolts are free to be withdrawn to bring their ends out of the slots 42 so that the window may be swung. After such withdrawal, bolts are again slightly turned to bring the detent plates in front of the brace bars 45 to prevent these bars from leaving the bolts. The sash is now free to be swung inwardly and this is done, and the brace bars 45 are shifted forwardly at their upper ends to bring their studs 44 into the topmost of the notches 43, and the sash will then be held slightly inclined inwardly to permit ventilation but to prevent the entrance of rain or snow. The sash may be lowered any distance and the studs engaged in the corresponding notches. In Figs. 1 and 2 the sash is shown entirely down in practically horizontal position, the studs 44 being in the lowermost notches of the escutcheon plate. The outside of the lower sash window pane can now be conveniently washed from the inside of the room.

After lowering of the lower sash to horizontal position, the upper sash may likewise be swung inwardly by first lowering the sash until its pins 24 reach the lower end of the channel 23, and then withdrawing the upper bolts 31, and then swinging the sash downwardly against the lower sash. It will be noted that the lower ends 23′ of the channel 23 are inclined forward slightly. This is for the purpose of permitting rotation of the upper sash without causing binding of its corner *a* against the weather board 20. After washing of the outer side of the upper sash window pane this sash is swung back into vertical position and its bolts 31 restored to the channels 23 and the sash is then raised to its upper position.

Preparatory to raising the lower sash to

its vertical position the studs 44 could be shifted by hand out of the respective notches but preferably means are provided for automatically accomplishing such separation. Such means is clearly shown in Figs. 2 and 3. Notches 54 are provided in the supporting braces 45 above their slots 46 and near the lower ends thereof. After the lower sash has been raised a short distance the supporting braces will drop to receive the bolts 47 in the notches 54, and then as the sash is further raised the supporting braces will be automatically shifted longitudinally to carry their studs 44 out of the escutcheon plate notches and the bars will then automatically be raised into parallelism and coincident with the escutcheon plate.

Just before the sash is brought into its final vertical position, the bolts 47 are given a slight turn and inward movement in order to permit the bolt ends and the detent plates 52 to enter the escutcheon plate notches whereafter the bolts are slightly turned to bring the detent plate ends behind the escutcheon plate walls. In order to automatically lock the supporting brace bars in their upper position after return of the lower sash to vertical position, friction means are provided. Such means is clearly shown in Figs. 9 and 10. Behind the slot 42 of each escutcheon plate and at the upper ends thereof the inclined wall section 55 is provided along which the inner end of the respective brace bar stud 44 rides as the brace bar reaches its upper position. Each stud has a head 56 at its inner end and the sides of the slot adjacent the inclined wall section 55 are drawn in as indicated at 57 so that escape of the studs is prevented when the bars are in their upper position, the frictional engagement of the stud heads with the inclined walls 55 serving to hold the bars in their upper position. It is possible to swing the lower sash to the first ventilating position without withdrawing stud 56 from the position shown in Fig. 9, because brace bar 45 is long enough to permit this. If desired the width of the slot 42 throughout the length of the supporting bars may be sufficiently contracted to prevent escape of the studs during the entire travel of the supporting bars.

In Fig. 4 means are clearly shown for enabling the sashes to be readily swung forwardly without interference and to permit operation of the detent plate 52 as heretofore described. It will be noted that the inner wall sections 17 are slightly inclined, that is, the distance between the outer ends of the respective pulley stiles is less than the distance between the inner ends thereof. This permits swing of the sashes freely and without friction. Furthermore the construction causes the escutcheon plate to be inclined transversely with reference to the brace bars so as to afford sufficient clearance spaces 58 for manipulation of the detent plates 52 to release the lower sash for swing. The inclined arrangement also permits the insertion of weather strips such as felt 59 along the inner sides of the pulley stile 19 to be engaged by the upper sash and to engage along their front edges with the lower sash as clearly shown.

I also provide other efficient weather proof arrangement. Extending from the sides of the upper sash are weather tongues 60 which engage in weather strip pockets 61 secured in the weather board 20. Likewise weather tongues 62 extend from the sides of the lower sash and into weather pockets 63 secured in the stiles 19. Not only are the pulley stiles inclined but the stiles for the lower sash are farther apart than those for the upper sash, this affording space for the weather strip connection between the front sash and the stile 19 and also giving additional clearance space for the forward swing of the upper sash. Not only does this improved construction permit the sash to be readily swung, but it also permits bodily removal of the sashes from the frame to be easily accomplished without need of taking off guide strips or other parts. If the lower sash is to be bodily removed, it is shifted upwards a distance and then swung forwardly and the bolts 47 rotated to release the detent plates 52 from the supporting brace bars, and then by tilting the sash transversely one of the trunnion pins will be released whereupon the sash can then be shifted laterally to release the other trunnion pin. To bodily remove the upper sash, its bolts 31 are withdrawn and the sash swung into horizontal position and then tilted transversely to release the chain engaging trunnion pins from the frame channel. The trunnion pins being loosely inserted in their pockets 25, these pins can readily be withdrawn and the sashes then entirely freed for bodily removal from the window frame.

In order to permit access to the weight chamber 30 and the weights therein, openings 65 are provided in the inner casings 66 which form the front walls of the weight chambers, and covers or closure boards 67 are provided for these openings. Each board has a detent tongue 68 at its lower end for engaging in a slot 69 formed in the inner sill 12, and a screw 69′ fastened to the upper end of the board engages in a cross bar 70 which engages behind the casing 66 adjacent the opening therethrough. Upon loosening of the screws the bars 70 will rotate into parallelism with the openings and the closure board can be readily withdrawn to expose the openings 65. The weights and the weight chains are thus readily accessible.

In Fig. 8 I have shown a connecting end for a cord, when cord is used instead of chains, for supporting the weights. This connecting end is in the form of a sleeve 71 which is clamped to the cord end and which at its lower end pivots a link 72 for receiving the hooks 73 on the weights.

To assist in making the window weatherproof, a weather ledge 74 may be provided at the lower end of the lower sash for supporting a weather strip or cushion 75. 76 and 77 represent lock parts of usual construction for locking the sashes when in their closed position.

It is apparent that my improved window is very desirable and useful, not only in residences but in any other building. The use of ladders or the necessity of climbing around outer window ledges is avoided and the windows can be readily washed from the inside of the building. The sashes can be easily and quickly removed bodily from the frames from the inside of the building without requiring the removal of strips or other frame parts as is the case in prior constructions. The swinging feature of the sashes does not interfere with their vertical movements in the ordinary manner. Furthermore, the lower sash can be adjusted to act as a window ventilator and the expense of special ventilating mechanism is avoided.

My improved construction also permits the adequate application of weather strip mechanism without interfering with the vertical or swinging movements of the sashes. Changes and modifications both in construction and arrangement are of course possible and I do not therefore desire to be limited to precisely what I have shown and described.

I claim as follows:

1. In a window structure, the combination of a frame, said frame having vertical channels in its opposite sides, a window sash in said frame, pins extending from the lower corners of said sash into said channels, a pin extending from one side of said sash into the adjacent channel and which pin is above the pin in the adjacent lower corner, a supporting bar slidably engaging at its upper end in said last named channel and at its lower end engaging said upper pin, and means whereby said upper pin may be withdrawn from its channel to release the sash for swinging movement away from the vertical plane, said bar supporting said sash in such position.

2. In a window structure, the combination of a frame, said frame having vertical channels in its opposite sides, a window sash in said frame, pins extending from the lower corners of said sash into said channels, a pin extending from one side of said sash into the adjacent channel and which pin is above the pin in the adjacent lower corner, said last named channel having notches in one of its edges, a supporting bar the upper end of which is adapted to engage said notches and the lower end of which is adapted to slidably engage said upper pin, and means whereby said upper pin may be withdrawn from its channel to release the sash for swinging movement away from the vertical plane, the engagement of the bar with said notches determining the position in which said sash will be held.

3. In a window structure, the combination of a frame, said frame having vertical channels in its opposite sides, a window sash in said frame, pins extending from the lower corners of said sash into said channels, a pin extending from one side of said sash into the adjacent channel and which pin is above the pin in the adjacent lower corner, a slotted escutcheon plate secured to the frame so that the slot thereof registers with said last named channel, said plate having notches in one of its edges which communicate with the slot, a supporting bar the upper end of which is adapted to engage said notches and the lower end of which is adapted to slidably engage said upper pin, and means whereby said upper pin may be withdrawn from its channel to release the sash for swinging movement away from the vertical plane, the engagement of the bar with said notches determining the position in which said sash will be held.

4. In a window structure, the combination of a frame, said frame having vertical channels in its opposite sides, a window sash in said frame, pins extending from the lower corners of said sash into said channels, a pin extending from one side of said sash into the adjacent channel and which pin is above the pin in the adjacent lower corner, a slotted escutcheon plate secured to the frame so that the slot thereof registers with said last named channel, said plate having notches in one of its edges which communicate with the slot, a supporting bar the upper end of which is adapted to engage said notches and the lower end of which is adapted to slidably engage said upper pin, and means whereby said upper pin may be withdrawn from its channel to release the sash for swinging movement away from the vertical plane, the engagement of the bar with said notches determining the position in which said sash will be held. said bar at its lower end having means adapted to be engaged by said upper pin when said sash is raised whereby said bar is shifted longitudinally to shift its upper end out of engagement with said notches, to slide in the slot of said escutcheon plate and to raise said bar into its normal vertical position.

5. In a window structure, the combination of a frame, said frame having vertical channels in its opposite sides, a window sash in

said frame, pins extending from the lower corners of said sash into said channels, pins extending from the upper corners of said sash into said channels, supporting bars slidably engaging at their upper ends in said channels and receiving said upper sash pins at their lower ends, and means whereby said upper pins may be withdrawn from said channels to release said sash for inward swinging away from the vertical plane, said bars supporting said sash when swung into such position.

6. In a window structure, the combination of a frame having vertically extending channels in its sides, a window sash in said frame, pins extending laterally from said sash at the lower end thereof and into said channels, pins at the upper end of said sash extending laterally into said channels, said pins guiding said sash during shift thereof in its vertical plane, said channels having notches in their inner edges, supporting bars having laterally extending pins at their upper ends for slidably engaging in said channels and co-operating with said notches, said bars having longitudinally extending slots, the upper pins of said sash extending into said slots, and means for withdrawing said upper sash pins from said channels whereby said sash may be swung inwardly toward a horizontal plane, said supporting bars supporting said sash when swung into such position, the engagement of the bar pins with said notches determining the position in which said sash will be held.

7. In a window structure, the combination of a frame, said frame having vertical channels in its opposite sides, a window sash in said frame, pins extending laterally from the lower end of said sash and into said channels, escutcheon plates secured to the frame sides in front of the upper ends of said channels, said plates having slots therein in register with said channels and having notches in their inner edges communicating with said slots, supporting bars having lugs extending from their upper ends into said escutcheon plate slots, said bars having longitudinal slots, the upper ends of said sash having pins extending normally laterally therefrom through said supporting bar slots and into said escutcheon plate slots, the pins at the upper end of said sash being adapted to be withdrawn from said escutcheon plate slots whereby to release said sash for inward swinging movement away from its vertical plane, said supporting bars engaging with their lugs in any set of notches to thereby support said sash in a corresponding angular position.

8. In a window structure, the combination of a frame having vertically extending channels in its opposite sides, a window sash in said frame, pins extending laterally from said sash at the lower end thereof and into said channels, escutcheon plates secured to the frame in front of the channels at the upper ends thereof and having slots in register with said channels and notches in the front edges of said slots, pins which may travel in the escutcheon plate slots extending laterally from said sash at the upper end thereof, supporting bars having longitudinally extending slots receiving said upper pins, studs extending laterally from the inner ends of said bars and through said escutcheon plate slots for cooperating with said notches, said sash upper pins being adapted to be withdrawn from said escutcheon plate slots whereby said sash will be free to be swung inwardly and downwardly, the extent of such swing being determined by the engagement of the supporting bar studs with a particular set of notches, and a notch at the lower end of each supporting bar adapted to be engaged by one of the sash upper pins when said sash is being swung upwardly whereby said bars are shifted longitudinally to shift their lugs out of the escutcheon plate notches and to raise said bars into their normal vertical position.

9. In a window structure, the combination of a frame having vertical channels in its opposite sides, a sash in said frame having pins at its lower end extending laterally into said channels, pins extending laterally from said sash at the upper end thereof, supporting bars having longitudinally extending slots for receiving the upper pins of said sash, lugs extending laterally from the upper ends of said bars and slidable in said channels, said upper sash pins extending normally through said bar slots into said channels, said pins being adapted to be withdrawn sufficiently to be released from said channels whereby said sash may be swung inwardly, said supporting bars holding said sash in its swung position, and detent plates at the inner ends of said sash upper pins for preventing escape of said bars from said pins when said sash is swung.

10. In a window structure, the combination of a frame having outer and inner stiles, the opposed inner faces of said stiles being inclined, said inner stiles being spaced farther apart than said outer stiles, an upper sash between said outer stiles, a lower sash between said inner stiles, weather side boards outside of said outer stiles, weather-strip connections between said upper sash and said weather side boards, weather-strip connections between said lower sash and said outer stiles, means whereby said sashes may be shifted vertically, and means whereby said sashes may be swung inwardly and downwardly.

11. In a window structure, the combination of a frame having outer and inner stiles, the opposed inner faces of said stiles being inclined, said inner stiles being spaced far-

ther apart than said outer stiles, an upper sash between said outer stiles, a lower sash between said inner stiles, weather side boards outside of the outer stiles, weather-strip connections between said upper sash and said weather side boards, weather strip connections between said lower sash and said outer stiles, weather strips secured to the inclined faces of said outer stiles which bear against the inner edge of the upper sash and the outer face of the lower sash, means whereby said sashes may be shifted vertically, and means whereby said sashes may be swung inwardly and downwardly.

12. In a window structure, the combination of a frame having channels in its opposite sides, notches in said channels spaced to be at various heights, a window sash in said frame provided with means cooperating with said channels permitting said sash to be raised or lowered in said frame, said window sash being adapted to pivot at its lower corners for swinging out of the vertical plane, brace bars having pivotal connection at their lower ends with said sash at its upper corners, the upper ends of said bars being adapted to co-operate with said notches to hold said sash in swung position, whereby the window sash may be swung out of the vertical plane with the lower portion of the sash remaining in its original horizontal plane.

13. In a window structure, the combination of a frame having channels in its opposite sides, notches in one of the channels in one side of the frame spaced to be at various heights, a window sash in said frame provided with means cooperating with said channels permitting said sash to be raised or lowered in said frame, said window sash being adapted to pivot at its lower corners for swinging out of the vertical plane, a brace bar adjacent the side having said notches and having pivotal connection at its lower end with said sash at its upper corner, the upper end of said bar being adapted to co-operate with said notches to hold said sash in swung position, whereby the window sash may be swung out of the vertical plane with the lower portion of the sash remaining in its original horizontal plane.

14. In a window structure, the combination of a frame having channels in its opposite sides, a window sash for said frame provided with means cooperating with said channels permitting said sash to be raised or lowered in said frame, said window sash having pivotal connection at its lower corners with the frame sides, a brace bar pivotally connected at its lower end with said sash at one side, the upper end of said brace bar and the adjacent frame side having pin and notch connection, whereby said window sash may be swung out of the vertical plane and held in swung position, with the lower portion of the sash remaining in its original horizontal plane.

In witness whereof, I hereunto subscribe my name this 29th day of April, A. D., 1919.

JOSEPH SIEGFRIED.