Feb. 16, 1932. F. J. PLYM 1,845,984

WINDOW CONSTRUCTION

Filed March 29, 1929 4 Sheets-Sheet 1

Fig. 1.

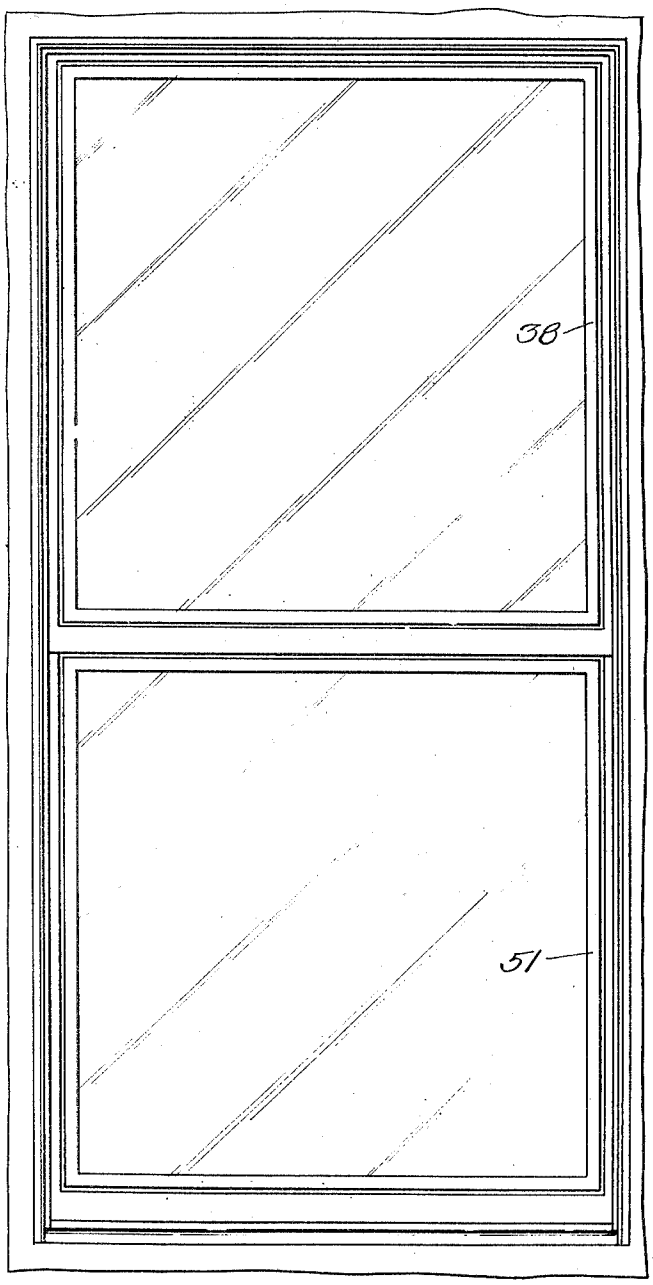


Fig. 2.

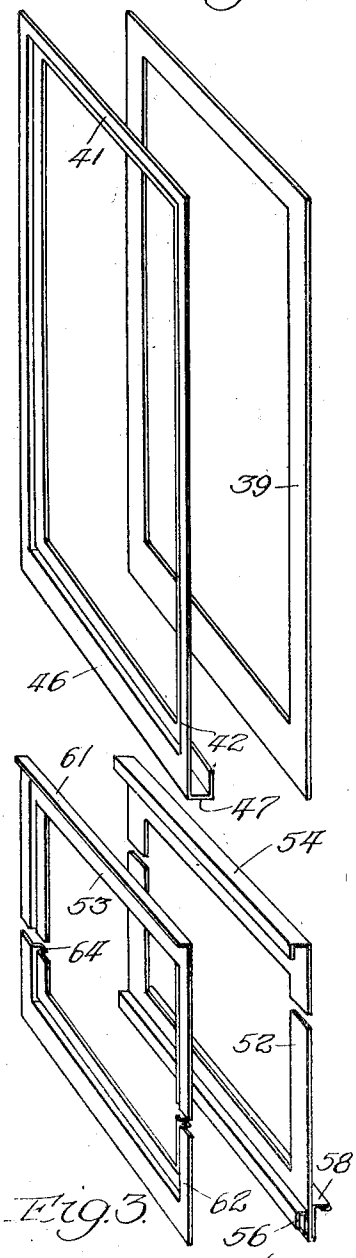


Fig. 3.

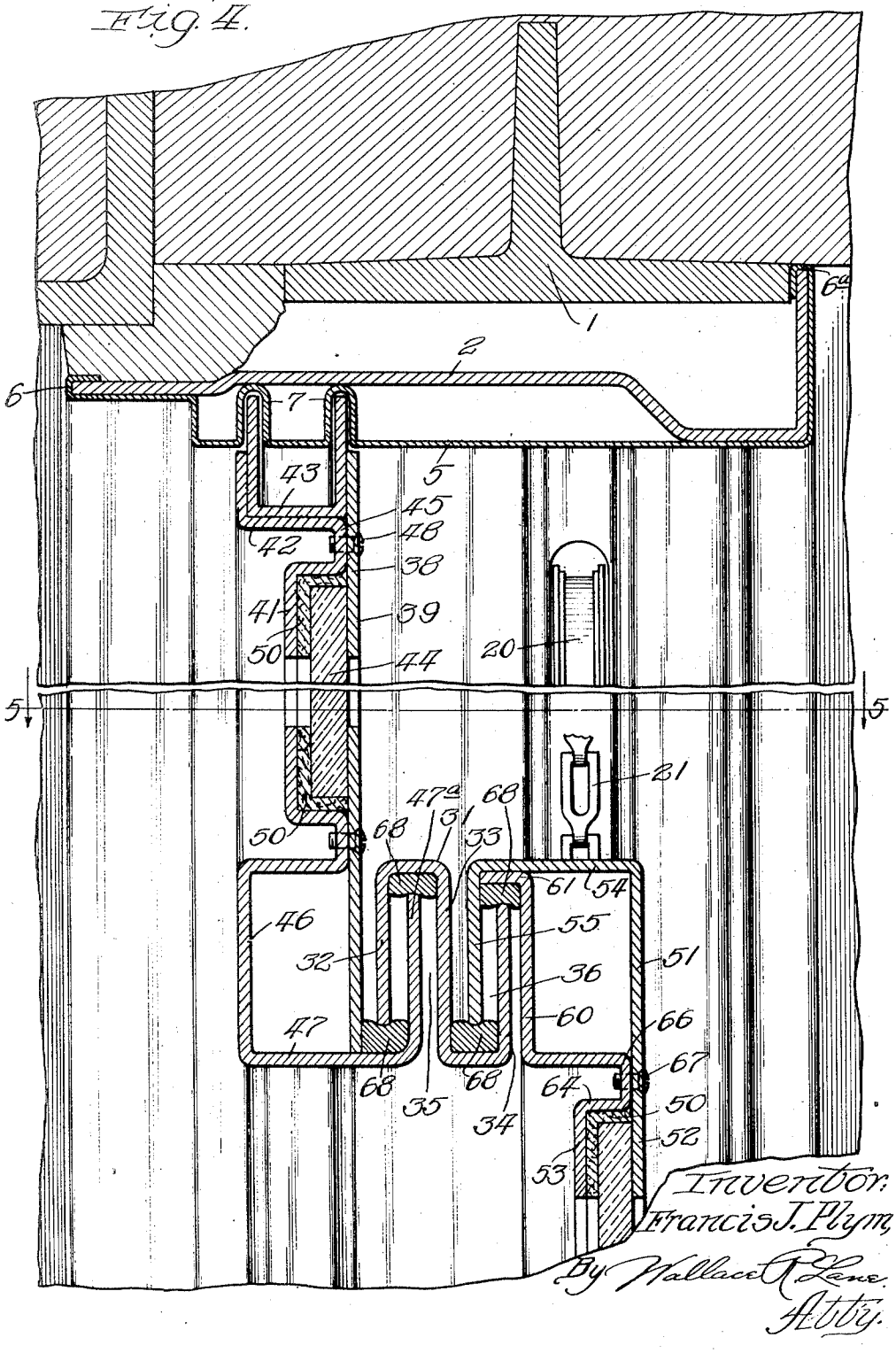
Inventor:
Francis J. Plym,
By Wallace & Lane.
Attys.

Feb. 16, 1932. F. J. PLYM 1,845,984

WINDOW CONSTRUCTION

Filed March 29, 1929 4 Sheets-Sheet 2

Fig. 4.



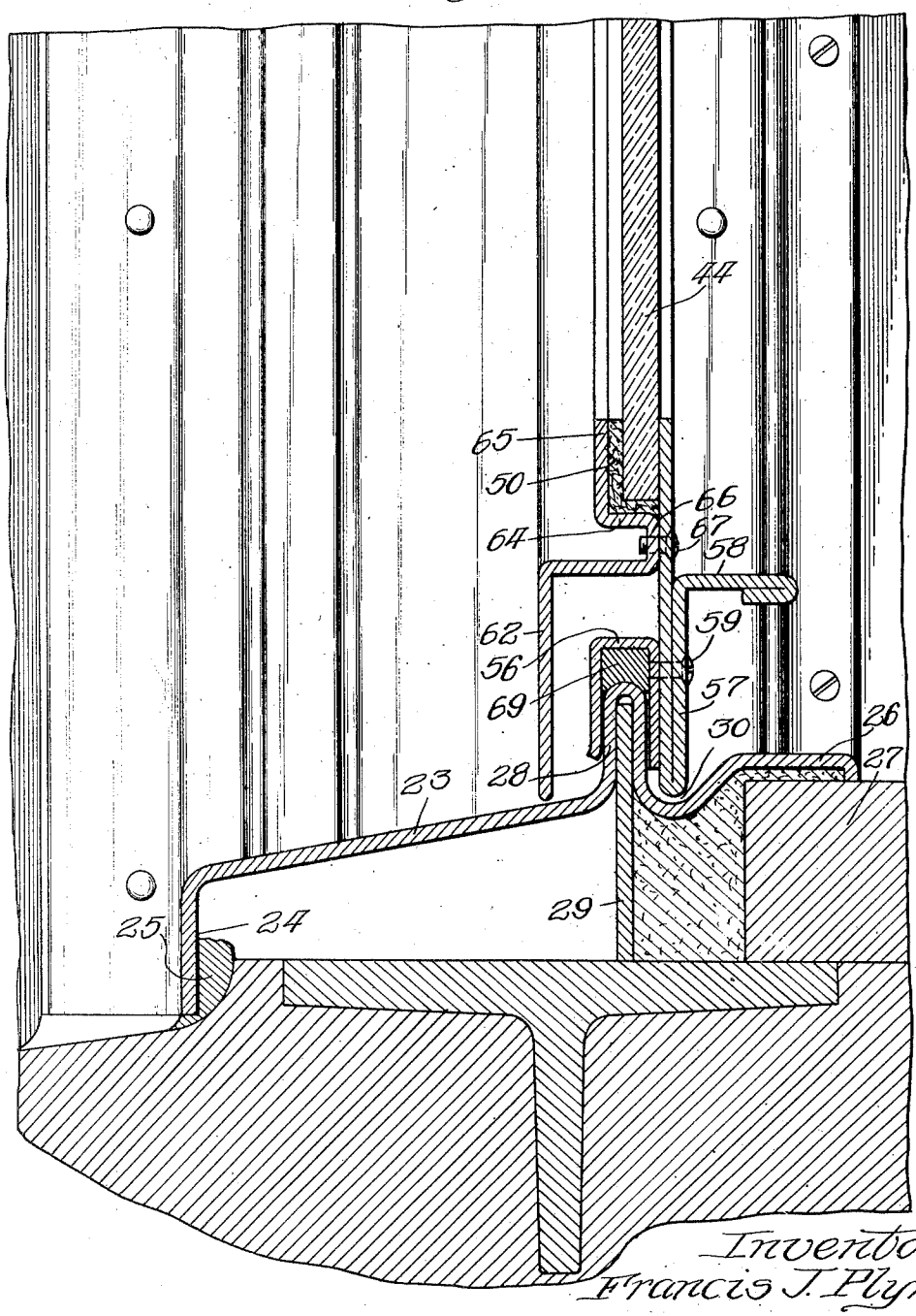
Inventor:
Francis J. Plym,
By Wallace R. Lane.
Atty.

Feb. 16, 1932. F. J. PLYM 1,845,984

WINDOW CONSTRUCTION

Filed March 29, 1929 4 Sheets-Sheet 3

Fig. 4A.



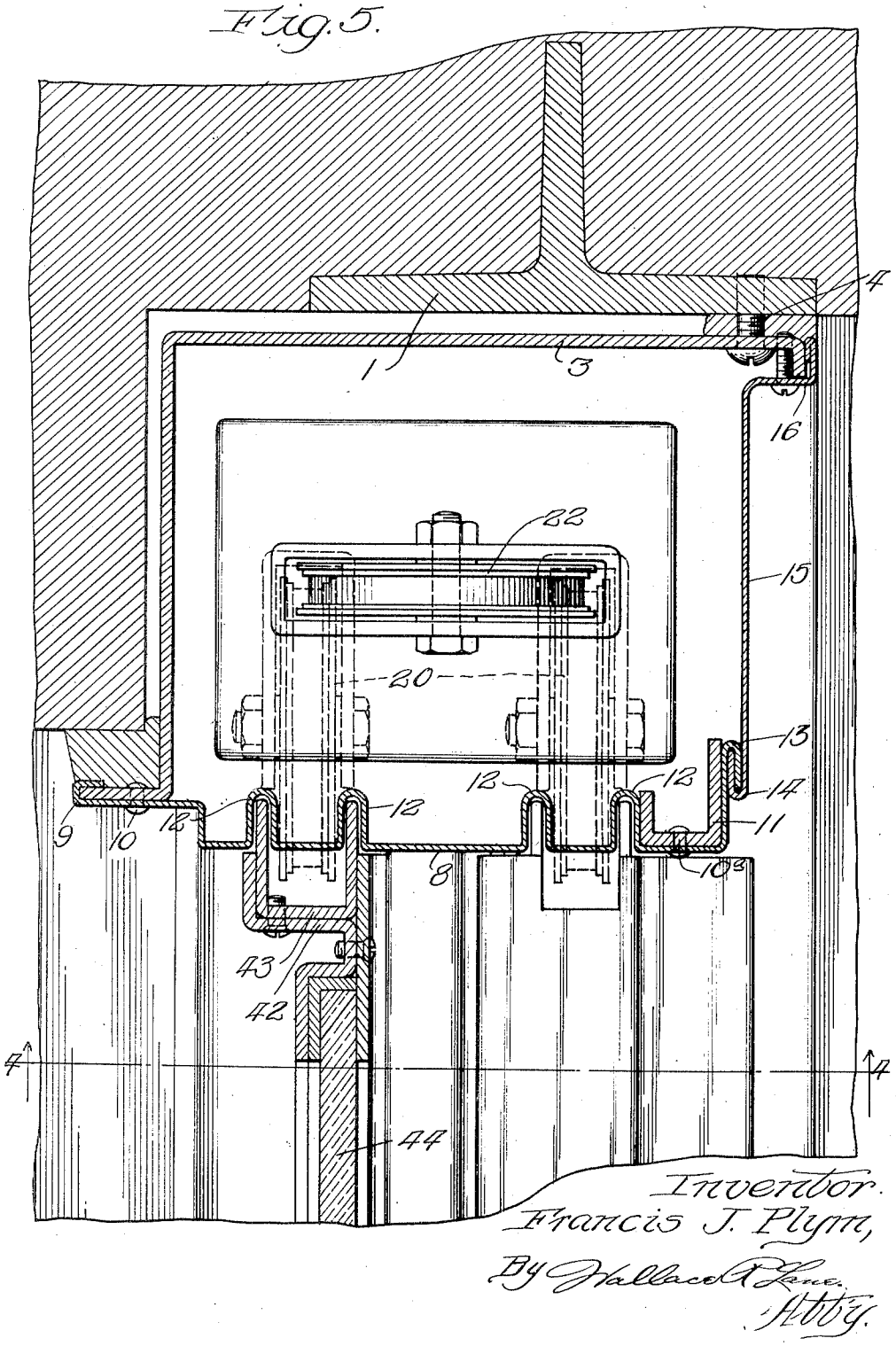
Inventor:
Francis J. Plym,
By Wallace A. Lane.
Atty.

Feb. 16, 1932. F. J. PLYM 1,845,984

WINDOW CONSTRUCTION

Filed March 29, 1929 4 Sheets-Sheet 4

Fig. 5.



Inventor.
Francis J. Plym,
By Wallace & Lane.
Atty.

Patented Feb. 16, 1932 1,845,984

UNITED STATES PATENT OFFICE

FRANCIS J. PLYM, OF NILES, MICHIGAN, ASSIGNOR TO THE KAWNEER COMPANY, OF NILES, MICHIGAN, A CORPORATION OF MICHIGAN

WINDOW CONSTRUCTION

Application filed March 29, 1929. Serial No. 350,996.

The present invention relates to window constructions, and more in particular to a novel metallic double-hung construction which may be easily installed and assembled, and when so assembled, provides a weather-proof and rigid construction.

Among the objects of my invention are to provide a novel construction of window frame and stile forming a part of the permanent building construction; further to provide a novel construction of sash meeting rail adapted to intercept the sashes and to form a weather tight engagement therewith; further to provide a novel construction of sash comprising interior and exterior units adapted to be assembled in the stile and frame, and when so assembled to hold the glass in position and allow for vertical movement of the sash in the stile; further to provide a novel means and method of assembling the sash construction; further to provide a novel metallic window construction of maximum simplicity, efficiency, and ease of assembly and operation; and such further objects, advantages and capabilities as will later more fully appear, and are inherently possessed thereby.

My invention further resides in the combination, construction and arrangement of parts illustrated in the accompanying drawings, and while I have shown therein a preferred embodiment, I desire it to be understood that the same is susceptible of modification and change, without departing from the spirit of my invention.

In the drawings:

Fig. 1 is a view in front elevation of my novel window construction;

Fig. 2 is a view in perspective of the exterior and interior unit of the upper sash;

Fig. 3 is a broken view in perspective of the exterior and interior units of the lower sash;

Fig. 4 and 4ª are fragmentary views in vertical cross section taken through the upper and lower sash construction and on the line 4—4 of Fig. 5.

Fig. 5 is a view in horizontal cross section taken on the line 5—5 of Fig. 4.

Referring more particularly to the construction disclosed in the drawings, the numeral 1 refers to steel bucks which are set in the top, sides, and bottom walls of the window opening in the building construction and form a permanent part of such construction. Connected to the bucks by any suitable means, is a top 2 and side members 3 of a frame, which form the top and side jambs respectively, for the window construction. The side members of the frame are disclosed as attached to the bucks by means, such as bolts 4 or the like. Suitably connected to the top of the frame, I provide a plate 5 having overturned lip portions 6 and 6ª engaging the edges of the frame, and a pair of longitudinal grooved portions 7 which are inwardly bent to form a seat for the upper sash construction.

The stiles 8 at the side of the frame are connected to the side members 3 on the interior by means of an inturned lip 9 and suitable connecting means 10, such as bolts or the like. The exterior face of each stile 8 is connected at 10ª to a vertically extending channel member 11 and provided with a plurality of longitudinal channels 12 the outer edge of the stile being bent at 13 to engage a bent portion 14 of a face plate 15, the upper edge of this face plate being bent at 16 for engaging a flange or edge of the side member 3, and is connected thereto by bolts 17 or the like. The construction of the side jambs 3 and stiles 8 provides a housing for pulleys 20 to which are attached the window chains 21 connected at one end thereof to a sash while the other end of each chain or rope is attached to a cross pulley 22 to which a sash weight is attached.

The sill 23 is provided with an outer flange or edge 24 adapted to seat in the masonry and there held in place by means of mastic cement or the like 25. The inner edge 26 of the sill is adapted to seat on the stool 27, while the intermediate portion thereof is bent upon itself at 28 to intercept a vertically extending plate 29 and to form a tight engagement with the lower sash. Rearwardly of the bent portion 28, the sill is provided with a longitudinally extending groove 30, adapted to seat the inner face or interior unit of the sash.

Connected to the side jambs, I provide a sash meeting rail 31 constructed in the form of a double channel member opening in opposite directions, the sides 32 and 33 opening downwardly, while the central or common side 33 of the channel and the side 34 open upwardly to provide longitudinally extending grooves 35 and 36 respectively, the groove 36 opening upwardly to intercept a portion of the lower sash, while the groove 35 opens downwardly to intercept the upper sash. This meeting rail is stationary and intercepts the sashes whenever they are in closed position.

The upper sash 38 comprises an interior unit 39, substantially rectangular in form. Connected to the interior unit of the upper sash is an exterior unit 41 substantially rectangular in form and provided with an outwardly and upwardly bent portion 42 adapted to seat between the same and the interior face 39, a channel member 43. The central portion of the exterior unit provides an angular shaped groove around the four sides thereof for the reception of a pane of glass 44, the exterior face being bent at 45 to provide contacting portions with the interior unit. The lower portion 46 of the exterior unit is substantially channel shaped, the lower edge 47 thereof being bent to form a flange 47^a adapted to seat within the longitudinal channel 35. Screws or the like 48 in the interior unit, threadedly engage with threaded openings in the exterior unit, and draw these units into tight engagement, this assembly holding the channel 43 in the upper portion in tight engagement between the two units and also holding the pane of glass 44 in position. These screws may be of greater diameter so as to contact with the portion 42 and the seating portion of the exterior sash unit 41, thus giving greater rigidity. Felt or the like 50 is adapted to be inserted around the edges of the pane of glass so as to allow the same to be held firmly but in yieldable position. The lower sash 51 comprises an interior plate or unit 52 and an exterior plate or unit 53. The interior unit at its upper end is provided with an inturned portion 54 forming the top of the sash and a downwardly extending portion 55 adapted to seat within the longitudinally extending grooved portion 36 of the meeting rail 31.

The bottom face of the interior unit is provided on the outer side with a longitudinally extending channel 56 adapted to receive the bent portion 28 of the sill when the sash is in closed position, and on the inner side is doubled back at 57 to provide an outwardly extending upper edge 58, this plate affording rigidity to the sash, and also providing an opening means. Attaching means, such as bolts or the like 59 pass through the interior unit 51 and channel 56, and holds this channel in assembled position. The exterior unit 53 is provided at its upper edge with an upwardly extending leg 60 provided with an out-turned edge 61, adapted to seat on the lower surface of the channel 54, and the bottom of such exterior unit being provided with a downwardly extending leg 62, adapted to seat on the outer surface of the sill 23. The sides of the exterior unit are also provided with outwardly extending bent portions forming a channel therebetween with the interior unit. The glass engaging portions of the lower sash are similar in construction to those in the upper sash and comprise glass seating portions 64, glass engaging portions 65, along with contacting portions 66 engaging with the interior unit and connected thereto by retaining means such as bolts or the like 67. It is to be understood, of course, that the glass retaining means is similar in construction on all four sides as shown more clearly in Figs. 2 and 3.

In the assembly of the window construction, the frame including the head jamb, side jambs and sill, is first placed in position and connected to the bucks. The plate 5 and stiles 8 are then affixed in position. Next the upper and side channel members 43 are placed in the longitudinally extending grooves in the plate and stiles. The interior units 39 and 52 of the sashes are next placed in position. The glass is then placed against the interior units and the exterior units 41 and 53 are placed in contacting relation with the channel 43 and the interior unit and connected thereto by bolts or the like. In order to make the construction weather tight, I provide a weather stripping 68, wherever the sashes contact with, or engage the central meeting rail, while a weather stripping 69 is provided in the channel member 56 in the lower sash. The assembly is very simple, and readily accomplished, and from the above disclosure, it will be seen that I have provided a simple construction of double-hung metal windows, which are both weather and fire proof, and which may be installed and repaired with the least expenditure of time and energy.

Having thus disclosed the invention, I claim:

1. In a window construction, a frame adapted to be inserted in a window opening and provided with a central meeting rail, grooved stiles attached to said frame, and a pair of sashes slidable in said stiles and adapted to engage said meeting rail when said sashes are in closed position.

2. In a window construction, bucks affixed in the sides of a window opening, a frame adapted to be inserted in said opening and attached to said bucks, grooved stiles connected to said frame, a meeting rail, and a pair of sashes slidable in said stiles and adapted to engage said meeting rail when said sashes are in closed position.

3. In a window construction, bucks affixed in the sides of a window opening, a frame adapted to be inserted in said opening and attached to said bucks, and including a sill, stiles connected to said frame, a meeting rail, and a pair of sashes slidable in said stiles and adapted to engage said meeting rail and sill when said sashes are in closed position.

4. In a window construction, bucks affixed in the top, sides and bottom of a window opening, a frame adapted to be inserted in said opening and attached to said bucks and including a sill, stiles connected to said frame, a meeting rail, a pair of sashes slidable in said stiles and adapted to engage said meeting rail and sill when said sashes are in closed position, and means on said meeting rail and sill providing weather-proof engagement with said sashes.

5. In a window construction, a grooved plate positioned at the top, stiles in the sides and a sill in the bottom of a window opening, a meeting rail affixed to said stiles, and a pair of sashes slidably mounted in said stiles and adapted to engage said plate, sill and meeting rail when said sashes are closed to provide a weather-tight closure.

6. In a window construction, a grooved plate, positioned at the top, stiles in the sides and a sill in the bottom of a window opening, a meeting rail affixed to said stiles, and a pair of sashes comprising an inner and outer member and channels therebetween, adapted to be assembled in said stiles, and said channels engaging said grooved plate and stiles for permitting sliding movement of said sashes.

7. In a window construction, a grooved plate positioned at the top, stiles in the sides and a sill in the bottom of a window opening, a meeting rail affixed to said stiles and provided with longitudinal channels, a pair of sashes slidably mounted in said stiles and adapted to engage said plate, sill and meeting rail when said sashes are closed, and means on said sashes adapted to seat in the channels in said meeting rail for providing a weather-tight closure.

8. In a window construction, grooved plate positioned at the top, stiles in the sides and a sill in the bottom of a window opening, a longitudinally extending rib on said sill, a meeting rail connected to said stiles and provided with longitudinal grooves, a pair of sashes slidably mounted in said stiles and adapted to engage said plate, sill and meeting rail when said sashes are closed, and means on said sashes adapted to seat in the channels in said meeting rail and on said rib for providing a weather-tight closure.

9. In a window construction, a frame therefor, a pair of sashes slidable in said frame, and a meeting rail fixedly positioned in said frame.

10. In a window construction, a frame therefor, a pair of sashes slidable in said frame, and a meeting rail provided with longitudinal grooves for intercepting said sashes.

11. In a window construction, a frame therefor, said frame provided with a meeting rail, and a pair of sashes slidable in said frame, said sashes having parts engaging with said meeting rail.

12. In a window construction, a frame therefor, a meeting rail in said frame, and a pair of sashes slidable in said frame, said sashes having portions overlapping said meeting rail.

13. In a window construction, a frame therefor, a meeting rail in said frame, said meeting rail having grooves opening in opposite directions, and a pair of sashes in said frame having parts seating in said grooves.

14. In a window construction, a frame therefor, a meeting rail in said frame, said rail being formed to provide a double channel member having oppositely disposed groove openings, and sashes in said frame having parts extending within said grooves.

15. In a window construction, a frame therefor, a meeting rail in said frame, said rail provided with longitudinal grooves, a weather-proofing material in said grooves, and sashes in said frame adapted to engage with said material to provide a tight joint at said meeting rail.

16. In a window construction, a frame therefor, a double channel-shaped meeting rail in said frame, and sashes slidable in said frame and adapted to engage said meeting rail.

17. In a window construction, a frame adapted to be inserted in a window opening and provided with a meeting rail, stiles secured to said frame, and a pair of sashes slidable in said stiles and adapted to engage said meeting rail.

18. In a window construction, a frame therefor, having side members, a member spaced from each of said side members, and stiles secured to said side members and passing around said member spaced therefrom to provide stile housings, and sashes in said frame.

19. In a window construction, a frame therefore, having angular side members, a member spaced from each of said side members and opposite the angular part thereof, and stiles secured to the outer edges of said angular members and to said members spaced therefrom to provide stile housings, and sashes in said frame.

20. In a window construction, a sill adapted to be affixed in the bottom of a window opening, said sill being formed from sheet metal and having a part bent upon itself and over the edge of a plate to provide a sealing contact with a window sash.

21. In a window construction, a sill adapted

to be affixed in the bottom of a window opening, said sill being formed from sheet metal and having a part bent upon itself to provide an upstanding rib and a part bent to provide an adjacent groove, said rib and groove adapted to be associated with parts of a window sash for providing a tight joint therebetween.

22. In a window construction, a sill adapted to be affixed in the bottom of a window opening, said sill being formed with a grooved portion fitting over the edge of a plate to provide a sealing contact with a window sash.

In witness whereof, I hereunto subscribe my name to this specification.

FRANCIS J. PLYM.