

Nov. 12, 1957

A. ZITOMER
WINDOW STRUCTURES

2,812,836

Filed Feb. 26, 1954

2 Sheets-Sheet 1

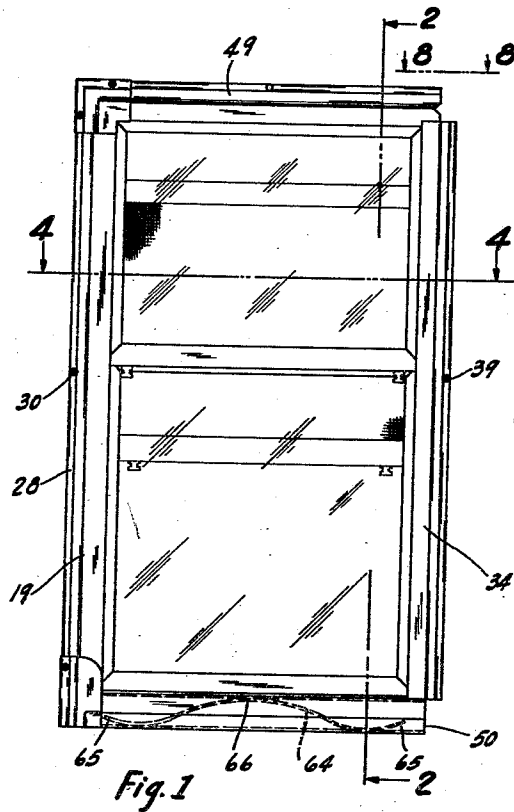


Fig. 1

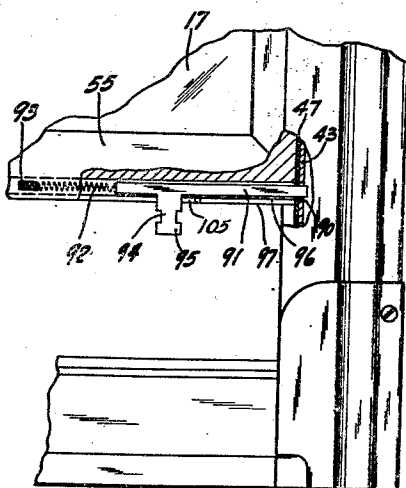


Fig. 3

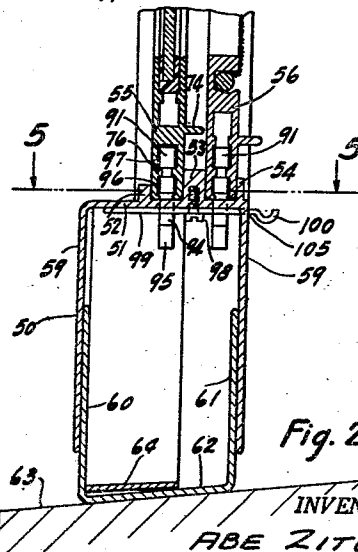
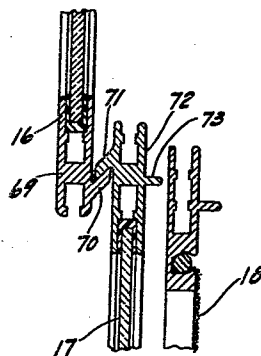
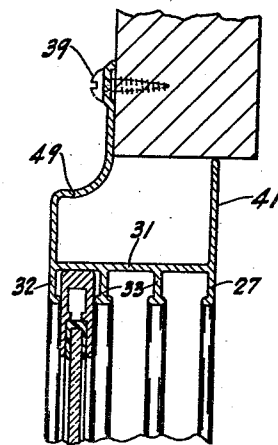


Fig. 2

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2 Sheets-Sheet 2

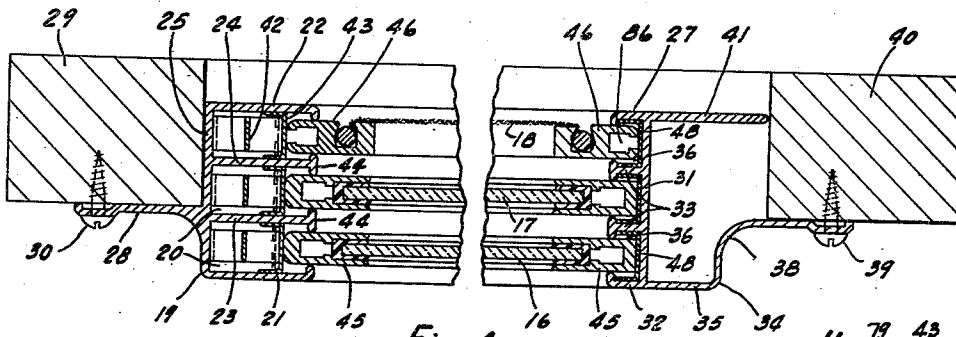


Fig. 4

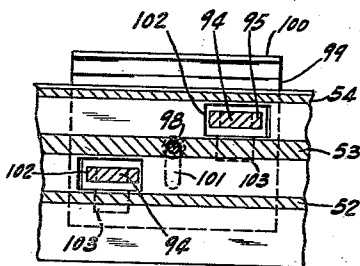


Fig. 5

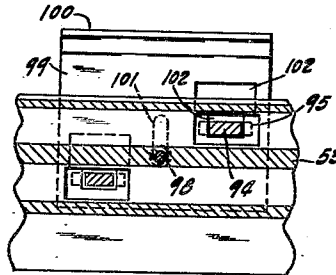


Fig. 6

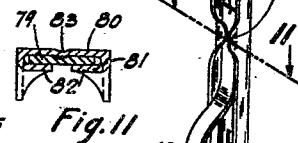


Fig. 11

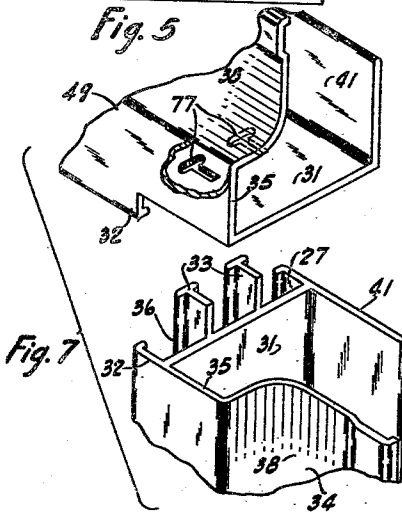


Fig. 7

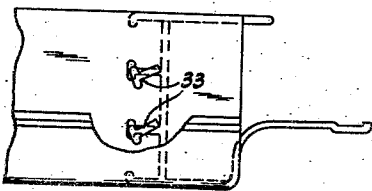


Fig. 8

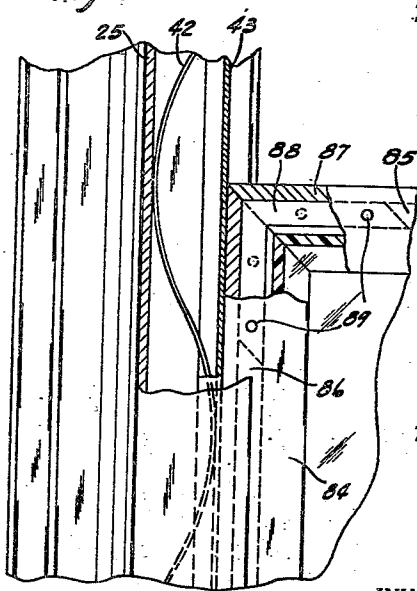


Fig. 9

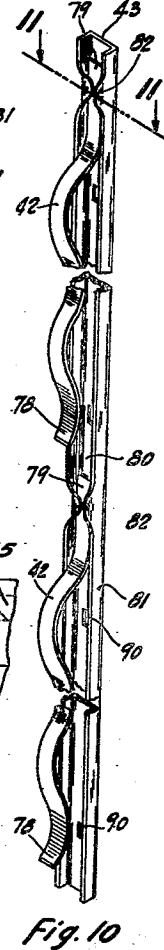


Fig. 10

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Application February 26, 1954, Serial No. 412,897

2 Claims. (Cl. 189—75)

This invention relates to improvements in window structures.

The invention consists in a "self-storing" combined storm and screen sash window in which the construction of the sash frame is simplified and its assembly made more convenient and secure. In particular, I provide a novel sash frame corner assembly having framing members which are lap jointed and positively interlocked. As integral parts of the corner members constitute the interlock, I have eliminated need for separate interlocking keys heretofore required.

The invention further consists in a novel sash lock. My lock comprises selectively locking and releasing downwardly projecting handles on laterally movable sash-positioning plungers with a slide member movable in the sash frame. The sash are also provided with novel ways for the reciprocating plunger, and with a housing for a plunger spring.

I also provide an improved laterally resilient sash guide assembly including a slide strip and multiple convoluted springs fixed to the slide strip. The assembly is such as to provide uniform lateral pressure of the assembly against the sash throughout its range of movement.

Other objects and advantages of the invention will be apparent to one skilled in the art on examination of the following disclosure.

In the drawings:

Fig. 1 is an elevation of a combined storm and screen sash embodying my invention, certain corner plates being removed.

Fig. 2 is an enlarged vertical cross sectional view taken along the line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary elevation of a lower corner of the device of the invention, a portion thereof being shown in section.

Fig. 4 is an enlarged horizontal cross sectional view taken along the line 4—4 of Fig. 1, parts being broken away.

Fig. 5 is an enlarged fragmentary cross sectional view taken along the line 5—5 of Fig. 2.

Fig. 6 is a cross sectional view similar to Fig. 5, but showing the locking slide moved to sash locking position.

Fig. 7 is a fragmentary perspective view, in spaced apart relation, of the jamb and lintel members before interlocking these members in my new corner construction.

Fig. 8 is a fragmentary plan view taken along the line 8—8 of Fig. 1 and showing my jamb and lintel elements interlocked.

Fig. 9 is an enlarged fragmentary elevation, partly in cross section, showing a sash engaged in a sash channel formed on the jamb.

Fig. 10 is a perspective view of my new sash guide and spring construction which fits into the jamb channel, as shown in Fig. 9.

Fig. 11 is a cross sectional view taken along the line 11—11 of Fig. 10.

I have chosen to exemplify my invention in a triple

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hung "self-storing" combination screen and storm sash window structure. All the parts of the window, except the glass, the screen and the zinc slide strips to be hereinafter described, desirably comprise extruded aluminum shapes.

The upper and lower storm sash 16, 17 and the screen sash 18 are provided with individual sash channels formed in the frame of the window. The frame comprises side jambs 19, 34, a top lintel 49 and bottom sill 50. Side jamb 19 has relatively deep channels 20 formed between the relatively deep outer and inner flange stops 21, 22 and the intermediate or parting flange stops 23, 24. The flange stops 21—24 project from a common base web 25 which has an oppositely extending face flange 28. Face flange 28 is mounted by means of screws 30 in face relationship to the wooden frame member 29 of the building to which the frame is applied.

The opposite jamb 34 of the frame comprises a base web 31 having inner and outer flange stops 27, 32 and intermediate or parting flange stops 33. These flange stops project from base web a distance less than the projection of flange stops 21—24 from base web 25 in jamb 19, and define relatively shallow sash channels 36 therebetween. Extending rearwardly from base web 31 in jamb 34 is a rearward extension 35 of flange 32 and a rearward extension 41 of flange 27. For uniformity of appearance the combined width of flanges 32 and 35 of jamb 34 is substantially equal to the width of flange 21 of jamb 19. Flange 35 is connected by means of an outwardly concave curved face flange 38, and screws 39, to frame member 40 of the building.

The deeper channels 20 in jamb 19 each house a vertical series of convoluted springs 42 mounted on the slide channels 43, one of which is shown in perspective in Fig. 10. Each marginal and intermediate flange stop is provided with a marginal bead 44 against which the sash are in lateral bearing engagement. In jamb 19, these beads limit outward movement of the slide strip 43 under pressure of the springs 42 which bear at spaced points along their convolutions with the base web 25 (Fig. 9).

The respective storm sash 16—17 have side stiles 45 and the screen sash has side stiles 46 engaged in the respective channel ways formed in the jambs 19 and 34. The respective sash are conveniently inserted and removed from engagement with their sash guides by moving them against the slides 43 to compress the convoluted springs 42. When the stiles clear the flange stops 27, 32, 33 on jamb 34, the sash may be swung into or out of alignment with their respective channels 36. The convoluted springs 42 normally exert sufficient bias to frictionally hold the sash in any position to which they are vertically adjusted in their respective ways.

As best shown in Fig. 4, I provide zinc channel-shaped liners 48 in the sash channels 36 in jamb 34. I may also provide a zinc wear strip 47 on the outer face of web 30 of sash slide 43, as shown in Fig. 3. I have found that direct bearing contact of the aluminum stiles on the aluminum guides galls and scars the aluminum members. By the provision for liners or wear strip made of zinc, or other material which does not gall when in bearing engagement with aluminum, however, the sash may be slid in its ways with much less effort than heretofore experienced, and without galling of the metal.

The lintel 49 of the frame may be of substantially the same cross section and be extruded from the same die as the jamb 34. As best shown in Figs. 2 and 7, it is provided with a base web and marginal and intermediate flange stops numbered to correspond with the reference characters applied to jamb 34.

At the bottom of the frame, I provide a sill 50 hav-

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ing telescopic channel members, the uppermost of which comprises a base web 51 having inner and outer stops 54, 52 and an intermediate parting stop 53. The channels formed between the stops receives the bottom rails 55 and 56 of the storm and screen sash 17, 18. Base web 51 is provided with downwardly extending marginal flanges 59 which telescopically embrace marginal flanges 60, 61 of the lowermost channel-shaped member which has a base flange 62. Base web 62 is desirably at a slight angle with the flanges 60, 61 in order to conform to the slope of the window frame sill 63. Within the telescopically engaged channel-shaped members of the sill 50, I may dispose a convoluted spring 64 (Figs. 1 and 2) to bias base web 62 against sill 63 and thus tightly seal the bottom of the window. As best shown in Fig. 1, the spring 64 comprises ends 65 bearing near the opposite ends of base web 62 and a single upwardly convex convolution 66 bearing centrally against the under surface of base web 51.

The respective sash members 16—18 may be provided with laterally projecting weather strip elements. Lower rail 69 of sash 16 is provided with an inwardly and upwardly oblique weather strip rail 70 which mates in the closed position of sashes 16 and 17 with the outwardly and downwardly oblique weather strip rail 71 extending from the top rail 72 of sash 17. Projecting laterally inwardly from the top and bottom rails 72 and 55 of sash 17 are weather strip rails 73 and 74.

The corner connection of the lintel 49 and sill 50 with the jambs 19 and 34 is exemplified in Figs. 7 and 8 which show the specific corner structure of lintel 49 and jamb 34. These members, as hereinbefore indicated, are desirably formed by extrusion from the same die. The upper end of jamb 34, however, is modified by milling the upper ends of base web 31, marginal flange stops 27, 32 and flanges 38 and 41 to a common plane materially offset from the level to which the ends of intermediate flange stops 33 extend. The lintel 49 is modified in a different manner by milling its marginal flange stops 27, 32 and intermediate flange stops 33 to a common plane materially offset from the level to which the edges of base web 31 and flanges 35, 41 and 38 extend. Base web 31 of lintel 49 is also provided with through apertures 77 just beyond the milled ends of its intermediate flanges 33. The apertures 77 are shaped to receive therethrough the projecting portions of the intermediate flange stops 33 on jamb member 34.

Thus, when the lintel and jamb members 49 and 34 are assembled as shown in Figs. 1 and 8, the projecting portions of intermediate flanges 33 on jamb 34 extend through the apertures 77 and beyond the base web 31 of lintel 49. Thereafter the projecting portions of the intermediate flanges 33 on jamb 34 may be twisted laterally, as shown in Fig. 8, to engage over the margins of base web 31 about the apertures 77 to interlock the lintel and jamb in right angular relation. In the assembled position of the parts, the milled ends of the intermediate and marginal flanges 33, 27, 32 on lintel 49 will abut the beaded edges of the intermediate and marginal flanges 33, 27, 32 on the jamb 34, thus continuing the channels formed by the said flanges through the corner whereby to receive the corners of the respective sash members in weather tight sealed relationship.

By the structure just disclosed mitering of the frame members is eliminated. The parts are lap jointed and positively interlocked. The interlock consists of parts extruded with the members and no separate and additional locking key or the like is needed.

As is readily apparent to one skilled in the art the corner between the lintel 49 and jamb 19 and the corners between the sill 50 and the jambs 19 and 34 may be formed in similar fashion to positively interlock these frame members together.

The specific convoluted spring and slide assembly shown in Fig. 10 constitutes an improvement over the

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convoluted spring and slide construction shown in my prior Patent No. 2,630,891 in which a single convoluted spring, extending for the full height of the window frame, and a channel shaped slide were disposed in the jamb channels without physical connection. In the device of my prior patent there was a tendency for the spring to shift position with respect to the slide and exert an uneven pressure on the sash. In the device of the present invention, however, I provide at least two separate spring segments 42. Each spring has a free end 78 and has an opposite end 79 fastened to the base web 80 of the channel shaped slide member 43. Immediately adjacent the engagement of the ends 79 of the spring with the base web 80 the marginal flanges 81 of the channel shaped member 43 are inwardly deformed at 82 to clamp the spring end 79 against the underlying portions of the base web 80. I may optionally dimple the base web 80 at 83 in order to positively interlock the spring end 79 with the base web 80.

It is noted that the free end 78 of one spring 42 terminates at a point adjacent the fast end 79 of the next spring 42. Accordingly, the spring segments do not overlap. In the structure herein disclosed, there is no possibility for either spring 42 to shift longitudinally with respect to the sash slide 43. Moreover, multiple springs provide for more uniform resilient pressure of the sash slide 43 toward the stiles of the respective sash members.

In Fig. 9, I show a sash stile 84 in sliding engagement with the sash slide 43 and subject to the bias of spring 42. In this figure I also show the mitered connection of the rail 87 of the sash with the sash stile 84. The rail and stile are formed with interior channels 85, 86 which communicate across the mitered jamb and in which I may fit the legs of angle member 88. The sash rail and stile may be interlocked with the angle members by means of the dimples 89.

As best shown in Fig. 10, the sash slide 43 is provided at intervals along its height with apertures 90. As best shown in Fig. 3, these apertures 90 may be engaged by a plunger 91 slidably mounted in a channel 96 formed in the bottom rails of the respective sash. For purposes of exemplification, the bottom rail 55 of storm sash 17 is illustrated in Fig. 3. As shown in this figure, and in Figure 2, the rail 55 is provided with two channels 96, 97 which communicate through the space between ribs 76 which partition the channels. Plunger 91 slides in channel 96. At the inner end of plunger 91, I provide a spring 92 which bears against a seat 93 formed out of the metal of the rail. Spring 92 biases the plunger toward engagement with aperture 90 in the sash slide 43. By manipulating the plunger 91 the sash may be supported at selected levels by engaging the plunger under the bias of its spring 92 with the vertically spaced apertures 90 in the sash slide 43. Each plunger is provided with a handle which extends downwardly between the ribs 76, through channel 97 and below the level of the rail where the handle comprises a narrowed shank 94 and an enlarged head 95. Bottom rail 56 of screen sash 18 is provided with like channels and a plunger 91. The walls of channel 97 may be provided with a stop 105 extending into the path of the plunger handle to limit plunger movement under the bias of the spring 92.

As best shown in Figs. 2, 5 and 6, I provide a novel sash lock which engages with the downwardly projecting handles of the plungers 91 in sash 17 and 18. The base web 51 of sill 50 is provided with a headed bolt 98 threaded into its intermediate parting stop 53. The inner flange 59 of sill 50 is provided with a slot 105 through which the slide 99 may be reciprocated by manipulating its handle 100 to the extent permitted by the engagement of the headed bolt 98 with the slide margins forming the ends of slot 101.

As best shown in Figs. 5 and 6, slide 99 is provided with two apertures 102, each aligned vertically with a handle of a plunger 91 when the slide is in its Fig. 5

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position. The aperture 102 is larger than the head 95 of the handle to permit vertical passage of the head 95 there-through. Accordingly, in this position of the slide, the sash may be raised and lowered at will. Slide 99 is provided with a second aperture 103 communicating in the path of slide movement with aperture 102. Aperture 103 is of narrower lateral dimension than the head 95 but is wide enough to pass about the reduced shank 94 of the handle. Accordingly, in the Fig. 6 position of the slide, where it is shown pulled inwardly, the margins of aperture 102 engage over the head 95 of the handle and lock the sash in their closed position.

I claim:

1. A corner structure in a window frame having sash guide members which meet at substantially a right angle, said guide members each comprising a base web, marginal flanges, and an intermediate flange, said flanges defining sash channels therebetween, one of said members having the ends of its marginal flanges disposed in the same plane with the end of its base web, its said intermediate flange extending beyond said plane, the other of said members having the ends of its marginal and intermediate flanges in substantially the same plane and its base web extending beyond said plane, the last mentioned base web having an

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aperture beyond the end of its said intermediate flange and the projecting intermediate flange of the said one member being engaged in said aperture, the ends of the base web and marginal flanges of said one member being engaged with the base flange of said other member, said projecting intermediate flange being interlocked with said apertured base web to secure said members in right angular relation.

2. The device of claim 1 in which the portion of said intermediate flange projecting beyond said apertured base web is deformed transversely whereby to engage over said apertured base web and interlock said guide members.

References Cited in the file of this patent

UNITED STATES PATENTS

1,654,293	Lamm	Dec. 27, 1927
1,879,655	Brogden	Sept. 27, 1932
2,359,756	Kaufmann	Oct. 10, 1944
2,446,144	Story	July 27, 1948
2,609,222	Severson	Sept. 2, 1952
2,630,891	Zitomer	Mar. 10, 1953
2,640,567	Pressnall	June 2, 1953
2,664,599	Zitomer	Jan. 5, 1954
2,679,665	Beard	June 1, 1954