

Oct. 30, 1962

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3,060,526

REMOVABLE SASH DOUBLE HUNG WINDOW

Filed Feb. 17, 1961

2 Sheets-Sheet 1

FIG. 1

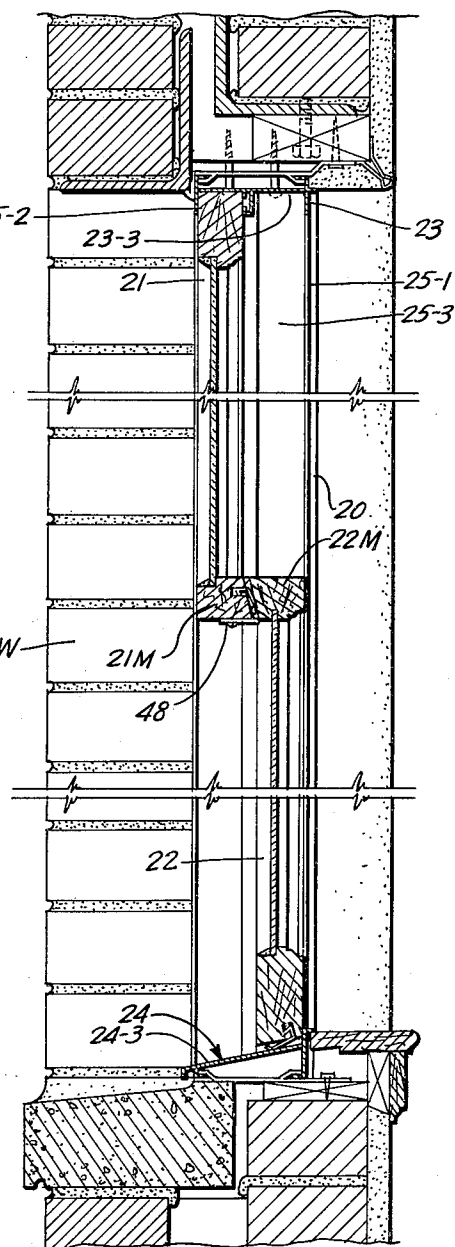
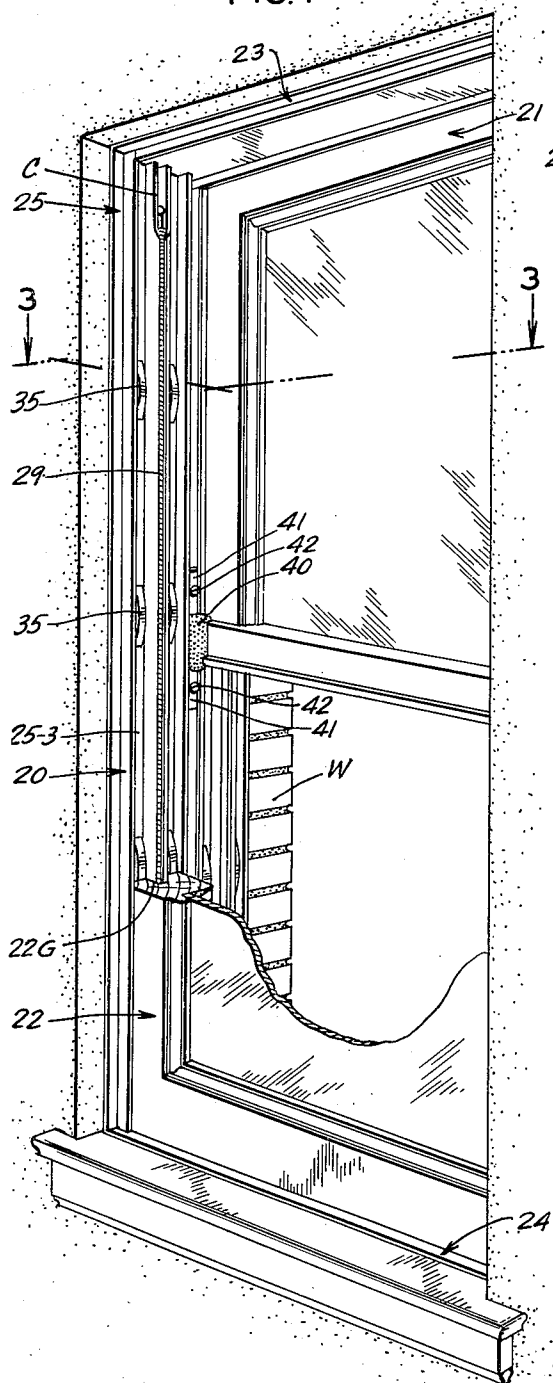


FIG. 2

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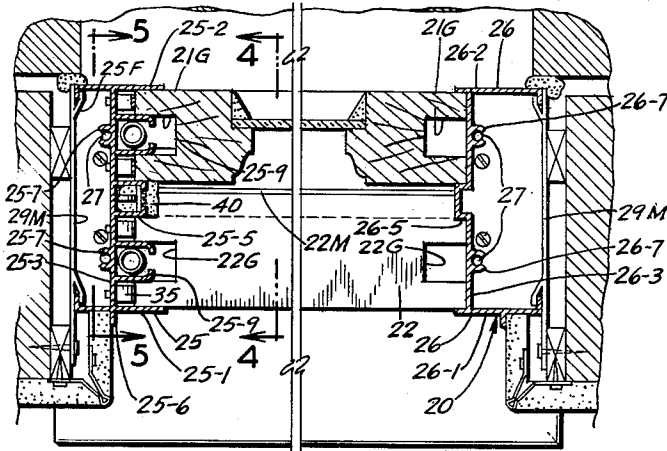


FIG. 3

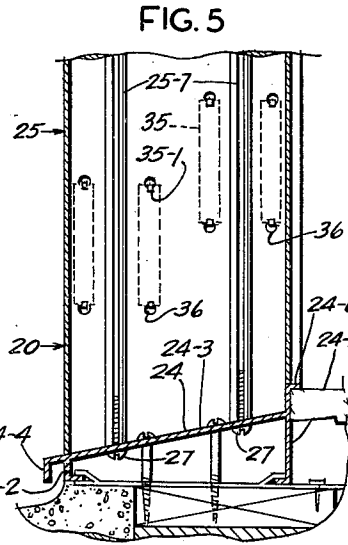


FIG. 5

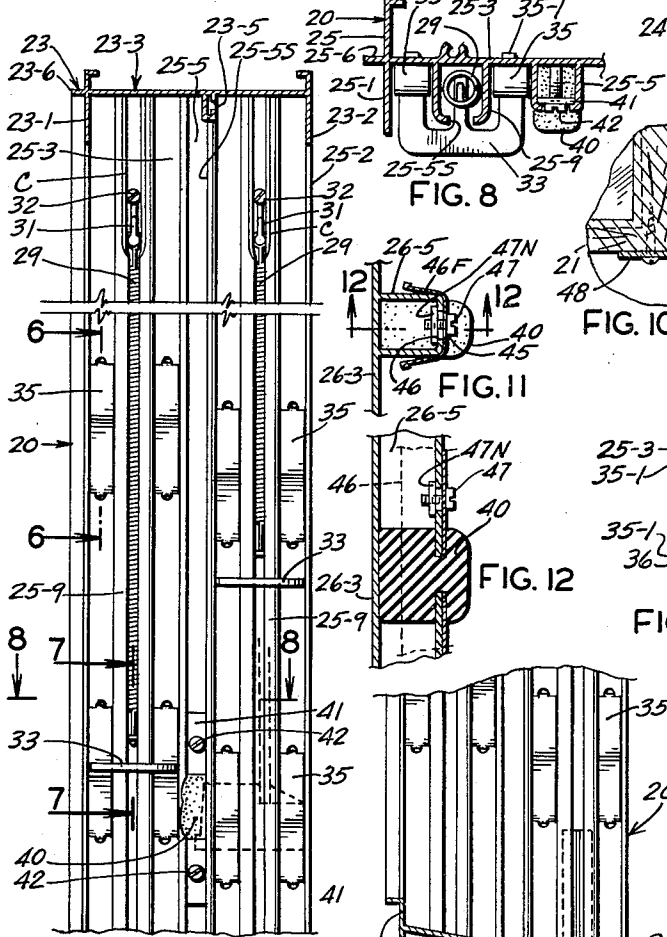


FIG. 4

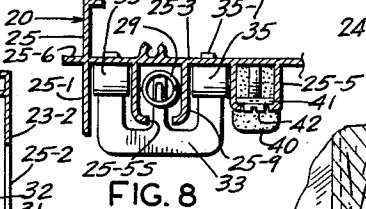


FIG. 8

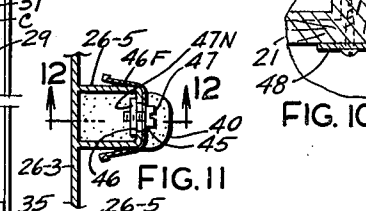


FIG. 11

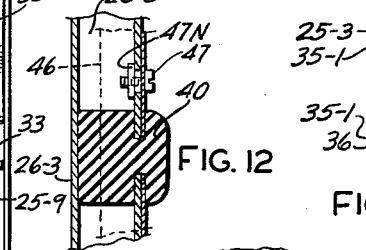


FIG. 12

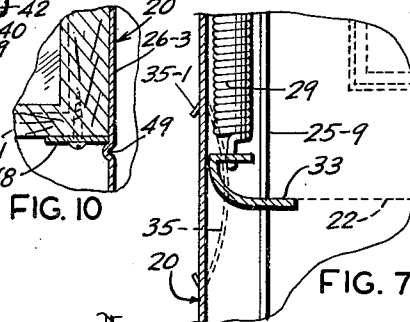


FIG. 7

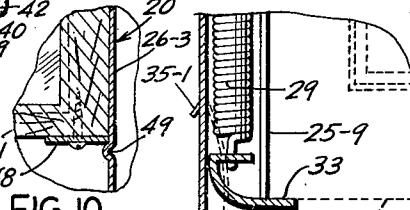


FIG. 10

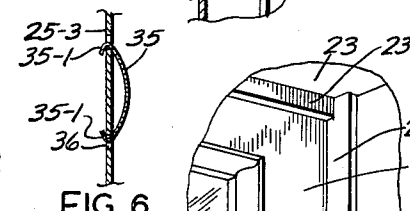


FIG. 6

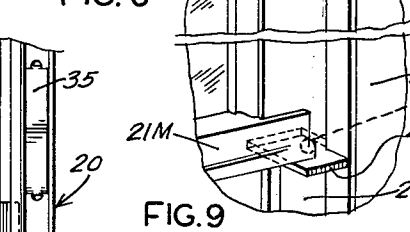


FIG. 9

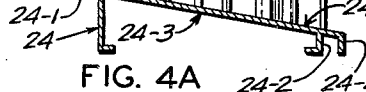


FIG. 4A

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3,060,526

REMOVABLE SASH DOUBLE HUNG WINDOW
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Michael J. Nardulli and Peter F. Nardulli, trustees
Filed Feb. 17, 1961, Ser. No. 90,003
14 Claims. (Cl. 20—52)

This invention relates to removable sash, double hung windows, and particularly to metal frames for such windows.

Removable sash, double hung windows as heretofore constructed have embodied entire metal or wood frames in which yieldable sash guideways have been mounted along one of the jambs so that the sash might be pressed laterally against the yielding guideway to thereby withdraw the sash from the other guideway and thus enable the sash to be removed. Usually the sash have been yieldingly counterbalanced by coil springs disposed vertically in the yielding guideway and in most instances the coil spring has been partially or fully housed.

The primary object of this invention is to provide a new and improved removable sash window structure of the double hung type, and related objects are to accomplish this in such a way as to eliminate separately formed yielding guideways, to incorporate the stops and spring housings for such a structure integrally in one of the jambs and to do this in such a way that the jamb may be formed as an extrusion, to provide a rigid metal window frame having the sash guides and spring housings formed integrally as parts of the frame member, to enable such a frame to receive standard wood sash, and to provide such a frame that is readily adapted for single or group installation.

Other and further objects of the present invention will be apparent from the following description and claims, and are illustrated in the accompanying drawings, which, by way of illustration, show a preferred embodiment of the present invention and the principles thereof, and what is now considered to be the best mode in which to apply these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the invention.

In the drawings:

FIG. 1 is a fragmentary perspective view of the inside of a window installation embodying the features of the invention;

FIG. 2 is a vertical sectional view of the window shown in FIG. 1;

FIG. 3 is a horizontal sectional view taken along the line 3—3 of FIG. 1;

FIG. 4 is a vertical sectional view taken along the line 4—4 of FIG. 3 and showing the upper portion of the left jamb in elevation with the sash removed;

FIG. 4A is a view similar to FIG. 4, and showing the lower portion of the left jamb in elevation;

FIG. 5 is a vertical sectional view taken along the line 5—5 of FIG. 3 and showing the outside face of the left jamb and its association with the sill;

FIG. 6 is a vertical sectional view taken along the lines 6—6 of FIG. 4;

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

FIG. 8 is a vertical longitudinal sectional view taken along the line 8—8 of FIG. 4;

FIG. 9 is a fragmentary perspective view showing the relationship of the meeting rail of the upper sash to the parting stop of the right hand jamb;

FIG. 10 is a fragmentary vertical sectional view of the meeting rail structure shown in FIG. 9; and

FIGS. 11 and 12 are cross sectional views showing another meeting rail seal and the weatherstrip that holds the same in place.

For purposes of disclosure the invention is herein illustrated as embodied in a removable sash double hung window installation having a metal frame 20 in which counterbalanced upper and lower sash 21 and 22 are disposed for ready removal when required. The metal frame 20 is herein shown as a single window unit mounted in a brick veneer wall W, but as will become apparent in the following description, the frame 20 adapted for multiple unit installation and for use in various types of wall construction.

The metal frame 20 is so constructed and arranged that either standard wood sash, or metal sash may be removably mounted in counterbalanced relation therein, and under the present invention this is accomplished in such a way that the metal frame 20 may be mounted directly in the wall without the usual wood frame and the respective elements of metal frame 20 embody integral parting stops and inner and outer stops, and the required vertical spring housings, and have vertical counterbalancing springs and laterally acting springs associated with one jamb so that upon completion of the frame mounting in a wall, the required sash 21 and 22 may immediately be put in place in the frame 20 without the necessity for installation of separately formed sash guides in the frame.

The standard wood sash 21 and 22 of the type for which the frame 20 is particularly intended and adapted have longitudinal grooves 21G and 22G in their side edges, and meeting rail structures 21M and 22M along the lower and upper rails of the respective sash 21 and 22.

The frame 20 has a head 23, a sill 24, a left jamb 25, FIG. 3, and a right jamb 26, all formed as aluminum extrusions, and each having a special cross sectional form which contributes to rigidity and symmetry of appearance and to the economical attainment of sash removability, and economy of production and installation. In a broad sense it may be pointed out that the jambs 25 and 26 have their upper and lower ends abutted against the head and sill respectively with widely distributed areas of contact and are held in this relation by screws 27 as will be described, so that unusual rigidity of the frame is attained.

The several extrusions that form the frame 20, while differing considerably as to specific cross sectional form, have several common structural characteristics. Thus each of these extrusions has parallel inside and outside walls identified respectively by the suffixes "1" and "2" associated with the primary reference numeral that has been applied to the respective frame extrusions, and these inside and outside walls are joined by transverse webs that are similarly identified by the associates suffix "3." At their outer edges the several pairs of walls "1" and "2" have flanges "5" and "6" integrally extended toward each other so that each pair of flanges "5" and "6" lies in a common plane for interlocking cooperation in a known manner with trim strips, mullions and the like or with nailing or mounting clips 29M.

In the head 23 and in the jambs 25 and 26, the webs "3" are disposed in planes perpendicular to the inside and outside walls "1" and "2," FIGS. 3 and 4, while in the sill 24, the web 24-3 is disposed so as to slope downwardly and outwardly as shown in FIGS. 4A and 5. The web 24-3 of the sill is joined to the inside wall 24-1 somewhat below the upper edge thereof so that the upper or inner portion of the inside wall 24-1 constitutes an inner stop for the sill, and the web 24-3 extends over and is joined to the top of the relatively low outside wall 24-2, and the web 24-3 extends for a short distance beyond the wall 24-2 and has a narrow drip flange or lip 24-4 therealong.

The web 26-3 of the right jamb 26 is disposed relatively close to but spaced from the inner edges of the walls 26-1 and 26-2, as shown in FIG. 3, so that the inwardly projecting portions of the walls 26-1 and 26-2 may act as relatively shallow inside and outside stops for the right hand jamb 26; and a parting stop 26-5 of the same depth is formed integrally of web 26-3 midway between the walls 26-1 and 26-2. Preferably the stop 26-5 is made hollow, as by forming a groove opposite the parting stop in the outer face of the web 26-3.

The web 25-3 of the left jamb 25 is disposed at a substantially greater distance from the inner edges of the walls 25-1 and 25-2 so that the inwardly projecting portions of the walls 25-1 and 25-2 form relatively deep inside and outside stops, and on the web 25-3 midway between the walls 25-1 and 25-2 a hollow parting stop 25-5 is formed. The parting stop 25-5 is hollow and is formed by L-shaped walls integral with the web 25-3 and the arms of these L-shaped walls are spaced apart to define a central longitudinal clearance slot 25-5S.

The web 23-3 of the head 23 has an integral hollow parting stop 23-5 on its inner face as shown in FIG. 4 in such a position that it may engage the inside surface of the upper sash 21.

On each of the inside walls 23-1, 24-1, 25-1 and 26-1 of the respective extrusions a guide or plaster flange "6" is provided. On the head 23, the flange 23-6 is in the same plane as the web 23-3; on the left jamb 25, the flange 25-6 is in the same plane as the web 25-3; on the jamb 26, the flange 26-6 is spaced outwardly from the inner edge of the wall 26-1 in the same distance as the corresponding dimension on the jamb 25; while on the sill 24, the flange 24-6 is located at the upper edge of the inside wall 24-1.

The outer faces of the webs 25-3 and 26-3 are each formed with a pair of spaced tube-like structures "7" thereon so that these structures "7" may be engaged by the screws 27 in assembling the several extrusions to form the frame 20. The tube-like structures 25-7 and 26-7 are each formed by a pair of generally L-shaped members, the arms of which are spaced apart so that there is a slot throughout the length of each of these tube-like structures.

In making or fabricating the frame 20, the head 23 and the sill 24 are cut at right angles to their longitudinal axes to lengths such that they may extend across the upper and lower ends of the jambs, and the jambs 25 and 26 are cut at right angles at their upper ends, and at their lower ends are cut at an angle corresponding to the slope of the web 24-3 of the sill. At their lower ends the jambs 25 and 26 have their inside walls 25-1 and 26-1 and their flanges 25-6 and 26-6 cut away so that the angularly cut lower ends of the jambs may seat on the sloping web 24-3 of the sill with the cut-away end edges of the walls 25-1 and 26-1 bearing against the upper edge of the wall 24-1.

At their opposite ends the walls 23-1 and 23-2 of the head 23 are notched up to the level of the web 23-3 to fit against the upper and side edges of the walls 25-1 and 25-2, and the walls 26-1 and 26-2 when the end of the webs 25-3 and 26-3 of the jambs engage the lower surface of web 23-1 of the head 23; and the jambs 25 and 26 are also slotted to cut away part of the parting stop 23-5 to enter such slots as the head 23 is put in place.

The head 23 and the sill 24 are then secured to the jambs 25 and 26 by extending the screws 27 through the head and sill and into the tube-like structures 25-7 and 26-7 at opposite ends thereof.

The extrusion that is used for the left jamb 25 also has a pair of integral spring housings 25-9, each formed by a pair of generally L-shaped members so that each spring housing has a longitudinal slot throughout its length. The spring housings 25-9 are disposed respectively midway between the walls 25-1 and 25-2 and the parting stop

25-5 so that the edges of the sash 21 and 22 may engage the sash grooves with the edge grooves 21-G and 22-G embracing the respective spring housings 25-9.

Near their upper ends, the front portions of the spring housings are cut away as indicated at C in FIGS. 1 and 4 so that expansive coil springs 29 may be inserted into or removed from the housings while the frame remains assembled; and hooks 31 are put in place by screws 32 in such upper portions of the housing 25-9 for supporting the upper ends of the springs 29. At their lower ends the springs 29 have angle brackets 33 secured thereto, as shown in FIGS. 7 and 8, and projecting through the slots of the spring housings so that the lower edges of the sash 21 and 22 may rest thereon. This enables the springs 29 to counterbalance the sash, and yet the sash may be removed as will be described.

On opposite sides of each of the spring housings 25-9 a plurality of bow springs 35 are mounted so as to engage the edges of the sash and urge the same yieldingly toward the opposite jamb 26. The bow springs 35 have their opposite ends bent toward each other to provide mounting ears 35-1, and these ears are extended through openings 36 formed in the web 25-3. Thus, the sash 21 and 22 may be moved up and down in the sash grooves and are at all times urged into firm edge contact with the web 26-3 of the jamb 26. This assures a proper seal of the sash with respect to the jamb 26, and an equally effective seal is provided in a somewhat different manner with respect to the jamb 25 as will be described presently.

When the sash 21 and 22 are in place as above described, the ends of the meeting rail structures 21M and 22M engage the parting stop 26-5, as shown in FIG. 3, but at their other or left hand ends these meeting rail structures are cut away so as to be spaced from the parting stop 25-5 in an amount just slightly greater than the depth of the parting stop 26-5. This enables the sash 21 and 22 to be shifted laterally to the left when the sash are to be inserted or removed. Such left hand displacement of a sash compresses the opposed springs 35, and acts to move the other or right hand edge of the sash out of the sash groove of the jamb 26. The right hand edge of the sash may then be moved inwardly by pivoting the sash about the spring housing 25-9, and then, by shifting the sash to the right, it may be withdrawn from the sash groove of the jamb 25.

The space between the parting stop 26-5 and the cut-away ends of the meeting rail structures 21M and 22M is closed or sealed when the sash are in their closed positions, and this is accomplished by compressible means so that the desired lateral shifting of the sash may be accomplished as above described. Such means are provided by a block 40 of sponge rubber that completely fills the parting stop 26-5 in the area opposite the meeting rails, and a portion of the resilient block 40 extends through the slot of the parting stop to fill the space between the meeting rail structures and the parting stop. In FIGS. 7 and 8, the resilient block 40 is held in place by upper and lower positioning plates 41 located within the parting stop 26-5 and engaging the upper and lower faces of the block 40. The plates 41 have screws 42 threaded therethrough and abutted against the web so that by tightening the screws 42, the plates 41 are clamped against the inside surfaces of the flanges of the parting stop.

In the alternative structure shown in FIGS. 11 and 12 the resilient block 40 is extended through an appropriately located opening 45 in a U-shaped weatherstrip 46 which embraces the parting stop 25-5 from top to bottom. Appropriately spaced screws 47 extend through the weatherstrip 46 and into the parting stop to engage nuts 47N whereby the weatherstrip 46 provides yielding or resilient flanges 46F along opposite sides of the parting stop which engage the surfaces on the sash to provide an exceptionally tight weather seal.

On the lower face of the upper sash 21 a plastic plate 48 is preferably secured in position to engage the web 26-3, and a rounded or semispherical embossure 49 is formed in the web 26-3 opposite the sash groove 21-G and midway between the wall 26-2 and the parting stop, and this embossure 49 is positioned so that when the sash 21 is in its fully raised position, the plate 48 rests on the embossure 49. This prevents downward creep of the sash, and yet, the sash may be moved quite easily when desired.

In the manufacture and merchandising of the window structure of the present invention, the jambs and the head and sill may be produced and shipped to the lumber dealer in cut lengths to provide assembled frames of twelve different widths and twelve different heights, so that the lumber dealer may assemble frames in the sizes required merely by securing the parts together with the screws 27. Moreover, the frames may be assembled with other similar frames to provide multiple window installations as required. As compared with conventional removable double hung window installations, the frames of the conventional installations run more than fifty percent more than the frame of the present window, and the price differential is even greater in multiple installations.

As installed in the wall of the building, the frame of the present invention is of such a character that the frame requires no maintenance, and particularly requires no painting, and furthermore, the frame of this invention is adapted at once to receive the sash which may be conventional wood sash.

The frame of this invention replaces the conventional wood frame that is usually used for removable sash, and thus the most expensive element of the usual wood assembly is replaced by a metal frame which by reason of the characteristics hereinbefore described, may be manufactured and assembled at a cost that is appreciably lower than the cost of wood frames.

In the structure of the present invention the sash cooperate with the one of the jambs in one relationship to attain a proper weather seal, while the sash cooperate with the other jamb in still a different way to attain the desired weather sealing action.

From the foregoing description it will be apparent that the present invention provides an extremely simple window structure wherein the sash may be removably mounted in the frame, and this structure is of such a character that installation of the frame and the sash is simplified and the cost of the completed structure is materially reduced.

Thus, while a preferred embodiment of the invention has been illustrated herein, it is to be understood that changes and variations may be made by those skilled in the art without departing from the spirit and scope of the appending claims.

I claim:

1. An extruded metal jamb for use in producing a rigid metal frame for removably receiving window sash in double hung relation, said jamb comprising parallel inside and outside walls of equal width and connected by a web spaced a substantial distance from the inner edges of said walls, said web having a pair of integral L-shaped walls projecting from the inner face thereof and defining a parting stop spaced midway between said inside and outside walls and having a longitudinal slot in its inner face, two pairs of integral L-shaped walls projecting from the inner face of said web with one pair in each of the respective spaces between the inside walls and said parting stop to define hollow longitudinally slotted spring housings, and two pairs of opposed arcuate ribs formed integrally on the other face of the web to define screw-receiving passages.

2. An extruded metal jamb for use in producing a rigid metal frame for removably receiving window sash in double hung relation, said jamb comprising parallel in-

side and outside walls of equal width and connected by a web spaced a substantial distance from the inner edges of said walls, said web having a pair of integral L-shaped walls projecting from the inner face thereof and defining a parting stop spaced midway between said inside and outside walls and having a longitudinal slot in its inner face, two pairs of integral L-shaped walls projecting from the inner face of said web with one pair in each of the respective spaces between the inside walls and said parting stop to define hollow longitudinally slotted spring housings, and two pairs of opposed arcuate ribs formed integrally on the other face of the web to define screw-receiving passages, said L-shaped walls of said spring housings being cut away near the upper end of the jamb to enable springs to be inserted endwise into the housings after the jamb has been incorporated in a frame.

3. A metal jamb for use in producing a rigid metal frame for removably receiving window sash in double hung relation, said jamb comprising an extrusion having parallel inside and outside walls of equal width and connected by a web spaced a substantial distance from the inner edges of said walls, said web having a pair of integral L-shaped walls projecting from the inner face thereof and defining a hollow parting stop spaced midway between said inside and outside walls and having a longitudinal slot in its inner face, two pairs of integral L-shaped walls projecting from the inner face of said web with one pair located in each of the respective spaces between the inside walls and said parting stop to define hollow longitudinally slotted spring housings, and two pairs of opposed arcuate ribs formed integrally on the other face of the web to define screw-receiving passages, and a block of resilient material secured in said parting stop to completely fill the same near the midpoint thereof and projecting through said slot for engagement by meeting rail structures of window sash.

4. A metal jamb for use in producing a rigid metal frame for removably receiving window sash in double hung relation, said jamb comprising an extrusion having parallel inside and outside walls of equal width and connected by a web spaced a substantial distance from the inner edges of said walls, said web having a pair of integral L-shaped walls projecting from the inner face thereof and defining a hollow parting stop spaced midway between said inside and outside walls and having a longitudinal slot in its inner face, two pairs of integral L-shaped walls projecting from the inner face of said web with one pair located in each of the respective spaces between the inside walls and said parting stop to define hollow longitudinally slotted spring housings, and two pairs of opposed arcuate ribs formed integrally on the other face of the web to define screw-receiving passages, a block of resilient material completely filling said parting stop near the midpoint thereof and having a portion thereof projecting through said slot, and means including screws securing said block in position.

5. An extruded metal jamb for use in producing a rigid metal frame for removably receiving window sash in double hung relation, said jamb comprising parallel inside and outside walls of equal width and connected by a web spaced a substantial distance from the inner edges of said walls, said web having a pair of integral L-shaped walls projecting from the inner face thereof and defining a parting stop spaced midway between said inside and outside walls and having a longitudinal slot in its inner face, two pairs of integral L-shaped walls projecting from the inner face of said web with one pair disposed in each of the respective spaces between the inside walls and said parting stop to define hollow longitudinally slotted spring housings, and two pairs of opposed arcuate ribs formed integrally on the other face of the web to define screw-receiving passages, said web having a plurality of pairs of openings cut therein in each of the spaces on each side of each spring housing, and bow springs having their ends mounted in said openings to dispose said bow

springs for engagement with the side edge of a window sash.

6. A metal jamb for use in producing a rigid metal frame for removably receiving window sash in double hung relation, said jamb comprising an extrusion having parallel inside and outside walls of equal width and connected by a web spaced a substantial distance from the inner edges of said walls, said web having a pair of integral L-shaped walls projecting from the inner face thereof and defining a hollow parting stop spaced midway between said inside and outside walls and having a longitudinal slot in its inner face, two pairs of integral L-shaped walls projecting from the inner face of said web with one pair located in each of the respective spaces between the inside walls and said parting stop to define hollow longitudinally slotted spring housings, and two pairs of opposed arcuate ribs formed integrally on the other face of the web to define screw-receiving passages, a block of resilient material completely filling said parting stop near the midpoint thereof and having a portion thereof projecting through said slot, a pair of locating plates disposed within said parting stop and engaging the upper and lower surfaces of said block, and means including screws securing said locating plates in position.

7. In a window frame for removable double hung sash, a head, a sill, and right and left hand jambs, all formed as metal extrusions and secured together to provide a rigid frame, said jambs and said head and sill each comprising parallel inside and outside face walls spaced apart the same distance and joined by an integral web, the web in said jambs and said head being perpendicular to the face walls and the web of said sill being joined to the inside face wall in downwardly spaced relation to the inside upper edge thereof and being sloped outwardly and downwardly and being joined integrally to the upper edge of the outside face wall, and the webs of said jambs having angular ribs formed on the outer faces thereof to define screw-receiving passages, the opposite ends of the inside and outside face walls of the head being notched and the lower ends of the inside face walls of both jambs being cut away to provide clearance enabling the ends of the webs of the jambs to butt against the webs of the sill and head and to enable the cut-away ends of the face walls of the jambs to butt against the opposed edges of the related face walls of the head and sill, screws extended through the webs of the sill and head and threaded into said passages of the jambs to hold the frame together, the webs of said jambs having integral parting stops formed on their inner faces and the inside and outside face walls being formed to project inwardly beyond said webs of the jambs to define opposed sash receiving channels, the channels in one of said jambs being deeper than the channels of the other jamb, and bow springs mounted in the channels of said one jamb to urge sash toward and into firmly seated relation in the channels of the other jamb.

8. In a window frame for removable double hung sash, a head, a sill, and right and left hand jambs, all formed as metal extrusions and secured together to provide a rigid frame, said jambs and said head and sill each comprising parallel inside and outside face walls spaced apart the same distance and joined by an integral web, the web in said jambs and said head being perpendicular to the face walls and the web of said sill being joined to the inside face wall in downwardly spaced relation to the inside upper edge thereof and being sloped outwardly and downwardly and being joined integrally to the upper edge of the outside face wall, the webs of said jambs having angular ribs formed on the outer faces thereof to define screw-receiving passages, the opposite ends of the inside and outside face walls of the head being notched and the lower ends of the inside face walls being cut away to provide clearance enabling the ends of the web of the jambs to butt against the webs of the sill and head and threaded into said passages of the jambs to hold the frame

together, said web of one of said jambs having a pair of integral L-shaped walls projecting from the inner face thereof and defining a hollow parting stop spaced midway between said inside and outside walls and having a longitudinal slot in its inner face, a block of resilient material secured in said parting stop to completely fill the same near the midpoint thereof and projecting through said slot for engagement by meeting rail structures of window sash.

9. In a window frame for removable double hung sash, a head, a sill, and right and left hand jambs, all formed as metal extrusions and secured together to provide a rigid frame, said jambs and said head and sill each comprising parallel inside and outside face walls spaced apart the same distance and joined by an integral web, the web in said jambs and said head being perpendicular to the face walls and the web of said sill being joined to the inside face wall in downwardly spaced relation to the inside upper edge thereof and being sloped outwardly and downwardly and being joined integrally to the upper edge of the outside face wall, the webs of said jambs having angular ribs formed on the outer faces thereof to define screw-receiving passages, the opposite ends of the inside and outside face walls of the head being notched and the lower ends of the inside face walls being cut away to provide clearance enabling the ends of the webs of the jambs to butt against the webs of the sill and head, screws extended through the webs of the sill and head and threaded into said passages of the jambs to hold the frame together, the webs of both of said jambs having formed with integral parting stops and the parting stop of one of said jambs comprising a pair of integral L-shaped walls projecting from the inner face of the web and defining a parting stop having a longitudinal slot in its inner face, said web of said one jamb having a plurality of pairs of openings cut therein on each side of its parting stop, bow springs having their ends mounted in said openings to dispose said bow springs for engagement with the side edge of a window sash, and resilient means filling said parting stop and projecting through the slot at the midpoint of the slotted parting stop to engage the ends of the meeting rail structures of such sash.

10. In a window frame for removable double hung sash, a head, a sill, and right and left hand jams, all formed as metal extrusions and secured together to provide a rigid frame, said jambs and said head and sill each comprising parallel inside and outside face walls spaced apart the same distance and joined by an integral web, the web in said jambs and said head being perpendicular to the face walls and the web of said sill being joined to the inside face wall in downwardly spaced relation to the inside upper edge thereof and being sloped outwardly and downwardly and being joined integrally to the upper edge of the outside face wall, and the webs of said jambs having angular ribs formed on the outer faces thereof to define screw-receiving passages, the opposite ends of the inside and outside face walls of the head being cut away and the lower ends of the inside face walls of both jambs being cut away to provide clearance enabling the ends of the webs of the jambs to abut against the webs of the sill and head and to enable the cut-away ends of the face walls of the jambs and head to butt against the opposed edges of the adjacent related face walls to provide rigidity in the frame, screws extended through the webs of the sill and head and threaded into said passages of the jambs to hold the frame together, the webs of said jambs having integral parting stops formed on their inner faces and the inside and outside face walls being formed to project inwardly beyond said webs of the jambs to define opposed sash receiving channels, the channels in one of said jambs being deeper than the channels of the other jamb, bow springs mounted in the channels of said one jamb to urge sash toward and into firmly seated relation in the channels of the other jamb, and a resilient block projecting from and

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mounted on the parting stop of said one jamb to engage the meeting rail structures of sash mounted in such channels.

11. In a window frame for removable double hung sash, a head, a sill, and right and left hand jambs, all formed as metal extrusions and secured together to provide a rigid frame, said jambs and said head and sill each comprising parallel inside and outside face walls spaced apart the same distance and joined by an integral web, the web in said jambs and said head being perpendicular to the face walls and the web of said sill being joined to the inside face wall in downwardly spaced relation to the inside upper edge thereof and being sloped outwardly and downwardly and being joined integrally to the upper edge of the outside face wall, the webs of said jambs having angular ribs formed on the outer faces thereof to define screw-receiving passages, the opposite ends of the inside and outside walls of the head being cut away and the lower ends of the inside face walls being cut away to provide clearance enabling the ends of the web of the jambs to butt against the webs of the sill and head, screws extended through the webs of the sill and head and threaded into said passages of the jambs to hold the frame together, said web of one of said jambs having a pair of integral L-shaped walls projecting from the inner face thereof and defining a hollow parting stop spaced midway between said inside and outside walls and having a longitudinal slot in its inner face, a U-shaped resilient metal weatherstrip embracing said hollow parting stop to close said slot and provide sash engaging resilient flanges along opposite sides of the hollow parting stop, and a block of resilient material secured to said weatherstrip near the midpoint thereof and projecting in position for engagement by meeting rail structures of window sash.

12. In a window frame for removable double hung sash, a head, a sill, and right and left hand jambs, all formed as metal extrusions and secured together to provide a rigid frame, said jambs and said head and sill each comprising parallel inside and outside face walls spaced apart the same distance and joined by an integral web, the web in said jambs and said head being perpendicular to the face walls and the web of said sill being joined to the inside face wall in downwardly spaced relation to the inside upper edge thereof and being sloped downwardly and outwardly and being joined integrally to the upper edge of the outside face wall, the webs of said jambs having angular ribs formed on the outer faces thereof to define screw-receiving passages, the opposite ends of the inside and outside face walls of the head being cut away and the lower ends of the inside face walls being cut away to provide clearance enabling the ends of the webs of the jambs to butt against the webs of the sill and head, screws extended through the webs of the sill and head and threaded into said passages of the jambs to hold the frame together, the webs of both of said jambs having formed with integral parting stops and the parting stop of one of said jambs comprising a pair of integral L-shaped walls projecting from the inner face of the web and defining a parting stop having a longitudinal slot in its inner face, said web of said one jamb having a plurality of pairs of openings cut therein on each side of its parting stop, bow springs having their ends mounted in said openings to dispose said bow springs for engagement with the side edge of a window sash, a resilient U-shaped weatherstrip

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embracing said slotted parting stop to close the slot throughout its length, and resilient means secured to said weatherstrip at substantially the midpoint thereof to engage the ends of the meeting rail structures of such sash.

13. In a window frame for removable double hung sash, a head, a sill, and right and left hand jambs, all formed as metal extrusions and secured together to provide a rigid frame, said jambs each comprising parallel inside and outside face walls joined by an integral web, said web in a first one of said jambs being formed with a longitudinal rib midway between the face walls to provide a parting stop and being spaced from the inner edges of the face walls so that said projecting inner edges of the face walls cooperate with said web and said web and said parting stop to provide parallel and relatively shallow sash runways, the web of the other jamb being spaced a greater distance from the inner edges of such face walls and being formed with a pair of angular integral flanges providing a hollow centrally slotted parting stop cooperating with the face walls to provide a pair of relatively deep sash runways, said web of said other jamb also having a pair of integral angular flanges in each of said deep runways defining centrally slotted spring housings in centered locations within each of the deep runways, coil springs disposed in the respective spring housings with their upper ends in an anchored relation with said housings, means at the lower ends of the springs projecting through the slots of said housings for engaging the lower edges of sash mounted in the frame, and plurality of bow springs mounted in fixed positions in each of said deep runways beside the spring housings for engaging the edges of sash to urge the same toward said shallow runways, and a compressible member secured within and completely filling a part of said hollow parting stop and projecting through said slot to yieldingly engage the ends of the meeting rail structures of a pair of sash.

14. In a window frame for removable double hung sash, a head, a sill, and right and left hand jambs, all formed as metal extrusions and secured together to provide a rigid frame, said jambs each comprising parallel inside and outside face walls joined by an integral web, said web in a first one of said jambs being formed with a longitudinal rib midway between the face walls to provide a parting stop and being spaced from the inner edges of the face walls so that said projecting inner edges of the face walls cooperate with said web and said parting stop to provide parallel and relatively shallow sash runways, the web of the other jamb being spaced a greater distance from the inner edges of such inside and outside walls and being formed with a pair of angular integral flanges providing a hollow centrally slotted parting stop cooperating with the face walls to provide a pair of relatively deep sash runways, said web of said other jamb also having a pair of integral angular flanges in each of said deep runways defining centrally slotted spring housings in centered locations within each of the deep runways, plurality of bow springs mounted in fixed positions in each of said deep runways beside the spring housings for engaging the edge of sash to urge the same toward said shallow runways, and a compressible member secured within and completely filling a part of said hollow parting stop and projecting through said slot to yieldingly engage the ends of the meeting rail structures of a pair of sash.

No references cited.