

May 14, 1940.

G. ROSENBERG

2,201,126

WINDOW CONSTRUCTION

Filed May 24, 1938

3 Sheets-Sheet 1

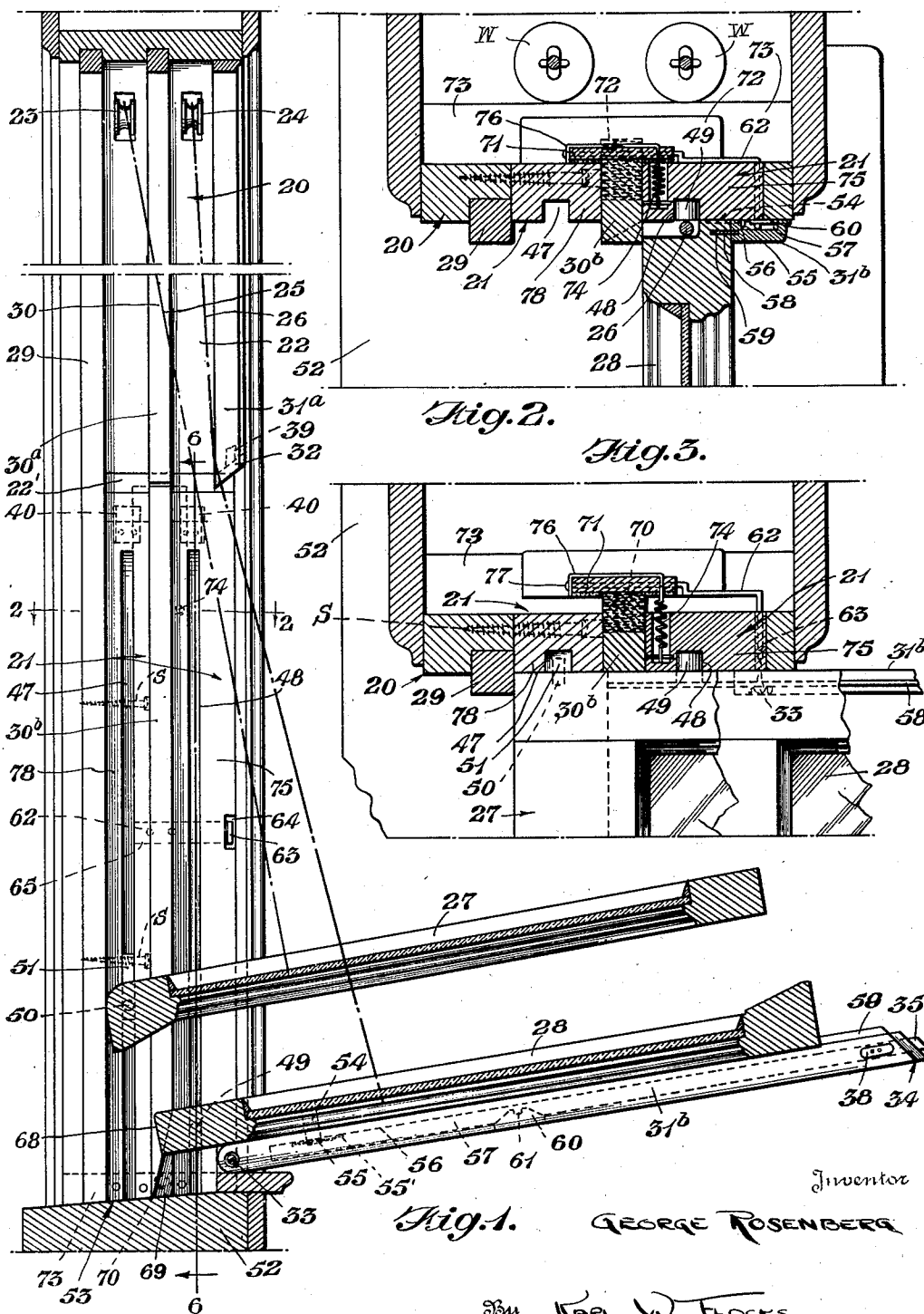


Fig. 1.

Fig. 2.

Fig. 3.

Inventor

By KAR W. FLOCKS

Attorney

May 14, 1940.

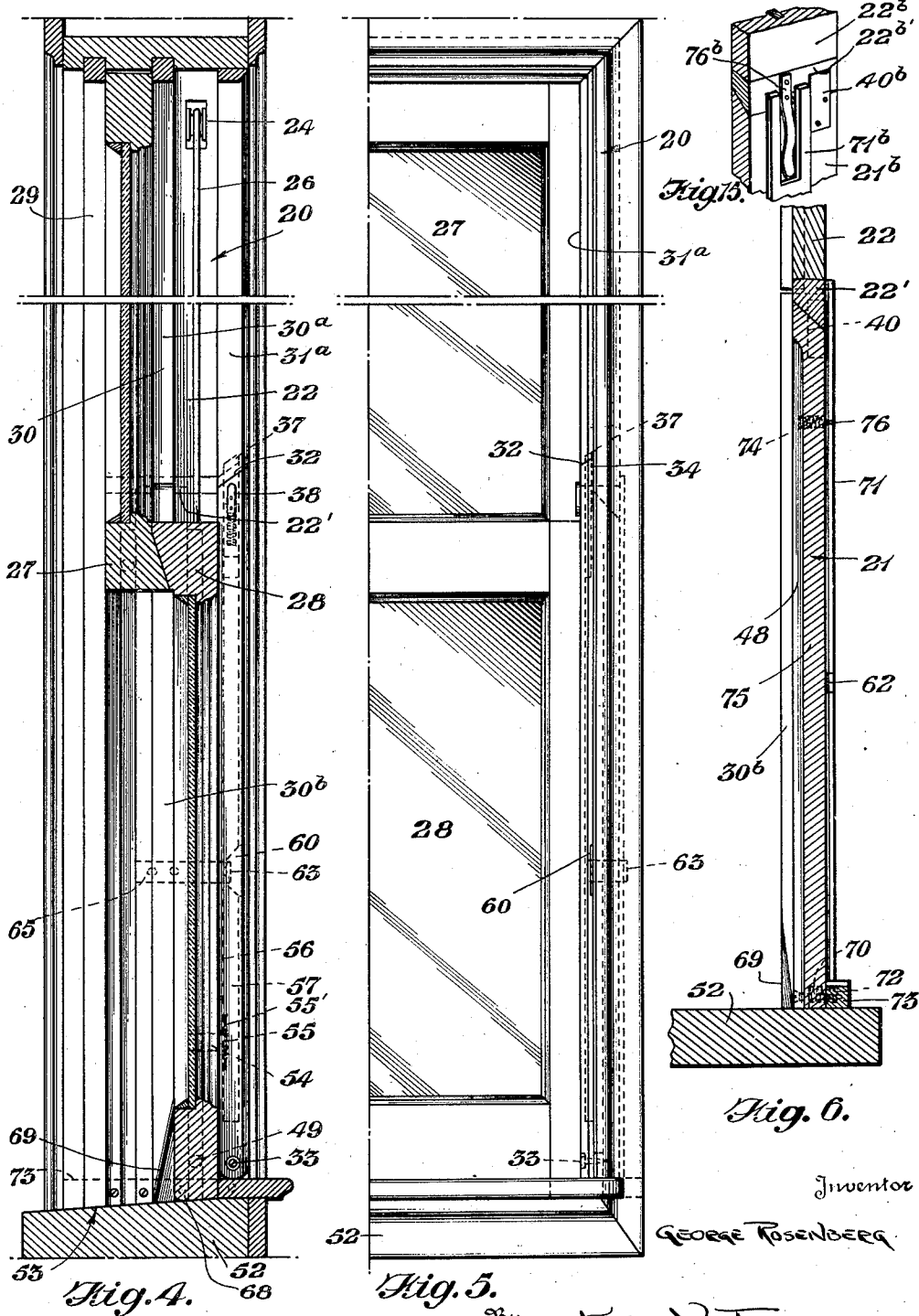
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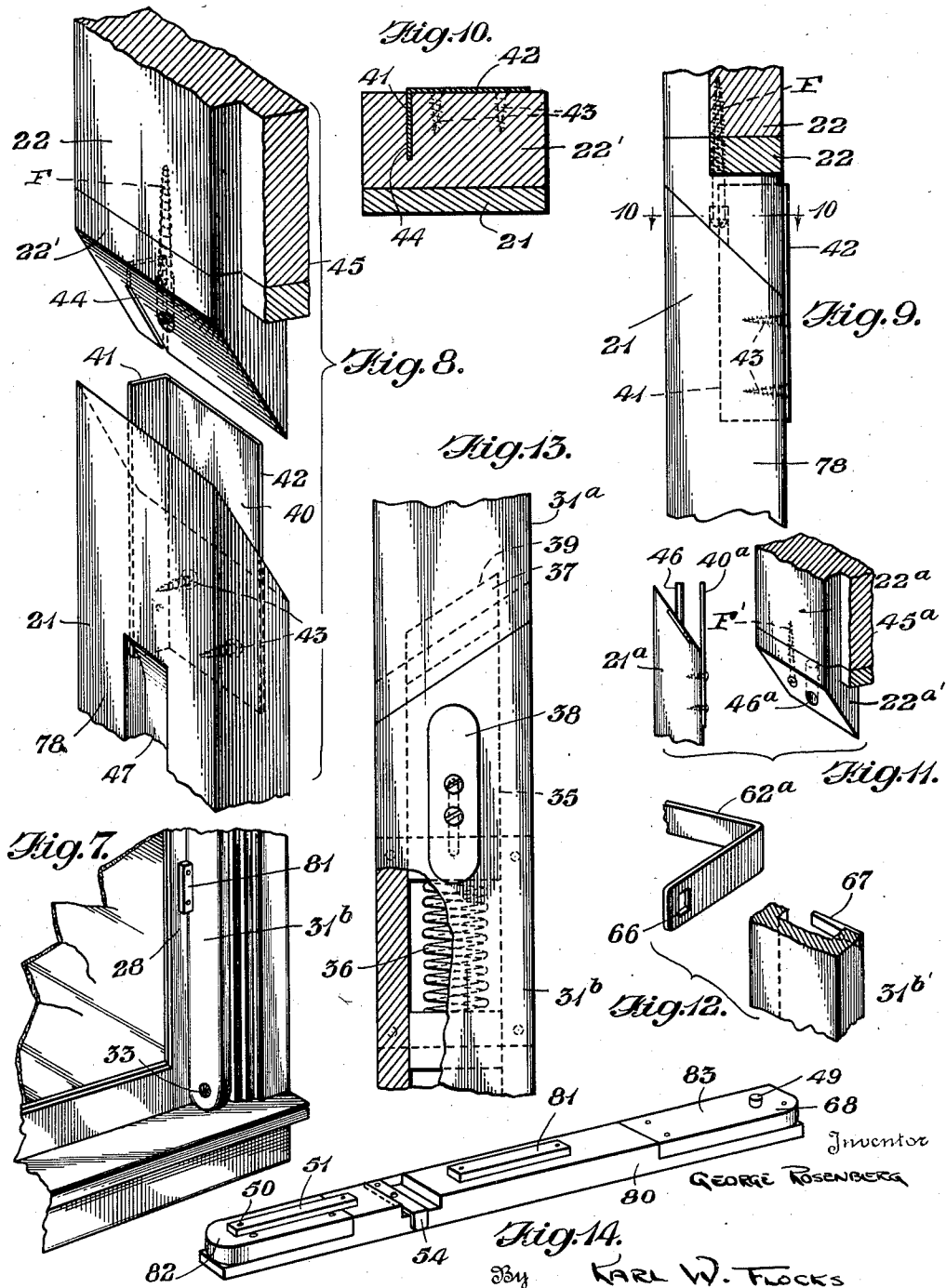
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Attorney

UNITED STATES PATENT OFFICE

2,201,126

WINDOW CONSTRUCTION

George Rosenberg, New York, N. Y.

Application May 24, 1938, Serial No. 209,821

14 Claims. (Cl. 20—42)

This invention relates to window construction and more particularly to improvements in double hung windows which are capable of pivotal movement.

5 Prior to my invention it has been proposed that the inside section of a double hung window be mounted for pivotal movement but such prior arrangements have been unsatisfactory and they have been designed for awkward operation and effect improper results insofar as protection from the elements is concerned. It has also been proposed that both sections of a double hung window be arranged for pivotal action, but such constructions have not met with success for their design was bulky, they did not afford the proper protection and they interfered with storm windows and screen installations. These prior swingable or pivotal double hung windows, it has been found, have been expensive to manufacture, require service by skilled technicians, are difficult to install, involving a redesign of conventional framing.

It is an object of my invention to provide a relatively simple double hung window, in which the frames are swingably mounted to facilitate their movement into a room for washing, painting or other purposes. It is another object of my invention to provide a double hung window, the frames of which are swingably mounted, effective to give proper protection from the elements.

It is a further object of my invention to provide a series of parts or structural elements with which an unskilled workman may convert a double hung window of conventional design to one in which the sashes are pivotally mounted.

Other objects and the nature and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a vertical sectional view of the invention with the frames in swung down position;

Fig. 2 is a horizontal sectional view taken along line 2—2 of Fig. 1 with the sashes in normal operative position;

Fig. 3 is a view similar to that shown in Fig. 2 but with the windows in swung down positions;

Fig. 4 is a view similar to that shown in Fig. 1 with the sashes in normal operative position;

Fig. 5 is a view in elevation of a portion of a window in accordance with my invention;

Fig. 6 is a fragmentary sectional view taken along lines 6—6 on Fig. 1, looking in the direction of the arrows;

Fig. 7 is a fragmentary perspective view of a

portion of my window construction illustrating a guide used in connection with a window when weather stripping is not incorporated in its construction;

Fig. 8 is a fragmentary perspective view of a removable portion of the window jamb and its relation to a fixed portion;

Fig. 9 is a view in elevation with the parts shown in Fig. 8 in assembled relation;

Fig. 10 is a horizontal sectional view taken along lines 10—10 of Fig. 9 and looking in the direction of the arrows.

Fig. 11 is a fragmentary view of a modified form of the elements illustrated in Fig. 8;

Fig. 12 is a fragmentary view in perspective of a locking mechanism used in connection with the window construction;

Fig. 13 is a fragmentary view, partly in elevation, and partly in section of a locking mechanism used in connection with a lower sash; and,

Fig. 14 is a perspective view of a base on which is mounted several elements which may be used in connection with the conversion of conventional window construction to a form in accordance with my invention.

Fig. 15 is a view in perspective of a modified arrangement of connection between the fixed portion of the jamb and the removable portion.

Referring to the drawings, a window jamb 20 comprises a removable section 21 and a fixed or stationary section 22 which has mounted therein a pair of pulleys or rollers 23 and 24 about which are arranged elastic members 25 and 26 which may be fabricated of conventional rope, strap, steel tape, chains, or the like. These resilient supports have secured at their respective ends in back of the jamb 20 balancing weights which may comprise solid cylindrical elements W fabricated of steel or lead or bags of lead pellets or small steel balls, not shown, and at their other ends to the upper sash 27 and the lower sash 28, respectively.

Secured at the rear outside portion of the jamb 20 is a fixed vertical stop or guide 29 with which the sash 27 cooperates when in vertical sliding position. Also, cooperating with the sash 27 is the stop or guide 30, comprising the stationary fixed portion 30a and movable, resiliently mounted portion 30b which will later be described in more detail. The guide or stop 30 has a dual function, not only is it associated with the upper sash 27, but it also engages the outer side of the sash 28, whereby movement of this sash upwardly or downwardly is facilitated and protection from the elements is effected by the sealing of the win-

dow along the line between the side edge of the sash and the face of the jamb 20. Also, associated with the front or lower sash is a stop or guide 31, the upper portion 31a of which is fixed or stationary and has a cutaway portion 32. The lower portion 31b of the stop or guide 31 is pivotally mounted at 33 to the lower portion of the jamb 20, and has its upper portion 34 so contoured as to engage the cutaway portion 32, when the lower portion 31b of the stop or guide 31 is elevated to place the sash 28 in operative position.

To secure the portion 31b in that position in which the sash 28 is in vertical sliding condition, the spring lock 35 is provided. This lock, see Fig. 13, comprises a spring element 36 housed within the stop portion 31b and arranged to urge the lock element 37 outwardly. Secured to the lock 37 and mounted externally of the portion 31b is an operative member 38 which may be moved downwardly with the finger to disengage the portion 37 from the corresponding receptacle 39 within the stop or guide portion 31a. It will be seen from the above that the lock 35 will automatically secure the portion 31b to the portion 31a when the stop portion 31b is raised into operative position and into engagement with the cooperative portion 31a.

To secure the jamb section 21 to the section 22, a pair of locking means 40, see Fig. 8, each comprising a sheet preferably of metal, bent to form a right angle section having a leg 41 and a leg 42, is secured to the section 21 by fastening means 43 which may be screws or the like. To provide for the engagement of the stationary jamb portion 22 with the locking means 40, a slot 44 may be formed therein, by saw or other suitable means. The section of leg 42 of the locking means 40 when in operative engagement with the jamb section 22 is along the rear wall 45 of this section and the leg 41 is within the slot 44. The fixed jamb section 22 may or may not comprise a lower removable portion 22' secured by screw or other fastening means F.

A modified form of locking means between the jamb section 21 and the jamb section 22 is illustrated in Fig. 11, wherein a peg 46 is secured to jamb section 21a for cooperation with the corresponding hole 46a and the flat plate 48a secured to the jamb section 21a is arranged to cooperate with the rear wall 45a of the jamb section 22a. As described in connection with Fig. 8, the fixed jamb section 22a may or may not comprise a lower removable portion 22a' secured by screw or other fastening means F'.

Formed within the removable jamb section 21 are the grooves 47 and 48 with which the sashes 27 and 28 cooperate respectively. Secured to the lower portion of the sash 28 is a round peg 49 which may be formed of wood or metal for cooperation with the groove 48, whereby when the sash 28 is in its vertical position the pin 49 will slidably engage the groove and when the sash is in its lowered position swung down as in Fig. 1, the pin 49 will act as a pivot point. Pivotaly secured to the lower portion of the sash 27 by means of pin 50 is sliding block 51 which slidably engages groove 47 whereby when the sash 27 is in its vertical position, motion of the sash 27 will be transmitted to the block 51 and the said sash properly guided in its motion. When the sash 27, however, is to be swung inwardly the slidable guide piece 51 will remain stationary and the said sash pivot about the pin 50. The sill 52 is sloped at its upper surface 53 in a manner to effect proper drainage and

protection from the elements. The lower portion of the removable jamb section 21 is sloped to correspond to the upper portion 53 of the sill 52.

Secured to the sash 28 along that edge normally adjacent the jamb is a metal angle element 54 having a bent portion 55 which is arranged to slidably engage the wall 56 of the groove 57 formed in that side of the movable stop section 31b which is also adjacent the jamb, whereby proper slidably engagement of the sash with the stop is effected. To insure good engagement of the bent portion 55 with the wall 56 a spring member 55' may be secured to the bent portion 55 as illustrated in Figure 1. I have provided further engaging means between the lower sash 28 and the stop section 31b which comprises metallic strap 58 which is secured to the said stop section 31b in a suitable manner and cooperates with the groove 59 formed within the inner side of the lower sash side wall. With this arrangement, sidewise movement between the stop section 31b and the sash 28 is prevented as is their separation. When the lower sash 28 is raised to its vertical position the lock 35 automatically snaps shut securing the stop sections 31b and 31a together at their adjacent ends. To further secure the lower stop section 31b to the jamb section 21 an element 60 comprising a slot 61 may be secured substantially midway between the ends of the stop section 31b for cooperation with the member 62 which has its end 63 so formed as to securely hold the element 60 to prevent movement of same toward the center of the sash. To effect the release of the end 63 of the element 62, from the slot 61 of the element 60, it is necessary to move the said end 63 back into the jamb section 21 through the slot 64 formed within the said jamb section. It is to be understood that other forms of locking elements may take the place of element 60 and end portion 63, which may comprise locking elements including suitable knobs or other finger grip portions which facilitate operation of the lock.

The element 62 is secured at its end 65 to the movable middle stop section 30b by suitable fastening means, whereby when movement of the said middle stop section 30b within the jamb section 21 is effected, as will be explained, corresponding movement of the end 63 of the element 62 takes place to release the element 60 and permits the stop section 31b to be lowered when the lock 35 is opened by movement of operating element 38. Another form of locking arrangement which may take the place of elements 60 and end portion 63 is illustrated in Fig. 12 wherein is disclosed a member 62a having hole 66 formed therein for cooperation with wedging member 67 secured to stop section 31b', wedging element 67 being so formed as to effect, by means of a wedging action, the tight holding or securing of the stop section 31b' to the jamb section 21.

To effect movement of the middle stop section 30b to which is secured the element 62, it is but necessary to lower the sash 28, release the lock 35, as already described and pivot said sash about the point 49 causing the lower portion 68 of said sash, adjacent the jamb section 21 to engage the lower portion 69 of said movable stop section 30b. That portion 68, of the sash 28 and the lower portion 69 of the movable stop 30b are formed with cam surfaces whereby the operation recited takes place, that is, the sash 28 acts as a lever functioning about the pivot point 49 and the oper-

ating portion 68 of the lever effects a camming action against the surface 69 of the movable stop section 30b to cause said movable stop to recede into the jamb section 21 against the action of a pair of springs as will be described.

To normally maintain the middle movable stop section 30b in operative position, as illustrated in Fig. 2, a resilient element such as a spring 70 which may be helical or otherwise, or rubber, is secured to the lower portion of a long flat element 71, which in turn is fastened to the movable stop section 30b, and is arranged to urge, by bearing engagement with the wall 72 of the block element 73, the stop section 30b outwardly. It is to be understood that leaf springs or similar means such as for example a lever mechanism or other linkage mechanism may be utilized in the place of the helical springs illustrated in the drawings to effect the operation described. The long flat element 71 which is of substantially the same length as the stop section 30b prevents the stop section 30b from protruding through the jamb section 21 more than predetermined distance. To prevent the transmission of dust and the elements through the window at the places where the movable stop section 30b slidably engages the jamb section 21, I may secure to those portions of the element 71 which are adjacent the rear side of the jamb section 21, a strip or strips of felt or other suitable weatherstripping material. Not only does this make for protection, but it insures quietness of operation.

Aiding the helical spring 70 in normally urging the stop section 30b outwardly is a second helical spring 74 secured to the removable element 75 incorporated in the jamb section 21. In assembling the window the end 76 of the helical spring 74 may be secured to the stop section 30b by means of the screw 77. It is to be noted that movement inwardly of the stop section 30b within the jamb section 21 causes corresponding movement of the element 62 which actuates the mechanism for securing the stop section 31b to the jamb section 21, as already explained. Not only is the element 75 removable from the jamb section 21, but the element 78 is likewise removable.

In the operation of my window with the sash in the normal vertical position, their movement is effected up and down in the usual manner. In order to bring both sashes, 27 and 28, respectively, within the room, however, it is necessary to first lower the inner sash 28, unlatch the lock 35 by downward movement of the element 38 and swing the said sash 28 inwardly about the pivot point 49, thereby causing camming action to take place between the surface 68 and the surface 69 causing inward motion of the middle stop section 30b and corresponding movement of the element 62, unlocking the second lock which secures the stop 31b to the jamb section 21. Before the sash 27 can be swung inwardly, however, it is necessary to manually push the upper portions of the springs 70 and 74 to the position illustrated in Fig. 3. Then the sash 27 may be swung down as illustrated in Fig. 1 to effect a maximum of ventilation to the interior of the room or to facilitate the washing or painting of the sashes.

The elements 75 and 78 are secured by screws 79 or other suitable means within the jamb section 21 to permit ready assembling and disassembling. Whereas the free end of the helical spring 70 is illustrated in Figs. 2 and 3 as merely bearing against the wall 72 of the element 73, it is to be understood that it is within the scope of my inven-

tion to modify such bearing surface to a slot or a hole.

Not only is the above described construction readily adaptable to factory production and assembling, but it also may be readily disassembled for service, replacement of parts or the like. In addition to the above advantages the design described readily adapts itself to the conversion of conventional double hung windows to ones operating in accordance with my invention by un-

skilled workmen. In Fig. 14 I have illustrated a series of parts mounted on a base 80 which may be applied by a home owner or unskilled workman for use in connection with the conversion of conventional double hung windows. For example, the part 81 may be utilized by securing it to sash 28 as illustrated in Fig. 7 to form a guide when the element 58 is not inherent in the construction of the stop section 31b. The element 82 may be substituted for a cutout portion in the lower part of the side walls or sashes 27 and the element 83 may be substituted for the lower part of the side walls of sash 28. The remaining elements mounted on the base 80 have already been described and may be used as shown in the remaining figures. Not only may the above parts be made of wood, but they may be fabricated of metal or synthetic or other materials.

Not only may the removable jamb portion 21 be secured to the fixed jamb portion 22 as illustrated in Figs. 8 and 11 but various other expedients may be resorted to as for example, referring to Fig. 15, the element 71b corresponding to the element 71 illustrated in Fig. 6 may be cut out, or so formed, at its upper portion as illustrated whereby a leaf spring or equivalent means secured to the portion 22b' may cooperate with the removable portion 21b at its rear face to hold the organization in proper position, the element 76b replacing the helical spring 76 illustrated in Fig. 6. The fixed jamb portion 22b may comprise a removable section 22b' as shown which cooperates with the element 40b in a manner similar to the embodiment illustrated in Figs. 8 and 11.

While the elements 78, 30b and 21 illustrated in section in Figs. 2 and 3 may be individually removable, as shown with the element 78 secured to the jamb section 20 by means of the screw S or other equivalent fastening means, it is to be understood that it is within the scope of my invention to prefabricate or preassemble the elements 78, 30b and 75 into a unit which may be incorporated in a window as a unit instead of assembling each element separately. When the removable jamb section is prefabricated as a unit for ready assembly I may utilize different securing means from that illustrated in Figs. 2 and 3. For example, a spring element 79 may be incorporated in the lock 73, an arrangement as illustrated in Fig. 15 may take the place of the spring element 76 in Fig. 6 and other corresponding elements. Further in the place of fastening means S I may utilize a locking means whereby the portion 20 may cooperate with the element 77 of the proposed unitary removable jamb section whereby the same will be locked into place when inserted into operative position corresponding to that illustrated in Figs 2 and 3. One type of mechanism which may be used as a locking means in place of the fastening means S is the arrangement illustrated in Figs. 2 and 3 involving the elements 60 and 62 or the modification illustrated in Fig. 12 wherein the element 67 cooperates with the hole 66 to effect a wedging

action. Other equivalent means may be utilized in the relation recited whereby the removable jamb section may be securely held in place.

It will be seen from the above that the window construction in accordance with my invention makes for the provision of a swingable sash window which normally operates precisely as does the conventional double hung window, but has definite advantageous features inherent in its design which comprises the simplicity of operation required to swing the windows within the interior of a room to permit washing, painting, or service and the practical locking features which are semi-automatic in their operation as well as being fool-proof and dependable.

It will be obvious to those skilled in the art that various changes may be made in this device without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

I claim:

1. In a window assembly, a jamb, a pair of sashes mounted for vertical movement, an outside stop, a middle stop, and an inside stop associated with said sashes, said inside stop being mounted for pivotal movement, said middle stop being so constructed and arranged as to be capable of at least two positions, one of said positions being within said jamb and one of said positions being externally of said jamb, means for normally urging said middle stop to its external position, said pair of sashes being further arranged for pivotal movement, one of said sashes cooperating with said middle stop upon pivotal movement of the former to urge the said middle stop to its position within said jamb whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

2. In a window assembly, a jamb, a pair of sashes mounted for vertical movement and in association with said jamb, an outside stop, a middle stop, and an inside stop mounted for pivotal movement about its lower portion, latching means for said inside stop associated with said jamb, said middle stop being so constructed and arranged as to be capable of at least two positions, one of said positions being within said jamb and one of said positions being externally of said jamb, said pair of sashes being further arranged for pivotal movement, means normally urging said middle stop to its external position, one of said sashes arranged to cooperate with said middle stop to effect movement of said middle stop to its position within said jamb upon pivotal movement of said sash, whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

3. In a window assembly, a jamb, a pair of sashes in association with said jamb and mounted for vertical movement, an outside stop, a middle stop, and an inside stop associated with said sashes, said inside stop being mounted for pivotal movement, dual locking means for said inside stop, said middle stop being so constructed and arranged as to be capable of at least two positions one within said jamb and one externally of said jamb, said pair of sashes being further arranged for pivotal movement, means

for normally urging said middle stop to its external position, one of said sashes cooperating with said middle stop to effect movement of same to its position within said jamb upon pivotal movement of said sash, whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

4. In a window assembly a jamb, a pair of sashes mounted for vertical movement and in association with said jamb, an outside stop, a middle stop, and an inside stop mounted for pivotal movement about its lower portion, latching means for said inside stop associated with said jamb, said middle stop being so constructed as to be movable and capable of at least two positions, said latching means being responsive to movement of said middle stop, said pair of sashes being further arranged for pivotal movement, whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

5. In a window assembly, a jamb, a pair of sashes in association with said jamb and mounted for vertical movement, an outside stop, a middle stop, and an inside stop associated with said sashes, said inside stop being mounted for pivotal movement, first locking means for said inside stop, second locking means for said inside stop, said middle stop being so constructed and arranged as to be movable and capable of at least two positions, one of said locking means being responsive to movement of said middle stop, said pair of sashes being further arranged for pivotal movement, whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

6. In a window assembly, a jamb, a pair of sashes mounted for vertical movement and in association with said jamb, a fixed outside stop secured to said jamb, a movable middle stop arranged for movement into and out of said jamb, and an inside stop mounted for pivotal movement about its lower position, latching means for inside stop associated with said jamb, said pair of sashes being further arranged for pivotal movement, one of said sashes cooperating with said middle stop to effect movement thereof upon pivotal movement of said sash whereby both sashes may be swung down and inwardly when said inside stop is pivotally moved about its lower position and said middle stop is moved into said jamb.

7. In a window assembly, a jamb, a pair of sashes in association with said jamb and mounted for vertical movement, a fixed outside stop secured to said jamb, a middle stop, normally protruding from the face of said jamb, but arranged to move into said jamb, and an inside stop associated with said sashes, said inside stop being mounted for pivotal movement, first locking means for said inside stop, second locking means for said inside stop, one of said locking means being responsive to movement of said middle stop, said pair of sashes being further arranged for pivotal movement, whereby both sashes may be swung down and inwardly when said inside stop is swung down and said middle stop is moved into said jamb.

8. In a window assembly, a jamb, a pair of

sashes in association with said jamb and mounted for vertical movement, an outside stop, a middle stop, and an inside stop associated with said sashes, said inside stop being mounted for pivotal movement, first locking means for said inside stop, second locking means for said inside stop, one of said locking means being manually operable, said middle stop being so constructed and arranged as to be capable of at least two positions, said pair of sashes being further arranged for pivotal movement, one of said sashes cooperating with said middle stop to effect movement thereof upon pivotal movement of said sash whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to the non-interfering positions with respect to the locus of pivotal movement of said sashes.

9. In a window assembly, a jamb, a pair of sashes mounted for vertical movement and in association with said jamb, an outside stop, a middle stop, and an inside stop mounted for pivotal movement about its lower portion, latching means for said inside stop associated with said jamb, second latching means for said inside stop associated with said middle stop, said middle stop being so constructed and arranged as to be movable and capable of at least two positions, said pair of sashes being further arranged for pivotal movement, one of said sashes cooperating with said middle stop to effect movement thereof upon pivotal movement of said sash whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

10. In a window assembly, a jamb, a pair of sashes in association with said jamb and mounted for vertical movement, an outside stop, a middle stop, and an inside stop associated with said sashes, said inside stop being mounted for pivotal movement, locking means for said inside stop, said middle stop being so constructed and arranged as to be movable and capable of at least two positions, said locking means being responsive to the movement of said middle stop, second locking means for said inside stop, said pair of sashes being further arranged for pivotal movement, whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

11. In a window assembly, a jamb, a pair of sashes mounted for vertical movement and in association with said jamb, an outside stop, a middle stop, and an inside stop mounted for pivotal movement about its lower portion, latching means for said inside stop associated with said jamb, said middle stop being so constructed and arranged as to be capable of at least two positions, spring means urging said middle stop into one of said two positions, said pair of sashes being further arranged

for pivotal movement, one of said sashes cooperating with said middle stop to effect movement thereof towards its second position when said sash is moved pivotally whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

12. In a window assembly, a jamb, a pair of sashes mounted for vertical movement and in association with said jamb, an outside stop, a middle stop, and an inside stop mounted for pivotal movement about its lower portion, latching means for said inside stop associated with said jamb, said middle stop being so constructed and arranged as to be capable of at least two positions, means for normally urging said middle stop into one of said two positions, cam means responsive to pivotal motion of one of said sashes for urging said middle stop into the other of said two positions, said pair of sashes being further arranged for pivotal movement, whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

13. In a window assembly, a jamb, a pair of sashes in association with said jamb and mounted for vertical movement, an outside stop, a middle stop, and an inside stop associated with said sashes, said inside stop being mounted for pivotal movement, manual locking means for said inside stop, second locking means for said inside stop, said middle stop being so constructed and arranged as to be movable and capable of at least two positions, means urging said middle stop into one of said two positions, cam means responsive to pivotal motion of one of said sashes for urging said middle stop into the second of said two positions, said pair of sashes being further arranged for pivotal movement, whereby both sashes may be swung down and inwardly when said inside stop and said middle stop are moved to non-interfering positions with respect to the locus of pivotal movement of said sashes.

14. In a window assembly, a jamb, a pair of sashes mounted for vertical movement and in association with said jamb, an outside stop, a middle stop, an inside stop mounted for pivotal movement about its lower portion, latching means for said inside stop, said middle stop being so constructed and arranged as to be movable and capable of at least two positions, means normally urging said middle stop into one of said positions, cam means for urging said middle stop into the second of said two positions, said cam means being associated with one of said sashes, said pair of sashes being further arranged for pivotal movement whereby when one of said sashes is swung downwardly about its pivot said middle stop is urged into the second of said two positions permitting the second sash to be swung down about its pivot.

GEORGE ROSENBERG.