March 16, 1965

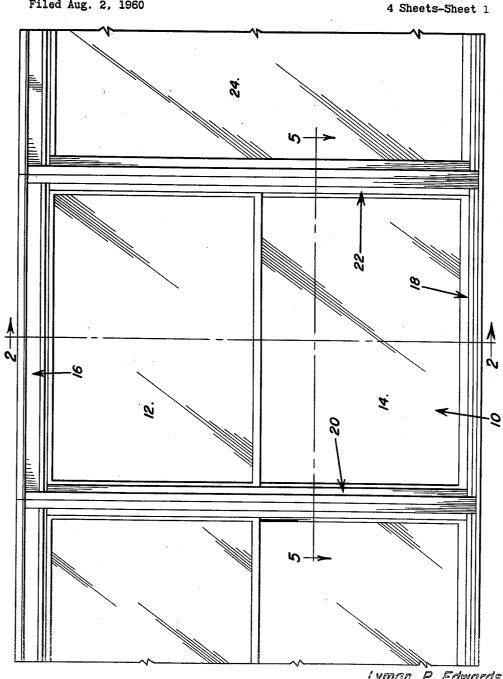
L. P. EDWARDS

3,173,179

Filed Aug. 2, 1960

Fig. I

METAL WINDOW CONSTRUCTION



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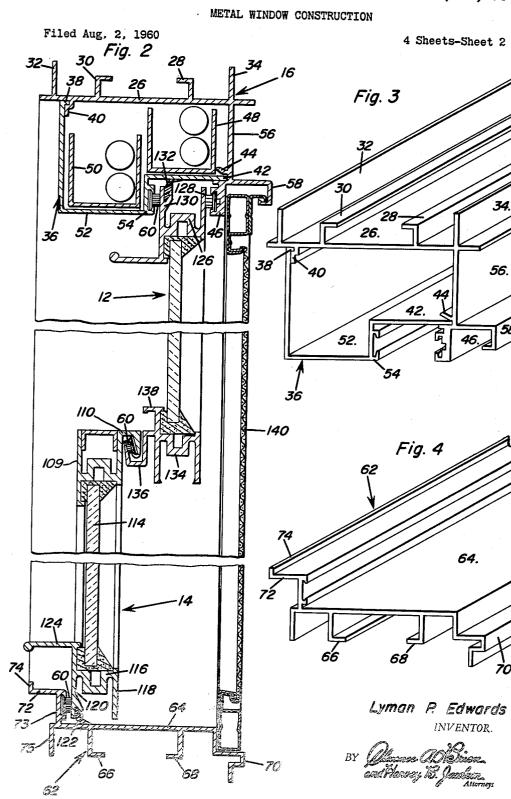
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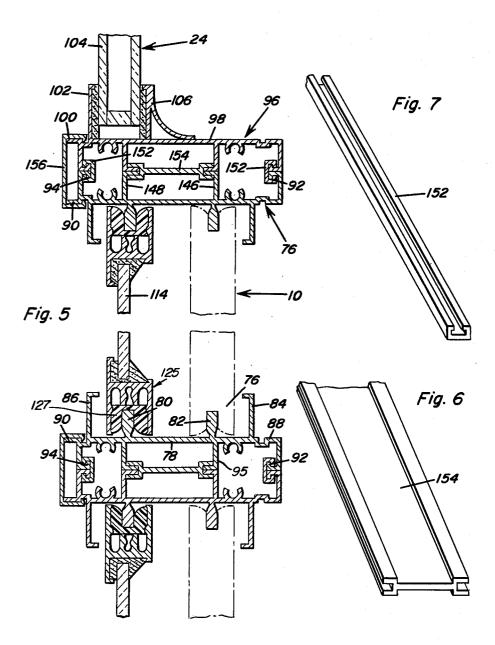
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Filed Aug. 2, 1960

METAL WINDOW CONSTRUCTION

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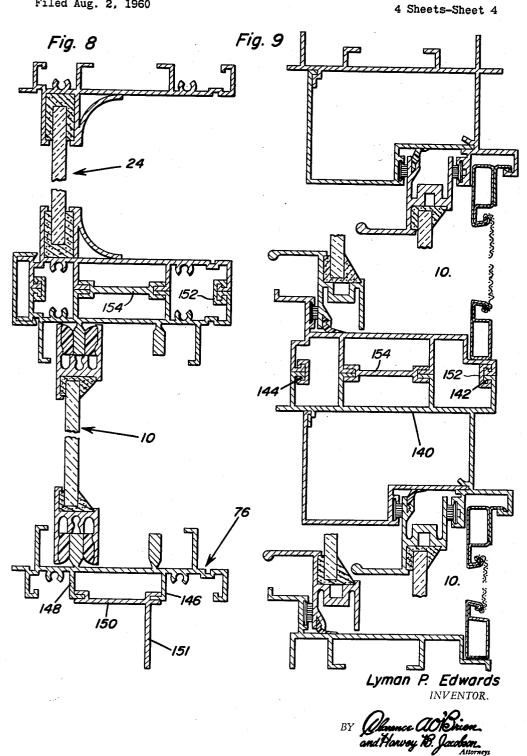
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Filed Aug. 2, 1960

METAL WINDOW CONSTRUCTION



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3,173,179 METAL WINDOW CONSTRUCTION Lyman P. Edwards, 3210 S. Winston, Tulsa, Okla. Filed Aug. 2, 1960, Ser. No. 47,110 4 Claims. (Cl. 20-52)

This invention relates to metal window construction including the combination of a plurality of interconnected window frame assemblies. It is therefore a primary object of this invention to provide metal window frame 10 assemblies that may be interconnected in series both vertically and horizontally.

Another object of this invention is to provide a hollow window frame construction creating dead air spaces thereabout providing insulation against heat transfer, filtration 15and condensation.

An additional object of this invention is to provide a window frame construction including inner wall framing means which will conceal shrinkage cracks that will occur between the window frame and the inner wall abut- 20 ting thereagainst.

A still further object of this invention is to provide a window frame which includes an inner projecting apron on the sill portion thereof which serves the purposes of draining condensation back into the sill and forms the 25 recess for the inner wall framing at the sill portions.

Another object of this invention is to provide a sash frame assembly which cooperates with the head and sill portions of the window frame to provide weather strip seals therebetween and further includes bumper means between the contacting portions of the sash frame and the head or sill portions of the window frame.

A still further object of this invention is to provide interlocking meeting rails on the sash frame for double hung windows installed in the window frame made in ac- 35 cordance with this invention, said interlocking rails being weather stripped without the use of cam locks for sealing purposes. The locking rails also feature a built-in lock keeper.

storm window hanger in the window frame made in accordance with this invention.

In accordance with the foregoing objects, the window frame made of aluminum in accordance with this invention may be interconnected in series horizontally or ver-45tically by means of mullions requiring no bolts or screws for interconnecting the window frames, said interconnecting mullions being concealed within the frame assemblies and capable of sustaining the window frames in assembled condition for delivery to the place of installation. In addition a center mullion is provided to supplement the inner and outer mullions provided for interconnecting adjacent abutting frame members of interconnected window frames in order to provide additional strength as needed. The window frame members whether they be 55 head, sill or jamb portions are all of channel shape configuration in cross-section and include integrally connected therewith outer portions for mounting or guiding the screen and integrally connected inner portions for providing the framing for the inner wall abutting against the 60 window frame. Abutting frame members are accordingly interconnected by means of mullions slidably assembled for interlocking abutting outer and inner portions of the frame members. The centrally disposed supplemental mullion interconnects the channel flanges of 65 the abutting frame members.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accom- 70 panying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

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FIGURE 1 is a front elevational view of a double hung window assembly interconnected horizontally on the right side with a fixed sash window while on the left side interconnected with another double hung type sash window;

FIGURE 2 is a vertical section view taken through a plane indicated by section line 2-2 in FIGURE 1;

FIGURE 3 is a perspective end view of the head portion assembly of a window frame made in accordance with this invention;

FIGURE 4 is a perspective end view of a sill portion of the window frame made in accordance with this invention;

FIGURE 5 is a broken horizontal section view taken through a plane indicated by section line 5-5 in FIG-**URE 1;**

FIGURE 6 is a perspective view of the centrally disposed interlocking mullion;

FIGURE 7 is a perspective view of the inner or outer interlocking mullion;

FIGURE 8 is a broken horizontal section view through two interconnected window assemblies one being of the double hung type the other being of the fixed sash type;

FIGURE 9 is a vertical broken section view through two vertically interconnected window assemblies of the double hung type.

Referring to the drawings in detail, FIGURES 1, 2 and 5 illustrate a double hung type window assembly interconnected in a horizontal direction with a fixed sash type window on one side and another double hung type window assembly on its other side. As seen in FIGURE 1, the completely illustrated double hung type window assembly is generally indicated by reference numeral 10. The window assembly 10 includes an upper sash assembly

12, a lower sash assembly 14, said sash assemblies being slidably guided within a window opening formed by sash framing surfaces on a head portion 16, a sill portion 13 and two jamb portions 20 and 22. To the right of the window assembly 10 as viewed in FIGURE 1, a An additional object is to provide a built-in screen and 40 fixed sash type assembly 24 is shown while on the left side an identical double hung type assembly is shown.

Referring to FIGURES 2 and 3, the head portion 16 of the window frame includes an upper member 26 against which the inner and outer wall constructions of the building installation may abut. The upper member 26 includes a pair of interlocking channel flanges 28 and 30 which are provided for the purposes of rigidity and for interlocking the member with other members. Also provided on the upper member 26 is an inner wall framing flange 32 and an outer wall framing flange 34 which respectively define abutting edges of the inner wall and outer wall of the building within which the window frame is installed. The upper member 26 is interconnected with a lower member 36 in order to form the head portion assembly 16. The lower member 36 includes an interlocking flange 38 which interlocks with a cooperating flange 40 on the bottom side of member 26. Also, portion 42 of the bottom member 36 is received within a cup formed by guide member 44 and an upper surface of a depending upper sash guide 46. A counterbalancing assembly 48 is provided for the upper sash and is mounted on the portion 42 of lower member 36. A similar counterbalancing assembly 50 is provided for the lower sash member and is seated on portions 52 of member 36. A second upper sash guide 54 forms the interconnecting portion between the portions 42 and 52 of the member 36. Also integrally connected with the upper member 26 extending perpendicular to vertically disposed front member 56 is a screen and storm window hanger 58. Formed within the upper sash guides 46 and 54 are longitudinally disposed pocket grooves within which weather stripping 60 is provided as seen in FIGURE 2.

As seen in FIGURES 2 and 4, the window frame is provided with a sill portion assembly generally indicated by the reference numeral 62. The sill portion 62 includes a top, flat surfaced portion 64 having lower depending channel flanges 66 and 68. Integrally connected with the member 64 and extending outwardly therefrom is a bottom screen supporting member 70. Integrally connected with the member 64 at its inner end is a recess forming apron 72 which forms the framing at the sill portion for the inner wall construction, said apron 72 also having an upstanding flange 74 for confining condensation and causing it to drain back onto the sill member 64. Disposed on the outward side of the apron member 72 is a groove type pocket within which weather stripping 60 is also disposed forming a guide for the lower sash. The downwardly projecting inner wall framing flange 75 also forms a recess 73 below the apron 72 as shown in FIGURE 2 to receive and hold abutting portions of the wall so as to conceal shrinkage cracks between the sill 62 and the inner wall in which it is installed as hereinbefore noted.

Referring to FIGURE 5, each of the jamb frame assemblies generally indicated by the reference numeral 76 include a sash framing portion 78 which has integrally connected thereto a pair of sash guides 80 and 82 dis-25posed between an outer framing flange 84 and an inner wall framing flange 86 integrally connected to the member 78. Also integrally connected with the member 78 and disposed on the outside portion of flange 84 is a screen and storm window guide portion 83 while on the 30 inner side of the framing flange 86 is a wall edge defining portion 90. The inner and outer portions of the jamb assembly 76 have integrally connected therewith locking flange portions 92 and 94 in addition to interlocking channel flanges 95 intermediate the inner and outer 35 portions.

It will be observed in FIGURE 5, that the jamb assembly abutting against and assembled to the jamb assembly 76 on one lateral side is identical in construction inasmuch as the adjacent window assembly is of the same 40 double hung type. However, the jamb assembly on the other lateral side generally indicated by reference numeral 96 associated with the fixed sash type window 24 differs slightly from jamb assembly 76. The jamb assembly 96 accordingly includes a member 98 having no sash framing flanges or sash guides but includes an inner wall edge defining portion 100 and an inner mounting flange 102 for the window pane 104. A cove-shaped glazing bead member 106 is provided on the member 98 and is adjustable in and out to accommodate any type of window pane 50 construction and bonding material.

Referring now to FIGURE 2, the lower sash assembly generally indicated by reference numeral 14 is shown. The lower sash includes an upper interlocking rail 110 integrally formed on the upper horizontal sash channel 55 member 109 within which hidden weather stripping 60 is mounted for engagement with a cooperating interlocking rail formed on the confronting lower channel member of the upper sash 12. The rail 110 has bonded thereto in the usual manner the window pane 114 which pane 60 is also bonded to a lower sash channel member 116. The lower sash member 116 includes a pair of spaced flanges 118 and 120 with the inner flange 120 carrying a flexible bumper member 122. As seen in FIGURE 2, the inner flange 120 is in sealing contact with the weather 65 stripping 60 provided on the apron portion 72 of the sill assembly 62. A lifting member 124 is also integrally connected with the lower sash member 116 for purposes of raising the window. Vertical sash channel members 125 interconnect the horizontal channel members 109 70 and 116 and mount therewithin bearing guide elements 127 as shown in FIGURE 5, slidably receiving the guide projections 80 or 82 on the jamb frame assemblies 76.

The upper sash 12 includes an upper sash frame 126 bled in interlocking position with the interlocking flanges including an outer flange 128 in contact with the weather 75 and are concealed within the interconnected jambs 76

stripping on the head frame guide 46 within a recessed portion of the head portion 16 of the window frame. Also, an inner flange 130 is provided on the upper sash member 126 for contact with the weather stripping 60 on head frame guide 54. The inner flange 130 also mounts an upper bumper member 132 similar to the lower bumper member 122. The upper sash 12 also includes a bottom rail 134 which has integrally connected therewith an interlocking portion 136 for contact engagement with the weather stripping on the interlocking portion of the 10 lower sash rail 110 between the confronting sides of the rails 119 and 134 to form a flat locking surface therebetween. Lower sash rail 134 also has a built-in lock keeper 138 adapted to receive the lock element (not shown) that may be mounted on rail 110 if desired, such 15 lock elements being conventional and well known to those skilled in the art, whereby the sashes 14 and 12 may be locked in closed position as illustrated in FIG-URE 2 without disturbing the weather stripping seal between the interlocking rails thereof. As will also be ap-20 parent from FIGURE 2, a screen 149 is provided and hangs from the screen hanger 58 and rests at the bottom on screen support portion 70.

It will be observed from the foregoing description, that all of the window frames may be formed from an integral head portion frame 36, the sill frame 62 and by jamb frame members 76 or 96 as respectively illustrated in FIGURES 3, 4 and 5. In FIGURE 2 the head frame member 36 is interconnected with the top member 26 to which the screen hanger is connected, said top member 26, however, being provided for the purpose of mounting the frame assembly directly within the building wall construction. However, if the frame assembly is to be vertically interconnected with another window frame assembly, the top member 26 will be replaced by a top member generally indicated by reference numeral 140 as seen in FIGURE 9. This member 140 is identical to the previously described member 26 as seen in FIGURES 2 and 3 except that the outer wall framing flange 34 is replaced by an interlocking flange 142 for connecting the head frame assembly to a sill frame assembly of the window frame connected vertically above the lower frame. Also, the inner wall frame has an interlocking flange 144 thereon, locking flanges 142 and 144 serving purposes similar to the flanges 92 and 94 by means of which the side jamb members are 45 interlocked in assembled relation.

Referring now to the bottom of FIGURE 8, it will be observed that one of the side jamb assemblies 76 is interconnected by means of its channel flanges 146 and 148 with an interlocking member 150 provided with a flange 151 which is arranged to space the inner wall of a frame type construction within which the window frame may be installed and may be rearranged as needed for brick and veneer construction or replaced by masonry anchors in masonry construction. It will therefore be observed that the various head frame, sill frame, and jamb frame members may interchangeably cooperate with all types of wall constructions by applying member 150 to the inner channel flanges thereof or said frame members may be used for interconnecting either horizontally or vertically the different types of window assemblies by means of the locking flanges 92, 94, 142 and 144.

In order to interlock the locking flanges of abutting frame members between interconnected window frame assemblies, interlocking means are provided. Referring for example to FIGURES 5, 6 and 7, a jamb frame 96 is shown in abutting relation to a different frame 76 so as to horizontally interconnect the double hung sash type of window assembly 10 with the fixed sash type window assembly 24. Accordingly, the interlocking locking flanges 92 and 94 on the jamb assembly 76 are interlocked with corresponding interlocking flanges on the jamb 96 by means of locking mullions 152 which are slidably assembled in interlocking position with the interlocking flanges and are concealed within the interconnected jambs 76

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and 96. The mullion 152 is more clearly illustrated in FIGURE 7. Also, in order to supply additional strength to the interconnection between frame members such as 76 and 96 a centrally disposed mullion 154 as more clearly seen in FIGURE 6, is provided. As shown in FIGURE 5, the centrally disposed mullion 154 interlocks the channel flanges 146 and 148 on jamb 76 with corresponding channel flanges on the jamb 96. Also, when such frame members as 76 and 96 are interconnected, the inner wall otherwise abutting against the frame member is eliminated 10 wherefore the enclosing member 156 is provided to cover the projecting wall framing portions 90 and 100.

Accordingly, as seen in FIGURE 8 a completely illustrated double hung type window 10 is shown connected with a fixed sash type window 24 while the opposite ends 15of the interconnected windows 10 and 24 are arranged for installation within the building wall construction. In FIGURE 9 two double hung type window assemblies 10 are shown interconnected in a vertical direction with the head frame portion of the upper window 10 being ar- 20 portion interconnecting said interior and exterior framing ranged for installation within the building wall construction while the sill portion of the lower window 10 being arranged for installation within the building wall construction. As previously explained, the abutting head and sill portions between the two double hung windows are ar- 25 ranged for interconnection by use of frame members modified so as to present the locking flanges for connection by the mullions 152.

From the foregoing description therefore, it will be apparent that the head and sill portions of window frames 30 may be interconnected for vertical stacking of window frames without alteration or modification of the sill or head frame members and utilizing the same interlocking parts as are used to interconnect the different types of jamb frame members which jamb frame members may 35also be readily interconnected for horizontal stacking of window frames. It will also be appreciated that the same window frame members may be arranged for direct installation within the inner and outer wall construction of the building. It will also be appreciated that the inter- 40 connecting construction provides a dead air space type of hollow construction surrounding the window frame having obvious advantages. It will also be recognized that as a result of the described construction a built-in screen and storm window mounting is provided and that a completely 45 sealed arrangement is realized even with the use of double hung windows. It will also be recognized that the window frames may be interconnected and so assembled prior to installation by means of interlocking mullions imparting the requisite rigidity to the interconnected assemblies and 50 also providing a flush and neat appearance to the interconnected window frame with said interconnected mullions being hidden within the interconnected frame members.

The foregoing is considered as illustrative only of the 55 principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents 60 may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a window sash and frame combination, a frame including interconnected head and sill portions having flat 65 engaging surfaces, a sash assembly slidably mounted for vertical movement within said frame between said head and sill portions and including a horizontal window-pane mounting member having inner and outer spaced flanges of equal length, bumper means mounted on the inner 70 flange and spaced inwardly from the outer flange for cush-

ioned engagement with one of said flat engaging surfaces on the head and sill portions, apron means integrally connected to said sill portion for drainage of condensate therefrom, and weatherstrip means mounted on said apron means spaced above the flat engaging surface to avoid accumulation of said condensate and for contact with the inner flange adjacent to the bumper means.

2. The combination of claim 1 wherein said apron means includes means for confining condensation and directing the same onto the sill portion and an interior framing portion connected to the apron means and the sill portion for hiding shrinkage cracks.

3. In combination with a building wall having an opening, at least two window framing assemblies mounted within said opening, said framing assemblies having abutting frame members dividing said opening, each of said frame members including an interior framing portion exposed on one side of said wall, an exterior framing portion exposed on the other side of said wall and a web portions, the framing portions on the abutting frame members mating to form coplanar framing surfaces and being provided with abutting lock elements projecting inwardly from the framing surfaces for concealment between the web portions, locking mullions slidably interlocking said abutting lock elements to hold the abutting frame members rigidly assembled, spaced flanges secured to the web portions of said frame members intermediate the framing portions, the flanges on the respective web portions being disposed in aligned abutting relation, and a reinforcing mullion interlocking said abutting flanges between the web portions of the abutting frame members.

4. The combination of claim 3, wherein said web portions are provided with spaced sash guides projecting into the opening framed by the framing assemblies.

References Cited by the Examiner UNITED STATES PATENTS

1,787,386	12/30	Marty 189-78
2,116,754	5/38	Edwards et al 189-72 XR
2,257,123	9/41	Peremi et al 189-72
2,303,844	12/42	Knudsen 18975
2,304,062	12/42	Peremi et al 189—72
2,418,014	3/47	Daab 189—72
2,473,298	6/49	Peremi et al 189-75
2,608,277	8/52	Storms 18972
2,643,744	6/53	Pickering et al 189-76
2,663,917	12/53	Peterson 20-52.8
2,699,204	1/55	Davis 20—52.8
2,703,158	3/55	Hauck 160—91 XR
2,711,233	6/55	Pierce 189—75
2,764,235	9/56	Renton 189-72 XR
2,775,325	12/56	Knebel 189-76
2,795,683	6/57	Teiger 20-62 XR
2,798,578	7/57	Toth 189-72 XR
2,843,233	7/58	Walsh 189-72 XR
2,862,262	12/58	Shea 20-52.8
2,884,056	4/59	Kubatzky 160362
2,889,587	6/59	Peterson 20-52.8
2,895,182	7/59	Evans 20-11
2,904,855	9/59	Hagerty 20-52
2,914,145	11/59	Benson 189—75
2,918,706	12/59	Rust et al 20-11
2,918,708	12/59	Sharp et al 20-52.8
2,980,947	4/61	Rust et al 20-52.8
2,985,263	5/61	Maciunas 189—75 XR
3,018,525	1/62	Diesenroth 20_52

HARRISON R. MOSELEY, Primary Examiner. GEORGE A. NINAS, Jr., JOSEPH D. BEIN, Examiners.