Feb. 5, 1952 H. A. ETLING 2,584,684

WINDOW CONSTRUCTION HAVING BOTH PIVOTAL AND SLIDING MOVEMENT

Filed July 12, 1949 3 Sheets-Sheet 1

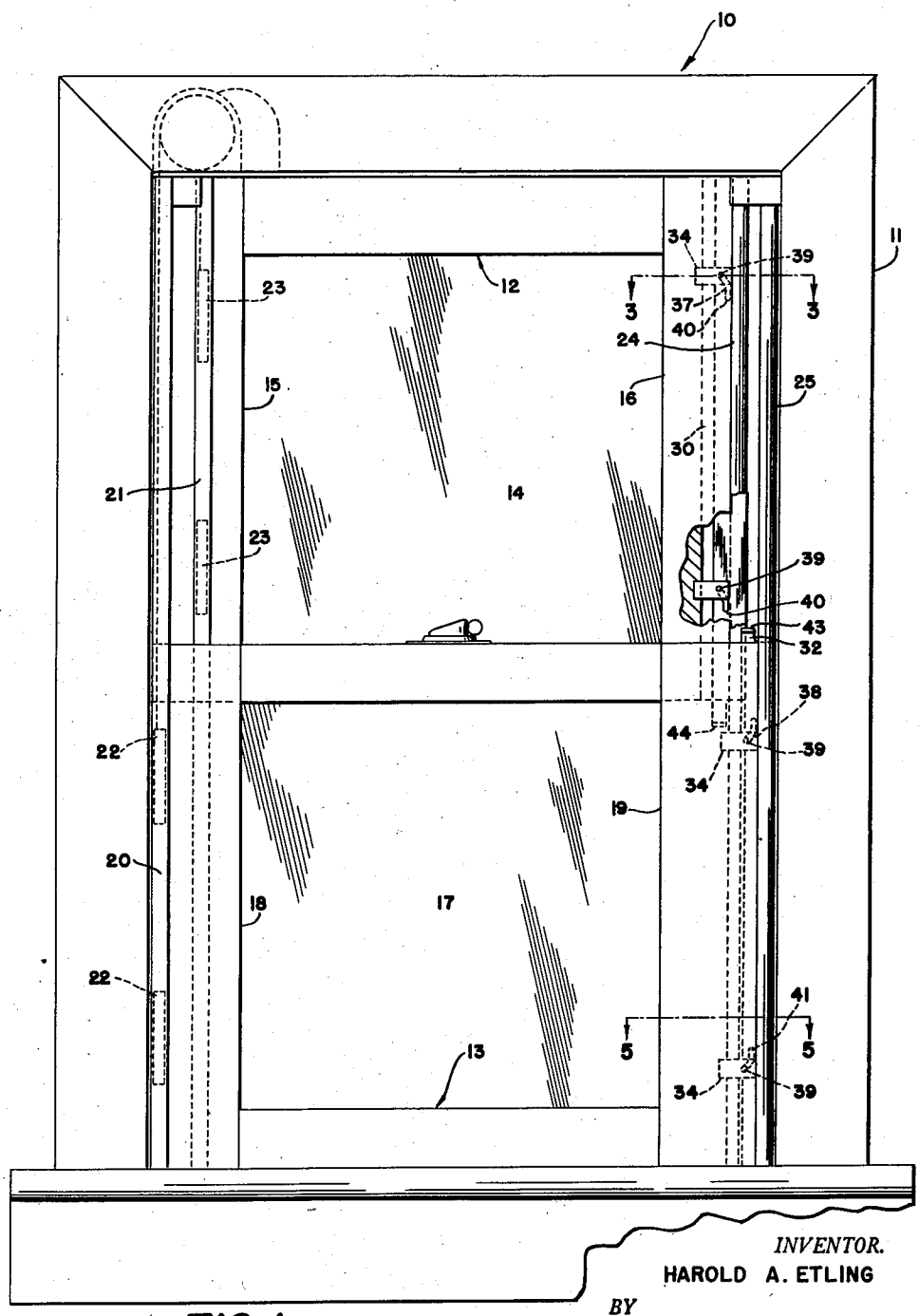


FIG. 1

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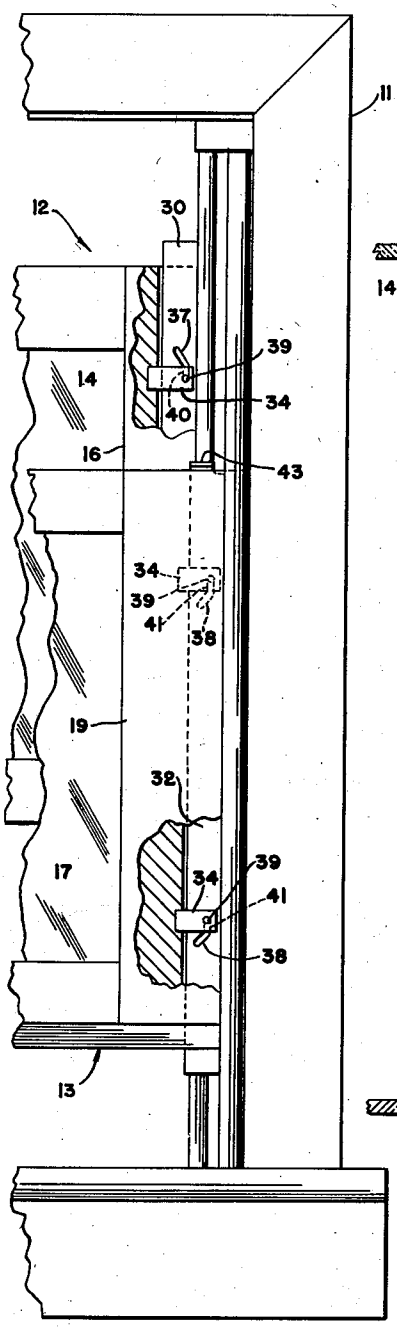
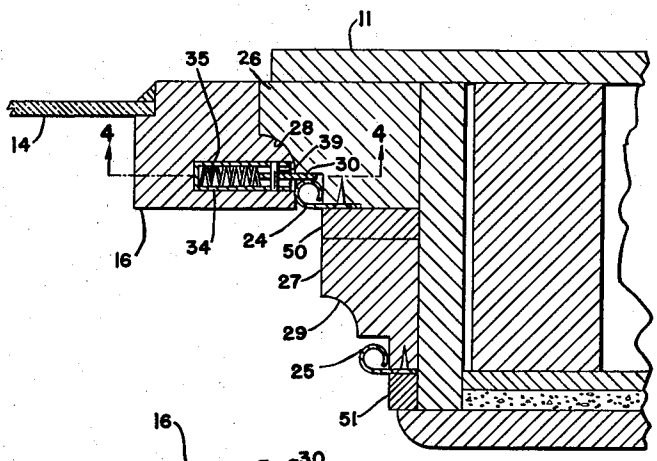


FIG. 2

FIG. 3



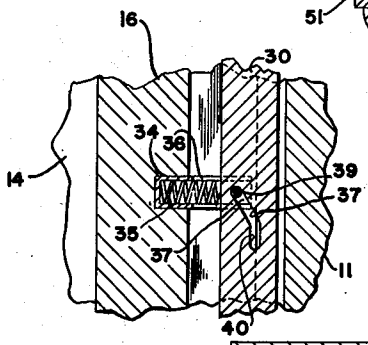


FIG. 4

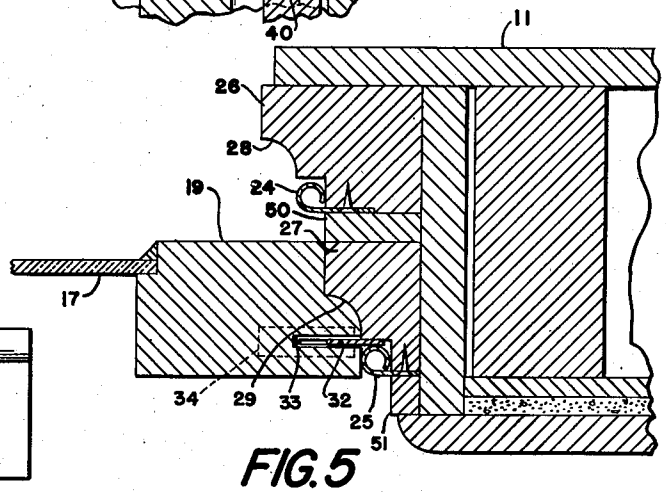


FIG. 5

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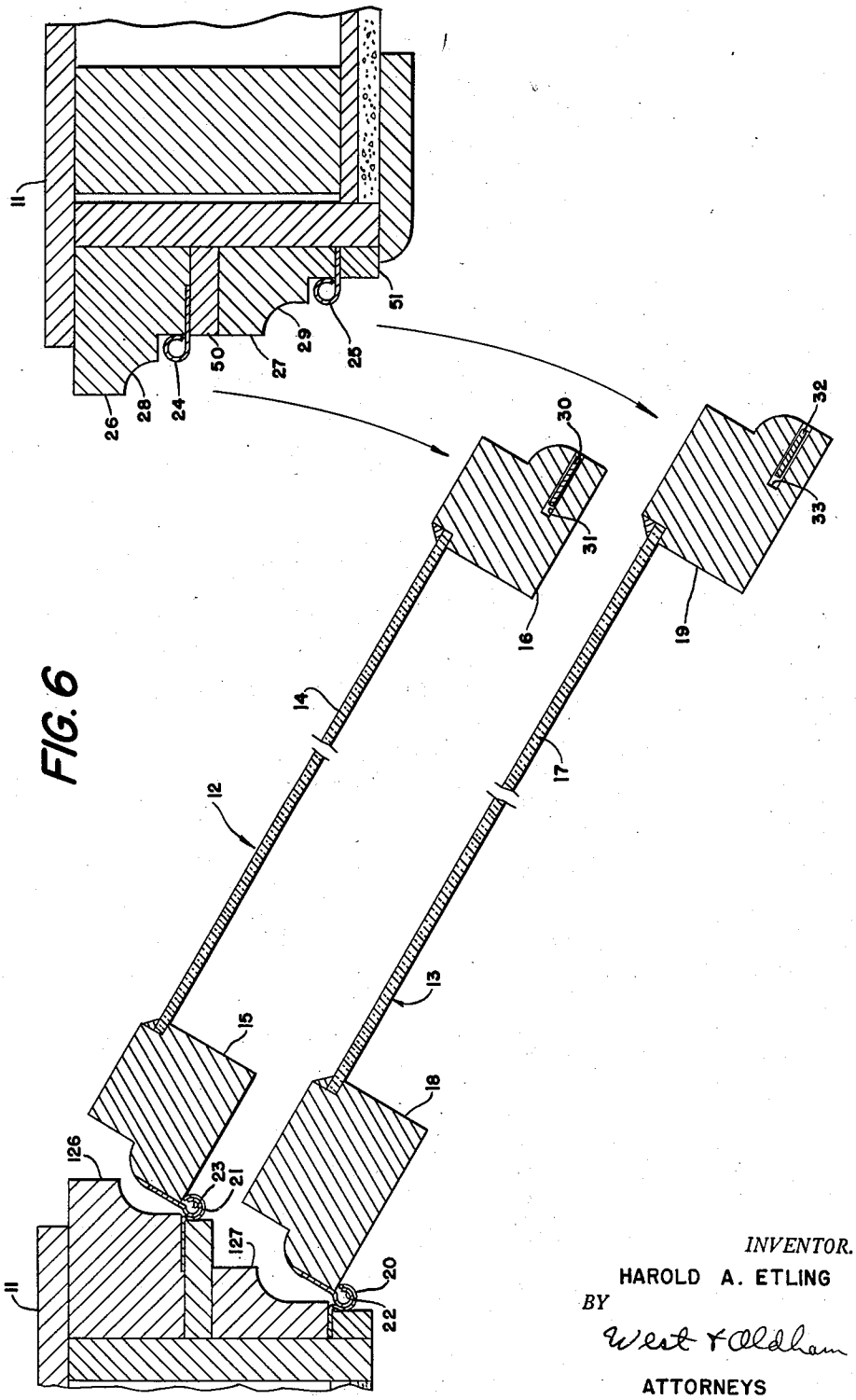


FIG. 6

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Patented Feb. 5, 1952 2,584,684

UNITED STATES PATENT OFFICE

2,584,684

WINDOW CONSTRUCTION HAVING BOTH PIVOTAL AND SLIDING MOVEMENT

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Application July 12, 1949, Serial No. 104,197

3 Claims. (Cl. 20—49)

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This invention relates to a window construction, particularly to a window construction wherein the window is slidable in a vertical direction and which also may be swung or pivoted inwardly about one vertical edge of the window.

The present invention relates to the same general type of a window such as is shown and described in my co-pending application Serial No. 83,423 filed March 25, 1949, but the present construction provides one wherein a more weather-tight construction is achieved.

The general object of the invention is to provide a novel and improved window having both a sliding and a pivotal action wherein the window can easily be secured to a window frame for sliding action but can likewise be readily removed therefrom for pivotal action about one margin of the window.

Another object of the invention is to provide a window which is adapted to be swung inwardly similar to a casement window but which new construction has advantages over a casement window.

A further object of the invention is to provide a double-hung window wherein both windows are free for vertial sliding movement in a window frame but wherein both windows may be swung inwardly about one vertical margin thereof to facilitate washing, cleaning, painting, or other actions on the window faces and both surfaces of the window pane carried thereby.

A further object of the present invention is to provide a lock strip on a window wherein the lock strip can be moved laterally and vertically of the window to and from a window frame engaging position.

Another object of the present invention is to provide a locking strip for engaging a window with a window frame and to automatically move such locking strip to its locking position as the window carrying same is moved to its closed position in a window frame.

A further object of the invention is to provide a window of the class described wherein the window is of durable but inexpensive construction, which window has an attractive appearance.

The foregoing and the objects and advantages will be made more apparent as the specification proceeds.

For a better understanding of the present invention, reference should be had to the accompanying drawings which disclose one presently preferred embodiment of the invention, and wherein:

Fig. 1 is an elevation, partially broken away

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and shown in sections of a window embodying the principles of the invention;

Fig. 2 is a fragmentary elevation, partially broken away and shown in section, of the window construction of Fig. 1 with the lower sash raised slightly and with the upper sash lowered slightly and with the windows being released for pivotal action;

Fig. 3 is a fragmentary horizontal section taken on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary vertical section taken on line 4—4 of Fig. 3;

Fig. 5 is a fragmentary horizontal section taken on line 5—5 of Fig. 1; and

Fig. 6 is a horizontal section of the windows showing the pivoted action thereof.

In the accompanying drawings and the specification, corresponding numerals will be used to refer to corresponding parts to facilitate correlation of the specification with the drawings.

Reference now will be had to the details shown on the drawings and wherein the window of the invention is generally indicated by the numeral 10. This window 10 includes a frame 11 which receives an upper sash 12 and a lower sash 13 therein for vertical sliding movement with relation thereto. The upper sash 12 includes a pane of glass 14 and vertically extending side rails 15 and 16 whereas the lower sash 13 has a pane of glass 17 and has vertically extending side rails 18 and 19. Any desired type of combined guide and hinge members are provided on one side of the frame 11 for engagement with the sashes 12 and 13 to permit either sliding or pivotal movement with relation thereto. In this instance, there are provided metallic guide and hinge or pivot strips 20 and 21 with the lower sash 13 being provided with a pair of hinge and pivot members 22 that are slidably and pivotally engaged with and received in the guide hinge strip 20. One of the members 22 is secured to the sash 13 adjacent each vertical margin thereof on the side rail 18 of such lower sash. These members 22 are of the general type shown in my co-pending patent application referred to hereinbefore. Similarly the upper sash 12 is provided with a pair of hinge and pivot members 23 secured to the side rail 15 of such upper sash adjacent the vertical margins thereof. These members 23 are of course engaged with the guide and hinge strip 21 for sliding and pivotal movement with relation thereto.

The novelty of the present window construction particularly resides in the means used to engage the side rails 16 and 19 of the upper and

lower sashes, respectively, to the frame 11. Fig. 1 of the drawing indicates that a pair of guide or anchor strips 24 and 25 are secured to the frame 11 and extend the height thereof along one lateral margin of same. The Figs. 3 and 5 best indicate that the frame 11 may have associated therewith and suitably secured thereto vertically extending filler strips 26 and 27 which have their laterally inner surfaces formed of arcuate contour at 28 and 29, respectively, so that such filler strips 26 and 27 are of complementary shape to the side rails 16 and 19 provided on the upper and lower sashes. Inasmuch as in many instances it is desired to have the upper sash 12 of less lateral width than the lower sash 13 in order to facilitate pivotal movement of the upper sash, the window construction shown in Figs. 1 through 6 is adapted to provide this construction and to such end, the filler strip 26 is of somewhat greater width than the filler strip 27. The guide strip 24 is shown engaged with the filler strip 26 whereas the guide strip 25 is in turn carried by the filler strip 27. Additional filler strips 50 and 51 may be provided to smooth out the overall contour and arrangement of the other filler strips and guide strips provided. In the embodiment of the invention disclosed herein, the guide or anchor strips 24 and 25 are shown as having the same cross sectional contour as do the guide and hinge strips 20 and 21 provided for securing the upper and lower sashes to the window frame for slidable and pivotal movement with relation thereto.

As an important element of the present invention, a lock strip 30 is received in a recess or slot 31 formed in the laterally outer surface of the side rail 16 of the upper sash whereas a similar lock strip 32 is received within a slot 33 formed in and extending the length of the side rails 19 of the lower sash 13. These locking strips 30 and 32 are both slidably carried by the window sash mounting same and with such strips being adapted to be moved vertically and laterally of the window sashes from a position substantially flush with the lateral margin of the window sash to a position protruding appreciably therefrom.

In order to urge the lock strips 30 and 32 outwardly of the window sash carrying same, usually a plurality of resilient means are carried in each window sash for creating a permanent outwardly directed force that is applied to the individual lock strip. In this instance, a plurality of cup members 34 are sunk into each of the side rails 16 and 19 from the laterally outer surface thereof in register with the slots 31 and 33 formed therein but with the cup 34 being more deeply positioned in the side rails than the slots 31 and 33. While any desired number of the cups 34 may be provided for each window sash, there are shown two such cups one adjacent each extremity of the side rail with which such cup is engaged. The cups 34 receive therein coil springs 35 or other resilient means which are compressed toward the closed end of the cup 34 by the lock strips 30 or 32. These cups 34 have slots 36 formed in diametrically opposed portions thereof into which the lock strips 30 and 32 extend whereby the lock strips are threaded, in effect, through the cups 34 and move along the axis of the cups 34 in moving from their laterally protracted to their laterally retracted position. The lock strips 30 and 32 are secured to the respective window sashes carrying same

by means of one or more slots 37 formed in the lock strip 30 and by similar slots 38 formed in the lock strip 32. The slots 37 and 38 enable the lock strips to be positively engaged or secured to the window sashes and usually pin members, such as pins 39 extend through the slots 37 and 38 and engage with each cup 34 to permit only limited relative movement between the cup 34 and the lock strip. The pins 39 may be engaged with the cups 34 in any desired manner, and, of course, would be formed into a unit assembly with the different lock strips before such assembly of cups 34 and lock strips is inserted into the receiving holes and slots 31 and 33 provided therefor in the lateral margins of the side rails of the window sashes.

One noticeable and very important difference between the lock strip 30 and the lock strip 32 is that the slot 37 formed in the lock strip 30 extends in a direction which can be considered to be downwardly and outwardly with relation to such lock strip, whereas the slot 38 in the lock strip 32 extends upwardly and outwardly with relation to the window sash of the invention by which such lock strip is carried. The reason for such difference in the location of the slots 37 and 38 will be pointed out hereinafter. It also should be noted that the slot 37 has a foot section 40 provided therein which extends substantially parallel to the marginal surface of the side rail 16 whereas the slot 38 has a foot section or portion 41 provided at the laterally outer end thereof which foot section also extends parallel to the adjacent lateral margin of the sash rail 19. The foot sections 40 and 41 provided on the slots in the lock strips are an important feature of the present invention since by the use of such foot sections, a resilient force set up on the lock strips by springs 35 and urging them laterally outwardly of the window sashes carrying same will not effect any lateral movement of the lock strips when pins 39 are engaged with the sections 40 and 41. It will be noted that the lock strips 30 and 32 are in their retracted positions when the pins 39 are engaged with the foot sections of the slots so that once the lock strips are positioned in their retracted places, the automatic or constant force of springs 35 urging them to their extended or operative positions will be effectively counteracted by the particular construction and arrangement of the lock strips of the invention.

Usually the lock strips 30 and 32 are both longer than the vertical height of the sashes with which they are associated and the upper end of the lock strip 32 is provided with a flange 43, whereas the lower end of the lock strip 30 is provided with a flange 44. These flanges 43 and 44 facilitate grasping the lock strips 30 and 32 and moving same vertically in order to release the lock strip from engagement with their associated guide or anchor strips 24 and 25. Such action will be performed, of course, when it is desired to swing the upper or lower sash about the pivoted edge thereof. It will be realized that other types of handle means or devices may be provided on or secured to the exposed portions of the lock strips, if desired. Or it may even be desirable to effect vertical movement of the lock strips by other types of means than that disclosed herein, particularly where it is desired to retain the adjacent end portions of the lock strips completely within the window sashes carrying same.

Fig. 2 of the drawings clearly brings out another important element of the present construction

and in this drawing it is shown that the upper lock strip 30 protrudes vertically upwardly from the top end of the side rail 16 whereas the lock strip 32 protrudes downwardly from the lower end of the side rail 19 in which it is carried. Fig. 2 shows both of the locks strips 30 and 32 in their laterally retracted position at which the window sashes carrying same are free for pivotal movement. Thus the window sashes may be swung outwardly of the window frame at that time, if desired. However, when the window sashes are to be re-engaged with the window frame and the means carried thereby, all it is necessary to do is to swing the window sashes back into the general plane defined for receiving same in the window frame 11. Then the upper sash 12 is slid upwardly of the frame until the protruding portion of the lock strip 30 strikes the upper part of the frame 11 at which time such locking strip will, by the arrangement of the pin-slot means positioning same on the window sash, cause such lock strip to be moved vertically downwardly and outwardly with relation to the window sash whereby such lock strip will move into engagement with the guide strip 24 provided therefor. Likewise, the lower window sash will be slid downwardly of the window frame 11 until the protruding or exposed portion of the lock strip 32 strikes the lower part of the window frame 11 and occasions relative upward and outward movement of the lock strip 32 with relation to the lower sash 13 by which such lock strip 32 will engage the guide strip 25 provided for same. Thus the novel pin and slot arrangement provided for positioning the lock strips on the window sashes not only provides a desired locking action for the lock strips when they are in their retracted position, but it also provides an automatic release of the lock strip and movement of same to their engaging position when it is desired to re-engage the window sash of the invention with the associated frame provided therefor.

It also should be pointed out that the cups 34 are of cylindrical contour. Also filler strips 123 and 127 are usually provided on the frame 11 to aid in securing the sashes 12 and 13 thereto for pivotal and sliding movement. In some instances it may even be desired to use the window construction of the invention to position windows for horizontal sliding movement and for pivotal movement about a vertical axis. Also, any desired shape of window frame may be used with the window of the invention and any kind of filler strips may be used in the window frame to position the window sashes therein. The guide means 24 and 25 may be of any desired shape and the window sashes may be of the same width, when desired. The construction shown provides an effective, weathertight seal for the window sashes since the lock strips will be snugly engaged between the guide and filler strips to seal that side of the window and the other side of the window is held tightly in closed position by the hinge and guide strips 20 and 21. It may even be desired to have the guide strips 24 and 25 resiliently bear on the lock strips when engaged therewith to urge same against the adjacent filler strips of the window construction.

While one complete embodiment of the invention has been disclosed herein, it will be appreciated that modification of this particular embodiment of the invention may be resorted to without departing from the scope of the invention as defined by the appended claims.

Having thus described my invention, what I claim is:

1. In a window construction, a window sash, a lock strip slidably carried by said sash at a vertically extending margin thereof, said lock strip having a plurality of slots formed therein with each slot having a vertically extending straight section at one end thereof and a longer section extending at an acute angle to the vertical, pin means carried by said sash and engaging said slots to limit the movement of said lock strip, said lock strip being movable from a laterally extended to a laterally retracted position by said pin means when moved vertically with relation to said pin means, said vertically extending slot sections retaining said lock strip in a retracted position when engaged with said pin means, and resilient means urging said lock strip outwardly of said sash.

2. In a pivotal and slidable window, a window sash having a slot in one of the laterally outer edges thereof, an elongate narrow thin lock strip embedded edgewise in said slot in said sash for releasable engagement with a window frame, said lock strip having a substantially longitudinally directed slot therein, a pin carried by said sash and extending through said slot in said lock strip to retain said lock strip in engagement with said sash, said sash having a hole extending laterally thereof into said slotted edge thereof and intersecting said slot, and a coil spring positioned in said hole in said sash and extending laterally of said sash, said coil spring being compressed in said hole by an edge of said lock strip to be retained thereby in said hole.

3. In a pivotal and slidable window, a window sash having a slot formed in one of the laterally outer edges thereof, an elongate narrow thin lock strip embedded edgewise in said slot in said sash for releasable engagement with a window frame, said lock strip having a substantially longitudinally directed slot therein, a tubular metal member positioned in a hole in said edge of said sash, said metal member having a slot extending thereinto from a laterally outer end thereof, said lock strip extending into said slot in said metal member, a pin engaged with said metal member and extending through said slot in said lock strip to retain said lock strip in engagement with said sash, and a coil spring positioned in said metal member and urging said lock strip outwardly of said sash.

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