Sept. 20, 1960 W. P. KESSLER ET AL 2,952,883

HORIZONTAL SLIDING WINDOW

Filed Aug. 3, 1956 4 Sheets-Sheet 1

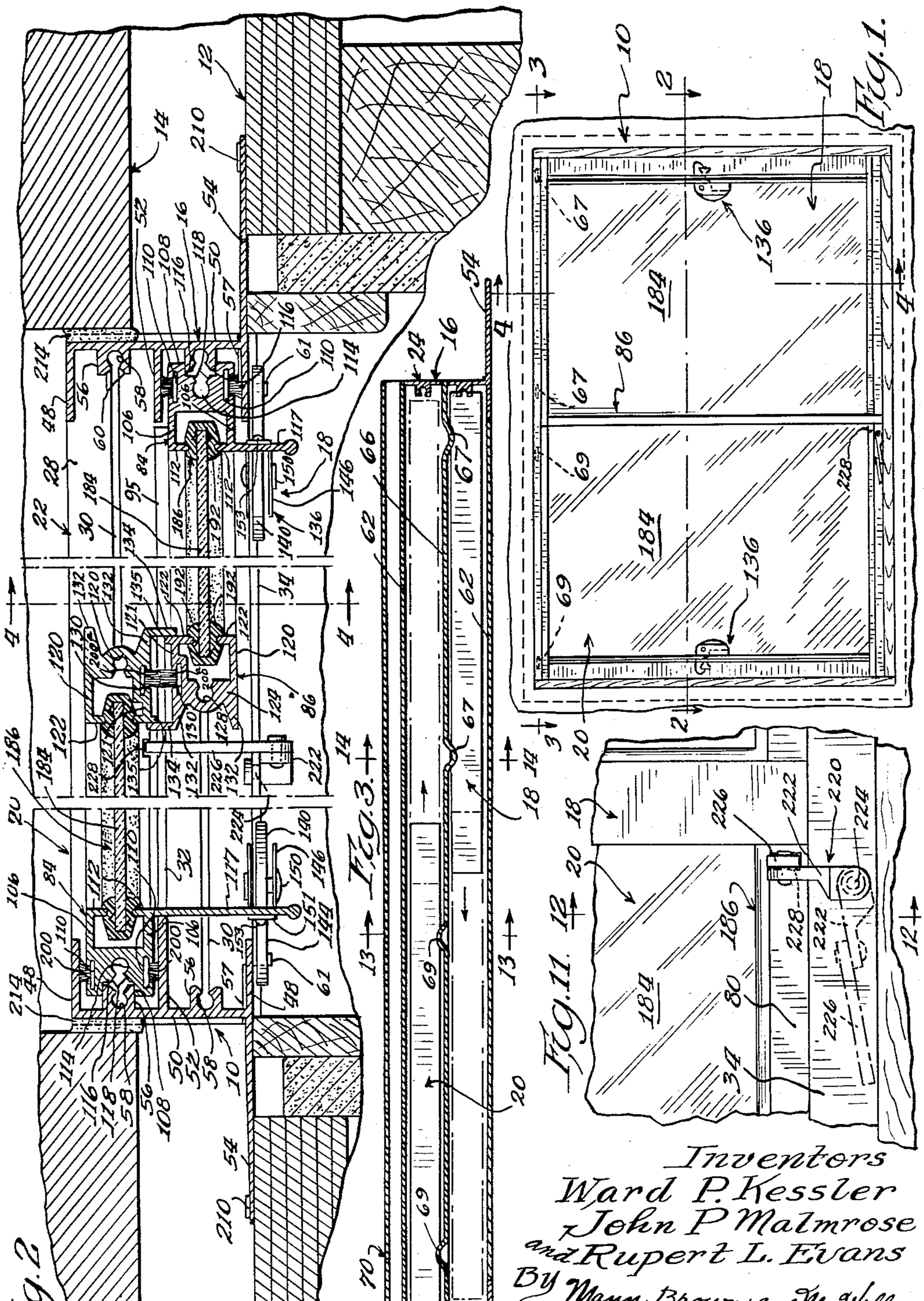

Fig. 1

Fig. 2

Fig. 3

Fig. 11

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Fig. 4.

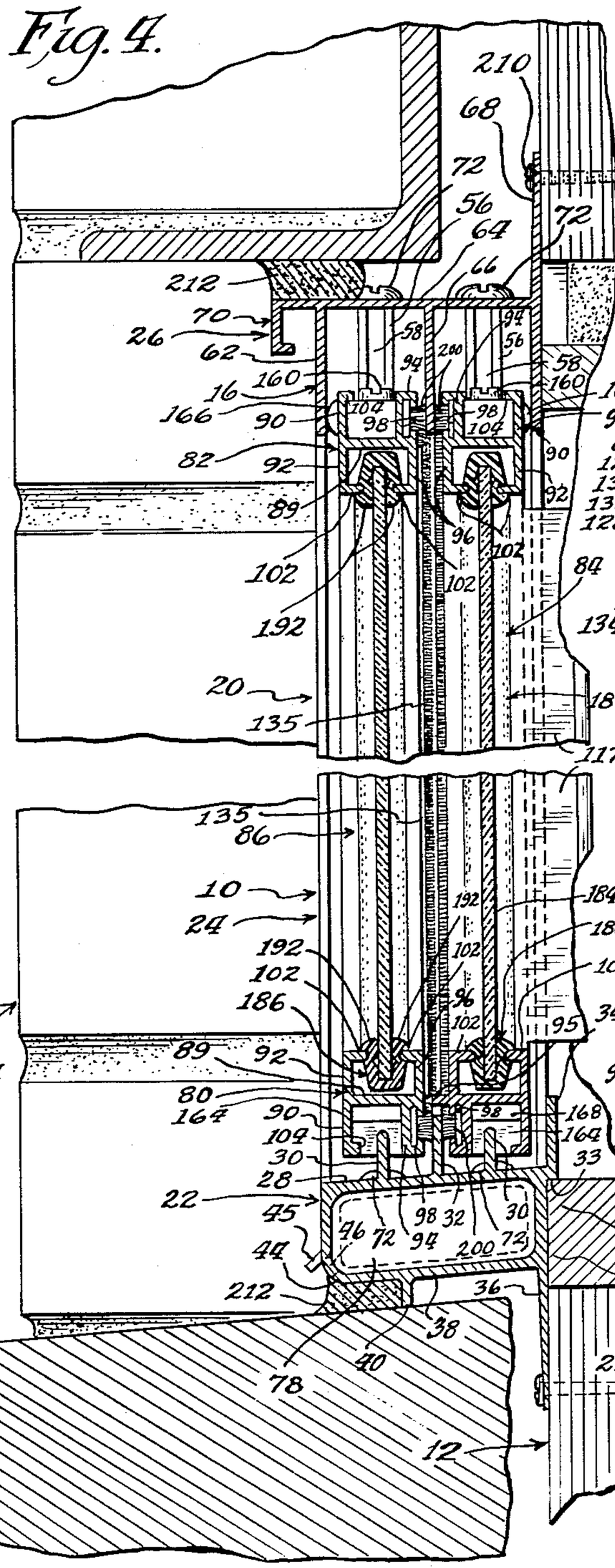

Fig. 5.

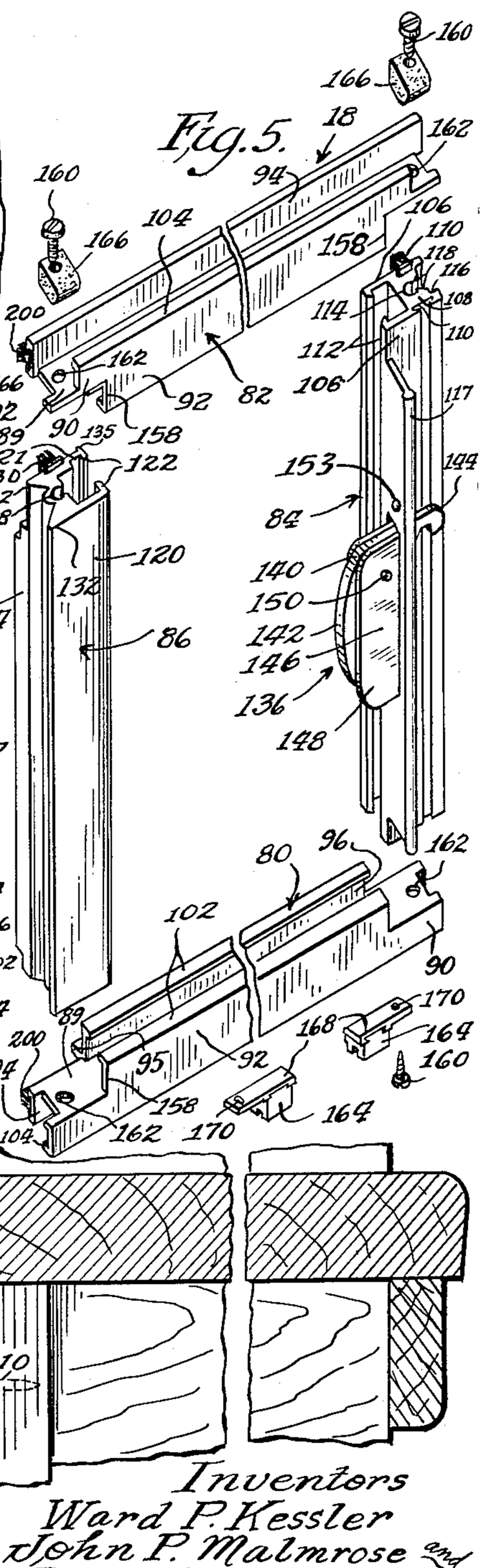

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Fig. 13.

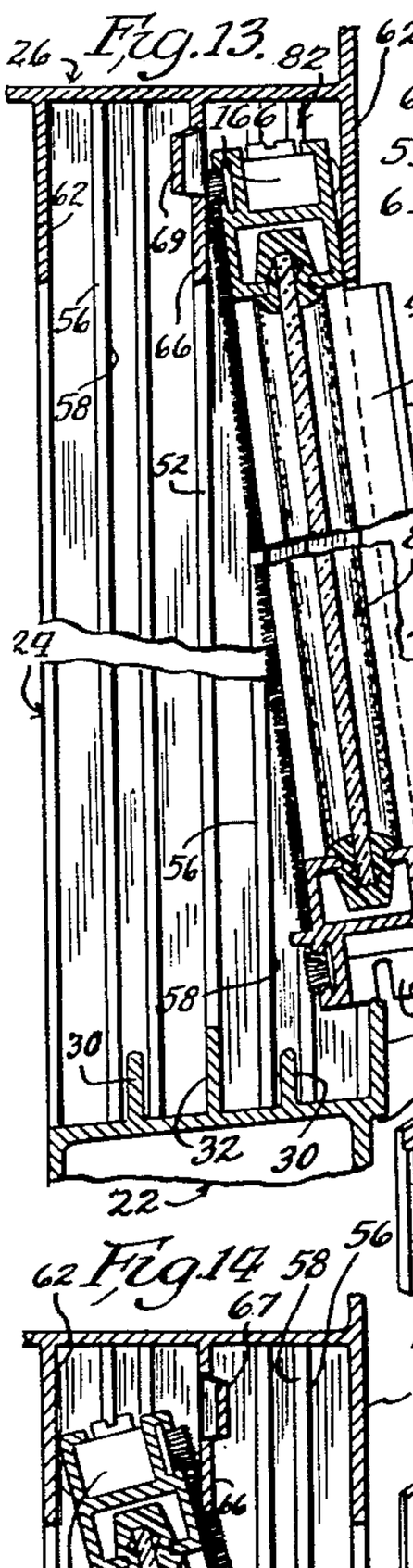


Fig. 6b.

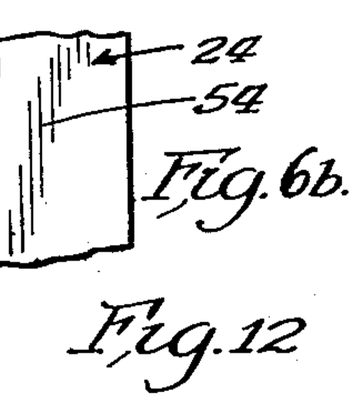


Fig. 12

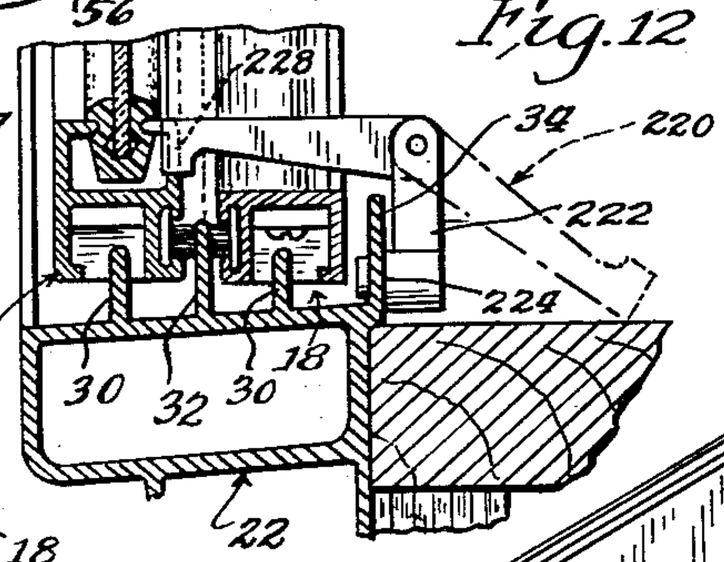


Fig. 6a

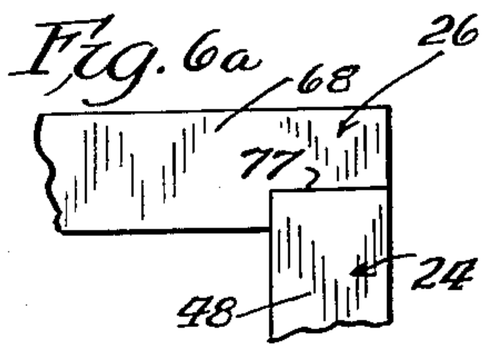
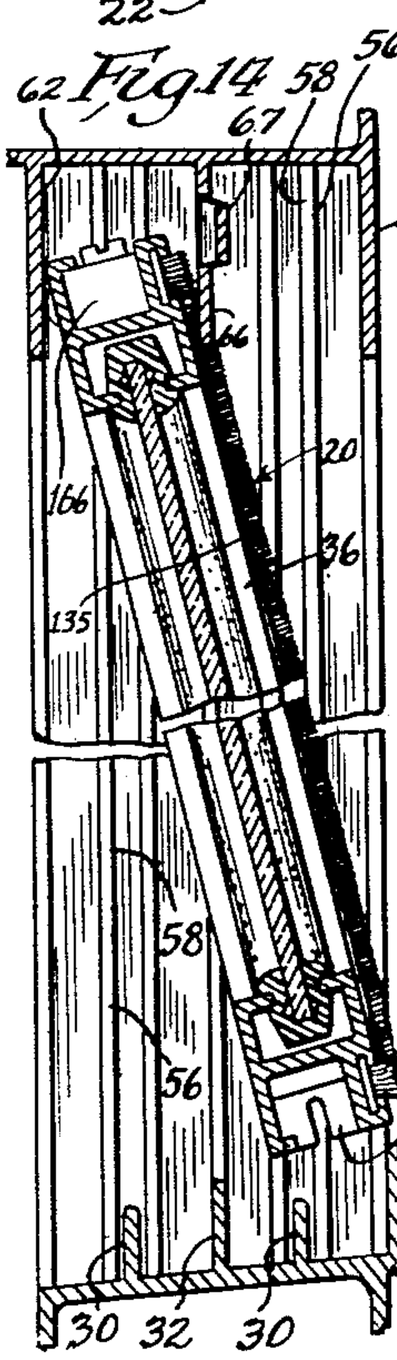


Fig. 6.

Fig. 14



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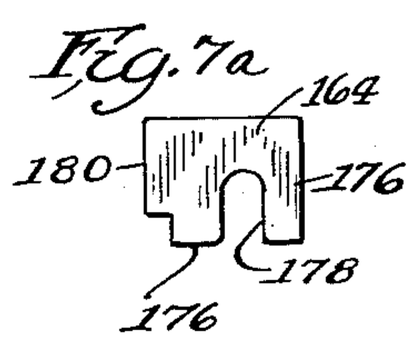


Fig. 7a

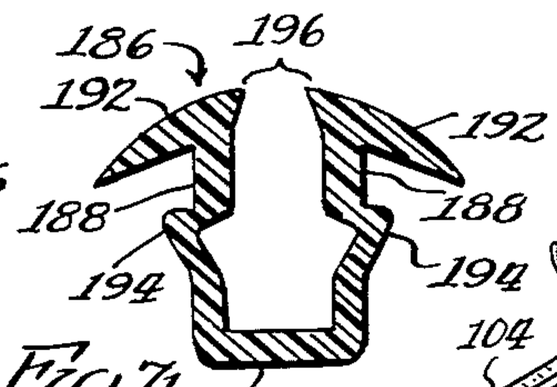
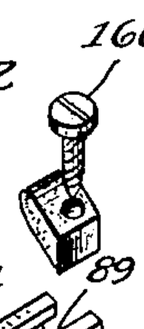


Fig. 7b.



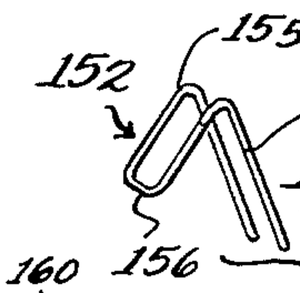


Fig. 8a.

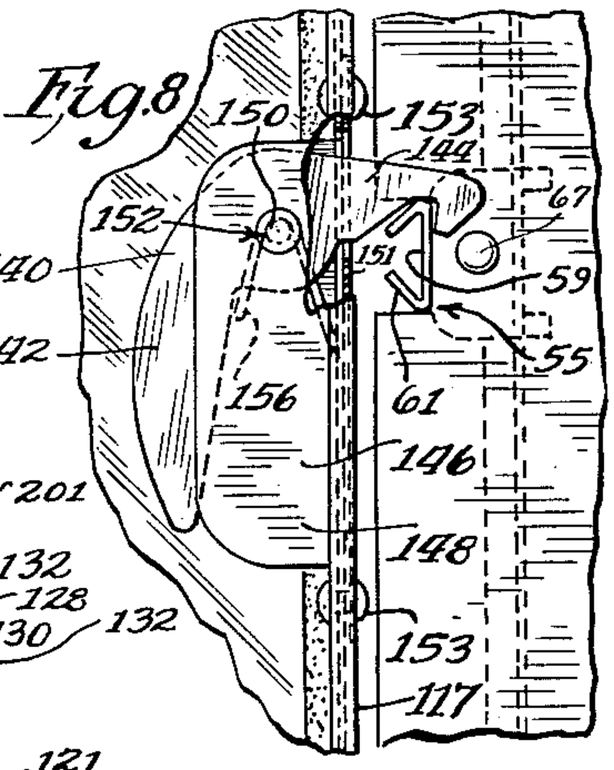


Fig. 8

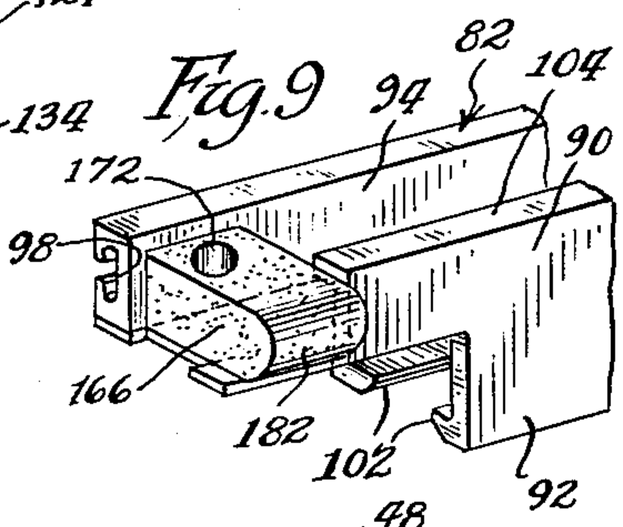


Fig. 9

Fig. 7

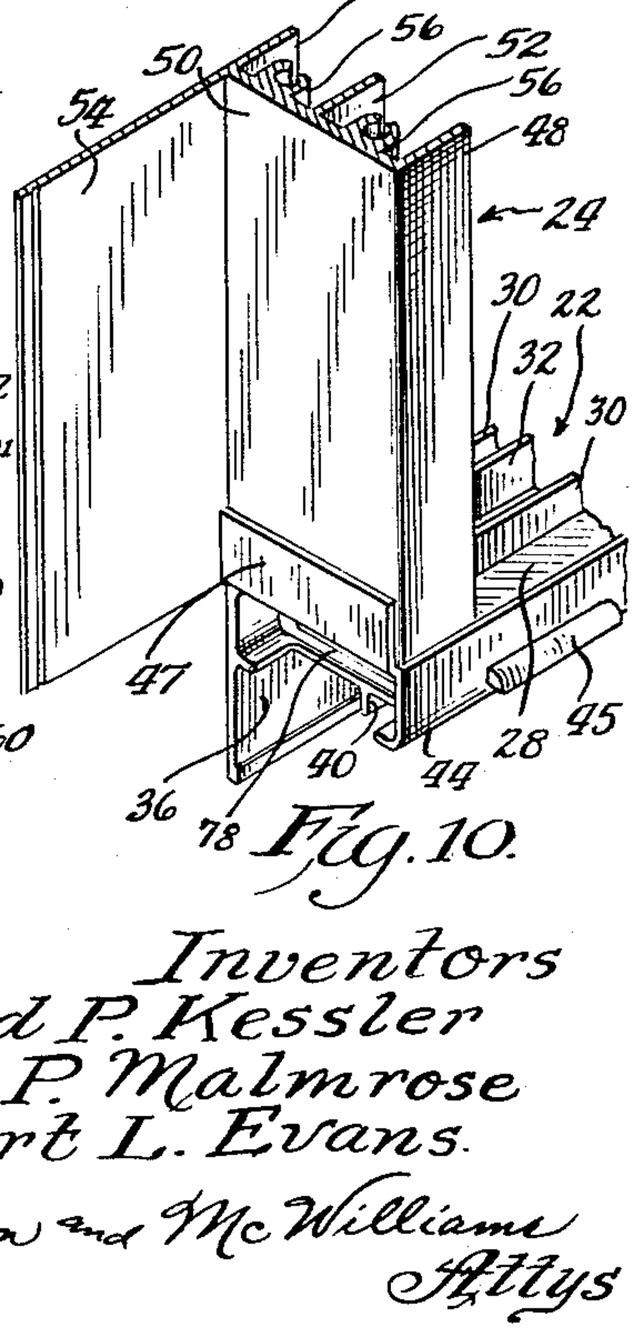


Fig. 10.

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United States Patent Office

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2,952,883

HORIZONTAL SLIDING WINDOW

Ward Philson Kessler, Houston, Tex., and John P. Malmrose and Rupert L. Evans, Kewanee, Ill., assignors to Kewanee Manufacturing Company, a corporation of Illinois

Filed Aug. 3, 1956, Ser. No. 601,968

5 Claims. (Cl. 20—52.2)

Our invention relates to a horizontal sliding window, and more particularly, to windows of this type having several sliding sashes or vents.

A study of conventional horizontal sliding windows has revealed that they have proved to be unsatisfactory for a number of reasons. For instance, most forms become defective in operation after a relatively short time; this is because the sliding sashes or vents are mounted on tracks formed on the window frame sill, and the sill of conventional window frames often bends or warps shortly after installation, with consequent deformation of the tracks and interference in operation with the sashes. Moreover, conventional windows of this type have proved to be drafty and they make no provision for handling moisture condensation that occurs on the glass and metal surfaces and drains down to the window frame sill.

A principal object of our invention is to provide a horizontal sliding window that is and remains effortless in operation, offers maximum weather-tightness, and is readily installed.

A further object of our invention is to provide a horizontal sliding window of the type having tracks for the sliding vents thereof, wherein the frame sill is formed to be of maximum strength and rigidity and insures that the sash or vent tracks remain level and true for smooth, easy operation.

Still a further object of the invention is to provide a horizontal sliding window arranged to handle moisture condensation accumulation.

Another object of the invention is to provide an improved pane mounting for window sashes.

Yet another object of the invention is to provide an improved latching device for horizontal sliding windows.

Still another object of the invention is to provide a burglar proof form of horizontal sliding window which permits the vents or sashes thereof to be easily removed for cleaning.

Yet a further object of the invention is to provide a horizontal sliding window to which screen and storm sashes may be readily applied.

Yet still a further object of the invention is to provide a horizontal sliding window that is inexpensively manufactured, convenient in use, and readily adapted for application to a wide variety of building conditions.

Other objects, uses, and advantages will be obvious or become apparent from a consideration of the following description and the drawings.

In the drawings:

Figure 1 is an elevational view of a preferred embodiment of the invention looking from inside the window, showing the same applied to a finished wall structure;

Figure 2 is a cross-sectional view along line **2—2** of Figure 1;

Figure 3 is a cross-sectional view along line **3—3** of Figure 1;

Figure 4 is a cross-sectional view along line **4—4** of Figure 2, showing both sashes in section;

Figure 5 is an exploded perspective view of a number

of the rail elements forming the inner or inside vent or sash;

Figure 6 is an exploded perspective view of the elements forming the window frame structure in which the sashes are mounted;

Fig. 6*a* is a fragmental elevational view illustrating the right hand upper corner of the inwardly facing side of the window frame;

Figure 6*b* is a fragmental plan view of the inwardly facing side of a jamb illustrating the sash latch catch element fixed to each frame jamb, with parts broken away;

Figure 7 is an exploded perspective view of the elements forming the outer vent or sash, with parts broken away for clarity of illustration;

Figure 7*a* is a side elevational view of a glide block employed in the illustrated vents or sashes;

Figure 7*b* is a sectional view of a gasket or sealing element in which the transparent panes of the sashes or vents are received;

Figure 8 is an elevational view illustrating our improved latch employed on the sashes of our window;

Figure 8*a* is a perspective view of a spring element employed to bias the latch illustrated in Figure 8;

Figure 9 is a fragmental perspective view illustrating an aligning block employed on the sashes of our window;

Figure 10 is a fragmental perspective view of one end of the sill of the window frame, showing a portion of a jamb applied thereto;

Figure 11 is a fragmental elevational view further illustrating a burglar proofing locking device shown diagrammatically in Figure 1;

Figure 12 is a cross-sectional view along line **12—12** of Figure 11;

Figure 13 is a cross-sectional view along line **13—13** of Figure 3 illustrating the manner in which the inner sash or vent is removed; and

Figure 14 is a cross-sectional view along line **14—14** of Figure 3 illustrating the manner in which the outer vent is removed.

GENERAL DESCRIPTION

Reference numeral **10** of Figures 1, 2, and 4 generally indicates a preferred embodiment of our invention applied to a conventional wall framing structure **12** about which a conventional outer masonry structure **14** has been erected.

The window **10** generally comprises a window frame **16**, an inner sash or vent **18**, and an outer sash or vent **20**.

The window frame

As shown more particularly in Figures 4 and 6, the window frame comprises a sill **22**, two jambs **24**, and a head section **26**. These elements may be formed out of any suitable materials, but preferably are provided in the form of extruded aluminum sections.

The sill **22** comprises a generally quadrilateral tubular element (see Figure 4) having a plurality of flanges extending from its upper and lower surfaces. As seen in Figure 4, the upper surface **28** of the sill is formed with two flanges **30** separated by a flange **32** that is taller than the flanges **30**. The inside border of the sill is offset as at **33** and is provided with a flange **34** along the upper edge thereof, and a depending flange **36**. The undersurface **38** of the sill **22** is formed with a relatively short flange **40**. As seen in Figure 6, a plurality of perforations **42** are formed in the upper surface of the sill between the flanges **30** and **32** approximately where shown, and the lower outer edge **44** of the sill is formed with a pair (in the illustrated embodiment) of outwardly extending lips **45** forming elongated ports **46** for a purpose hereinafter made clear. The upper surface **28** of the

sill also includes appendages or wings **47** (see Figure 6) for a purpose likewise hereinafter made clear.

The jambs **24** have a generally channel shaped configuration including side flanges **48** and web **50**. Each jamb is formed with an internal flange **52** that is positioned to be vertically aligned with the taller flange **32** of the sill when the jambs are fixed to the sill. Each jamb also includes an elongated fin or flange **54** along the inside edge of the respective jambs.

As seen more particularly in Figure 2, the internal surface of each jamb, besides being formed with internal flange **52**, is also formed with ridges **56** having rounded undercut grooves **58** formed therein, with surfaces **60** leading to said grooves **58**. Each jamb has fixed thereto a sash latch catch element **55** (see Figure 6*b*) comprising a flat strip **57** having one end **59** thereof bent normally of the strip and fingers **61** of said end **59** bent toward each other. The respective strips **57** are fixed against the inner surface of inside flange **48** of each jamb, said strips extending through slots **63** formed in webs **50** and ends **59** positioned in notches **65** formed in flanges **48**, rivets **167** or the like securing strips **57** in place.

The head section **26** comprises a generally channel shaped member including side flanges **62** and a web **64**, in which an internal flange **66** is formed. Preferably, the flanges **62** and **66** are of the same length. The head section **26** also includes a flange or fin **68** extending from the inner edge thereof, which flange or fin projects beyond the ends of the head section proper, as seen in Figure 6. The head section **26** of the illustrated embodiment also includes a **J**-shaped appendage **70** for purposes hereinafter made clear.

As seen more particularly in Figure 3, the internal flange **66** of the head section of the window frame is provided with inwardly projecting protuberances **67** and outwardly projecting protuberances **69**.

Preferably, this is done by a stamping operation before the head section is secured to the other elements of the window frame, and preferably, any perforations in the metal are sealed over by a suitable adhesive to preclude the possibility of drafts.

The window frame is assembled by inserting conventional self-tapping screws **72** through holes **74** formed in the sill and head section, which holes **74** are positioned for alignment with the rounded grooves **58** formed in the jambs **24**. The screw threaded portions of screws **72** engage the internal surface of these grooves **58** to hold the elements in assembled relation.

The wings or appendages **47** of the sill at each end thereof are bent upwardly and flat against the back surface of the respective webs **50** of the jambs **24** (see Figure 10). This seals off the joint between the upper surface **28** and the respective jamb webs **50**.

The jambs **24** may be slotted as at **76** to receive the flanges **66** and **34** of the head section and the sill, and as shown in Figures 6 and 6*a*, the head section and jambs may be recessed as at **77** to receive the respective flanges **48** and **62**. Flanges **30** and **32** of sill **22** are abridged as at **79** to receive the lower ends of jambs **24**. It will be appreciated that these interengaging elements of the frame provide an exceptionally strong, rigid structure. Preferably, the ends of the tubular sill are closed by pressing sill plugs **78**, made from, for instance, aluminum, within the sills.

The sashes

The inner sash **18** (see Figure 5) comprises a bottom rail **80**, a top rail **82**, and side rails **84** and **86**. The side rail **84** of the illustrated embodiment also comprises the pull rail of the sash, and the side rail **86** comprises the meeting rail of the sash.

The individual rails of sash **18** also are preferably extruded aluminum elements. The top and bottom rails **80** and **82** have generally the same cross sectional configuration, as seen more particularly in Figure 4. The top

and bottom rails each comprise an elongate element having a generally **H**-shaped configuration including web **89** and legs **90**, **92**, **94**, and **96** in which the outer surface of leg **94** is formed with a longitudinally extending undercut groove **98**, and in which the legs **92** and **96** on the other side of web **89** are formed with flanges **102** projecting toward each other. Also, leg **90** is formed with a short projection **104** that projects towards leg **94**, and the outwardly facing surface of the bottom rail is formed with a short outwardly projecting flange **95** that forms a drip sill, as hereinafter described.

The side rails **84** and **86** have a somewhat different construction. The side rail **84**, as seen more particularly in Figure 2, generally comprises an elongate element having a generally channel shaped cross sectional configuration including legs **106** and a relatively thick web **108**, in which both sides of the element are formed with the longitudinally extending undercut grooves **110**, similar to grooves **98**. The ends of legs **106** are formed with flanges **112** that project towards each other, and the back of the element **84** is formed with a rounded groove **114**. Outwardly of the groove **114** in this element, right angled surfaces **116** define an enlarged area of the groove which merge into inclined surfaces **118** that in turn merge into groove **114**. The inwardly facing leg **106** includes an inwardly projecting flange **117** which comprises the hand gripping element of the sash.

The side rail **86** generally comprises an elongate element having a generally channel shaped cross-sectional configuration including legs **120** and **121** formed with opposed projections or flanges **122** and in which the inside surface of the web **124** is formed with a rounded groove **128**. The outer side of rail **86** is formed with an undercut groove **130** similar to grooves **98** and **110** and projections **132** extend from the web **124** of the rail **86**. The outer projection **132** is formed with an outwardly extending flange **134** and leg **121** is formed with an outwardly extending flange **135** (see Figure 2) for purposes hereinafter made clear.

A latch or locking device **136** is mounted on the hand gripping flange **117** of the rail **84**. The latch device comprises an angle shaped latch element **140** (see Figure 8) including a handle portion **142** positioned at right angles to a notched portion **144**. The latch element **140** is positioned between sides **146** of lock case **148** and is pivoted to the lock case **148** by a suitable pin **150** adjacent the juncture of the portions **142** and **144**. A **V**-shaped spring element **152** (see Figure 8*a*) is interposed between the latch element **140** and the flange **117**. The spring element **152** generally comprises a length of music spring wire formed in the shape of a **U**, with the legs **155** bent at an acute angle, somewhat as shown in Figure 8*a*, and is arranged so that the web **156** bears against the handle portion **142** of latch element **140** while the ends of the legs bear against the base **151** of lock case **148**. The base **151** of case **148** is fixed, as by rivets **153**, to flange **117**, the case extending through a suitable slot formed in the flange **117**.

The top and bottom rails **80** and **82** are cut away sufficiently, as at **158**, to receive the ends of the side rails **84** and **86**. Self tapping screws **160** passing through holes **162** formed in webs **89** of the top and bottom rails secure the top and bottom rails to the side rails. In the illustrated embodiment, the screws **160** are screw threadedly received in the rounded grooves **114** and **128**, respectively, of the side rails **84** and **86**.

The screws **160** also respectively secure in place a pair of glide blocks **164** and a pair of aligning blocks **166**. The glide blocks **164** are mounted on glide block holders **168** which are received between the legs **90** and **94** of the bottom rail **80** and screws **160** pass through holes **170** formed in these glide block holders. As shown in Figure 9, the aligning blocks **166** are each received at the end of the top rail **82** and screws **160** pass through a hole **172** formed in these elements.

The glide blocks **164** and the aligning blocks **166** are preferably made from a substance that eliminates friction as much as possible and a product known in the art as 66MS Nylasint, made by the E. I. du Pont de Nemours and Co. of Wilmington, Del., is preferred for this purpose. Another suitable product is nylon, made by the same company.

The glide blocks and aligning or guide blocks are preferably shaped substantially as shown in Figures 7*a* and 9, respectively. The glide blocks **164** generally comprise a U-shaped element including legs **176** separated by a slot **178** and including a protuberance **180** extending from a leg **176**. This protuberance **180** fits within the slot defined by the flange or projection **104** of a leg **90** of the bottom rail **80**. The aligning block **166** illustrated (see Figure 9) generally comprises an element having in the main a rectangular parallelepiped configuration but including a rounded end **182** which projects beyond the side of the top rail **82** on which the block **166** is mounted and engages one of the side flanges **62** of the head section **26** of the window frame when the sash is mounted in the frame **16** (see Figure 4).

The sash **18** receives a pane **184** (see Figure 7) of transparent material, such as glass, and a novel form of gasket or sealing element **186** sealingly mounts the pane **184** in the sash.

The gasket or sealing element **186** is provided with the unstressed configuration shown in Figure 7*b*, and as indicated, the sealing element is provided with a generally U-shaped configuration including legs **188**, web **190** joining legs **188**, wings **192** extending from the ends of the legs **188**, and protuberances **194** formed on the legs **188**. It will be noted that the wings **192** extend outwardly of the legs **188** and are inclined toward the web **190**. The ends of the legs **188** are formed with outwardly projecting edges **196** for purpose hereinafter made clear. The illustrated element **186** is a vinyl extruded product.

Before the side rails and top and bottom rails are assembled, the sealing element **86** is applied to the pane **184**. This may be done as the sash is assembled, the sealing element being slotted at the corners of the sash to accommodate the right angled corners of the pane **184**, somewhat as shown in Figure 7. In mounting the glass within the rails of the sash, the length of the sealing element that is to be received in a particular rail is mounted on the pane, the legs **188** being received over the pane, and then the rail is slipped over the web and adjacent portions of legs **188** of this element. The rail is driven home over the sealing element with a suitable mallet.

When each rail is properly received over the sealing element **186**, the projections **102** of the top and bottom rails and the projections **112** and **122** of the side rails will be received between the wings **192** and the protuberances **194**, and the wings **192** will be flattened out against the outwardly facing surfaces of these projections. By so doing, the edges **196** are urged into sealing engagement with the pane **184** to provide an unsually effective seal.

After the rails are assembled about the pane **184**, weather stripping **200** and **200***a* is applied to the grooves **98**, **110**, and **130**. The weather stripping preferably comprises what is known in the art as wool pile Schlegel cloth or its equivalent, and when applied to these undercut grooves, extends about the entire perimeter of the sash, the side rail stripping ends extending into notches **201** of rails **80** and **82** and abutting their weather stripping. The weather stripping **200***a* of the sash meeting rails **86** preferably has a deeper pile as shown in Figure 2 so that the piles of these rails will intermesh when the vents are both closed.

The outer sash **20** (see Figure 7) is constructed and arranged in a manner similar to the inner sash **18** and identical parts have been given correspondingly identical reference numerals. The only material difference between the inner and outer sash is that the pull rail

flange **117** of the outer sash is wider since it must extend further to present the hand gripping portion thereof for easy access by the operator, and the drip sill **95** is eliminated.

APPLICATION AND OPERATION

The window frame **16** is applied to the wall framing **12** by properly positioning the offset **33** of the sill **22** in the rough opening of the wall framing, and then driving nails **210** through the fins or flanges **36**, **54** and **68** of the window frame. After the masonry **14** has been erected, suitable caulking is applied where shown at **212** in Figure 4 and at **214** in Figure 2 to seal all cracks about the window frame.

The sashes **18** and **20** may then be applied from either outside or inside of the window in the manner indicated in Figures 3, 13, and 14. As, for instance, the protuberances **67** are positioned to project over the inner sash **18** when same is in the closed position shown in Figure 2 they will preclude vertical movement of the sash in this position, and it is thus apparent that the distance between the lower edges of protuberances **67** and the top of the sill flange **30** on which the inner sash is mounted is less than the distance between the lower edges of the protuberances **67** and the lower edges of the inner sash glide block legs **176**, which prevents the sash from being swung onto or from the sill flange **30** (when the sash is disposed with respect to the sill in a position corresponding to its said closed position). However, when the inner sash **18** is moved to the left of Figure 3 and away from the protuberances **67**, enough room is provided above the top of the sash to permit it to be moved upwardly sufficiently and then swung inwardly (as shown in Figure 13) or outwardly to be removed and conversely, to be applied thereto. The outer sash **20** and the protuberances **69** are arranged in a similar manner. Thus, the outer sash may be removed from the inside after the inner sash has been removed by moving the outer sash to the right of Figure 3 and then lifting it upwardly and swinging it either inwardly as shown in Figure 14 or outwardly.

Figures 11 and 12 illustrate a latch device **220** which aids in making the window **10** substantially burglarproof. A rigid element **222** is pivoted to the flange **34** of the sill **22** as at **224** in any suitable manner, and said element **222** has pivoted at one end thereof an elongate latch bar **226** which is adapted to swing over the path of movement of the inner sash **18** and lodge in a notch **228** formed in the bottom rail **80** of the outer sash **20**.

In the inoperative position, the latch device appears as shown in dotted lines in Figure 11. However, when it is desired to place the device **220** into operation, the elements are positioned as shown in Figure 12. This permits only a limited sliding movement of the inner sash to the left of Figures 1 and 3 in the event that a burglar is successful in unlatching latch element **140** of the inner sash, or this element is inadvertently left unlatched. The limited sliding movement allowed is insufficient to permit the person seeking entrance to reach around pane **18** and unlock device **220**, and, of course, the inner sash **18** cannot be removed in the position it is in when device **220** is applied.

As indicated in Figure 8, the latch element **136** is preferably arranged so that, even though some vertical movement of the inner sash within the window frame is permitted, the notched end **144** of the element **140** remains in engagement with the catch element **55**. This is done by insuring that the latch element has a substantial range of pivotal movement, and in the illustrated embodiment, the slot formed in lock case base **151** is sufficiently long to permit the latch element **140** to assume at least the two locking positions indicated in Figures 1 and 8.

The appendage **70** is provided in the frame **16** to receive screen and storm sashes of a conventional make.

Advantages of invention

Our invention provides a number of results that are a substantial improvement over conventional sliding windows.

It will be noted, for instance, that the sill **22** is not rectangular in cross-sectional configuration, but inclines downwardly and outwardly of the window. Moisture condensing on the glass and metal surfaces of the window, if substantial in quantity, will tend to collect in the spaces between flange **32** and the flanges **30** of the sill and pass into the center of the sill through the respective perforations **42**. The moisture will then tend to flow toward and out of the weep holes **46**, which also permit rapid evaporation of any liquid remaining within the sill.

The tubular configuration of the sill gives the entire window maximum strength and rigidity, and insures that the sash tracks remain level and true for smooth, easy operation. The reason is that the sill and its flanges **30** are of one piece construction, which rigidly holds the bases of flanges **30** so that their upper edges retain the rectilinear longitudinal configuration indicated in the drawings.

As has been noted hereinbefore, the entire peripheries of the sashes are provided with weather stripping **200**. This weather stripping is urged into contact with the flange **32** of the sill, the internal flanges **52** of the jambs, and the internal flange **66** of the head section of the window frame, by the glide blocks **164** and the aligning blocks **166**. When the sashes are both in closed position, the weather stripping of the two meeting rails of the sashes contact each other and intermesh to form a substantial weather seal at this point. Flanges **134** of sash rails **86** are in contact with the respective rails **86** to substantially isolate the intermeshed weather stripping of the two meeting rails and further seal the window against drafts at this point. Flanges **135** increase the contact area between the rails **86** and flanges **134**. When the windows are both closed, the configuration of the side rails and the positioning of weep ports **46** and perforations **42** provide circuitous paths for any air that might be forced in through the window by high winds or the like, which, in addition to the weather stripping, substantially eliminates the possibility of drafts. As shown in Figure 2, ridges **56** fit into and against right angled surfaces **116** of sash rails **84** to provide a substantially complete seal. Moreover, the sealing element in which the panes **184** are mounted substantially precludes drafts at this point in the window. Weather stripping may be applied to the inwardly facing groove **110** of the inner sash and the outwardly facing groove **110** of the outer sash if so desired, though none is shown in the illustrated embodiment.

It will be noted from Figure 4 that drip sill **95** of inner sash rail **80** overhangs flange **32** of the sill, and protects the weather stripping **200** immediately under it from access weathering. It also prevents outside moisture from having access to perforations **42** under the sash **18**.

The sashes are both easily removed when positioned as described above, which permits easy cleaning and 100% ventilation when desired. When positioned in locked position, they cannot be removed, either from the inside or outside. The sealing element **186** eliminates the conventional mastic glazing compounds formerly required to mount panes.

The locks of both sashes of the illustrated embodiment comprise self-locking stainless steel hardware arranged to permit independent operation thereof. They are positive, simple and attractive.

The sashes are mounted on a minimum of antifriction glides and aligning blocks which substantially eliminates undesirable friction in operation of the sashes.

The safety latch **220** insures that the window may not be opened from the outside.

While the invention has been illustrated as applied to two vent windows, it will be apparent that it is applicable to windows employing one or more than two vents, and in which one or more vents may be fixed ones.

The foregoing description and the drawings are given merely to explain and illustrate our invention and the invention is not to be limited thereto except insofar as the appended claims are so limited since those skilled in the art who have our disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

We claim:

1. A window structure of the horizontally sliding sash type comprising a window frame including a sill formed on its upper surface with a plurality of spaced upstanding flanges extending longitudinally thereof, said flanges including a taller flange separating two shorter flanges, said frame also including channel shaped jambs arranged with the flanges thereof opposing each other and each including an internal flange aligned with said taller flange of said sill, said frame further including a head section, said head section being generally channel shaped and positioned with the flanges of its channel shape extending toward said sill, said head section including an internal flange vertically aligned with said taller flange of said sill, a sash slidably mounted on each of said shorter flanges of said sill to provide an inner and an outer sash for the window structure, said sash each comprising a bottom rail, a top rail and spaced pull and meeting rails forming the side rails thereof, a pair of spaced antifriction glide blocks interposed between each sash bottom rail and the shorter flange of said sill on which the sash is mounted, said glide blocks being formed with a downwardly opening slot in which the respective shorter flanges are received, whereby said guide blocks ride on top of the respective shorter flanges to mount the respective sash thereon, each sash including weatherstripping about the entire border of each of the sides thereof facing said taller flange of said sill, each sash top rail extending into horizontal alignment with said internal flange of said head section and the side flange thereof on the side of the window frame at which the sash is mounted, each sash top rail carrying spaced antifriction guide members along their respective top rails, said guide members being in sliding engagement with the head section flange of its channel shape on the side of the window frame on which the sash is mounted, said guide members being proportioned to press the weatherstripping of the sash along their top rails into engagement with said internal flange of said head section, said slots of said glide blocks being positioned to cause the weatherstripping along the bottom rails of the sash to be pressed against said taller flange of said sill, with the weatherstripping of the respective sash pull rails contacting the respective internal flanges of said frame jambs when said sash are positioned adjacent them, and the weatherstripping of the respective said meeting rails intermeshing when said weatherstripping of said pull rails contacts the respective frame jamb internal flanges.

2. The window structure set forth in claim 1 wherein the inner sash on its bottom rail includes an outwardly projecting, generally horizontal flange overlying said taller flange of said sill whereby the weatherstripping carried by said inner sash bottom rail is protected from excess weathering.

3. A window structure of the horizontally sliding sash type comprising a window frame including a sill formed on its upper surface with a plurality of spaced upstanding sash track forming flanges extending longitudinally thereof defining upwardly facing edges that are rectilinear in longitudinal configuration, said frame also including side jambs and a head section, a sash slidably mounted on each of said flanges of said sill, said sash each comprising a bottom rail, a top rail and spaced side rails, a pair of antifriction glide blocks interposed between each sash bottom rail and the flange of said sill on which the sash is mounted and resting on said

upwardly facing edges of the respective flanges, said sill including said track forming flanges being of one piece construction and tubular in cross sectional configuration whereby said edges of said flanges are rigidly held in their said rectilinear configurations.

4. A window structure of the horizontally sliding sash type comprising a window frame including a sill formed on its upper surface with a plurality of spaced upstanding flanges extending longitudinally thereof, said flanges including a taller flange separating two shorter flanges, said frame also including jambs and a head section, said head section being generally channel shaped and positioned with the flanges of its channel shape extending from the web thereof toward said still, said flanges of said head section defining planar continuous walls of uniform height throughout their lengths said head section including an internal flange vertically aligned with said taller flange of said sill, a sash slidably mounted on each of said shorter flanges of said still, said sash each comprising a bottom rail, a top rail and spaced pull and meeting rails forming the side rails thereof, said sash bottom rails having grooved portions that rest on the respective shorter flanges of said sill to slidably mount the respective sash on said sill, said grooved portions each being formed with a groove in which the upper edge of the respective shorter flanges of said sill is received and thereby defining said grooved portions into legs that extend below the respective upper edges of said shorter flanges of said sill when the respective sash are slidably mounted on the respective sill shorter flanges one of said sash forming the inner sash of the window structure and the other sash forming the outer sash thereof, said sash including said grooved portions thereof being shorter in height than the distance between the tops of said sill shorter flanges and the web of said head section to permit removal of the sash by lifting the sash from the respective shorter flanges into the space between the respective side flanges and internal flange of said head section and swinging the sash inwardly, said internal flange of said head section being formed with spaced indentations that project over the respective sash when they are in their closed positions a distance in excess of the clearance between the respective sash top rails and said internal flange of said head section, whereby the sash cannot be removed from the frame when in their closed positions by reason of engagement with the respective indentations when raised toward said web of said head section.

5. In a window structure of the horizontally sliding sash type including a frame structure including a sill formed with inner and outer tracks on which an inner sash and an outer sash are respectively slidably mounted, and an upstanding flange on its inner side extending longitudinally thereof and projecting above said tracks, said sash including meeting rails that are in juxtaposition when the sash are in their closed positions, an improved latching arrangement therefor comprising a rigid arm pivoted at one of its ends to the sill flange for movement about a substantially horizontal axis that extends perpendicularly of the sill, said arm being of a length that exceeds the vertical distance between said axis and the top of said sill flange so that when it is positioned in an upright position, its other end projects above the sill flange, a latch bar pivoted to said other end of said arm for movement about an axis that extends perpendicular to the first mentioned axis, said rigid arm being pivoted to the sill flange adjacent said meeting rails when same are in their juxtaposed positions and being disposed with respect thereto to permit said latch bar to be swung toward the outer sash across the path of movement of the inner sash, said outer sash being formed with notch means to receive said latch bar, said latch bar being movable from its latching position by swinging same about the second mentioned axis, after which said latch bar may be moved to an out of the way position below said sill flange by swinging said arm about the first mentioned axis away from its upright position.

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