June 22, 1937. E. PEREMI ET AL 2,084,776

WINDOW

Filed March 13, 1935 3 Sheets-Sheet 1

Fig. 1.

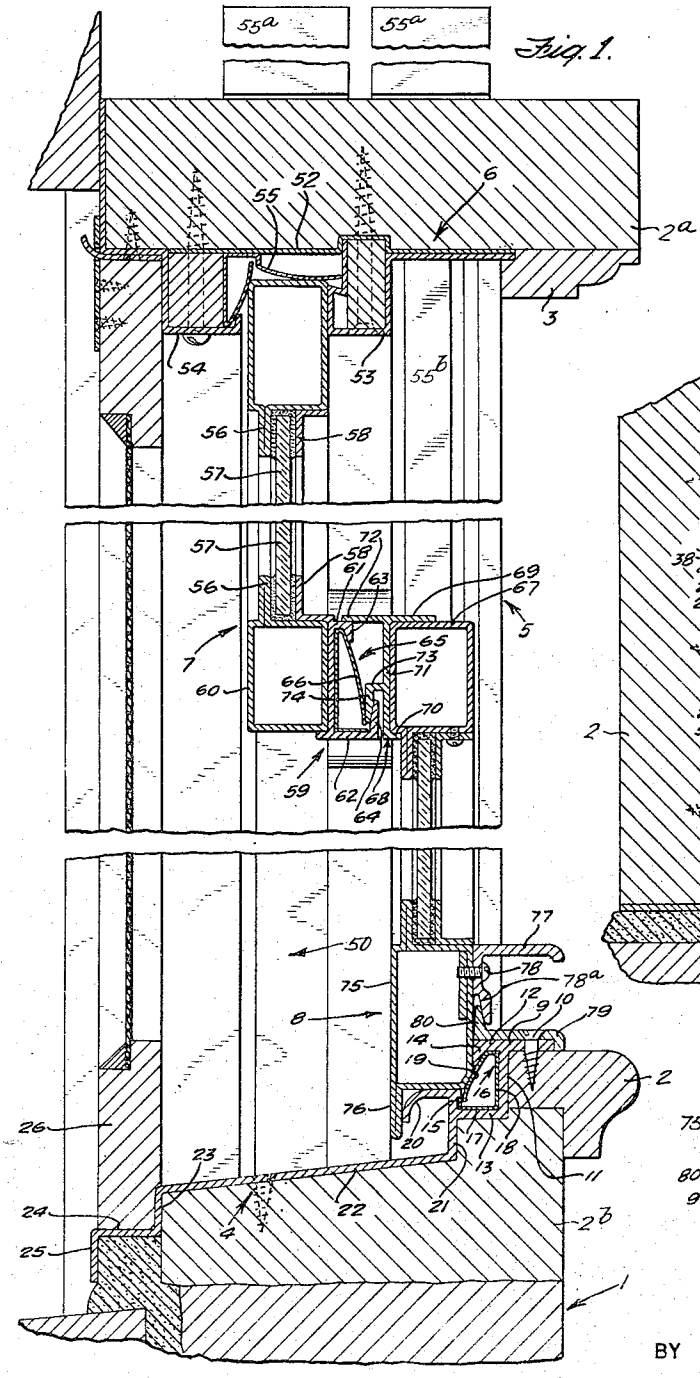


Fig. 1a

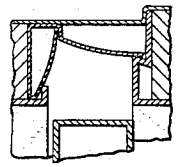


Fig. 2.

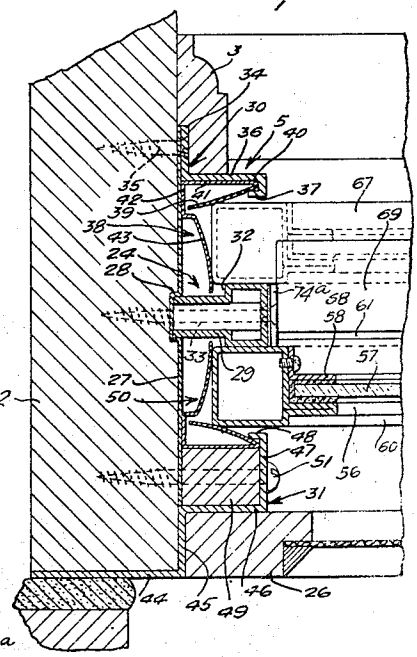
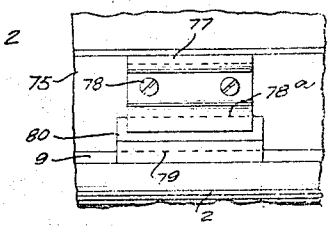


Fig. 3.



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June 22, 1937. E. PEREMI ET AL 2,084,776

WINDOW

Filed March 13, 1935 3 Sheets-Sheet 2

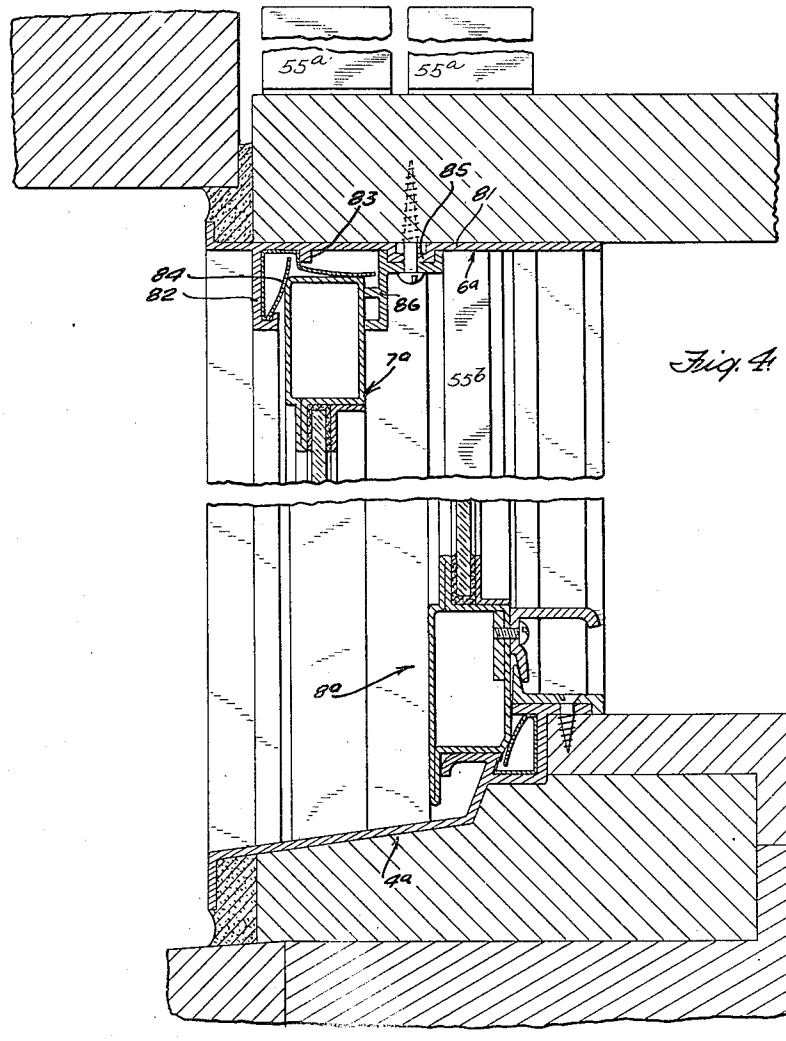


Fig. 4.

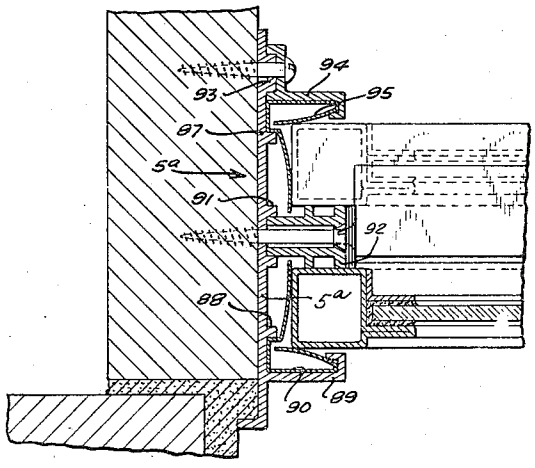


Fig. 5.

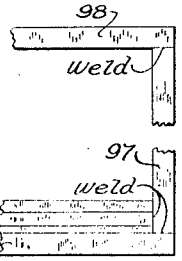


Fig. 8

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WINDOW

Filed March 13, 1935 3 Sheets-Sheet 3

Fig. 6.

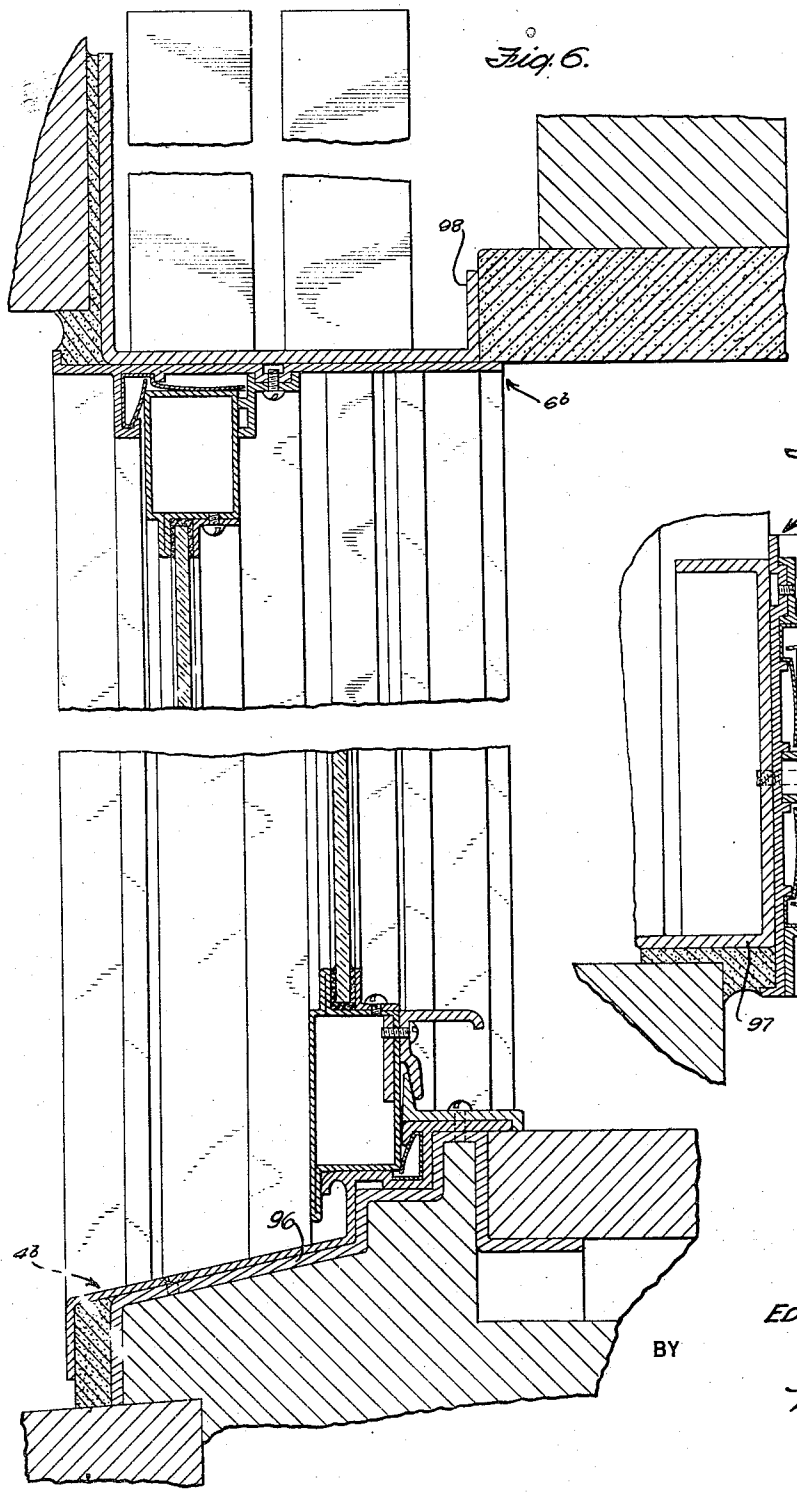


Fig. 7.

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2,084,776

WINDOW

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Application March 13, 1935, Serial No. 10,803

20 Claims. (Cl. 189—65)

This invention relates to windows and more particularly to sliding windows or windows of the double hung type.

It is an important object of the invention to provide a thoroughly weather-proof, double hung window which is of rigid construction, which can be made inexpensively and in which all of the sash engaging frame members are formed of non-corroding non-ferrous metal.

It is a further important object of the invention to provide such windows with a sealing construction incorporated as an integral part of the window which will cause the window to be firmly and completely sealed and which will prevent rattling but which will at the same time provide perfect freedom of movement for the sashes and permit wide tolerances in the dimensions of the parts.

To this end it is a feature of the invention that a sash engaging and guiding construction is provided having a plurality of independently flexible continuous spring surfaces disposed angularly to one another and adapted to engage respectively a face and an edge of the sash. With such an arrangement the edge engaging spring members at opposite sides of a sash bear in opposed relation against the opposite edges of the sash and balance one another. Each is free to yield, however, and each forms a firm sealing contact with the engaged edge of the sash. The face engaging spring members may urge the sash toward a parting strip. Each of these members also forms a firm sealing contact with the engaged portion of the sash so that along each sash stile and along the top rail of the upper sash sealing is effected independently at successive points. At the same time the pressure against the sash is so light and of such yielding nature that all tendency toward binding or frictional resistance to the movement of the sash is substantially avoided.

It is a further feature of the invention that the spring members are so constructed and housed that the edges thereof are covered and guarded to prevent liability of a person's being cut by the edges.

In accordance with a further feature of the invention the sash lifts provided on the bottom rail of the lower sash are provided with cam extensions engageable with wedging members provided on the sill, for reinforcing the bottom rail of the lower sash when the sash is in closed position.

In accordance with a further feature of the invention the sill is provided with an outwardly and downwardly extending lip for interfering with the ingress of rain or snow and the bottom rail of the lower sash is provided with a downwardly extending flange or lip which is drawn into firm engagement with the outer face of the sill lip when the window is closed. The co-acting cam members on the sill and sash serve to draw the sill and sash lips into firm contact with one another.

Windows embodying the invention may be made entirely of non-ferrous or non-corrosive metal or partly of wood covered by non-ferrous metal, or partly of steel covered by non-ferrous metal. It is a feature, however, that any ferrous metal which may be employed is covered and protected by non-corroding metal, and that all parts having rubbing contact are composed of non-ferrous or non-corrosive metal.

Other objects and advantages will hereinafter appear.

In the drawings forming part of this specification:

Fig. 1 is a sectional side elevation, partly broken away, through a wall section of a building having mounted therein a window embodying features of the invention;

Fig. 1a is a fragmentary detail vertical sectional view of the top part of the window with the upper sash in an open position.

Fig. 2 is a fragmentary, horizontal, sectional view through the structure disclosed in Fig. 1, the section being taken with the window in open position so that the sashes overlap;

Fig. 3 is a fragmentary, detail view in front elevation illustrating particularly the interacting cam and wedge members carried by the lower sash and the sill;

Fig. 4 is a view similar to Fig. 1 illustrating another form of window embodying features of the invention;

Fig. 5 is a view similar to Fig. 2 illustrating certain features of the window of Fig. 4;

Figs. 6 and 7 are further views similar to Figs. 1 and 2, respectively which illustrate a further form of window embodying features of the invention, and;

Fig. 8 is a view in elevation showing the rigid buck employed in the window of Figs. 6 and 7.

The window of Fig. 1 is shown as mounted in a wall 1. The building structure may include the usual wooden jamb, header and subsill, and wooden retaining or moulding strips 3 along the top and sides of the window opening. The window frame comprises a metallic sill member 4, metallic uprights or jambs 5 and a metallic head 6. The frame is adapted to be used with either

wooden or metal sashes but it is preferably used with a metal window having an upper sash 7 and a lower sash 8 of the construction illustrated.

The sill member 4 may be an extruded member of aluminum, brass, bronze or other noncorroding metal. The same materials may be used in the other exposed metallic members of the frame and window. The sill member 4 comprises a sill flange 9 which overlies the wooden sill 2 and which is secured to the wooden sill by means of screws 10. The sill member 4 further includes a weather strip housing comprising a side wall 11 and upper and lower walls 12 and 13. The upper wall 12 is provided at its outer edge with a downwardly extending lip or flange 14, and a lip or flange 15 extends upward from the bottom wall 13 for a short distance. A weather strip 16 of spring metal is enclosed in the space bounded by the walls 11, 12 and 13 and the lips 14 and 15. The weather strip comprises a base web 17, a vertical web 18 and a sash engaging web 19 which is exposed to contact with the lower inner edge of the lower sash through the space between the lips 14 and 15.

A lip or flange 20 is extended outward from the lip 15 and then downward to provide an overhanging portion adapted to be seated in a recess at the inner lower portion of the lower sash for interfering with ingress of rain or snow.

The sill member 4 has a portion 21 which extends downward in the plane of the lip 15 and a portion 22 which slopes downward and outward to the outer boundary of the sill base. At the outer extremity of the base portion 22 the sill 4 has portions 23, 24 and 25 which extend downward, outward, and downward, respectively. The portions 23 and 24 form a seat for the lower end of a screen 26 and the portion 25 forms a web for forming a weather tight joint with the wall structure of the building.

The two jambs 5 are of like construction and each comprises a vertical strip 27 of sheet metal having a vertically extending channel 28 formed centrally therein and screw holes formed in its margins. The channel 28 serves to locate a parting strip 29 and the screw holes serve to locate retaining beads 30 and 31. The edges of strip 27 are protected and held by moulding beads 3.

The parting strip 29 is preferably a drawn or bent sheet metal member with a wooden core, or it may be an extruded metal member of hollow construction, formed with outwardly facing shoulders 32. The parting strip is secured to the wood frame by means of screws 33 which are passed through the parting strip and threaded into the wood frame. The inner retaining bead 30 comprises a web 34 which is secured to the frame by screws 35, an inwardly extending web 36, and a reverse lip or flange 37 provided at the inner extremity of the web 36. The retaining bead 30 and the parting strip 29 co-operate to form a guide and housing for one side rail of the lower sash. They further co-operate to house a flexible sealing and guiding member 38 which co-operates with the lower sash.

This member 38 is of novel construction and constitutes a very important feature of the present invention. In its preferred form it comprises a free, resilient web 39 for bearing against the outer surface of the sash, a vertex portion 40 which is received between and imprisoned by the web 36 and the lip 37 of the retaining bead 30, angularly related positioning webs 41 and 42 for engaging respectively the web 36 of the retaining bead 30 and the plate or strip 27, and a free spring web 43 for engaging an edge portion of the lower sash. The end of the web 43 extends beneath the shoulder 32 of the parting strip and plays in the space between the shoulder and the metallic sheet 27, the edge of the web being guarded by the parting strip shoulder. The edge of the web 39 plays in a recess of the sealing member and is guarded by a shoulder bounding the recess.

It will be seen that the web 39 urges the sash into firm contact with the parting strip, thus causing the sash to move in a straight path and in sealed engagement with the parting strip. The web 43 bears against the edge of the sash and forms a second line or area of sealed engagement. The web 39 bears against the inner surface of the sash and forms a third line or area of sealed engagement. The webs 39 and 43 are free to flex independently of one another. The sash is supported between the webs 43 at opposite sides of the frame and since either of these webs is free to yield, the sash may shift from side to side as resistance is encountered. There is no possibility, therefore, of binding resulting from too fine a clearance of the assembled parts. Similarly the webs 39 afford considerable play for the sash so that the retaining strip 30 can be set far enough away from the parting strip to afford easy clearance for the sash. There is no possibility of rattling, however, because the weather strips always bear firmly against the sash and cushion it. The spring members can be separate pieces as well as one piece; and shape and arrangement can be varied.

The outer retaining bead 31 is similar to the inner bead 30. It differs, however, in that it comprises an outer web 44 for engaging an outer face of the wood frame structure. It also comprises angularly related webs 45 and 46 which form a seat for the screen 26 and an inwardly extending web 47 which terminates in a flange or lip 48. A wooden filler strip 49 is desirably set into the retaining bead 31, a sealing and guiding member 50 similar in all respects to the member 38 which has been described is housed between the flange 48, the block 49 and the plate 27. The outer retaining bead 31 is secured to the wood frame by means of screws 51 which pass through the web 47, the wooden strip 49, and the plate 27 into the wood frame. The member 50 co-operates with the upper sash in the same way that the member 38 co-operates with the lower sash.

The head construction is similar to the jamb construction. The head construction comprises a metallic plate 52, a parting strip 53 and an outer retaining bead 54. Between the parting strip 53 and the outer retaining bead 54 there is housed a sealing member 55 preferably similar to the member 38 which has been described.

Counterweights may be employed, but preferably the sashes are counterbalanced by spring drums 55*a* whose movable elements are connected to the sashes through flexible bands 55*b*.

The preferred form of sash structure is illustrated in Figure 1. The upper sash 7 is composed of tubular metallic rails formed with inwardly extending flanges 56 for forming a seat for a pane 57, and metallic angle bars 58 or any other suitable retaining means may be employed at the opposite side of the pane. The meeting rail of the

upper sash carries a sealing member **59** which may be an extruded metallic member. The member **59** extends across the meeting rail **60** at the inner side thereof and includes top and bottom walls **61** and **62**, a downwardly extending lip **63** on the wall **61**, and an upwardly extending lip **64** on the wall **62**. The lips and walls jointly form a housing for a weather strip **65** which is triangular in form and which comprises a free resilient web **66** that extends downward and inward. The web **66** normally bears against the outer face of the lip **64**.

The meeting rail **67** of the lower sash is provided with a sealing member **68** for cooperating with the sealing member **59** of the upper sash. The sealing member **68** comprises upper and lower webs **69** and **70** and a vertical web **71** which serve jointly to partly embrace the rail **67**. The upper web **69** has an outward extension **72** which extends across and rests upon the top of the web **61** when the window is closed. The vertical web **71** has an angular extension **73** formed at the outer side thereof which includes a downwardly extending lip **74**. The lip **74** has a beveled inner face which cooperates with a similarly beveled outer face of the lip **64**. When the lips are forced into contact they coact to draw the meeting rails firmly toward the parting strip. At the same time the lip **74** wedges in between the lip **64** and the spring web **66** of the weather strip **65** so that firm sealing engagement is provided at both the inner and outer sides of the lip **74**. The angular member **73** forms an overhang which is very effective for preventing ingress of rain or snow.

The extensions **68** and **59** travel in the plane of the parting strips but are made of less length than the distance between the parting strips. The parting strips are provided with wedge shaped fillers **74***a* to engage the projections **68** and **59** in the meeting position thereof to seal the spaces between the projections and the parting strips.

The member **59** includes an edge flange which forms a retaining strip **58** for a pane.

The lower rail **75** of the lower sash is provided with a downward extension or flange **76** which lies outside the lip **20** of the sill member **4**. The flange **76** and the overhanging lip **20** serve effectually to prevent ingress of rain between the lower sash and the sill.

The lower sash is provided with metallic sash lifts **77** which are secured to the rail **75** by screws **78**. The sash lifts **77** are provided with cam extensions **78***a* which extend downward and inward. Sill members **79** secured to the sill by the screws **10** are provided with wedge projections **80** which engage between the projections **78***a* and the rail **75** to draw the lower portion of the lower sash inward so as to press the flange **76** firmly against the lip **20**.

It will be seen that a structure is provided in which the joints are all firmly sealed when the window is closed but in which the sashes are floatingly mounted so that all tendency toward frictional obstruction or binding is obviated.

The embodiment illustrated in Figures 4 and 5 is in general the same as that of Figures 1 to 3. The principal difference consists in the fact that the frame members are made of extruded sections so that no reinforcing wood fillers need be employed in the retaining heads or parting strip. The sash structures **7***a* and **8***a* of the window may be identical with the sash structures already described in connection with Figures 1 to 3. The sill member **4***a* is substantially identical with the sill member already described and differs principally in the fact that no shouldered seat for the screen is provided. The head **6***a* comprises an extruded metallic member **81** which is integrally provided with flange members **82** and **83** for housing a weather strip **84** similar to the weather strip **38** of Figures 1 to 3. The metallic member **81** is also provided with a bead or rib **85** for positioning and supporting a parting rail **86**.

Each jamb **5***a* comprises an extruded metallic member **87** which includes integral members **88** and **89** forming a housing for a sealing and guiding member **90** which is similar in all respects to the member **38** of Figures 1 to 3. The metallic member **87** further includes beads or flanges **91** for positioning a parting strip **92** and a bead **93** for positioning a retaining strip **94**. The retaining strip **94** and the metallic member **87** jointly form a housing for a weather strip **95** which is like the weather strip **38** of Figures 1 to 3.

The form of embodiment disclosed in Figures 6 and 7 is to all intents and purposes identical with that of Figures 4 and 5 with the exception that the non-ferrous members of the window frame are reinforced and made more rigid by steel members. The steel members are in every instance covered and protected, however, so as not to be exposed to corrosion. Thus, provision is made of a subsill member **96** which is of steel and to which the sill member **4***b* is secured. Provision is also made of concealed jamb members **97** to which the jambs **5***b* are attached, and of a concealed steel head member **98** to which the head **6***b* is attached. Each of the members **96**, **97** and **98** is in the form of a channeled angle bar which is rigid and strong for its weight.

The rigid buck of Figs. 6 and 7 is illustrated by itself in Fig. 8. The sill and head members **96** and **98** are shown in this figure as rigidly attached to the jamb members **97** by means of welding, although any other suitable form of rigid connection could be employed. The weld joints are indicated by series of small crosses in Fig. 8.

While we have illustrated and described in detail certain preferred forms of our invention, it is to be understood that changes may be made therein and the invention embodied in other structures. We do not, therefore, desire to limit ourselves to the specific constructions illustrated, but intend to cover our invention broadly in whatever form its principle may be utilized.

We claim:

1. In a double-hung window, the combination with a pair of sliding sashes, of frame jambs forming sash guides, and yieldable sash engaging members housed one in each jamb and each including a fixed body portion and free marginal webs or tongues, the tongues of each member being independently yieldable and disposed at an angle to one another to continuously engage, respectively, against an edge and a face of the sash, the edge engaging tongues acting in opposed relation against the opposite edges of the sash.

2. In a double hung window, the combination with a pair of sashes and frame jambs forming sash guides, of a yieldable sash engaging member housed in each jamb including a fixed body portion and free marginal web or tongue portions adapted to flex independently of one another and arranged to engage the sash along separated lines to form successive and independent continuous sealing joints, said members bearing in opposed relation against opposite edges of the sash.

3. In a double hung window, the combination with a pair of sashes and frame jambs forming sash guides, of a yieldable sash engaging member housed in each jamb including a fixed body portion and free marginal webs or tongues, the tongues being disposed substantially at right angles to one another and adapted to continuously engage; respectively, against an edge and a face of the sash, the edge engaging tongues at opposite sides of the sash bearing in opposite directions against the sash and the face engaging tongues at opposite sides of the sash bearing in the same direction against the sash.

4. A structure as set forth in claim 1 wherein each yielding sash engaging member is a single-ply, raw-edged, unitary, resilient, non-ferrous, sheet metal member.

5. In a window, the combination with a frame and a sliding sash having substantial clearance therebetween, of means for sealing the sash and holding it against rattling comprising resilient tongues bearing against the opposite side edges of the sash and resilient tongues bearing against a face of the sash at opposite sides thereof, said resilient tongues being independently yieldable and forming at each side a plurality of independent, continuous, successive, sealed joints.

6. In a window, the combination with a frame and a sliding sash having substantial clearance therebetween, of means for sealing the sash and holding it against rattling comprising resilient tongues bearing against the opposite side edges of the sash and resilient tongues bearing against a face of the sash at opposite sides thereof, said resilient tongues being independently yieldable and forming at each side a plurality of independent, continuous, successive, sealed joints, the frame and sealing member being provided with means for covering and guarding the free edges of the tongues.

7. In a window, the combination with a frame and a sliding sash having substantial clearance therebetween, of means for sealing the sash and holding it against rattling comprising resilient tongues bearing against the opposite side edges of the sash and resilient tongues bearing against a face of the sash at opposite sides thereof, said resilient tongues being independently yieldable and forming at each side a plurality of independent, continuous, successive, sealed joints, the frame being provided with a shoulder to cover and guard the free edge of one of said tongues, and the sealing member, itself, being provided with an overlapping shoulder to guard the free edge of the other tongue.

8. A sash guiding and sealing member adapted for use in widows employing sliding sashes, comprising a body portion adapted to be fixed in place, and angularly related independently yieldable longitudinally flexible, single-ply, raw edged marginal portions adapted to continuously engage respectively a side and face of the sash, said body portion being formed with a shoulder to overlie and guard the edge of one of said marginal portions.

9. In a window, in combination, a frame, and a sash guided for sliding movement in the frame, said frame comprising a sill member having an overhanging lip member comprising successive portions extending outwardly and downwardly, respectively, to define a splash pocket of substantial width and height and disposed directly underneath the sash, said sash having its lower end adapted to bear against the outwardly extending portion of said lip, and having a lip extending downward from its lower end to extend downward past the overhanging lip of the sill member to bear against the downwardly extending portion thereof when the sash is in closed position.

10. In a window, in combination, a frame, a sash guided for sliding movement in the frame, said frame comprising a sill member having an overhanging lip member extending outwardly and downwardly and disposed directly underneath the sash to define a splash pocket of substantial width and height, said sash having a lip provided at its lower end to extend downward past the overhanging lip of the sill member when the sash is in closed position, and co-acting short cam members mounted on the sash and the sill member respectively for holding the sash lip against separation from the sill lip when the sash is in closed position, the sash carried cam member forming a unitary part of a sash lift.

11. In a window, in combination, a frame, a sash guided for sliding movement therein, said frame comprising a sill member having an open-sided housing formed therein, and a continuous, longitudinally flexible sealing member housed in the sill member and exposed to contact with the lower inner edge of the sash through the open side of the housing, the sash engaging web of the sealing member terminating in a single ply edge, and the sill housing having a shoulder to cover and guard said edge.

12. In a window, in combination, a frame, a sash guided for sliding movement therein, said frame comprising a sill member having an open-sided housing formed therein, and a sealing member housed in the sill member and exposed to contact with the lower inner edge of the sash through the open side of the housing, said sealing member being composed of a resilient sheet metal strip folded into polygonal form and having its longitudinal edges free, and of single ply form, and said housing having a shoulder for covering and guarding the edge of the sash engaging web of the sealing member.

13. In a window, in combination, a frame, a sash guided for sliding movement therein, said frame comprising a sill member, and co-acting short cam members mounted on the sash and the sill member, respectively, at an intermediate point between the side rails for reinforcing the sash against bending when the sash is in closed position.

14. In a window, a frame, and a sash slidably mounted therein, said frame comprising a head member and a sealing member housed in the head member, said sealing member including independently yieldable longitudinally flexible, single-ply, resilient tongues arranged to engage and press against the top edge and the outer face of the sash, respectively, as the sash is moved to closed position to form a plurality of continuously sealed joints.

15. In a window, a frame, and a sash slidably mounted therein, flexible metal weather strips housed in the frame, said frame being composed in part of non-corrosive metallic sill, jamb and head members, and including jambs each comprising hollow sheet metal retaining beads having wood reinforcing cores, one of said sheet metal beads having a shoulder for holding the associated weather strip in place, and the other having a shoulder for covering and guarding a free edge of the weather strip.

16. In a window, the combination with a rigid outer supporting wood frame forming a complete

accurately formed rectangular window enclosure and comprising a sub-sill, jambs and a header, of a complete metallic frame built into the wood frame, and a sash slidably mounted in the metallic frame, said metallic frame being composed of sill, jamb and head members all of which are rigid extruded pieces formed of non-corrosive metal.

17. In a window, the combination with a rigid outer supporting frame formed of rigid bar members angular in cross section comprising a sub-sill, jambs and a header, said members being rigidly and accurately united to form a complete rectangular window enclosure, of a complete inner frame composed of non-corrosive metallic rigid extruded pieces built into the outer frame and carried and held in alignment by the outer frame.

18. In a window, the combination with a rigid outer supporting frame formed of rigid bar members angular in cross section comprising a sub-sill, jambs and a header, said members being rigidly and accurately united to form a complete rectangular window enclosure, of a complete inner frame composed of formed non-corrosive metallic sheets or plates built into the outer frame and carried and held in alignment by the outer frame.

19. In a double hung window, the combination with a rigid outer supporting frame formed of rigid members comprising a sub-sill, jambs and a header, said members being rigidly and accurately united to form a complete rectangular window enclosure, of an inner frame built into the outer frame to hold and guide the sashes and to constitute a cover for protecting the outer frame against weather, said inner frame being composed of light gauge, non-corrosive sheet metal in those portions not exposed to wear or strain in use, and of heavier gauge non-corrosive metal in those portions which are subject to wear and abuse in use.

20. In a double hung window, the combination with a rigid outer supporting frame formed of rigid bar members angular in cross section comprising a sub-sill, jambs and a header, said members being rigid and accurately united to form a complete rectangular window enclosure, of a complete inner frame composed of formed non-corrosive metallic sheets or plates built into the outer frame and carried and held in alignment by the outer frame, and sash counterbalancing means mounted upon and carried by the outer frame.

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Disclaimer

2,084,776.—*Edmund Peremi* and *Louis Toth*, Manhasset, N. Y. WINDOW. Patent dated June 22, 1937. Disclaimer filed June 16, 1951, by the assignee, *General Bronze Corporation.*

Hereby enters this disclaimer to claims 11, 12, 16, 17, 18, 19, and 20 of said patent.

[*Official Gazette July 24, 1951.*]