Feb. 21, 1967 F. W. KREGER 3,304,658

SLIDING CLOSURE CONSTRUCTION

Filed May 21, 1964

4 Sheets-Sheet 1

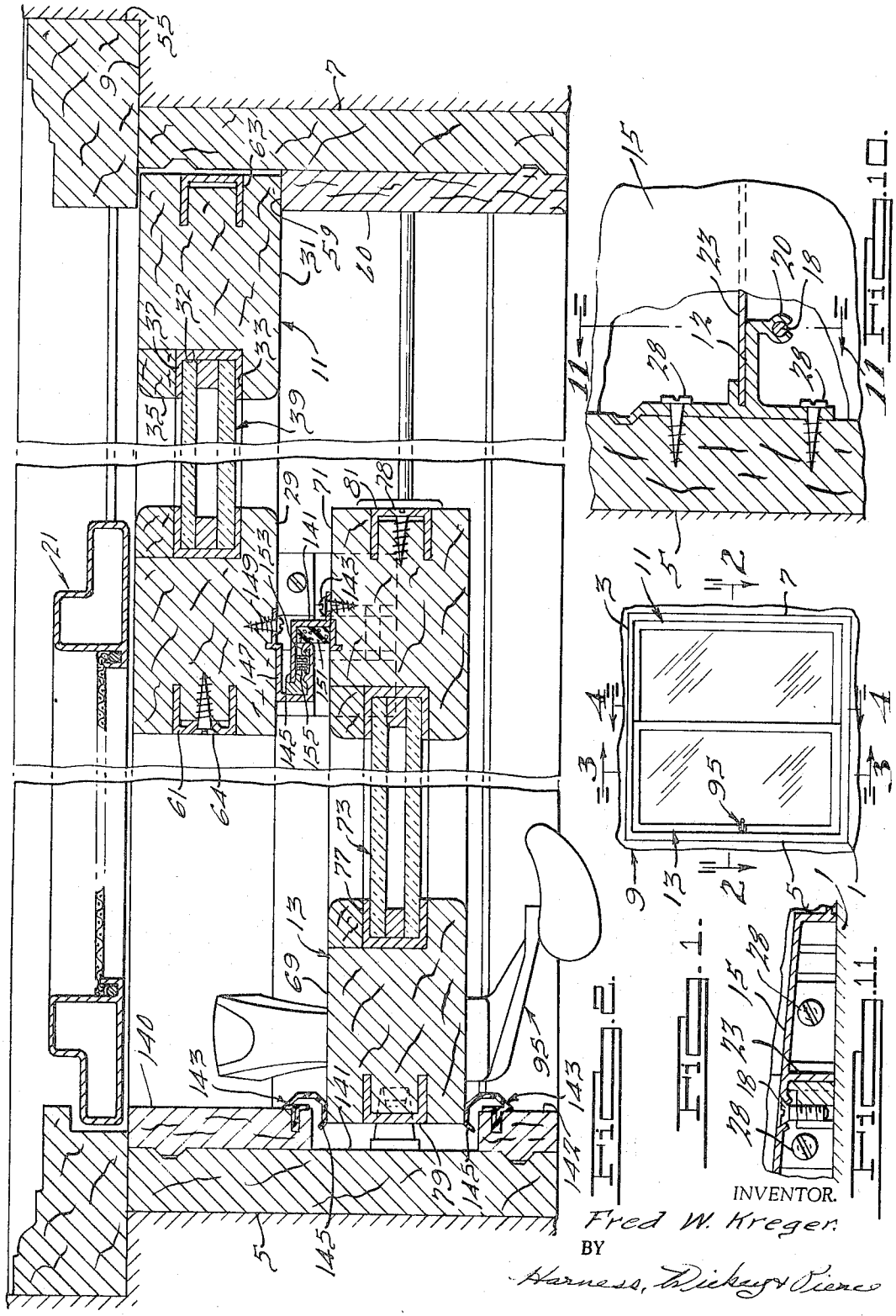


Fig. 10.

Fig. 11.

Fig. 1.

Fig. 2.

INVENTOR.
Fred W. Kreger
BY
Harness, Dickey & Pierce
ATTORNEYS.

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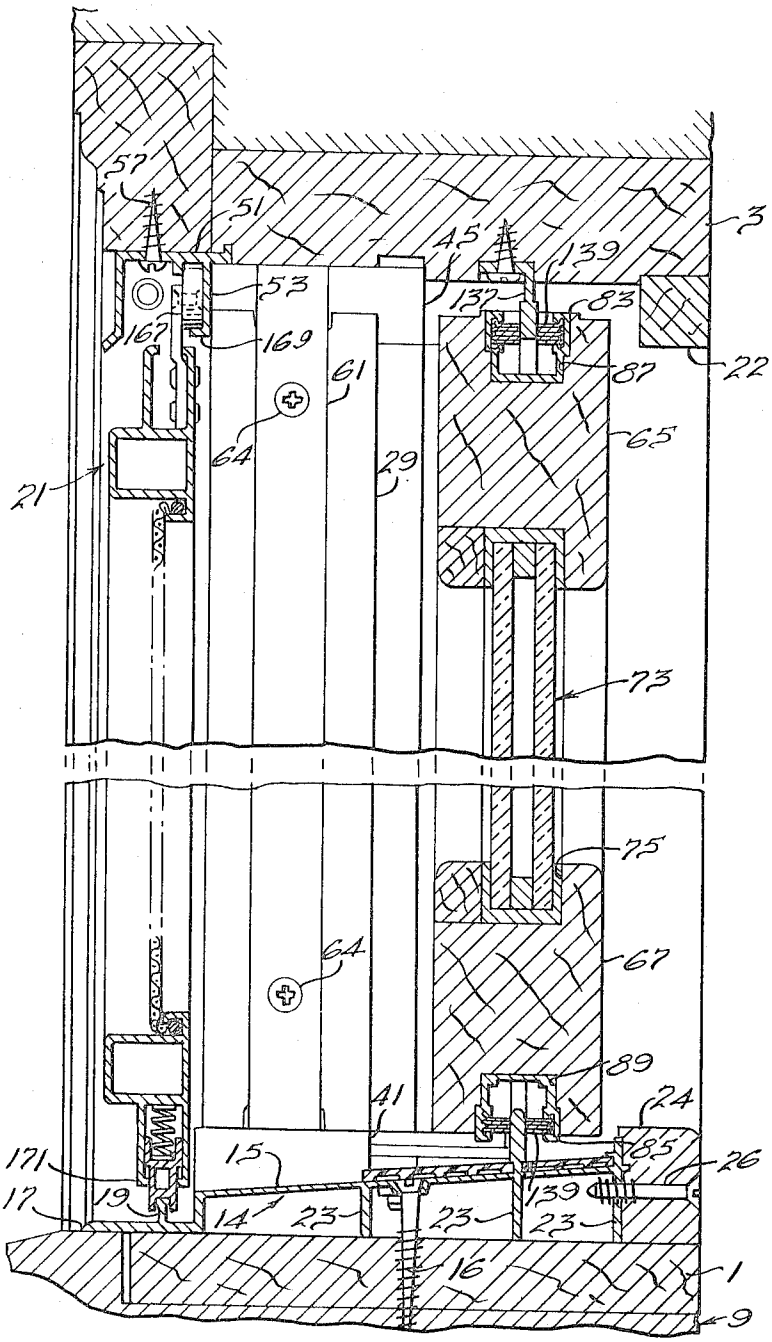


FIG. 3.

INVENTOR.
Fred W. Kreger.
BY
Harness, Dickey & Pierce
ATTORNEYS.

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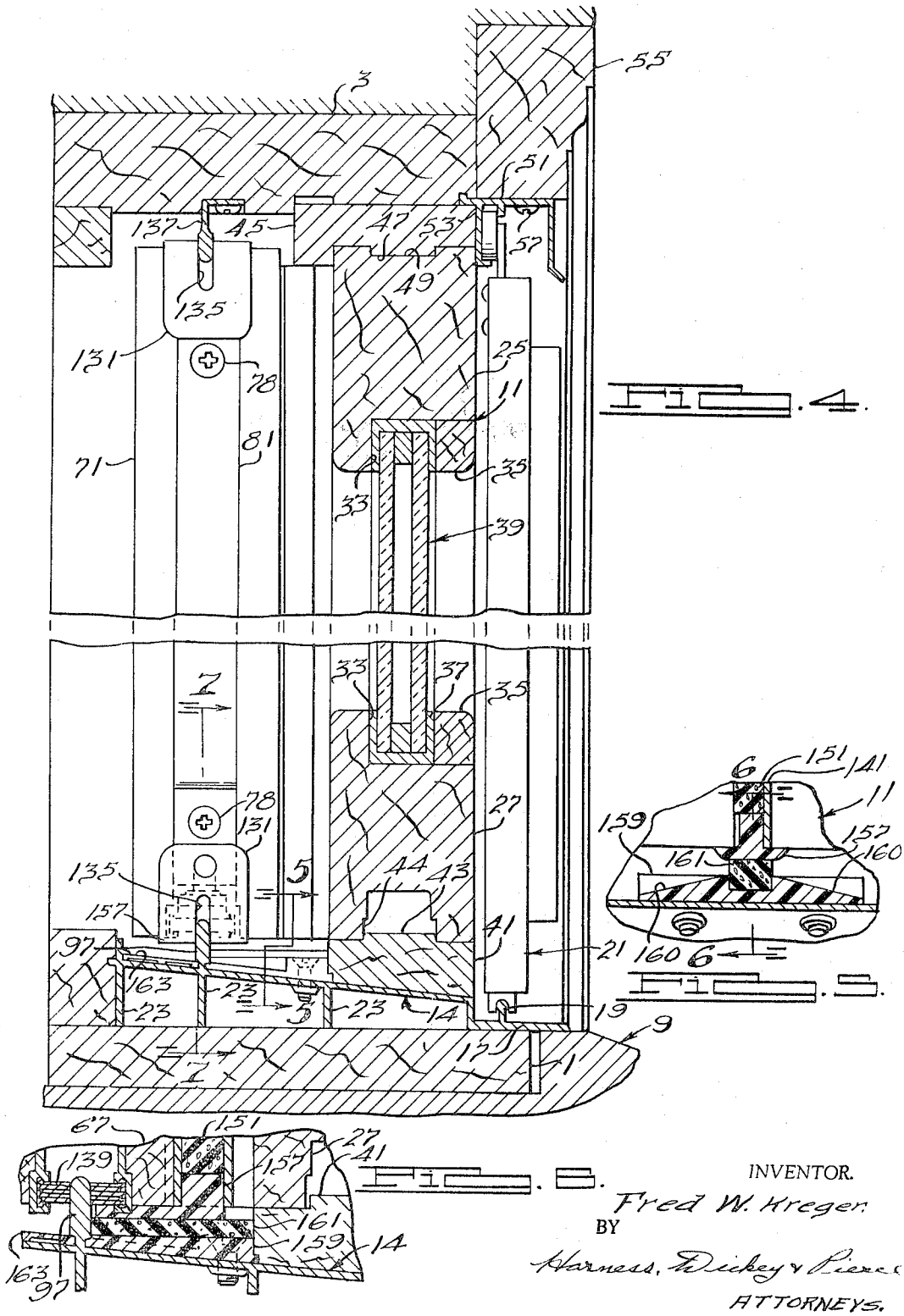


FIG. 4.

FIG. 5.

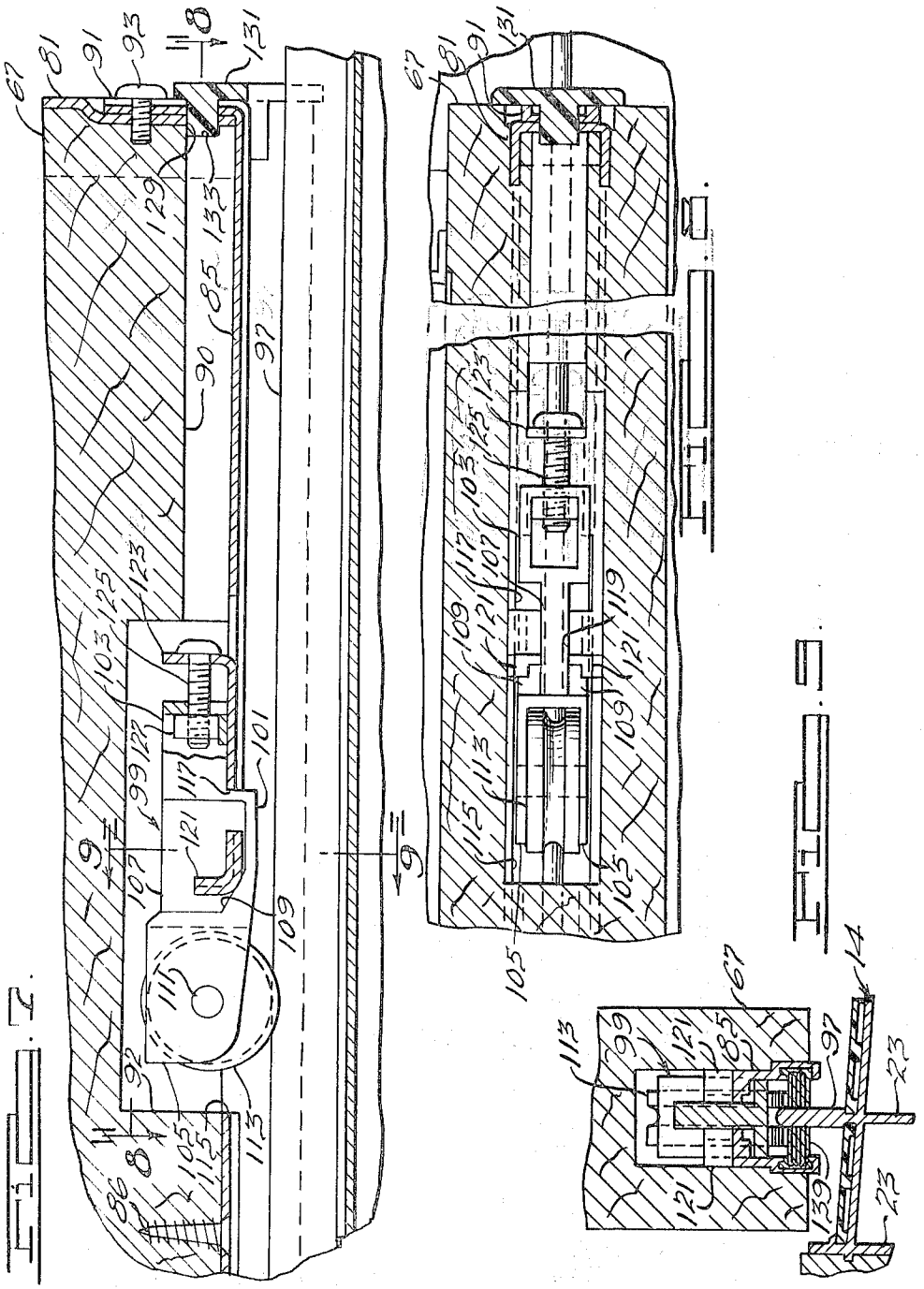
FIG. 6.

INVENTOR.
Fred W. Kreger
BY
Harness, Dickey & Pierce
ATTORNEYS.

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INVENTOR.
Fred W. Kreger
BY
Harness, Dickey & Pierce
ATTORNEYS.

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SLIDING CLOSURE CONSTRUCTION

Fred W. Kreger, Grosse Pointe, Mich., assignor to Sash Controls, Inc., Detroit, Mich., a corporation of Michigan

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8 Claims. (Cl. 49—425)

This invention relates generally to sliding closure construction and particularly to a sliding door construction for exterior walls of a building. This type of closure generally includes at least one fixed panel and one or more slidable panels closely adjacent thereto, each of which is constructed from a glass pane mounted and supported in a rectangular frame structure of wood, aluminum, or any other suitable material. The fixed panels are rigidly supported within a wall frame situated in the wall of a building while the movable panels are guided within the frame for sliding movement from an open to a closed position. Adequate sealing means is provided so that when the sliding door is in the closed position, the interior of the building will be protected from undesirable weather conditions existing outside.

Several problems arise in the use of this type of sliding closure. For example, a pull handle is generally positioned on the sliding door frame to one side thereof for the user to grasp in manipulating the door between its open and closed positions. Thus, when force is exerted on the pull handle in a direction away from the glass pane such as when the door is moved to its closed position, a severe tensional stress is placed on the door frame tending to pull it apart. After extending use of the door, an actual separation between the door frame components can occur. To overcome this problem, the sliding door of the present invention is so constructed that the frame surrounding the glass pane is maintained under constant compression horizontally against the glass pane. Thus, the adverse effect any tensional force tending to pull this frame apart could have is effectively counteracted.

Another problem area involves proper alignment of the sliding door after it is installed in the wall frame. Since it is not practical to hold the door components to close tolerances while they are being made, quite often the sliding door must be adjusted after it has been mounted in the wall frame so that a proper sliding and sealing effect can be realized. Also, a sliding door of this type is relatively heavy and this, after extensive use, may cause the door and the wall frame to become misaligned. To alleviate this problem, the sliding door of the present invention is provided with a simple but reliable adjustment means which is effective to properly align the sliding door without removing it from the wall frame.

A further problem area in this field lies in producing an effective seal between the sliding door and the sill upon which it slides to prevent water from gaining access to the building interior when the door is in its closed position. The sliding closure structure of the present invention contemplates a simple but effective and reversible seal to accomplish this purpose.

Other problems arise in the field of sliding closures including the formation of frost on the inside portion of the sill and lateral spreading of the wall frame. These undesirable conditions are substantially reduced by providing an insulating device which acts as a temperature barrier on the sill adjacent the sliding door and by rigidly attaching the sill to the wall frame.

It is a principal object, therefore, of the present invention to provide an improved sliding closure construction having exceptional strength and durability while being relatively easy to operate.

It is a further object of the present invention to provide an improved sliding closure construction which will effectively seal out undesirable weather conditions when the sliding door is in its closed position.

It is a further object of the present invention to provide an improved sliding closure construction in which the panel frame sections which surround and support the glass panes are maintained under constant horizontal compression.

It is a further object of the present invention to provide an improved sliding closure construction having a strengthened closure panel construction.

It is a further object of the present invention to provide an improved sliding closure construction having a strengthened wall frame construction.

It is a further object of the present invention to provide an improved sliding closure construction having a height and angular adjustment provision for the sliding door readily accessible after installation thereof.

It is a further object of the present invention to provide a sliding closure construction having an improved seal effective to prevent air infiltration and water from gaining access to the building interior.

It is a further object of the present invention to provide a sliding closure construction having an improved sill construction for substantially reducing frost formation on the inside thereof.

It is still a further object of the present invention to provide an improved sliding closure construction which is relatively inexpensive to manufacture, attractive in appearance, rugged in construction and reliable in use.

These and other objects and advantages of the present invention will become more apparent from the following detailed description taken in conjunction with the drawings in which:

FIGURE 1 is an elevational view of a sliding closure construction embodying the present invention and showing a typical installation thereof;

FIG. 2 is an enlarged sectional view of the structure of FIG. 1 taken along line 2—2 thereof;

FIG. 3 is an enlarged sectional view of the structure of FIG. 1 taken along line 3—3 thereof;

FIG. 4 is an enlarged sectional view of the structure of FIG. 1 taken along line 4—4 thereof;

FIG. 5 is an enlarged, fragmentary sectional view of the structure of FIG. 4 taken along line 5—5 thereof;

FIG. 6 is a sectional view of the structure of FIG. 5 taken along line 6—6 thereof;

FIG. 7 is a sectional view of the structure of FIG. 4 taken along line 7—7 thereof;

FIG. 8 is a sectional view of the structure of FIG. 7 taken along line 8—8 thereof;

FIG. 9 is a sectional view of the structure of FIG. 7 taken along line 9—9 thereof;

FIG. 10 is a fragmentary horizontal sectional view showing structure for attaching the closure sill to the wall frame; and

FIG. 11 is a sectional view of the structure of FIG. 10 taken along line 11—11 thereof.

Referring now to the drawings, FIGURE 1 shows a typical installation of the sliding closure assembly of the present invention. A wall frame structure including a base member 1, a head member 3, and spaced side jamb members 5 and 7, fixedly supported within an exterior wall 9 in an appropriate manner, defines a rectangular opening therein within which is received one or more fixed panels 11 and one or more slidable panels 13. In the embodiment illustrated herein, only one fixed and one movable panel is shown.

A sill member, indicated generally at 14 in FIGURES 3 and 4, may comprise a length of extruded aluminum or any other suitable material having an upper surface 15 sloped downwardly toward the exterior of the building, for drainage purposes, and terminating in an ex-

terior horizontal portion 17. As shown, the sill 14 may be fixed to the base 1 by a plurality of screws 16 and to each jamb 5 and 7 through an extruded sill clip 12 (FIGS. 10 and 11). As shown, one clip 12 is attached to the sill at either end by screws 18 threadedly received in an extended portion 20 and to the jambs 5 and 7 by screws 28. By attaching the sill 14 to the jambs 5 and 7 in this fashion, a rigid construction is provided whereby the jambs will be prevented from spreading apart with use. Additionally, the sill may be removed and replaced after installation simply by removing screws 18 and 28 and provides a rigid spacing for the jambs 5 and 7 during door installation.

A longitudinally extending track 19, formed integral with the exterior sill portion 17, slidably guides an exterior screen 21 in a manner to be described. The underside of the sloped interior portion of the sill 14 may be provided with a plurality of reinforcing downwardly depending and longitudinally extending rib portions 23 which engage the base member 1. To give the frame interior a finished appearance, a first elongated wood rail 22 may be suitably fixed to the rear portion of the head member 3 while a second rail 24 may be fixed to the interior portion of the base member 1 and to the sill 14 by appropriate means such as screws 26.

The fixed closure panel 11, shown more in detail in FIGURES 2 and 4, is generally rectangular in shape and may include a top rail 25 and a bottom rail 27 interconnected at their respective ends in a conventional tongue and groove manner by a pair of vertical stiles 29 and 31. Although the panel frame shown is constructed of wood, it is to be understood that any other suitable material, such as aluminum, may be used. Each of the top and bottom rails and the vertical stiles is provided, respectively, with a longitudinally extending shoulder portion 33 which together with removable inserts 35 defines a continuous rectangular groove 32 at the inner peripheral portion of the rectangular panel 11. A U-section resilient mounting strip 37 may be provided within the groove 32 to resiliently support a glass pane assembly 39 therein. A weather-tight seal is provided between the bottom rail 27 and the sill 14 and may include an elongate supporting block 41 having a longitudinally extending tongue portion 43 received within a grooved portion 44 in the bottom rail 27. An upper block 45 is snugly received within the head member 3 and has a longitudinally extending tongue 47 received within a groove 49 in the top rail 25 to form a weather-tight seal between the head member 3 and the top rail 25. An upper guide track 51 for the screen 21 has a vertical section 53 which abuts and retains the block 45 within the head member 3 and is fixed to a molding trim section 55 by a plurality of screws 57. The molding trim section 55 is suitably attached to the wall 9 adjacent the jamb 7 and retains the vertical stile 31 against a shoulder 59 formed by a strip 60 removably attached to the jamb member 7. This strip 60 is attached to the jamb 7 after the wall frame has been installed and the closure is ready for installation and may extend from the head 3 to the top of the sill 14. Therefore, nicks or other minor damage which may have resulted to the face of the jamb 7 will not be exposed to view. Alternatively, the jamb 7 and strip 60 may be formed integral, if desired. Thus, the panel 11 is fixedly mounted within the wall frame section and provides a weather-tight seal between itself and the jamb 7, the sill 14 and the head member 3. A pair of channel members 61 and 63 are fixed along the outer longitudinal surfaces of the vertical stile members 29 and 31, respectively, by suitable screws 64 and extend from a point adjacent the lower end of the stiles to a point adjacent the upper edge of the upper block 45. See FIGURES 2 and 3. Thus, these channel members give the side edges of the fixed panel 11 a finished appearance.

The movable panel 13 is designed generally the same as the fixed panel 11 and is mounted for horizontal sliding movement along the sill 14 adjacent the fixed panel 11 from an open position to a closed position. Thus, as seen in FIGS. 2–4, the movable panel includes an upper rail 65 and a lower rail 67 interconnected at their ends by a pair of spaced vertical stiles 69 and 71, respectively. A glass pane assembly 73 is positioned within a groove 75 in each of the rails and stiles and is resiliently supported by a U-section supporting member 77 in the same manner as in the fixed panel 11 described hereinabove. However, to maintain the slidable panel 13 in constant horizontal compression against the glass pane assembly 73, an interconnected channel assembly is provided and is shown in greater detail in FIGURES 2, 3 and 7.

Embedded in the outer longitudinal surfaces of the vertical stiles 69 and 71, respectively, and fixed thereto by suitable screws 78 are a pair of channel members 79 and 81 which extend from end to end thereof. A second pair of channel members 83 and 85 which serve to reinforce and tie together the top and bottom rails 65 and 67 and the vertical stiles 69 and 71 are fixedly retained by suitable means such as screws 86 within a pair of longitudinally extending channel grooves 87 and 89 formed in the outer surfaces of the top and bottom rails 65 and 67, respectively. Additionally, the channel member 85 houses the closure panel roller and adjustment assembly as well as a weather strip construction later described. The channel groove 89 is enlarged at each end thereof to form a pair of roller adjustment access slots 90 and a pair of sheave receiving slots 92, only one each of which is shown in FIGURE 7, and to be described. Each of the channel members 83 and 85 extends substantially from end to end of its respective rail member and is provided with a tab portion 91 (only one of which is shown) at each end thereof which may be bent to extend generally perpendicular to the main channel portion. See FIGURE 7. Each of the ends of the channel sections 79 and 81 may be deformed inwardly toward its respective stile 69 and 71 with the tabs 91 of the channels 83 and 85 being attached thereto outwardly thereof by appropriate means such as screws 93. Thus, by properly designing the length of the channels 83 and 85 between tabs 91, the vertical stiles 69 and 71 will be maintained in constant horizontal compression against the rails 65 and 67 and the glass pane assembly 73. Also, by positioning the tabs 91 outwardly of the channel sections (as shown in FIG. 7), none of the tensional stress applied to the channels 83 and 85 resulting from the compression of the panel 13, will be placed on the bolts 93; rather, this tensional stress will be applied directly to the channel bars 83 and 85.

The sliding panel 13 is thus put under a horizontal compressive force to counteract any tensional force tending to pull it apart. Such a force can arise, for example, when a user moves the panel 13 to its closed position. As shown in FIG. 2, a conventional door pull and latch operator handle, indicated generally at 95, is fixed to the vertical stile 69 and is positioned to be grasped by the user to move the panel 13 from its open to its closed position. Thus, when the user grasps the handle 95 and moves the panel 13 in a lefthand direction, as viewed in FIGURE 2, the tendency will be for the vertical stile 69 to be pulled away from the top and bottom rails 65 and 67. However, since the vertical stiles 69 and 71 are maintained in compression against the rails 65 and 67 by the channels 79, 81, 83 and 85, any tendency for the stile 69 to pull away from the rails 65 and 67 will be overcome and the panel 13 will remain rigid.

The panel 13 is mounted for horizontal sliding movement along an elongated track 97, which may be formed integral with the sill 14, by a pair of adjustable sheave assemblies 99 (only one of which is shown). See FIGURES 7–9. The sheave assemblies 99 are carried by the channel member 85 adjacent each end thereof and since they are identical, a description of one will suffice

here. As shown in FIGURE 7, each of the sheave assemblies includes a bracket 101 which may have a hollow rectangular portion 103 interconnected with a pair of parallel spaced ears 105 by an intervening web portion 107. A longitudinally extending inclined cam ramp 109 is disposed on either side of the web portion 107 for a purpose to be described. A pin 111 is positioned between the spaced ears 105 for rotatably supporting a roller 113 in rolling engagement with the track 97.

The upper portion of the channel member 85 has formed therein adjacent each of the sheaves 99 a pair of spaced rectangular slots 115 and 117. A narrow opening 119, formed between a pair of tab portions 121, interconnects the rectangular openings 115 and 117 and is positioned to freely receive the intervening web portion 107 of the bracket 101. The spaced ears 105 of the bracket 101 are freely received in the slot 115 while the rectangular portion 103 rests atop the channel member 85 adjacent the slot 117. The tabs 121 are positioned for engagement with the cam ramp portions 109 and, upon longitudinal relative movement between either of the brackets 101 and the channel 85, relative vertical movement will also take place. Thus, the channel member 85 is provided with an upwardly extending tab portion 123 adjacent the notch 117 which receives a bolt member 125. A nut member 127 is non-rotatably positioned within the rectangular portion 103 of the bracket 101 and threadedly receives the bolt member 125. It will be seen then that as the nut 127 is threaded up on the bolt 125 by rotating the bolt, the bracket 101 will be moved in a right-hand direction (as viewed in FIG. 7) relative to the channel member 85 whereupon relative longitudinal movement between the ramp 109 and the tab portion 121 will cause relative movement therebetween and the slidable panel 13 will be adjusted upwardly relative to track 97. Therefore, since an adjustable sheave assembly 99 is positioned at each end of the slidable panel 13, the entire panel 13 may be adjusted vertically as well as either end thereof to insure both proper sliding action and sealing effect of the panel 13.

When the bolt 125 is rotated to unthread the nut 127 therefrom, the weight of the panel 13 acting on the cam ramp 109 through the tab portions 121 will move the bracket 101 in a left-hand direction (as viewed in FIG. 7) relative to the channel member 85 thereby lowering the corresponding end of the panel 13. To manipulate the bolts 125, a screw driver may be inserted from without the panel 13 along the adjustment slots 90, as viewed in FIGURES 7–9, through an opening 129 in the tab 91 of the channel member 85 and in the channel member 81. A removable channel guide 131, constructed of nylon or other suitable material, has an extension 133 snugly received in the opening 129 at either end of the channel member 85 to give the slidable panel 13 a finished appearance. The lower end of the guides 131 is formed with a slot 135 slidably receiving the track 97. Thus, when either end of or the entire panel 13 is to be adjusted vertically, the corresponding guides 131 may be removed manually to permit acces to the bolts 125 by a suitable screw driver.

The channel member 83, positioned within the groove of the top rail 65, is also closed at each end by a pair of removable channel guides 131. See FIGURE 4. An upper track 137 is slidably received by openings 135 formed in the guides 131 to guide the upper portion of the panel 13 as well as give it a finished appearance.

To function satisfactorily as a sliding closure, the panel 13 must, in cooperation with the fixed panel 11 and the wall frame assembly provide a complete weather-tight seal when in the closed position. As seen in FIGURE 3, both the channel members 83 and 85 have, disposed throughout their length, a pair of opposed strips 139 of wool pile or other appropriate material disposed in snug sliding engagement with the tracks 97 and 137, respectively, to provide a weather-tight seal across the top and bottom of the slidable panel 13.

Means is provided to seal the slidable panel 13 at both vertical edges when it is in a closed position. As shown in FIGURE 2, the jamb 5 has a pair of spaced strips 140, 142 removably attached thereto extending from the head member 3 to the top of the sill 14 thereby forming a generally vertically extending groove 141 therebetween adapted to receive the vertical stile 69 when the panel is in its closed position. Again, these removable strips 140, 142 will conceal any nicks or minor damage which might have occurred to the face of the jamb 5. Alternatively, the jamb 5 and strips 140, 142 may be formed integral, if desired. Positioned adjacent each vertical edge of the groove 141 is a pair of weatherseal elements 143 having one edge thereof fixed to the jamb strips 140, 142 adjacent each side of the groove 141. Each of the elements 143 has an extended flexible portion 145 engageable with and deflectable by the stile 69 when it is moved to its closed position. Thus, when the panel 13 is in the closed position, as shown in FIGURE 2, the weatherseal elements 143 will provide an effective seal between the jamb 5 and the stile 69. To seal the other vertical edge of the movable panel 13, a vertically extending channel member 141 is fixed to the vertical stile 71 by suitable means such as screws 143. The channel 141 is formed with a protrusion 145 positioned to be received within a vertically extending channel 147 fixed to the vertical stile 29 by screws 149 when the panel 13 is in its closed position. A strip of synthetic foam 151 or other suitable material is positioned within the channel 141 for engagement with a free end portion 153 of the channel 147 while a strip of wool pile 155 may be carried by the end portion 153 for engagement with the protrusion 145 when the movable panel 13 is in its closed position. Thus, an effective weatherproof seal is provided between the panels 11 and 13 and between each panel and the wall frame.

To effectively prevent water which may run down the vertical joint between the fixed and movable panels from gaining access to the interior of the door assembly, an efficient seal is provided and is shown in FIGURES 4–6. This seal is seen to include a wedge member 157 formed of any suitable material such as plastic and is suitably retained within the lower end of the vertical channel 141 on the movable panel 13 and in engagement with the lower end of the foam strip 151. Fixedly carried by the sill 14 is a sill plate 159 provided with upper surfaces 160 which taper downwardly from a block of resilient foam-like material 161 fixed to the central portion thereof. As shown in FIGURES 4–6, the wedge 157 deformably engages the foam block 161 when the movable panel 13 is in its closed position and will prevent air filtration therepast. Additionally, water which runs down the vertical joint between the fixed and movable panels will be prevented from entering between the panels by the joint 157, 161 and will run down the sloped surface 160 and the sill 14. Also, by providing the double slope 160, an effective water barrier may be provided with the movable panel 13 on either side of the fixed panel. By providing that the wedge 157 engages the foam block 161 only in the closed panel position as contrasted with contact during the entire opening and closing cycle, would be wear of the foam block 161 is substantially eliminated.

To help reduce the tendency of frost formation on the interior glass of the movable panel 13, a temperature barrier in the form of a rigid plastic strip 163 is suitably retained atop the sill 14 substantially coextensive with the position occupied by the movable panel 13 when in the closed position. By using this plastic strip, the cold transmitted from the outside and conducted through the sill 14 which would ordinarily cause frost formation thereon in cold weather is materially reduced. Additionally, the interior portion of the sill 14 will not be as cold to the touch.

To complete the closure assembly, a removable screen assembly **21** is shown in FIGURE 3 as slidably mounted on the track **19** and the channel **51**. The screen assembly includes a pair of rollers **167** rotatably carried thereby and received within a horizontal guide track **169** formed in the channel **51**. At the lower portion of the screen assembly **21** a guide member **171** is spring biased into engagement with the track **19**. Thus, the screen assembly **21** is free to slide horizontally along the wall frame and is easily removable therefrom merely be raising up on the guide **171** with a suitable tool and pivoting the lower portion of the screen assembly outwardly. This will swing the lower edge of the rollers **167** outwardly of the guide track **169** thereby freeing the screen assembly **21**.

It will thus be seen that by the above described structure, there has been provided a very attractive and rugged sliding door assembly which is effectively weatherproof and easily operable. However, while the foregoing is a preferred embodiment of the present invention, various additions, substitutions, omissions and modifications can be made thereto without departing from the spirit of the invention as encompassed by the appended claims.

What is claimed is:

1. A sliding closure construction including a rectangular wall frame, a rectangular closure panel slidable horizontally within said frame and formed by at least one glass pane enclosed by a pair of spaced horizontal top and bottom rails interconnected at their ends to a pair of spaced vertical stile members, said closure panel being slidably disposed within said closure frame for movement from an open to a closed position; a first pair of longitudinally extending reinforcing members disposed along the outer longitudinal surface of each said stile members and extending from end to end thereof, respectively; a second pair of longitudinally extending reinforcing members disposed along the outer longitudinal surface of each said rail members and extending from end to end thereof, respectively, each said reinforcing member of said second pair having a tab extending generally perpendicular thereto from each end thereof and lying against the outer surface of the reinforcing members of said first pair; and means interconnecting each said tab with an adjacent reinforcing member end portion at the outer surface thereof, whereby said rectangular closure panel is maintained under constant horizontal compression.

2. A sliding closure construction including a rectangular wall frame, a longitudinally extending track in the bottom of said frame, a rectangular closure panel slidably disposed in said wall frame for movement from an open to a closed position and formed by at least one glass pane enclosed by a pair of spaced horizontal top and bottom rails interconnected at their ends to a pair of spaced vertical stile members, a notch formed in the bottom of said bottom rail adjacent each end thereof, an elongated channel member fixed to the bottom of said bottom rail and having a slot formed near each end thereof adjacent each said notch, said channel member having a pair of spaced tabs extending inwardly into each said slot and defining a narrow opening therebetween, a pair of roller brackets carried by said channel member one adjacent each said notch, said roller brackets having an intermediate portion which includes a generally vertically extending web slidable in said narrow opening and a generally horizontally extending portion at the base of and to either side of said web, said horizontally extending portion having a longitudinally inclined cam surface positioned to engage said tabs, each said roller bracket having a roller at one end spaced from said cam surface and engaging said track, screw means carried by said channel member and operatively engaging each said roller bracket at the other end thereof for moving said roller brackets in a longitudinal direction relative to said channel member when said closure panel is mounted in said wall frame whereby engagement between said tabs and said cam surface will cause vertical adjustment of said closure panel relative to said wall frame.

3. A sliding closure construction including a rectangular wall frame, at least one rectangular closure panel fixedly mounted in said wall frame, at least one rectangular slidable closure panel formed by at least one glass pane enclosed by a pair of spaced horizontal top and bottom rails interconnected at their ends to a pair of spaced vertical stile members, said slidable closure being disposed in said wall frame for movement from an open position to a closed position; a first pair of longitudinally extending reinforcing channel members fixed along the outer longitudinal surface of each said stile members and extending from end to end thereof, respectively; a second pair of longitudinally extending reinforcing channel members fixed along the outer longitudinal surface of each said rail members and extending from end to end thereof, respectively, each said reinforcing member of said second pair having a tab extending generally perpendicular thereto from each end thereof; and means interconnecting each said tab with an adjacent reinforcing member end portion at the outer surface thereof; sealing means mounted on said wall frame and said closure panels to provide a weather-tight seal between said panels and between said panels and said wall frame when the slidable panel is in its closed position, means provided on said wall frame for preventing the flow of water past said closure panels, means mounted on said wall frame for substantially reducing frost formation on the inside of said sill and means for vertically adjusting either side edge of said slidable panel relative to said wall frame, said adjusting means comprising at least a pair of roller assemblies carried adjacent a lower end of said slidable panel, a cam surface on each said roller assembly, fixed cam means on said slidable panel engageable with each said cam surface, each said roller assembly being movable in a longitudinal direction relative to said slidable panel whereby engagement between said cam surfaces and said cam means effects said vertical adjustment of said slidable panel.

4. A sliding closure construction including a rectangular wall frame, at least one rectangular closure panel fixedly mounted in said wall frame, at least one rectangular slidable closure panel formed by at least one glass pane enclosed by a pair of spaced horizontal top and bottom rails interconnected at their ends to a pair of spaced vertical stile members, said slidable closure being disposed in said wall frame for movement from an open position to a closed position; a notch formed in the bottom of said bottom rail adjacent each end thereof, an elongated channel member fixed to the bottom of said bottom rail, a pair of roller assemblies carried by said channel member one adjacent each said notch, a cam surface formed on each said roller assembly and positioned to engage a portion of said channel member, and means for moving said roller assemblies in a longitudinal direction relative to said channel member when said slidable closure panel is mounted in said wall frame to vertically adjust said slidable closure relative to said wall frame, sealing means mounted on said wall frame and said closure panels to provide a weathertight seal between said panels and between said panels and said wall frame when the slidable panel is in its closed position, means provided on said wall frame for preventing the flow of water past said closure panels, and means mounted on said wall frame for substantially reducing frost formation on the inside of a sill in said wall frame.

5. A closure construction as defined in claim **4** wherein closure panels includes a plate member mounted on said sill, a resilient pad carried by said plate member, the upper surface of said plate member being sloped downwardly away from said resilient pad on either side thereof, a wedge carried by said slidable panel

and adapted to engage said resilient pad when said slidable panel is in its closed position.

6. A closure construction as defined in claim 4 wherein said means for reducing frost formation includes a plastic strip disposed along the upper portion of said sill and adapted to act as a temperature barrier.

7. A sliding closure construction including a rectangular wall frame having a horizontal sill, at least one rectangular closure panel fixedly mounted in said wall frame, at least one rectangular slidable closure panel formed by at least one glass pane enclosed by a pair of spaced horizontal top and bottom rails interconnected at their ends to a pair of spaced vertical stile members, said slidable closure being disposed in said wall frame for movement from an open position to a closed position; a first pair of longitudinally extending reinforcing members disposed along the outer longitudinal surface of each said stile members and extending from end to end thereof, respectively; a second pair of longitudinally extending reinforcing members disposed along the outer longitudinal surface of each said rail members and extending from end to end thereof, respectively, each said reinforcing member of said second pair having a tab extending generally perpendicular thereto from each end thereof; and means interconnecting each said tab with an adjacent reinforcing member end portion at the outer surface thereof, a notch formed in the bottom of said bottom rail adjacent each end thereof, said reinforcing member of said second pair disposed along said bottom rail comprising an elongated channel member fixed to the bottom of said bottom rail, a pair of roller assemblies carried by said channel member one adjacent each said notch, a cam surface formed on each said roller assembly and positioned to engage a portion of said channel member, and means for moving said roller assemblies in a longitudinal direction relative to said channel member when said slidable closure panel is mounted in said wall frame to vertically adjust said slidable closure relative to said wall frame, sealing means mounted on said wall frame and said closure panels to provide a weathertight seal between said panels and between said panels and said wall frame when the slidable panel is in its closed position, a plate member mounted on said sill, a resilient pad carried by said plate member, the upper surface of said plate member being sloped downwardly away from said resilient pad on either side thereof, a wedge carried by said slidable panel and adapted to engage said resilient pad when said slidable panel is in its closed position, and a plastic strip disposed along the upper portion of said sill adapted to act as a temperature barrier to resist the formation of frost on the interior portion of said sill.

8. A sliding closure construction including a rectangular wall frame having a horizontal sill, at least one rectangular closure panel fixedly mounted in said wall frame, at least one rectangular slidable closure panel formed by at least one glass pane enclosed by a pair of spaced horizontal top and bottom rails interconnected at their ends to a pair of spaced vertical stile members,

said slidable closure being disposed in said wall frame for movement from an open position to a closed position; a first pair of longitudinally extending reinforcing channel members fixed along the outer longitudinal surface of each said stile members and extending from end to end thereof, respectively; a second pair of longitudinally extending reinforcing channel members fixed along the outer longitudinal surface of each said rail members and extending from end to end thereof, respectively, each said reinforcing member of said second pair having a tab extending generally perpendicular thereto from each end thereof; and means interconnecting each said tab with an adjacent reinforcing member end portion at the outer surface thereof, a notch formed in the bottom of said bottom rail adjacent each end thereof, a pair of roller assemblies carried by the channel member of said second pair fixed to said bottom rail one adjacent each said notch, a cam surface formed on each said roller assembly and positioned to engage a portion of said channel member, and means for moving said roller assemblies in a longitudinal direction relative to said channel member when said slidable closure panel is mounted in said wall frame to vertically adjust said slidable closure relative to said wall frame, sealing means mounted on said wall frame and said closure panels to provide a weathertight seal between said panels and between said panels and said wall frame when the slidable panel is in its closed position, a plate member mounted on said sill, a resilient pad carried by said plate member, the upper surface of said plate member being sloped downwardly away from said resilient pad on either side thereof, a wedge carried by said slidable panel and adapted to engage said resilient pad when said slidable panel is in its closed position, and a plastic strip disposed along the upper portion of said sill adapted to act as a temperature barrier to resist the formation of frost on the interior portion of said sill.

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HARRISON R. MOSELEY, *Primary Examiner.*

KENNETH DOWNEY, *Examiner.*