Jan. 3, 1967 R. DALLAIRE 3,295,259

SASHLESS SLIDING WINDOW SYSTEM

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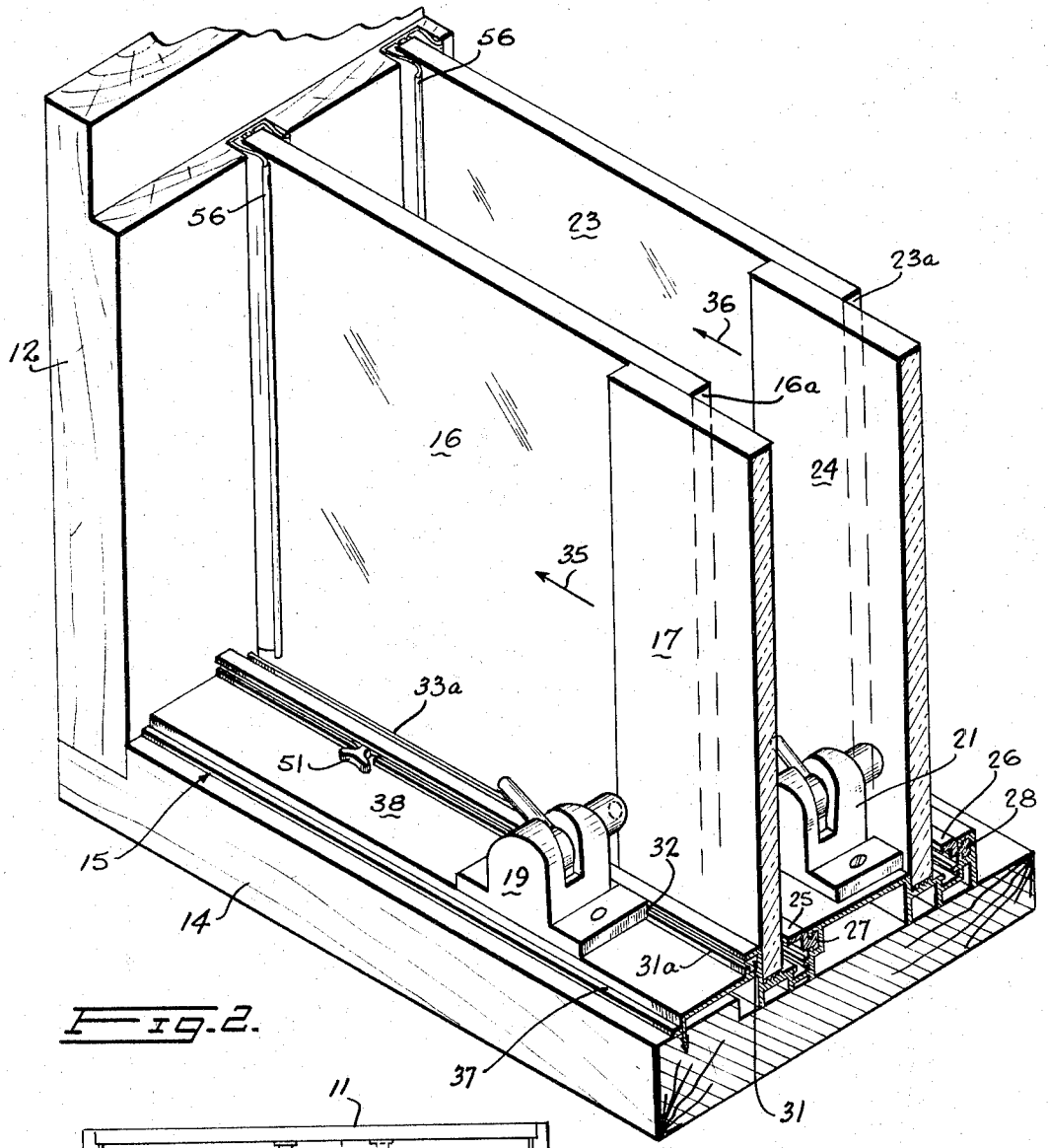


Fig. 2.

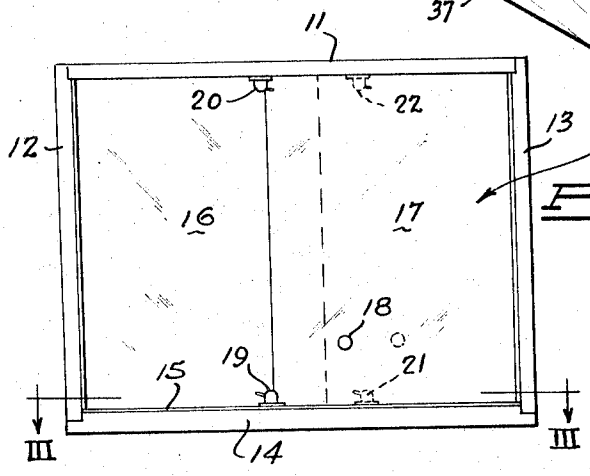


Fig. 1.

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SASHLESS SLIDING WINDOW SYSTEM

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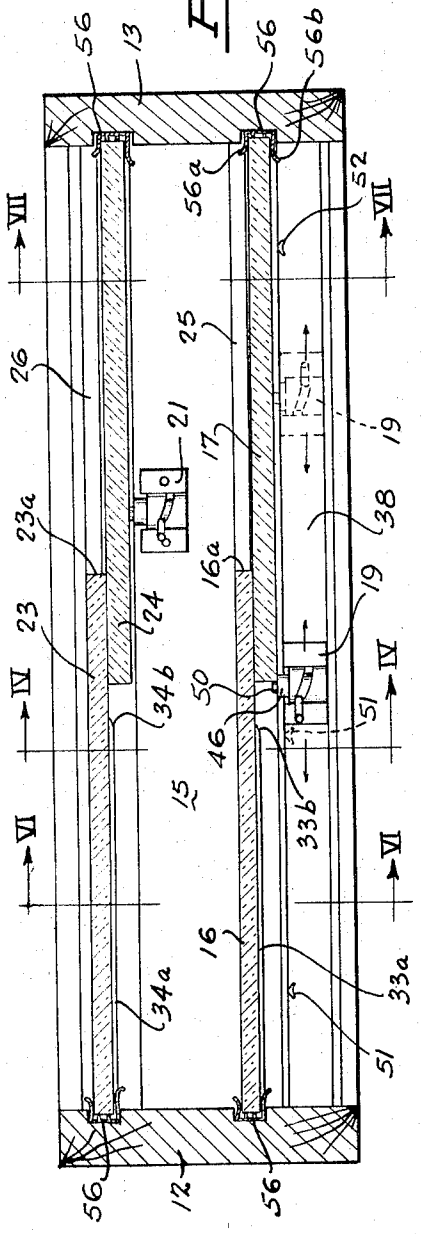


FIG. 3.

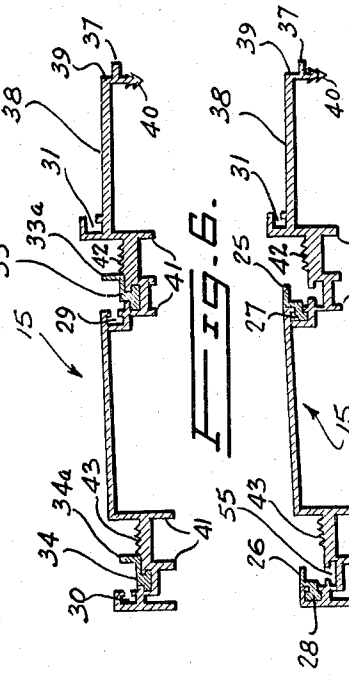


FIG. 6.

FIG. 7.

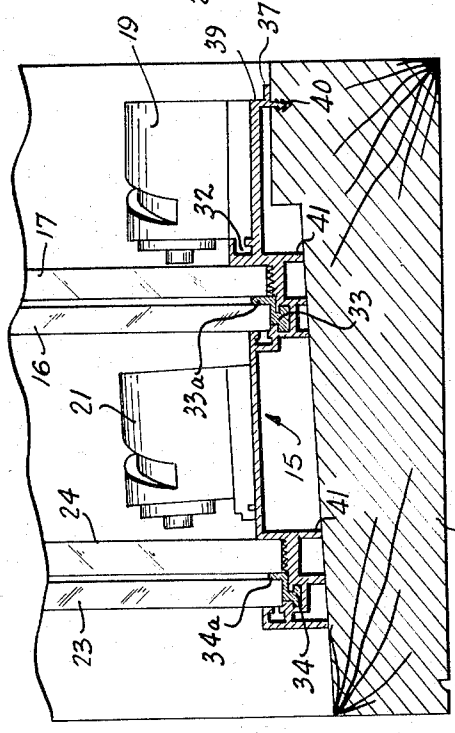


FIG. 5.

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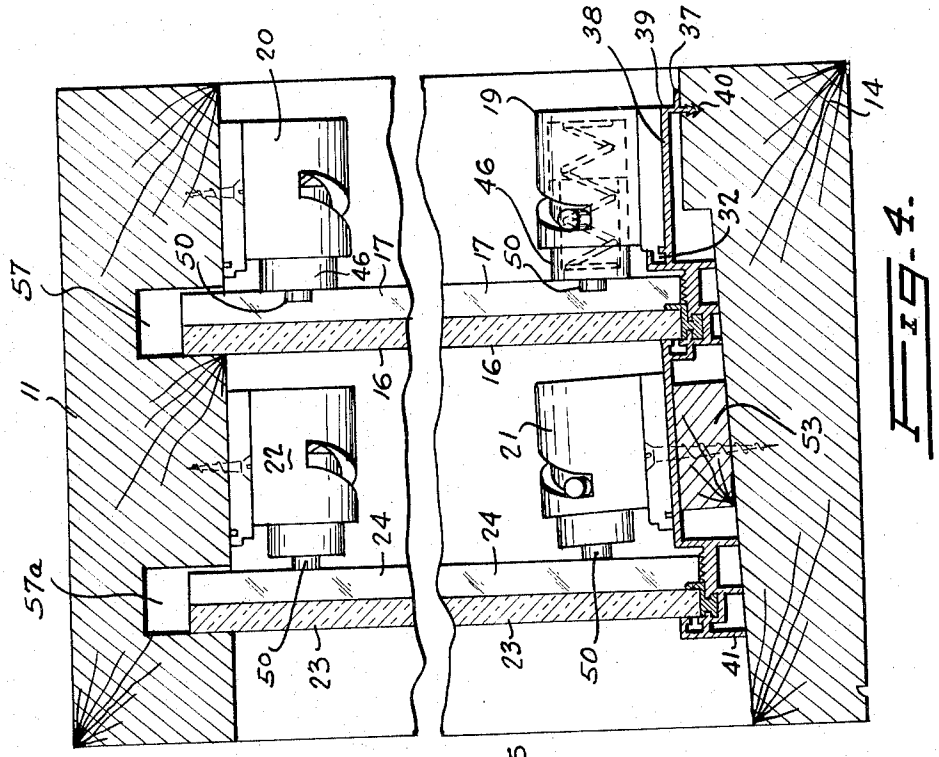


FIG. 4.

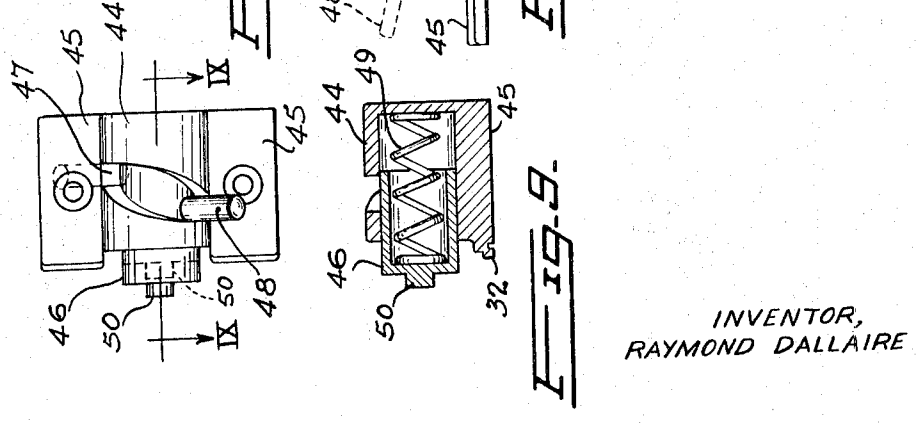


FIG. 8.

FIG. 9.

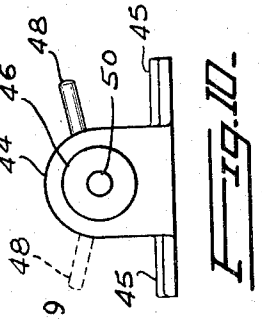


FIG. 10.

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SASHLESS SLIDING WINDOW SYSTEM

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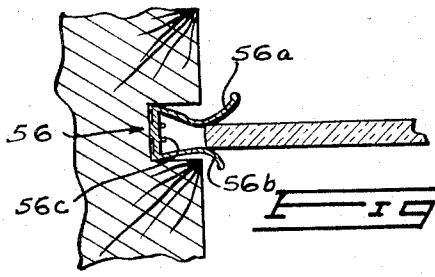


FIG. 11.

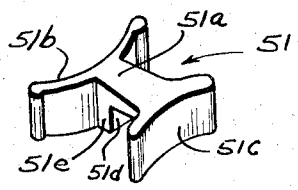


FIG. 13.

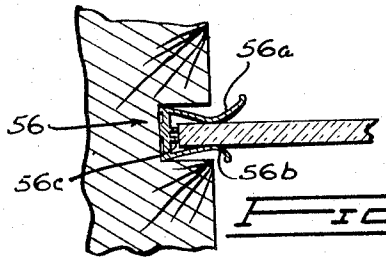


FIG. 12.

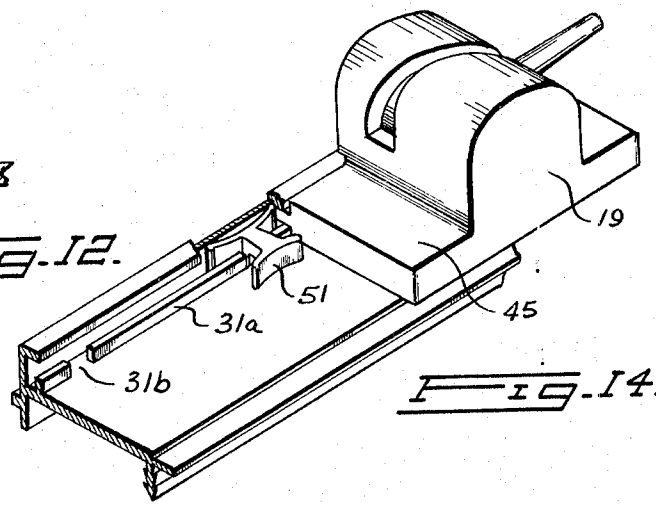


FIG. 14.

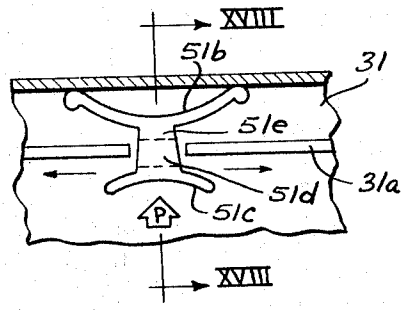


FIG. 16.

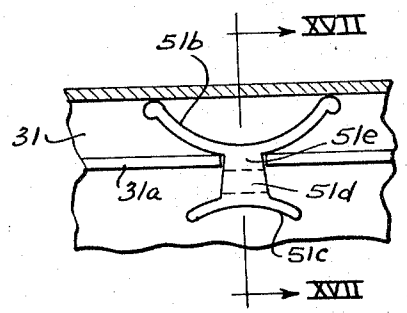


FIG. 15.

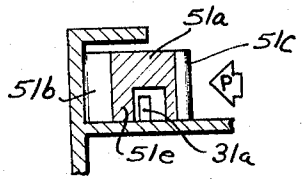


FIG. 18.

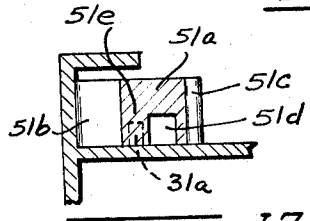


FIG. 17.

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United States Patent Office 3,295,259 Patented Jan. 3, 1967

3,295,259

SASHLESS SLIDING WINDOW SYSTEM

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Filed Dec. 4, 1964, Ser. No. 415,950
Claims priority, application Canada, Mar. 19, 1964, 898,225
7 Claims. (Cl. 49—413)

The present invention relates to sashless sliding windows and particularly to an improved window system including an extruded track and improved locking means.

It is therefore an object of the present invention to provide improved extruded sill tracks for windows of the sashless sliding type.

It is a further object of this invention to provide improved locks for sliding windows.

It is a further object of this invention to provide sashless double sliding windows, that is, which includes a storm or second window, and means to facilitate removal of all of the panes of glass for purposes of cleaning from the interior of the dwelling or building in which said window is installed.

It is a still further object of this invention to provide locking means which prevent any tendency of sashless sliding windows to rattle, and which also absolutely prevent opening of a locked window from the exterior of the building.

A still further object of the invention is to provide an extruded track for sashless sliding windows having extruded stop and support members adapted to slidably interlock with grooves on said track, said stop and support members being identical in cross-section and serving either as window stops to prevent movement of a pane in a sashless sliding window system which is to remain stationary, or as support members for stationary panes, as well as to separate stationary panes from sliding panes.

A further object of the invention is to provide means whereby a lock may be interlocked to said track in a manner permitting said lock to be slidably adjustable in said track to achieve an improved and more secure lock, and to facilitate removal of windowpanes for purposes of cleaning and installation of screen sections.

A still further object of the invention is to provide adjustable stop means for said slidably adjustable locks, the stop means being interlockable in said track, and being adjustable to a plurality of positions thereon.

A still further object of the invention is to provide improved vertical channel members which will ensure a weathertight relationship between the panes of glass in a sliding window system and the side frame members thereof.

A sashless sliding window system comprising the combination of a window frame and an extruded sill track, at least one pane-supporting groove in said sill track, two recessed T-grooves running the length of said pane-supporting grooves, said pane-supporting groove being adapted to receive and support a stationary and a sliding pane, an extruded member, L-shaped in cross-section, having a T-lug projecting therefrom and running the length thereof, said T-lug being slidably interlockable in either of said recessed T-grooves in said track, said track having an interior sill, a recessed L-groove on said interior sill running the length thereof adjacent said pane-supporting groove, and a lock having an L-lug projecting therefrom said L-lug being slidably engageable in said L-groove.

These and other objects of the invention will become apparent with reference to the following detailed description and in the light of the accompanying drawings. It will be appreciated that the following description is by way of example only, and that obvious alternatives

will occur to one skilled in the art. The scope of the invention should therefore be limited only by the appended claims.

In the accompanying drawings:

FIGURE 1 is a plan view of a window according to the invention taken from the interior of a building in which said window is installed;

FIGURE 2 is a partial prospective view of a window system according to the invention;

FIGURE 3 is an enlarged sectional view taken along line 3—3 of FIGURE 1;

FIGURE 4 is an enlarged sectional view taken along lines 4—4 of FIGURE 3, showing the locking members in closed position;

FIGURE 5 is a view corresponding to FIGURE 4, but including only the lower locking member, in unlocked position;

FIGURES 6 and 7 are sectional views of the extruded track according to the invention taken along lines 6—6 and 7—7 of FIGURE 3, respectively;

FIGURE 8 is a top plan view of a lock according to the invention;

FIGURE 9 is a sectional view taken along line 9—9 of FIGURE 8;

FIGURE 10 is a front plan view of the lock illustrated in FIGURES 8 and 9.

FIGURE 11 is a sectional view illustrating a vertical channel member with a window pane adjacent but not in union therewith;

FIGURE 12 is a sectional view corresponding to FIGURE 11 with the window pane in union with the vertical channel member;

FIGURE 13 is a perspective view of a stop member according to the invention;

FIGURE 14 is a perspective view of a lock member and a stop member mounted on the sill of an extruded track according to the invention;

FIGURE 15 is a plan view of a stop member mounted on a track, in locked position, with a portion of the track cut away;

FIGURE 16 is a view corresponding to FIGURE 15 with the stop member under compression, as during adjustment thereof;

FIGURE 17 is a view taken along line 17—17 of FIGURE 15; and

FIGURE 18 is a view taken along line 18—18 of FIGURE 16.

Detailed reference will now be made to the drawings, wherein like reference numerals identify like parts.

In FIGURE 1 a sliding window is indicated generally at **10**, mounted within a frame consisting of upper frame member **11**, side frame members **12** and **13**, and sill **14**. Mounted on sill **14** is extruded track **15** which supports stationary pane **16** and sliding pane **17** which is provided with handle **18**. Also seen in FIGURE 1 is interior lower lock **19**, interior upper lock **20**. Shown in dotted lines are lower lock **21** and upper lock **22** which are located between the interior and exterior panes of this sliding window system, and act to lock the exterior sliding pane.

Turning now to FIGURE 2, track **15** is more clearly illustrated, as are interior panes **16** and **17**, as well as interior lock **19**. Lock **21** is also illustrated, as are exterior panes **23** and **24**. Shown in interlocked relationship with window sill track **15** are stop members **25** and **26** and L-shaped in cross section, which abut against the ends **16***a* and **23***a* of panes **16** and **23** respectively, and prevent panes **16** and **23** from sliding in their seats in track **15**. As is seen more clearly in FIGURE 3 stop members **25** and **26** extend from the ends **16***a* and **23***a* of panes **16** and **23** respectively, to side member **13** of the window frame. Referring again to FIGURE 2, stop

members 25 and 26 will be seen to be in interlocking relationship within track 15, lugs 27 and 28 projecting from stop members 25 and 26 respectively, being in slidable interlocking engagement in T grooves 29 and 30 respectively (see also FIGURES 6 and 7) in track 15. Similarly, lock 19 is in interlocking, slidable relationship with track 15, by means of L-groove 31, of track in which L-lug 32 of lock 19 is slidably engaged (see also FIGURE 5).

While stop members 25 and 26, which are interlocked with track 15 prevent sliding of panes 16 and 23, support members 33 and 34 are also in interlocking engagement with grooves 54 and 55, respectively (see FIGURE 7), in track 15. Support members 33 and 34 serve to support panes 16 and 23 respectively and wall 33*a* of member 33 separates pane 16 from pane 17 when pane 17 is in open position, that is, when it has been slidably moved in the direction of arrow 35 of FIGURE 2. Similarly, wall 34*a* of member 34 separates pane 23 from pane 24 when pane 24 is in open position, that is, when it has been slidably moved in the direction of arrow 36 of FIGURE 2. As is illustrated in FIGURE 3, the ends of walls 33*a* and 34*a* are bevelled at 33*b* and 34*b*, respectively, to permit panes 17 and 24 to slide freely by in track 15 as panes 17 and 24 are being opened. Support members 33 and 34 are illustrated more clearly in sectional view, in FIGURE 5. It should be noted that support members 33 and 34 are identical in cross section to stop members 25 and 26, that is, of L-shaped cross section, and therefore the installation of a window is greatly simplified as will be explained hereinafter.

Referring now to FIGURES 2, 4, 5, 6 and 7, track 15 is provided along its inner edge with a horizontal lip 37. The inner, or sill portion 38 of track 15 also serves as a support for interior lock 19, and terminates in a downwardly projecting wall 39 which has a pointed end having saw teeth 40 on both sides thereof. As is seen most clearly in FIGURES 2, 4 and 5 the portion of end wall 39 below lip 37 is adapted to be received in a groove cut in wooden sill 14, of slightly lesser width than the thickness of wall 39, whereby saw teeth 40 when pressed therein will prevent track 15 from being raised from sill 14. Track 15 is further provided with a plurality of downwardly projecting support legs 41, adapted to rest on and be supported by sill 14.

As seen in FIGURE 4, upper window frame member 11 is provided with recesses 57 and 57*a* which act as upper tracks for sliding panes 17 and 24, respectively, and as upper seats for stationary panes 16 and 29, respectively. In addition, recesses 54 and 54*a* permit all four panes to be raised above track 15 during installation and removal of the panes as is well known in sliding window installations. As is customary in sashless sliding window systems, recesses 57 and 57*a* will each contain a stop member (not illustrated) to prevent movement of stationary panes 16 and 23. In other words, the stop members in recesses 57 and 57*a* will act against the upper edges of panes 16 and 23 in the same manner as stop members 25 and 26 act against the lower edges thereof.

Track 15 is further provided with a serrated surface throughout its length in grooves 42 and 43, being the supporting surface for sliding panes 17 and 24, respectively (see FIGURES 6 and 7). These serrated surfaces facilitate sliding of panes 17 and 24 when these panes are being moved from open to closed position or vice versa.

Turning now to FIGURES 8, 9 and 10, a lock according to the invention is illustrated. The lock includes a cylindrical housing 44 open at one end, and hollow cylindrical bolt 46 projects therethrough. Spiral slot 47 is provided in cylindrical housing 44, and projecting therethrough is handle 48 affixed to bolt 46 which is rotatable within housing 44 by means of handle 48. Contained within housing 44 and bolt 46 is spring 49, normally urging bolt 46 out of housing 44. It will be appreciated that rotation of bolt 46 by means of handle 48 in spiral slot 47 as to the position shown in broken lines in FIGURE 10 will partially withdraw bolt 46 into cylindrical housing 44, while rotation in the opposite direction will result in bolt 46 being forced forwardly out of housing 44 by the action of spring 49. Projecting from the front wall of bolt 46 is an axial extension or stop 50. Lug 32, integral with the front edge of base 45, is adapted to slidably interlock with groove 31 of track 15.

As seen in FIGURES 2 and 3, bolt 19 is free to slide between two stops 51 and 52 on sill 38 of track 15. In FIGURE 3 lock 19 is shown in solid lines abutting stop 51, and in broken lines in a position intermediate stop 51 and stop 52. Lock 19, as has already been described, is in slidable interlocking relationship with track 15, lug 32 being engaged in groove 31.

As illustrated most clearly in FIGURES 2, 11 and 12, vertical channel members 56 are generally U-shaped in cross-section, although one of the arms of the U, arm 56*a*, is slightly longer than the other arm, arm 56*b*. Both arms 56*a* and 56*b* are slightly bowed toward each other, and both terminate in a small bead which runs the length thereof. A plurality of ribs 56*c* are provided on the interior of channel member 56 to ensure a weather-tight relationship with pane 16 when pane 16 is in union with channel member 56 as illustrated in FIG. 12. Additionally, it will be noted that walls 56*a* and 56*b* of channel member 56 are pressed against both faces of pane 16, ensuring a weather-tight relationship therebetween. Wall 56*a* is of slightly longer length than wall 56*b*, for as is evident in FIG. 3, channel member 56 will be installed so that wall 56*b* is aligned with the inner edge of sill 38 of track 15, and the longer length of wall 56*a* of channel member 56 will ensure union with pane 17 as it is slidably moved to closed position, even though it might tend to wander slightly inwardly in its track.

Reference will now be made to FIGURES 13 to 18 which illustrate stop member 51, which is generally H-shaped in cross section and is molded of suitable plastics such as nylon. Stop 51 comprises cross bar 51*a*, spring arm 51*b* and pressure arm 51*c*. Spring arm 51*b* is generally curved and terminates in a bead at each end thereof. Pressure arm 51*c* is slightly curved in order comfortably to receive the finger or thumb of the operator during adjustment. Cross arm 51*a* is provided with a notch 51*d* which is located adjacent pressure arm 51*c*, and which results in the creation of a lug 51*e* in arm 51*a*, adjacent spring arm 51*b*. When stop member 51 is in locking position, as illustrated in FIGURES 14, 15 and 17, it will be seen that spring arm 51*b* is under tension in groove 31, between the inner wall of groove 31 and outer lip 31*a* thereof, with lug 51*e* being received within a slot provided in lip 31*a*, stop 31 thus being held in fixed position. Through manual application of pressure in the direction of arrows P of FIGURES 16 and 18, spring arm 51*b* may be compressed within groove 31 so that lug 51*e* is fully received within groove 31, and notch 51*d* comes into alignment with lip 51A of groove 31, permitting stop member 51 to be slidably adjusted in the direction of the arrows shown in FIGURE 16, along track 31. A plurality of notches in lip 31*a*, such as notch 31*b* illustrated in FIGURE 14, may be provided at the various locations at which stop member 51 is to be located, as will be explained hereinafter. As seen most clearly in FIGURE 14, stop member 51 will abut against base 45 of lock 19, to prevent sliding thereof beyond the point at which stop 51 is located.

The installation and operation of a window system according to the invention will now be described.

The window to be fitted with a sliding window system according to the invention is framed according to normal construction practices. A section of track 15 is cut to the length of the sill of the window being fitted with a window, and a groove provided in the sill will receive pointed tooth wall 40 of track 15.

Before track 15 is affixed to sill 14, stop members

25 and 26 are slidably engaged by lugs 27 and 28, respectively in track 15. Similarly, support members 33 and 34 are slidably engaged in the cooperating grooves of track 15. Stop members 25 and 26 will be pre-cut to a length equal to the width of the window minus the width of panes 16 and 23, while support members 33 and 34 will be cut to a length slightly less than the length of panes 16 and 23. Support members 33 and 34 will be positioned directly below the permanent position which panes 16 and 23 are to maintain, while stop members 25 and 26 will be positioned so that they abut the interior ends of panes 16 and 23 at one end, and side frame 13, at their other end. When the panes have been installed stop members 25 and 25 will of course remain stationary on track 15, as will support members 38 and 34. If desired a track reinforcing block 53 (see FIGURE 4) may be provided at the point where the lower lock 21 is to be installed. Lock 19 which is to slide in groove 31 of track 15 is installed by simply cutting away a portion of lip 31*a* at either end of groove 31. T-lug 32 of lock 19 may then be pressed home into groove 31, where it is free to slide in groove 31, along sill 38. Two adjustable stop members 51 are installed in groove 31, one such stop member on each side of sliding lock 19.

Upper lock 20 which acts against the interior panes and upper lock 22 which acts against the exterior panes are then affixed as by screw nails to the underside of the top frame 11 in the positions indicated in FIGURE 1. Lower interior lock 19 is also affixed as by screw nails or other suitable means to track 15, between exterior pane 24 and interior pane 17. Vertical moldings 53 are now placed in suitable grooves provided in side frame members 12 and 13.

Pane 23 may now be installed by firstly lifting it upwardly so that its upper edge extends into recess 57 provided in upper frame member 11 and subsequently lowering it so that it is seated on support member 34 and in abutting relationship with stop member 26. Sliding pane 24 may now be installed in a similar manner, so that it is supported by the serrated surface of track 15. Stationary interior pane 16 will be installed in a manner similar to exterior pane 23, and sliding interior pane 17 will be installed in a manner similar to sliding exterior pane 24.

With reference to FIGURE 3, interior lock 19 will now now be moved along track 15 until it is positioned as shown in solid lines. A notch 31*b* to receive lug 51*e* of stop 51 is provided on lip 31*a* at a point where base 45 of lock 19 will prevent movement of lock 19 at the point where the shoulder of bolt 46 of lock 19 will press against the edge of pane 17. While lock 19 is in this position stop 50 will project beyond the end of pane 17, whereby pane 17 will be prevented from sliding within track 15, when lock 19 is in closed position. Further, the shoulder of bolt 46 will press pane 17 against pane 16 with sufficient force to prevent any rattling thereof. A second lock stop 52 will be provided on track 15, to prevent lock 19 from sliding beyond the point illustrated in dotted lines in FIGURE 3. In other words, lock 19 is free to be slidably moved between stops 51 and 52 of track 15. A third notch in lip 31*a* may be provided at a point intermediate the position of stop 51 and stop 52 illustrated in FIGURE 3, whereby a window may be left partially open, and at the same time be prevented from fully opening should an intruder attempt to gain entry through a window according to the invention.

When panes 24 and 17 are in closed position it will be appreciated that they are received within vertical channel members 56, insuring a weather-tight closure, and with all four locks 19, 20, 21 and 22 in locking relationship, the window is secure against weather and attempts of forced entry. As most clearly seen in FIGURE 4, bolts 46 of locks 19 and 20 press against pane 17 when in locked position, and stop member 50 project beyond the end of pane 17 absolutely preventing opening thereof.

When it is desired to remove the window panes for purposes of cleaning, lock 19 is first slid from its normal position shown in solid lines in FIGURE 3 to the position shown in dotted lines, and pane 17 is then slid fully open. Lock 19 will then not interfere with the removal of pane 17 as it is lifted into channel 54 and swung inwardly and thus removed entirely from the frame. Similarly, panel 16 may be readily removed while lock 19 is in the position shown in dotted lines in FIGURE 3. Lock 21 will not interfere with the removal of pane 24 after pane 24 has been slid to open position, nor with the removal of pane 23, and therefore all of the panes may be readily removed for purposes of cleaning or the interchange of an exterior screen section for pane 24.

While all the locks are provided with interlocking lugs 32, only lock 19 need be slidable on track 15. Lock 20, 21 and 22 are affixed directly to the track or to the upper frame member by screw nails or other suitable means.

The extruded track 15 as well as the interlocking support and stop members are of any suitable plastics, while the lock mechanisms are also of suitable plastics, as for example, nylon, including the bolt and the housing.

A number of small unobtrusive drainage holes to receive condensation may be provided at any convenient point in track 15, along with one or more small exterior drainage holes at the bottom of the exterior wall 41 of track 15.

I claim:

1. A sashless sliding window system comprising the combination of a window frame and an extruded sill track, at least two pane supporting grooves in said sill track, two recessed T-grooves running the length of said pane-supporting grooves, said pane supporting grooves being adapted to receive and support a stationary and a sliding pane, an extruded member, L-shaped in cross-section, having a T-lug projecting therefrom and running the length thereof, said T-lug being slidably interlockable in either of said recessed T-grooves in said track, said track having an interior sill, a recessed L-groove on said interior sill running the length thereof adjacent said pane-supporting groove, and a lock having an L-lug projecting therefrom said L-lug being slidably engageable in said L-groove.

2. A sashless sliding window system according to claim 1, said pane-supporting grooves having a serrated bottom surface and two vertical walls rising therefrom, one of said recessed T-grooves being in one wall of said pane-supporting groove and running the length thereof, the other of said recessed T-grooves being in the said bottom thereof, said T-groove in said wall being adapted to receive in slidable intelocking relationship the T-lug of a first length of said extruded L-shaped member, whereby said first L-shaped member will act as a stop to prevent movement of said stationary pane, and said T-groove in the bottom of said track being adapted to receive in slidable, interlocking relationship the T-lug of a second length of said extruded L-shaped member, whereby said second L-shaped member will act to support said stationary pane and to separate said stationary pane from said sliding pane.

3. A sashless sliding window system according to claim 1, the L-lug of said lock being slidably interlocked in said L-groove of said track, said lock comprising a cylindrical housing mounted on a base, said cylindrical housing being open at one end, a cylindrical bolt rotatably mounted within said housing, a spiral slot on the upper side of said housing, a handle intergral with said bolt extending through said spiral slot, and an axial extension of lesser dimension than said bolt extending from said bolt at the open end of said housing, said axial extension being of lesser length than the thickness of a window pane, spring means within said housing normally urging said bolt toward the open end of said housing said sliding pane being in overlapped relationship with said stationary pane when in closed position, whereby

when said lock is in locking relationship with said sliding pane said axial extension projects beyond the edge thereof, and said bolt is urged by said spring against said sliding pane and against said overlapping stationary pane.

4. A sashless sliding window system according to claim 3, said lock being slidable on said inner sill within predetermined limits created by stop means affixed to said sill to act against the base of said lock.

5. In a sliding window system according to claim 4, said L-groove on said interior sill having a lip, a plurality of notches in said lip, said stop means comprising a generally H-shaped stop member having a notched cross bar, a curved spring arm and a curved pressure arm; said spring arm being adapted to be received in said L-groove and normally to urge said cross bar toward one of said notches on the lip of said L-groove, said pressure arm being exposed for manual pressure whereby said spring arm may be compressed to bring said notch in said cross bar into alignment with said lip on said L-groove to permit slidable adjustment of said stop member along said interior sill.

6. A sashless sliding window system according to claim 1, said extruded sill track having a plurality of downwardly depending support legs running the length thereof

at least one of said support legs terminating in a plurality of saw teeth running the length thereof and being adapted to be received in a groove in the bottom of sill of said window frame.

7. In a sliding window system according to claim 1, a vertical channel member at each end of each of said pane supporting grooves, said channel members comprising a generally U-shaped member having at least one rib running the length thereof on the interior thereof, intermediate portions of the arms of said channel member being slightly bowed toward each other, one of said arms being slightly longer than the other, said channel member being adapted to snugly receive the edge of one of said panes.

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