July 30, 1963 F. W. HETMAN 3,099,050

WINDOW SASH CONSTRUCTION

Filed Feb. 24, 1960 4 Sheets-Sheet 1

FIG. 1

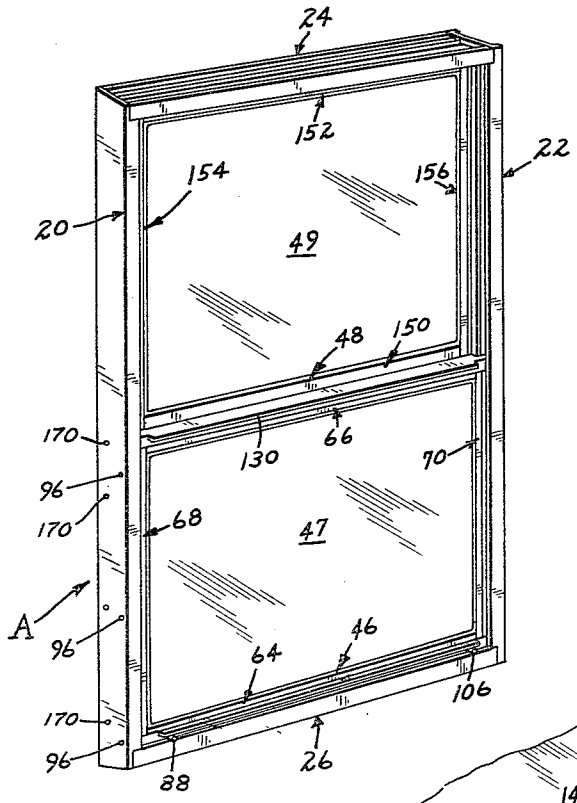


FIG. 10

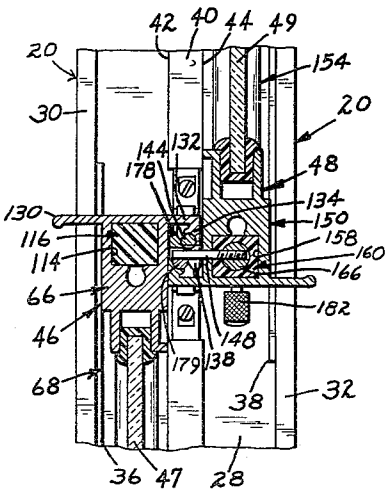


FIG. 3

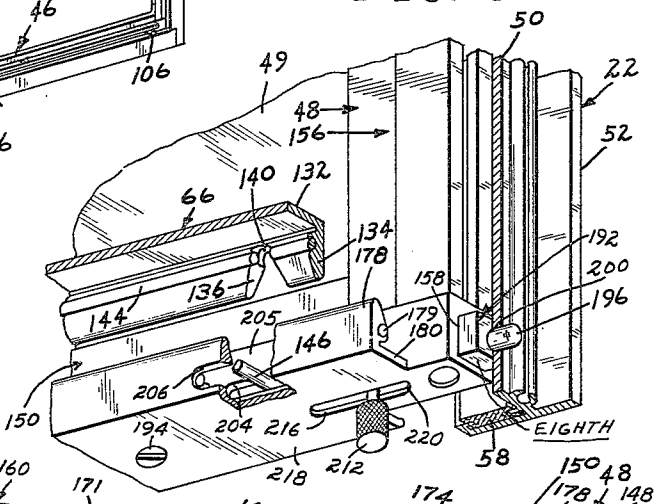
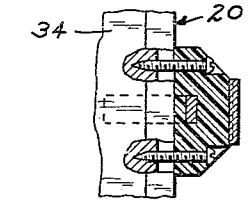


FIG. 11



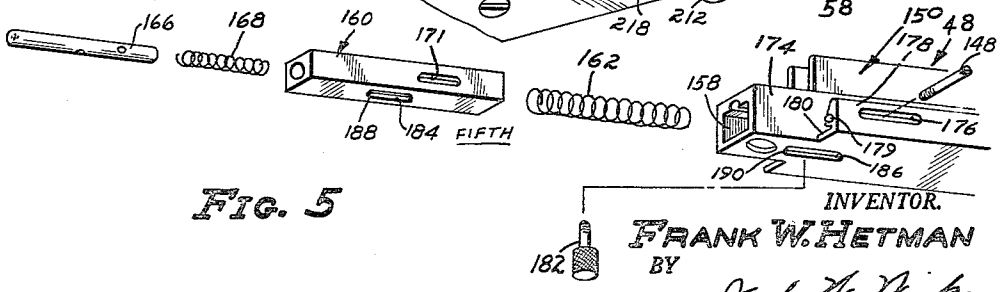


FIG. 5

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July 30, 1963 F. W. HETMAN 3,099,050

WINDOW SASH CONSTRUCTION

Filed Feb. 24, 1960 4 Sheets-Sheet 2

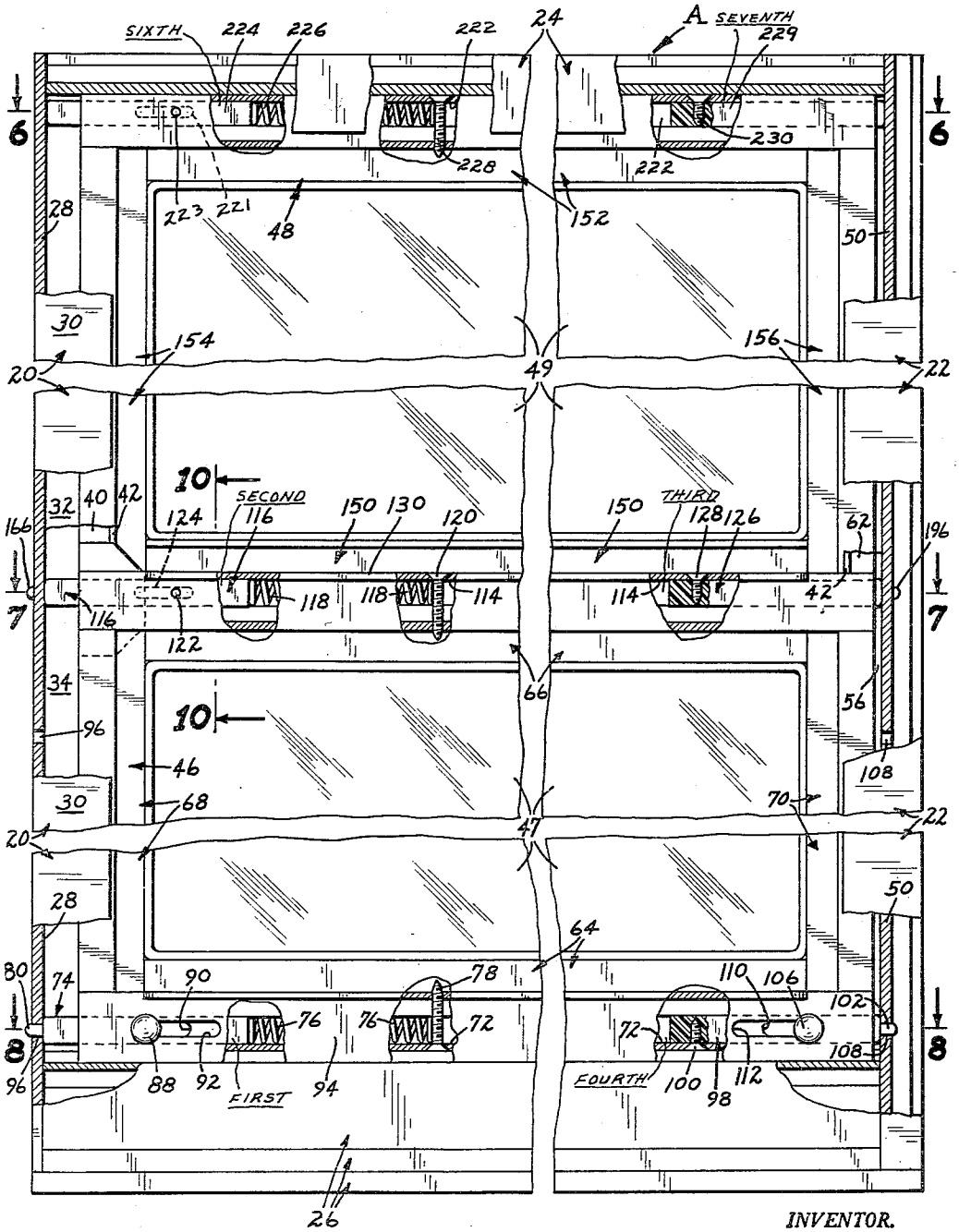


FIG. 2

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WINDOW SASH CONSTRUCTION

Filed Feb. 24, 1960 4 Sheets-Sheet 3

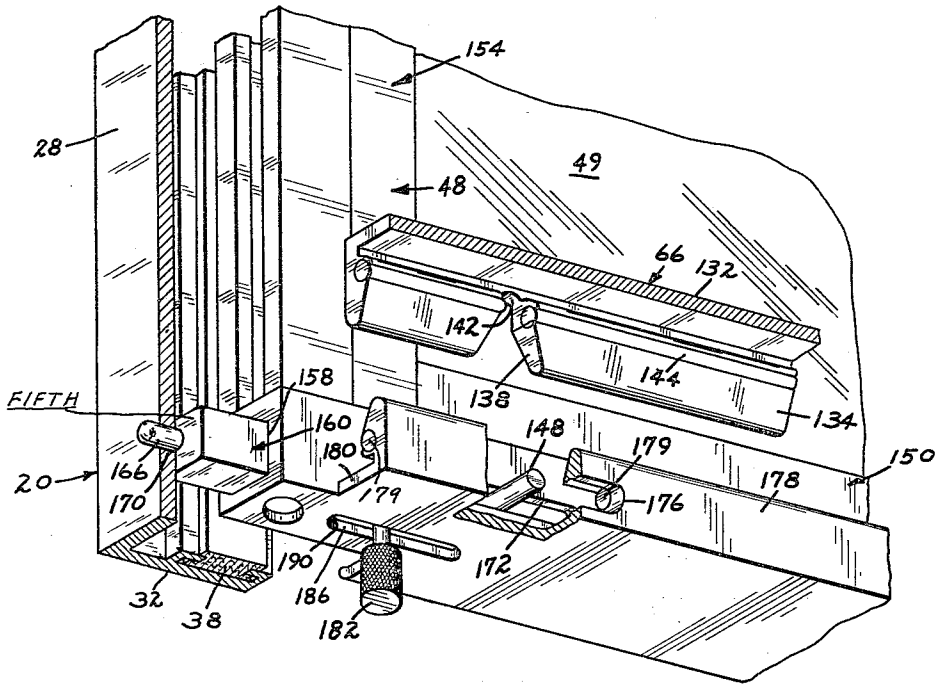


FIG. 4

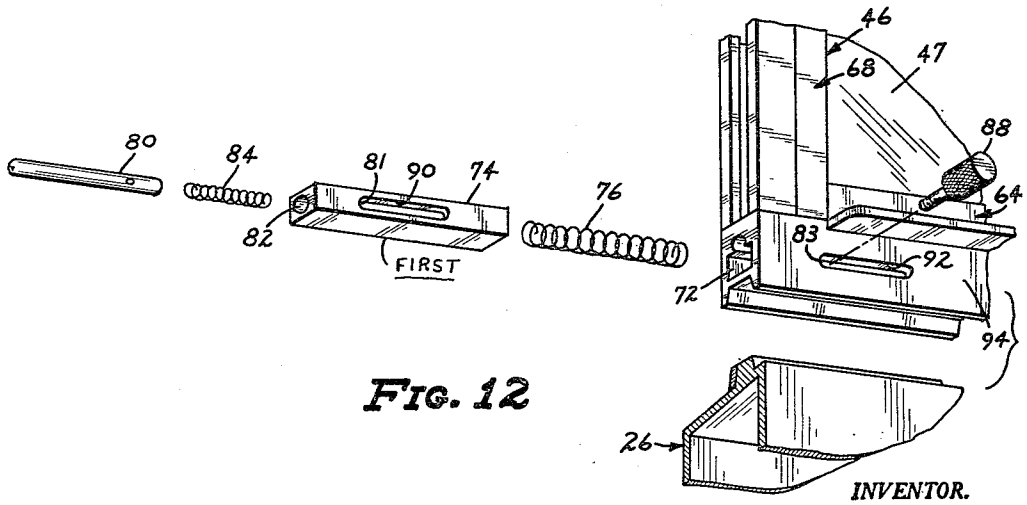


FIG. 12

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July 30, 1963 F. W. HETMAN 3,099,050

WINDOW SASH CONSTRUCTION

Filed Feb. 24, 1960 4 Sheets-Sheet 4

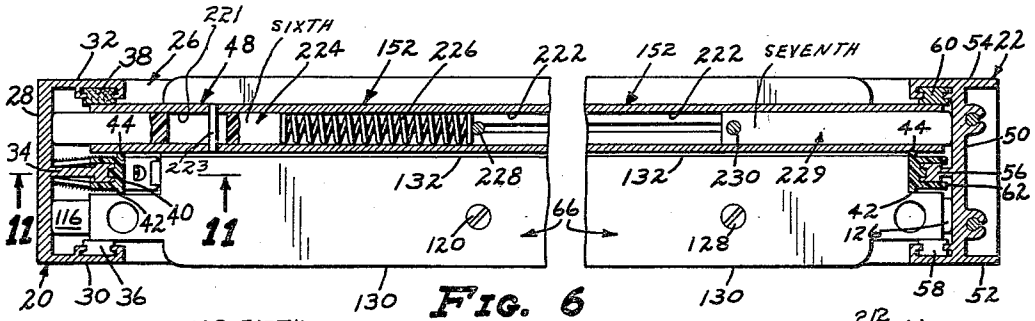


FIG. 6

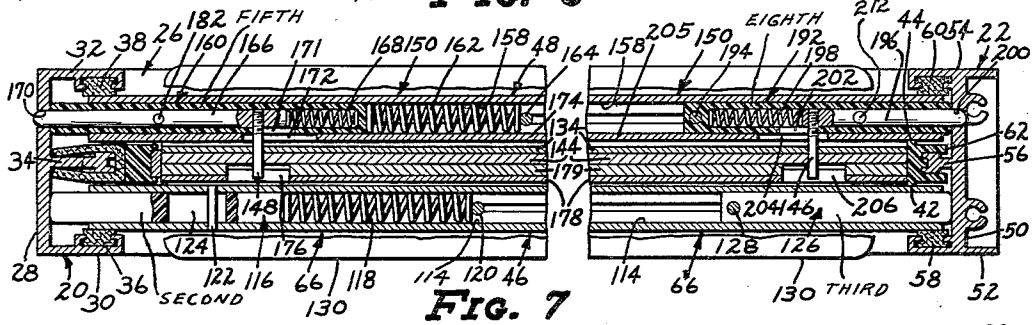


FIG. 7

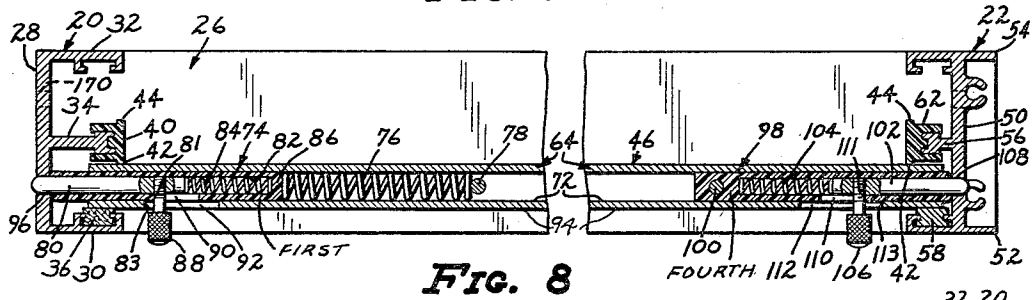


FIG. 8

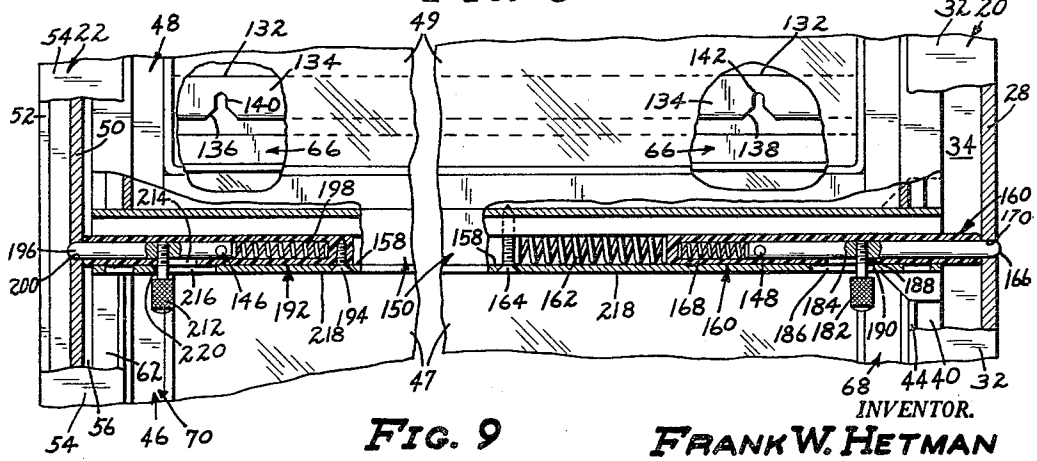


FIG. 9

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United States Patent Office

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3,099,050
WINDOW SASH CONSTRUCTION

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Filed Feb. 24, 1960, Ser. No. 10,699
6 Claims. (Cl. 20—52.2)

My invention relates generally to an improvement in windows, more particularly to the so-called double hung type and in detail to a removable friction held or balanced, slidable and releasably locking window sash construction made substantially of extruded aluminum.

It is an object of my invention to provide a cartridge member which is slidably or fixedly mounted within a horizontal rail of a window sash and which is spring urged outwardly for pressing engagement with the inner surface of the frame stile which allows removal of the sash from the frame and provides a guided sliding of the sash within the frame stile. It is a further object to provide within the same slidable cartridge a spring urged slidable locking pin which is engageable with recess means formed in the stile for releasably locking the sash in predetermined positions.

It is still a further object to provide in a further version of the cartridge, which is mounted in the lower horizontal frame rail of the upper sash, a pin member extending transversely from the locking pin and means on the upper rail of the lower sash for engaging the pin when both sashes are fully closed to thereby prevent movement of the locking pin whereby the sashes are automatically locked when the opposed upper and lower sashes are placed in closed position.

It is also an object to provide the aforementioned cartridge members of plastic and preferably "nylon" or the like whereby the end thereof, which is in pressing engagement with the frame stile, slides in a free but slightly limited manner, thereby giving a guided "balance" to the sash without sagging of the sash on one side or the other. The locking pin mounted therein slides in a free and desirable manner due to the fact that the cartridge is "nylon."

It is a further object to position a similar cartridge and locking pin combination aforementioned in the sash at a point opposite to the spring urged cartridge carrying a locking pin but with a fixed slidable contact of the end of the cartridge with the frame stile.

I shall not here attempt to set forth and indicate all of the various objects and advantages incident to my invention, but other objects and advantages will be referred to in or else will become apparent from that which follows.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings, showing by way of example a preferred embodiment of the inventive idea wherein like numerals refer to like parts throughout.

In the drawings forming part of this application:

FIGURE 1 is a perspective view of a full double hung window embodying my invention, looking at the same from the inside, a portion of the framing shown in broken lines.

FIGURE 2 is a front plan view of a window sash according to my invention looking at the same from the inside, portions of which are broken away and other portions in section.

FIGURE 3 is an enlarged fragmentary perspective view of a lower corner of the upper sash looking at the same from the inside portions thereof being in section and portions broken away.

FIGURE 4 is an enlarged fragmentary perspective view of a corner of the sash opposite to that shown in FIGURE 3 looking at the same from the inside.

FIGURE 5 is an exploded perspective view of the

cartridge and bolt mechanism together with a portion of the end of the rail which mounts the cartridge and bolt shown in FIGURE 4.

FIGURE 6 is a sectional view on the line **6—6** of FIGURE 2.

FIGURE 7 is a sectional view on the line **7—7** of FIGURE 2.

FIGURE 8 is a sectional view on the line **8—8** of FIGURE 2.

FIGURE 9 is a fragmentary view of the window at the central portion thereof viewing the same from the outside where the sashes meet some portions in section and other portions broken away, the lower sash being raised slightly.

FIGURE 10 is a sectional view on the line **10—10** of FIGURE 2.

FIGURE 11 is a sectional view on the line **11—11** of FIGURE 6.

FIGURE 12 is an exploded perspective view of the cartridge and bolt mechanism together with a portion of the lower rail of the lower sash at the left end thereof as seen from the inside.

Referring to the drawings in detail, my sash construction A includes the first and second side frames or stiles **20** and **22** respectively, which may be formed of extruded aluminum and which are secured inside conventional new window framing or which may be secured in old window framing. The upper ends of the stiles **20** and **22** are connected to a top frame or lintel member **24**, and the lower ends of the stiles **20** and **22** are connected to the sill member **26**. The stile **20** is channel-shaped and includes the base portion **28**, the inner flange portion **30**, the outer flange portion **32** and the substantially centrally disposed flange portion **34**. The flanges **30** and **32** mount the weather stripping and sash guide strips **36** and **38** respectively, the strip **36** being mounted on the lower half of the flange **30** and the strip **38** being mounted on the upper half of the flange **32**. Both the strips **36** and **38** are spaced from the base **28** to contact the frame of the sash hereinafter described.

Secured to the flange **34** is a channel-shaped non-metallic elongated guide member **40** formed with the oppositely disposed rib portions **42** and **44**, the rib **42** being contacteed by the lower inner sash frame **46** and the rib **44** being contacted by the upper outer sash frame **48**. The guide **40** prevents metal to metal contact of the sashes thereby lessening cold conduction and elimination of binding of the parts. The sash frame **46** is provided with the glass **47** and the sash frame **48** is provided with the glass **49**.

The stile **22** is I-shaped and includes the central base portion **50**, the inner flange portion **52**, the outer flange portion **54** and the substantially centrally disposed flange portion **56** on the base **50**. The flanges **52** and **54** mount the weather stripping and sash guide strips **58** and **60** respectively adjacent the base portion **50**. The strip **58** is mounted on the lower half of the flange **52**, and the strip **60** is mounted on the upper half of the flange portion **54**. I also provide the non-metallic elongated guide member **62**, identical to the guide member **40**, which is secured to the flange **56**.

The lower sash frame **46** includes the lower rail **64**, the upper rail **66**, and the oppositely arranged stiles **68** and **70**. The lower rail **64** is substantially rectangular in cross section and is formed with an internal rectangular recess **72** extending throughout the length thereof. Slidably positioned within the recess **72** at the left end thereof, as viewed from the inside of the window, FIGURES 2, 8 and 12, is the cartridge sash holder **74** also referred to as a first cartridge in the overall picture. The cartridge **74** is urged outwardly of the frame **64** by the primary coil spring **76** for pressing engagement with the stile **20**.

The cartridge 74 is positioned within the recess 72 with the inner end thereof up against the spring 76 which further abuts stop screw 78. The slidable cartridge 74 carries the locking pin 80 slidably mounted in the recess 82 of the cartridge 74, and the locking pin 80 is spring urged outwardly of the cartridge 74 by the secondary coil spring 84 mounted between the inner end of the pin 80 and the stop 86. The locking pin 80 is moved and its movement limited by means of the release pin 88 secured to the pin 80 and extending outwardly through the slot 90 formed in the wall of the cartridge 74 and the slot 92 formed in the inner wall 94 of the lower rail 64. The stile 20 is formed with the spaced holes 96 which receive the end of the locking pin 80 for holding the sash 46 at predetermined positions. The outward travel of the pin in the cartridge 74 is limited by the release pin 88 contacting the stop edge 81 of slot 90, and the cartridge 74 is prevented from coming out of the recess 72 by the release pin 88 contacting the stop edge 83 of the slot 92.

The right hand end of the lower rail 64, looking at FIGURES 2 and 8, has positioned in the recess 72 thereof the cartridge 98, also referred to as a fourth cartridge in the overall picture, which is secured in fixed position in the rail 64 by means of the screw 100. The cartridge 98 is substantially identical to the cartridge 74 and mounts the slidable locking pin 102 urged outwardly of the cartridge by the coil spring 104. The outer end of the cartridge 98 extends slightly beyond the end of the rail 72 for sliding engagement with the base portion 50 of the stile 22. It will be seen that the end of the cartridge 98 is urged against the stile 22 by virtue of the oppositely disposed spring urged cartridge 74 held in pressing engagement with the stile 20. The pin 106 is secured to the locking pin 102 and is used to move the same against the action of the spring 104 to remove the end of the pin 102 from one of a series of holes 108 formed in the base 50 of the stile 22 for locking the sash 46 at predetermined positions. The pin 106 extends through the slot 110 of the cartridge 98 and the slot 112 of the rail 64 for easy access. The outward movement of the pin 102 is limited by contact of the pin 106 with the stop edge 111 of the slot 110 of cartridge 98 and cartridge 98 is prevented from coming out of recess 72 by contact of pin 106 with stop edge 113 of slot 112.

The cartridges 74 and 98 are also made of "nylon" for the desired sliding frictional engagement of the ends thereof with the appropriate stile and the surfaces of the recess 72 of the rail 46.

The lower sash frame 46 also includes the upper rail 66 which is formed with the longitudinally extending inner recess 114 which slidably receives the "nylon" sash holder cartridge 116, also referred to as a second cartridge in the overall picture, which is urged outwardly into pressing engagement with the stile 20 by means of the coil spring 118 which abuts the screw 120. The outward movement of the cartridge 116 is limited by means of the pin 122 secured to the rail 66 and extending through the slot 124 formed in the cartridge 116.

Also positioned in the recess 114 of the rail 66 is the "nylon" cartridge 126, also referred to as a third cartridge in the overall picture, which extends slightly beyond the frame and is secured in fixed position by means of the screw 128 for pressing engagement with the stile 22 as a result of the oppositely disposed spring urged cartridge 116.

The upper rail 66 includes the outer lip 130 used to facilitate the raising and lowering of the lower sash 46. Also formed on the rail 66 is the top extension portion 132 from which depends the elongated lip 134. The lip 134 has formed therein adjacent but spaced from the outer ends thereof the V-shaped slots 136 and 138 each having the bottom pin-receiving slot portion 140 and 142 respectively together with the insulative contacting strip 144. As the lower sash 46 is lowered to its lowermost position the slot portions 140 and 142 of the lip 134 of the rail 66 receive the stop pins 146 and 148 secured to the locking pins 196 and 166, respectively, to thereby lock the upper sash 48 by preventing movement of the pins 146 and 148 and consequently the pins 196 and 166, as hereinafter described.

The upper sash frame 48 includes the lower rail 150, the upper rail 152, and the oppositely arranged stiles 154 and 156. The rail 150 is substantially rectangular in cross section and is formed with the internal rectangular recess 158 extending throughout the length thereof. Slidably positioned within the recess 158 at the left thereof as viewed in FIGURE 7 and also in FIGURE 10 and again in FIGURES 4 and 5, is the cartridge 160, also referred to as a fifth cartridge in the overall picture. The cartridge 160 is urged outwardly for pressing engagement with the base 28 of the stile 20 by means of the primary spring 162 which abuts the screw 164. Slidably mounted within the cartridge 160 is the locking pin 166 which is urged outwardly of the cartridge 160 by means of the secondary spring 168. The outer end of the locking pin 166 engages three holes 170 formed in the base portion 28 of the stile 20. The pin 148 is connected to the locking pin 166 and extends outwardly through the slot 171 of the cartridge 160 and the slot 172 formed in the wall 174 of the rail 150 and also outwardly through the slot 176 of the upstanding lip 178 which is connected to the extension portion 180 connected to the wall 174 of the rail 150. The lip 178 mounts the insulating strip or gasket 179, and when both sashes are closed, the insulating strip 144 contacts the lip 178 and the insulating strip 179 contacts the lips 134 to seal the two sashes together.

The numeral 182, particularly FIGURES 4, 7 and 9, designates a vertically disposed actuating pin which is connected to the locking pin 166. The pin 182 extends downwardly through the slot 184 of the cartridge 160, and the slot 186 of the rail 150. The outward movement of the pin 166 is limited by contact of the pin 182 with the stop edge 188 of the slot 184 and the cartridge 160 is restricted in its outer movement by the pin 182 contacting the stop edge 190 of the slot 186 of the rail 150, FIGURES 4 and 9.

Further provided in the rail 150, particularly FIGURES 3, and the right of FIGURE 7, and the left of FIGURE 9, is the cartridge 192, also referred to as an eighth cartridge in the overall picture, which is fixedly mounted in the recess 158 by means of the screw 194. The outer end of the cartridge 192 extends slightly beyond the rail 150 to slidably contact and also make pressure engagement with the stile 22 due to the spring action of the cartridge 160 oppositely disposed to cartridge 192. Slidably mounted within the cartridge 192 is the locking pin 196 which is urged outwardly of the cartridge 192 by means of the coil spring 198 into one of a series of holes 200 in the stile 22.

Secured to the locking pin 196 is the horizontally disposed pin 146 which extends outwardly through the slot 202 formed in the wall of the cartridge 192, the slot 204 of the wall 205 of the rail 150 and through the slot 206 of the upstanding lip 178 formed on the extension portion 180 connected to the rail 150, particularly FIGURES 3 and 9.

The numeral 212, FIGURES 3 and 9, designates a vertically disposed actuating pin which is secured to the locking pin 196 and extends downwardly through the slot 214 formed in the cartridge 192 and also through the slot 216 formed in the bottom wall 218 of the rail 150. The extent of the outward movement of the locking pin 196 is limited by the contact of the pin 212 against the end shoulder 220 of the slot 216, particularly FIGURES 3 and 9.

The upper rail 152 of the upper sash 48 is substantially rectangular in cross section and formed internally and longitudinally thereof is the recess 222, FIGURES 2 and 6. Looking at the left of FIGURE 6 in particular, we find the cartridge 224, also referred to as a sixth cartridge in the over-all picture, which is slidably mounted in the

recess 222 and spring urged against the base 28 of the stile 20 by means of the spring 226 which abuts the screw 228. The cartridge 224 has formed therein the transverse slot 221 through which extends the pin 223 secured to the rail 152. The pin 223 allows movement of the cartridge, but prevents it from coming out of the recess 222, FIGURES 2 and 6.

Further provided is the cartridge 229, also referred to as a seventh cartridge in the over-all picture, which is secured in the recess 222 by means of the screw 230 and which extends slightly beyond the rail 152 for pressure engagement with the base 50 of the stile 22 due to the spring urged cartridge 224 oppositely disposed.

It will be noted briefly in review that each sash is slidably held within the stiles 20 and 22 by means of four cartridges. The lower sash 46 is mounted by means of the opposed lower cartridges 74 and 98, and is opposed upper cartridges 116 and 126. The upper sash 48 is mounted by means of the lower opposed cartridges 160 and 196 and the upper opposed cartridges 224 and 229. The detailed construction of each of the cartridges has been hereinbefore set forth, and each is simply moulded of "nylon." The cartridge made of "nylon" allows (1) easy sliding of the same in its recess where that is the case, (2) easy sliding of the locking pin within the cartridge and (3) the end of the cartridge has a desirable sliding engagement with the stile.

With both sashes in full closed position; that is, with the lower sash 46 in fully lowered and locked position and the upper sash 48 in fully raised and locked position, the locking pins 80 and 102, FIGURE 8, of the lower rail of the lower sash 48 are in engagement with the holes formed in the stiles 20 and 22 respectively, and the cartridges 74 and 98 in pressing engagement with the stiles 20 and 22 respectively. At the same time, the upper cartridges 116 and 126 of the upper rail 66 of the lower sash 46 are in pressing engagement with the stiles 20 and 22 respectively. In addtion, the locking pins 166 and 196, of the lower rail of the upper sash, FIGURES 3, 4, 5 and 7 are in engagement with holes 170 and 200 respectively of the stiles 20 and 22 respectively with the ends of the cartridges 160 and 192 in pressing engagement with the stiles 20 and 22 respectively. In addition, the pins 146 and 148 are in engagement with the slots 140 and 142, respectively, of the lip 134 and as a result the locking pins 166 and 196 cannot be moved thereby locking the upper sash 48 in full raised closed position and thereby preventing movement of the upper sash until the lower sash is raised. At the same time, the cartridges 224 and 229 in the upper rail 152 are in pressing engagement with the stiles 20 and 22 respectively.

To raise the lower sash 46 the release pins 88 and 106 are moved inwardly of the window thereby withdrawing the lock pins 80 and 102 respectively from the holes in the stiles 20 and 22 respectively. It will be noted that as the pins 80 and 102 are slidably moved inwardly to clear the holes of the stiles the cartridges remain in pressing engagement with the stiles.

To lower the upper sash 48 from upper locked position, the lower sash 46 must first be raised sufficiently to move the slots 140 and 142 of the flange 134, FIGURE 9, out of engagement with the pins 146 and 148 respectively. Then the pins 182 and 212 may be moved to thereby withdraw the locking pins 166 and 196 respectively from the holes 170 and 200 respectively in the stiles 20 and 22 respectively, and in this condition the ends of the cartridges 160 and 192 respectively are still in pressing engagement with the stiles 20 and 22, respectively. With the locking pins 166 and 196 withdrawn, the upper sash may then be lowered. As the upper sash is lowered, the cartridges 224 and 229 are in pressure engagement with the stiles 20 and 22, respectively.

It will be seen that as the lower sash is lowered and locked the upper sash is automatically locked when in full raised position.

All of the eight cartridges 74, 98, 116, 126, 160, 192, 224 and 229 are formed of plastic, preferably "nylon" and due to the nature of the material, the contact of the ends of the various cartridges with the stiles allows a sliding, but restrained movement, thereby providing the desirable friction hold of the sashes. The pins slide in a desirable fashion within the cartridges, and the cartridges slide in a desirable fashion in the rail recesses.

My various cartridges and the construction thereof allow removal of either sash 46 or 48 in the following manner: To remove the lower sash 46 the same is unlocked and raised slightly to remove the pins 146 and 148 from the slots 140 and 142 and by manipulation the entire sash is pushed to the left, FIGURES 1, 2, 6–8, against the action of the springs 76 and 118 enough so that the outer ends of the fixed cartridges 98 and 126 may be caused to by-pass the vertical inner edge of the flange 52.

To remove the upper sash 48, the lower sash 46 is raised sufficiently to remove the pins 146 and 148 from the slots 140 and 142 respectively and by manipulation the entire sash 48 is pushed to the left, FIGURES 1, 2, 6–8, against the action of the springs 162 and 226 enough so that the outer ends of the fixed cartridges 192 and 228 may be caused to by-pass the vertical inner edge of the flange 54. To insert the sashes, the procedure is, in effect, reversed. As the lower sash 46 is moved up and down, it has sliding ocntact with the shoulders 42 of the guide members 40 and 62 and the strips 36 and 58. As the sash 48 is moved up and down, it has sliding contact with the shoulders 44 of the guide members 40 and 62 and the strips 38 and 60. When the lower sash 46 is in full lower locked position, it is in contact with the sill member 26, and when the upper sash is in full raised and locked position it is up against the top frame or lintel 24.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In a window construction, the combination of a pair of oppositely disposed first and second vertical stiles and a sash including an upper and a lower horizontal rail connected to oppositely disposed vertical side rails, a first cartridge slidably mounted in said lower rail and spring urged outwardly thereof for pressing engagement with said first stile, a locking pin slidably mounted in said first cartridge and spring urged outwardly thereof for engagement with recess means formed in said first stile, a second spring urged cartridge slidably mounted in said upper rail for pressing engagement with said first stile, a third cartridge mounted in said upper rail for sliding engagement with said second of said stiles, a fourth cartridge mounted in said lower rail for sliding engagement with said second stile, and a locking pin slidably mounted in said fourth cartridge and spring urged outwardly thereof for engagement with recess means formed in said second mentioned stile.

2. In a window construction, the combination of a first and second oppositely disposed stiles, an upper sash having upper and lower connected rails, a lower sash having upper and lower connected rails, a first cartridge slidably mounted in said lower rail of said lower sash and spring urged outwardly thereof for pressing and sliding engagement with said first stile, a locking pin slidably mounted in said first cartridge and spring urged outwardly thereof for releasable engagement with recess means formed in said first stile, a second cartridge slidably mounted in said upper rail of said lower sash and spring urged outwardly thereof for pressing and sliding engagement with said first stile, a third cartridge mounted in said upper rail of said lower sash for pressing and sliding engagement with said second stile, a fourth cartridge mounted in the lower rail of said lower sash for pressing and sliding engagement with said second stile, a locking pin slidably mounted in

said fourth cartridge and spring urged outwardly thereof for releasable engagement with recess means formed in said second stile, a fifth cartridge slidably mounted in said lower rail of said upper sash and spring urged outwardly thereof for pressing and sliding engagement with said first stile, said fifth cartridge having a locking pin slidably mounted therein and spring urged outwardly therefrom for releasable engagement with recess means formed in said first stile, a sixth cartridge slidably mounted in said upper rail of said upper sash and spring urged for pressing and sliding engagement with said first stile, a seventh cartridge mounted in said upper rail of said upper sash for pressing and sliding engagement with said second stile, an eighth cartridge slidably mounted in said lower rail of said upper sash for pressing and sliding engagement with said second stile, a locking pin slidably mounted in said eighth cartridge and spring urged outwardly thereof for releasable engagement with receses means formed in said second stile, first stop pin means extending from said locking pin of said fifth cartridge, second stop pin means extending from said locking pin of said eighth cartridge, means formed on said upper rail of said lower sash for locking engagement with said first and second stop pin means to prevent disengagement of said locking pins of said fifth and eighth cartridges from said recess means of said first and second stiles when said upper rail of said lower sash is placed adjacent said lower rail of said upper sash whereby said sashes are locked together.

3. In a sash holder, the combination of a cartridge and a sash rail having recess means for said cartridge, said cartridge being slidably mounted in said rail recess means and having an elongated body member having a recess extending longitudinally therein, said body member having a first slot formed on one side thereof and a second slot on the bottom thereof, a locking pin slidably mounted in said recess of said body member and spring urged outwardly thereof, an actuating pin connected to said locking pin and extending outwardly through said bottom slot of said cartridge and a stop pin connected to said locking pin and extending outwardly through said first side slot of said cartridge.

4. In a sash holder the combination of a sash rail and a cartridge for sliding contact with a window stile, said sash rail having a recess formed therein in which said cartridge is slidably mounted, means for urging said cartridge from said rail, a locking pin slidably positioned within and carried by said cartridge, means for normally urging said locking pin from said cartridge for locking engagement with the window stile, means for moving

said locking pin out of engagement with the window stile against the action of said locking pin urging means, stop pin means extending from said locking pin outwardly of said cartridge for engagement with a portion of a second sash to prevent movement of said locking pin and thereby prevent movement of both sashes.

5. In a sash holder, the combination of a sash rail and a cartridge, said sash rail having a recess formed therein in which said cartridge is slidably mounted, means for urging said cartridge from said recess for pressing and sliding engagement with the stile of a sash frame, a locking pin slidably mounted in said cartridge with means for normally urging the pin from the cartridge, said cartridge having a slot formed longitudinally in the wall thereof, said sash rail having a slot formed longitudinally in the wall substantially in register with said slot of said cartridge, a release pin secured to said locking pin and extending outwardly through said cartridge slot and said rail slot for slidably moving said locking pin within said cartridge and out of engagement with a window stile of a sash frame.

6. In a window sash holder and lock construction, the combination of a sash rail and a cartridge, said sash rail having recess therein in which said cartridge is slidably mounted, means for urging said cartridge from said recess means for pressing and sliding engagement with a stile of a window frame, a locking pin slidably mounted in said cartridge with means for normally urging the pin from the cartridge for releasable locking engagement with the stile of a said window frame to postition the sash rail relative to the stile and release pin means moving said locking pin slidably into said cartridge and out of engagement with the window frame stile against the action of said pin-urging means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,748,986	Lane	Mar. 4, 1930
2,611,156	Toth	Sept. 23, 1952
2,728,117	Zappone et al.	Dec. 27, 1955
2,740,998	Zitomer	Apr. 10, 1956
2,757,419	Balintfi	Aug. 7, 1956
2,760,607	Bongiovanni	Aug. 28, 1956
2,774,997	Zitomer	Dec. 25, 1956
2,818,610	Pengelly	June 7, 1958
2,862,550	Zappone et al.	Dec. 2, 1958
2,965,935	Olsen	Dec. 27, 1960