Feb. 7, 1933. B. H. POLLOCK ET AL. 1,897,010

WINDOW

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FIG. I.

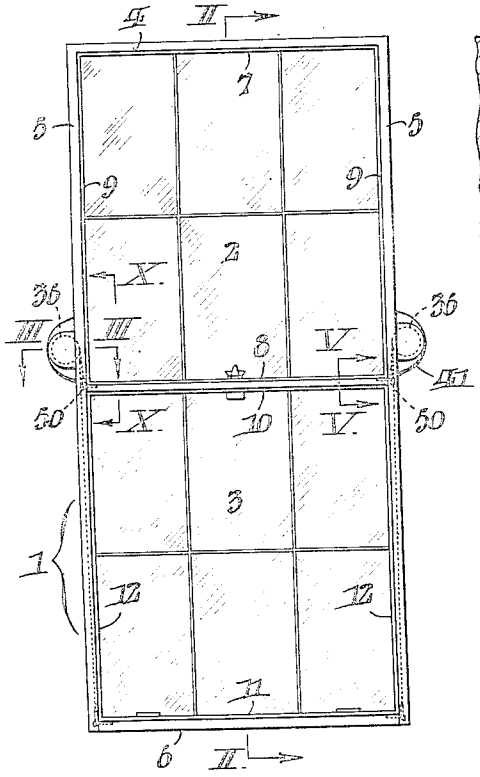


FIG. II.

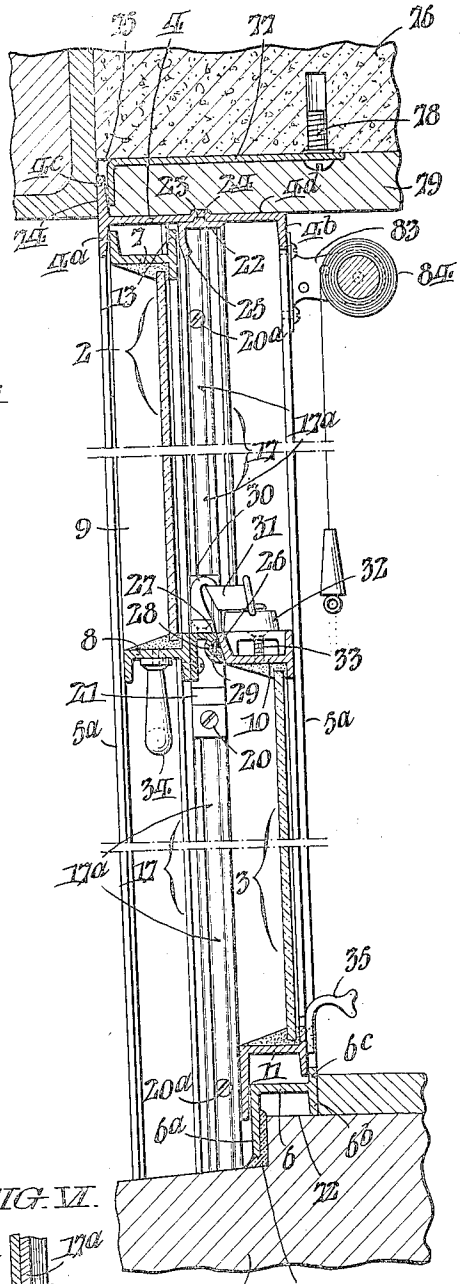


FIG. VII.

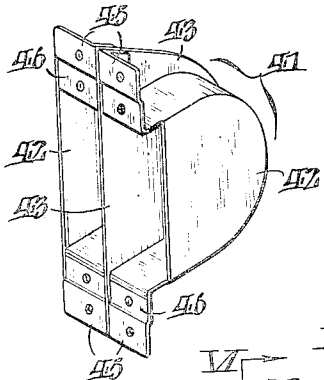


FIG. V.

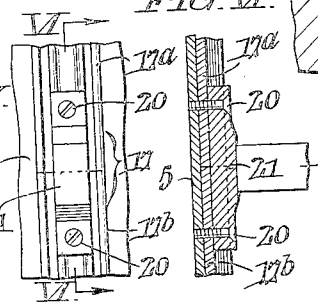


FIG. VI.

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WINDOW

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FIG. III.

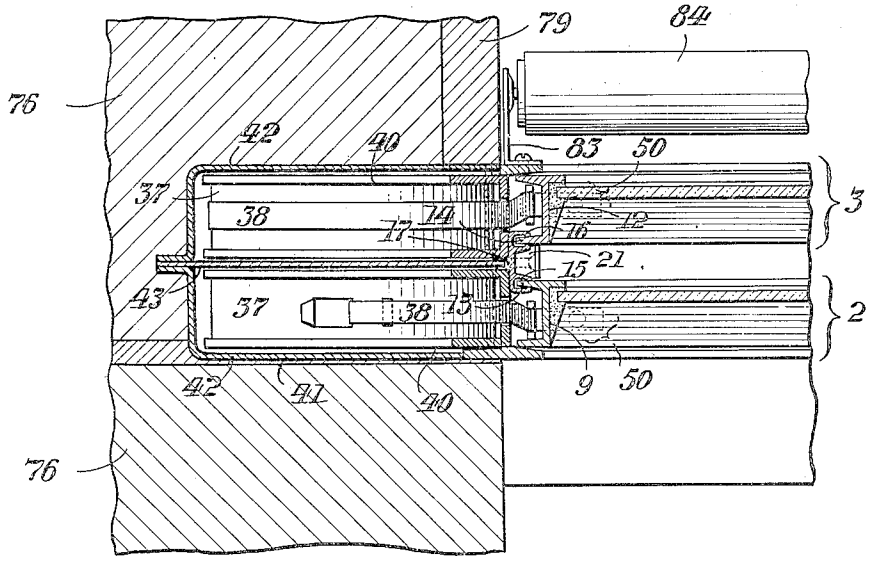
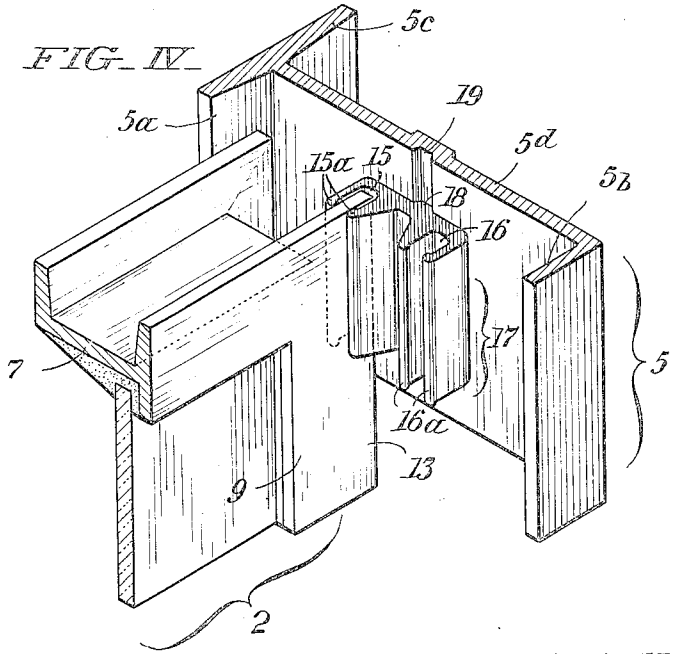


FIG. IV.



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WINDOW

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FIG. IX.

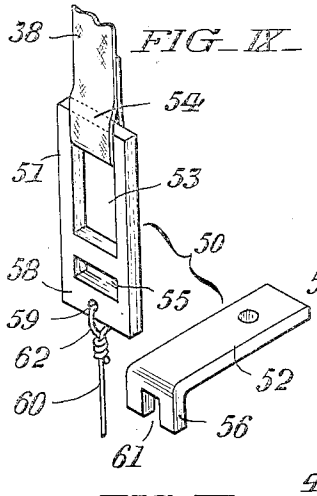


FIG. VIII.

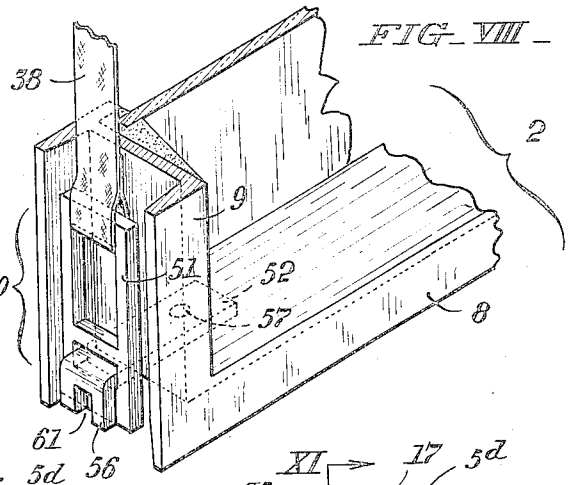


FIG. XI.

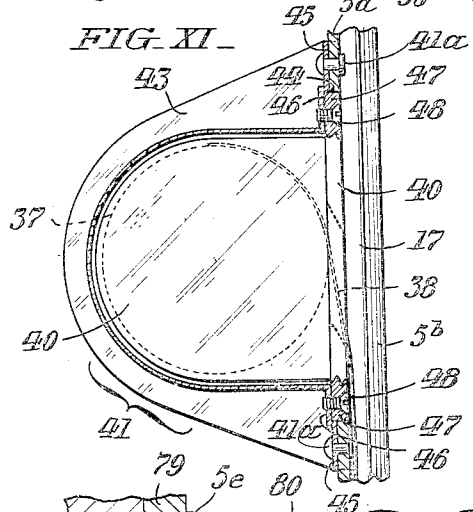


FIG. X.

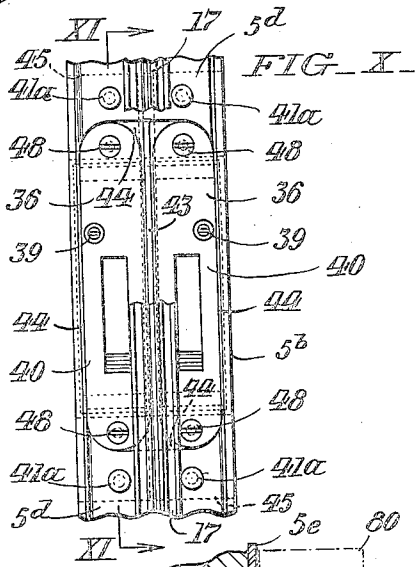


FIG. XII.

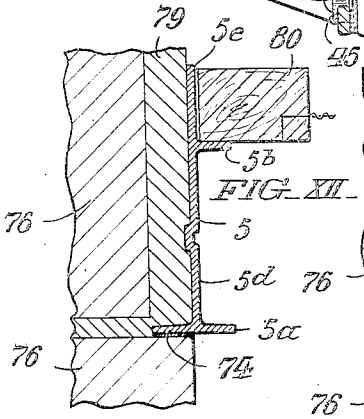


FIG. XIII.

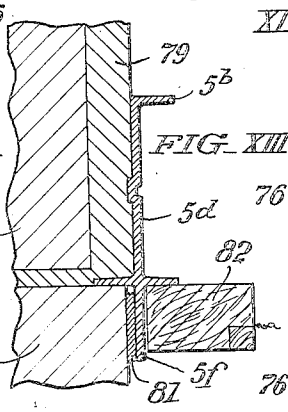
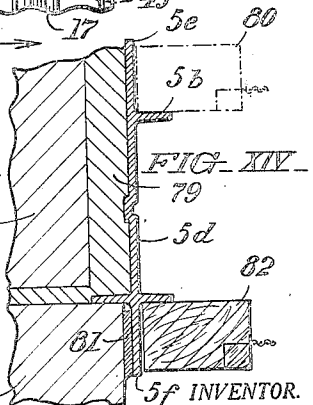


FIG. XIV.



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Feb. 7, 1933. B. H. POLLOCK ET AL 1,897,010

WINDOW

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FIG. XV.

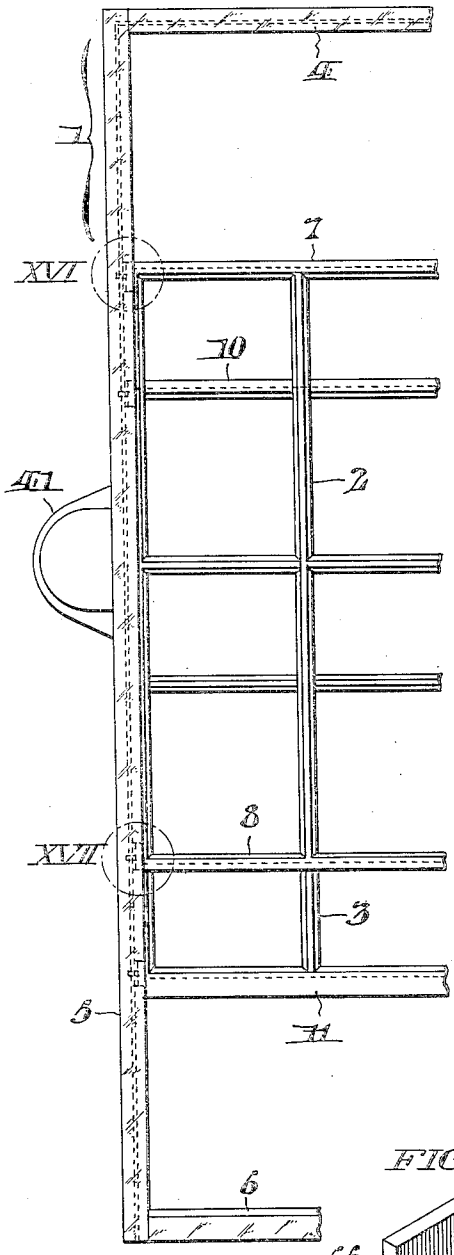


FIG. XVI.

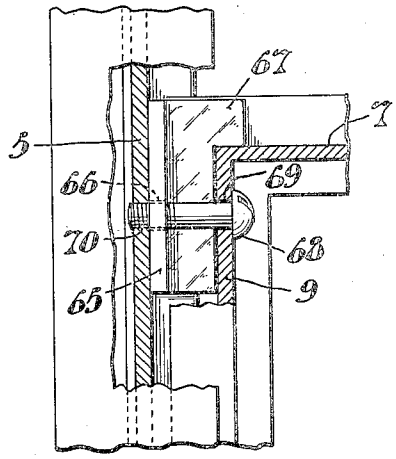


FIG. XVII.

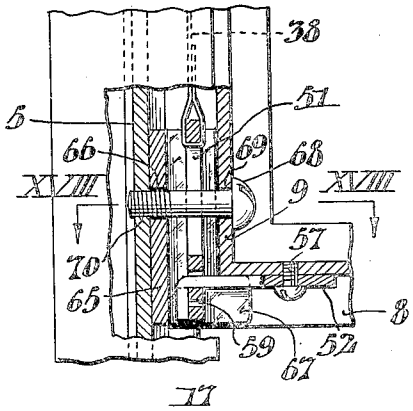


FIG. XVIII.

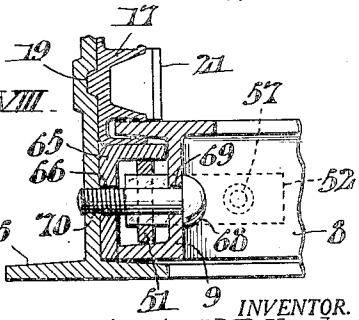
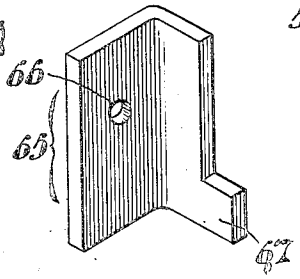


FIG. XIX.



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Patented Feb. 7, 1933 1,897,010

UNITED STATES PATENT OFFICE

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WINDOW

Application filed November 5, 1930. Serial No. 493,510.

This invention relates to windows, and has more especial reference to metallic windows of the double hung sliding sash type.

In the main, our invention is directed toward structural improvements in windows of the kind referred to whereby the utmost rigidity and strength are attained with use of a minimum amount of metal; fabrication and assembling is simplified through avoidance of incidental fitting or machining of the component parts; and placement of the windows incident to installation is greatly facilitated.

Another object of our invention is to provide improved means for effectively weather sealing the sliding sashes of the window in respect to the window frame, as well as relative to each other.

Our invention is also in part directed toward provision of simple means for temporarily securing the sashes against sliding in the window frame during shipment, and for preventing the frame from being sprung or distorted during installation thereby to preclude subsequent binding of the sashes.

A further object of our invention is to embody in the frame of the window, means for effectively anchoring it in the masonry around the opening provided for its reception in the wall of a building.

Still other objects and attendant advantages of this invention will be manifest from the detailed description following of the typical embodiment shown in the drawings, wherein Fig. I is an inside view of our improved window.

Fig. II is a vertical sectional view of the window, taken as indicated by the arrows II—II in Fig. I, and drawn to a larger scale with intermediate portions broken out.

Fig. III is a detail cross sectional view, likewise on a larger scale, taken as indicated by the arrows III—III in Fig. I.

Fig. IV is a fragmentary perspective view showing the interrelation of various parts of the window structure.

Fig. V is a fragmentary view of the inside face of one of the window jambs, looking in the direction of the arrows V—V in Fig. I.

Fig. VI is a detail section taken as indicated by the arrows VI—VI in Fig. V.

Fig. VII is a perspective view of one of the housings for the spring balances employed to counteract the weight of the sashes of the window.

Fig. VIII is a perspective view showing the novel means provided for attaching the ends of the tapes of the spring balances to the window sashes.

Fig. IX is a perspective view showing the method employed in interengaging the parts constituting the tape attaching means.

Fig. X is a fragmentary view, like Fig. V, of the inside face of one of the window jambs but looking in the direction indicated by the arrows X—X in Fig. I.

Fig. XI is a detail sectional view taken as indicated by the arrows XI—XI in Fig. X.

Figs. XII, XIII and XIV are fragmentary sectional views, corresponding to Fig. III, showing variations in the construction of the frame of the window.

Fig. XV is a fragmentary front elevation of the window structure showing the sashes positioned and secured against movement for the purposes of shipment and installation.

Figs. XVI and XVII are detail sectional views, respectively in the plane of the window at the regions XVI and XVII in Fig. XV, drawn to a larger scale and showing the removable clip means provided for application at the upper and lower corners of the sashes to hold the latter definitely spaced from, and secured against movement relative to the window frame during shipment and installation.

Fig. XVIII is a detail cross-section taken as indicated by the arrows XVIII—XVIII in Fig. XVII; and,

Fig. XIX is a perspective view of one of the clips.

With detailed reference first more particularly to Figs. I, II, III and IV of the illustrations, the frame of the window is comprehensively designated by the numeral 1 and the sliding sashes respectively by the numerals 2 and 3. The head rail 4 and the jamb rails 5, of the frame 1, are of extruded bar

metal having the broad channel cross-section seen to the best advantage in Figs. II and IV. At the upper corners of the frame 1, the head rail 4 and jambs 5 meet in mitered joints, and welding is preferably resorted to in permanently securing them together with their lateral flanges 4*a*, 4*b* and 5*a*, 5*b* projecting inwards of the frame 1. The head and jamb rails 4, 5 also have flanges 4*c*, 5*c* in the same plane with the flanges 4*a*, 5*a* and projecting in the opposite direction relative to the main cross webs 4*d*, 5*d*, or outwardly of the frame 1. By virtue of the described cross-section of the head and jamb rails 4, 5 the frame 1 may obviously be made light without sacrifice of strength or rigidity, at a great saving in metal. The bottom or sill rail 6 of the frame 1, although of generally similar channel cross-section, is much narrower than the head and jamb rails 4, 5, see Fig. II. As shown, the sill rail 6 has a relatively deep depending forward flange 6*a*, a narrower downward rear flange 6*b* and an upward flange 6*c* in line with the flange 6*b*. The ends of the sill rail 6 abut the insides of the jamb rails 5 of the frame 1 whereto they are welded fast, with its flanges 6*b*, 6*c* flush with the flanges 5*b* of said jamb rails.

The frames of the sashes 2 and 3 are likewise made from channel section rolled or extruded metal, their top, bottom and side rails, indicated respectively at 7, 8, 9 and 10, 11, 12, being permanently secured together by welded miter joints at corners, with their flanges directed outwardly as shown in Figs. II, III, and IV.

The sashes 2, 3 are guided for up and down movement within the frame 1 through engagement of the flanges 13, 14, of their opposite side rails 9 and 12 respectively, in parallel slots 15, 16 of parting strips 17 disposed centrally of the in sides of the jambs 5. From Figs. III and IV it will be observed that the parting strips 17 too are of channel section extruded metal with relatively thick lateral flanges which afford the slots 15, 16 and with medial longitudinal tongues 18 at the rear to engage central lengthwise grooves 19 in the jambs 5 of the frame 1. It will also be noted from Fig. IV that the slots 15, 16 of the parting strips 17 are counter recessed with formation of narrow beads 15*a*, 16*a* to contact with the sash flanges 13, 14. Undue friction and resistance to the free movement of the sashes 2, 3 is thus effectively avoided. Although small, the contact areas of the beads 15*a*, 16*a* with relation to the sash flanges 13, 14 is snug so that an efficient weather seal is maintained along the sides of the sashes 2, 3 and said sashes are thereby, at the same time, prevented from rattling. For convenience of assembling the window the parting strips 17 are each made in two sections 17*a*, 17*b* (Figs. V and VI) which are butted end to end and meet centrally of the height of the frame 1.

The parting strip 17 is in each instance secured to the corresponding jamb rail 5 of the frame 1 by means of screws 20, 20*a* that take into the cross web 5*d* of said jamb rail. The screw 20 also serves, in each instance, to secure a weathering block 21 which is suitably configured, as shown in Fig. III, to fit the central hollows of the two parting strip sections 17*a*, 17*b* across the juncture of the latter, after the manner shown in Figs. V and VI.

To prevent entry of wind or rain over the top of the upper sash 2 when in closed position, a sealing strip 22 of angular cross-section is secured to the head rail of the frame 1. As shown in Fig. II the weathering strip 22 is formed centrally of its horizontal flange with a longitudinal tongue 23 to fit a medial groove 24 in the head rail 4, in a manner similar to that described in connection with the parting strip 17. The weathering strip 22 is secured by one or more screws, not shown, passing through its horizontal flange and taking into the frame head rail 4. From Fig. II it will also be noted that the vertical flange of the weathering strip 22 is flush with the inner edges of the upper sash guiding grooves 15 in the parting strips 17, and moreover that the said flange is curved, as at 25, to ease the approach of the sash flange 13.

For the purpose of weather tightness at the juncture between the sashes 2 and 3, the flange 26 of the lower sash meeting rail 10 is beveled to conform with the bevel flange of a weathering bar 27 secured to the meeting rail 8 of the upper sash, as shown in Fig. II. The weathering bar 27 affords a groove 28 for lodgment of a tubular sealing strip 29, made from rubber or the like, having capacity to yield under compression when wedged by the bevel flange 26 of the lower sash 3. At its ends, the weathering bar 27 meets the weathering blocks 21, see Figs. II and VI.

The provisions made for locking the sashes include a hook member 30 which is secured to the weathering bar 27 on the upper sash 2, and a cooperating rotatable latch member 31 whereof the base 32 is configured to fit the channel groove of the upper rail 10 of the lower sash 3 and it is secured to the latter by screws 33. Provisions are also made in the form of grasps 34, 35 for convenience in sliding the sashes 2, 3.

To counteract the weight of the sashes 2, 3, spring balances of a conventional type, such as shown at 36 in Figs, I, III, X and XI, are employed by preference. These balances 36 have spring influenced drums 37 to take up the metallic sash tapes 38 and screws 39 (Fig. X) accessible at the frontal faces of their casings 40 for adjusted concealed friction means whereby the effect of the springs

may be regulated. Housings 41 secured somewhat above the center of the out sides of the frame jambs 5 accommodate the spring balances 36 for the upper and lower sashes 2 and 3 side by side, as shown in Fig. III. Each such housing 41 is in the present instance made from sheet metal, see Fig. VII, with hollow semi-circular members 42 which are welded or otherwise secured to opposite sides of a central partition member 43, with attendant setting apart of separate chambers for the two spring balances 36. The chambers of the housing 41 are in each instance accessible through an opening 44 cut into the cross web 5*d* of the jamb 5, as shown in Figs. X and XI; and said housing is secured by means of four rivets 41*a* passing through its upward and downward flanges 45 that take into the said jamb. As shown in Figs. VII and XI the flanges 45 of the housing 41 are recessed as at 46 to accommodate the flanges 47 of the spring balance casings 41 which are in turn secured by screws 48 (Figs. X and XI) taking into the recessed portions 46 of the housing flanges 45.

In assembling the window the lower sash 3 is placed in frame 1, then the upper section 17*a* and the lower section 17*b* of parting strip 17 are applied to frame jambs 5. Then the upper sash 2 is inserted in place from bottom of frame 1 so that side flanges 13 and 14 of the frames 2, 3 are engaged in grooves 15 and 16 of the parting strip 17. The weathering blocks 21 are then put in place and all secured fast to the jambs 5 by the screws 20, 20*a;* and finally the weathering strip 22 is applied to the head rail 23 of the frame 1 and made fast. The operation of assembling is thus a very simple matter requiring no machining nor fitting and can therefore be accomplished by relatively unskilled help at a great saving in labor expense. The novel construction of the frame head rail 4, the frame jambs 5, the parting strips 17 and the head weathering strip 22, as regards the tongue and groove interengagement of these parts, obviously predetermine accurate registry with assurance of perfect alignment of the sashes 2 and 3 for easy sliding movement. By virtue of overlapping the top and sides of the upper sash 2 in closely contiguous relation as shown in Figs. II and III, the outer flanges 4*a*, 5*a*, of the head and jamb rails 4, 5 of the frame 1, serve as auxiliary weathering means to exclude wind and rain. The inside flanges 5*a* and 6*c* respectively of the jamb rails 5 and the sill rail 6 operate in a similar capacity with regard to the lower sash 3.

Attachment of the tapes 38 of the spring balances 36 is facilitated through provision of the novel means, comprehensively designated by the numeral 50 in Figs. I, III, VIII and IX, comprising, in each instance, a staple 51 and a hook member 52. As shown in Figs. VIII and IX the staple 51 is of rectangular configuration with a relatively large upper opening 53 permitting ready threading of the tape 38, incident to attachment to the upper cross bar 54, and a smaller bottom openings 55 for engaging over the downturned end 56 of the hook member 52, which latter is secured by means of a screw 57 to the lower rail 8 of the sash 2. The bottom cross bar 58 of the staple 51 is pierced at 59 for application of a wire 60, as shown in Fig. IX, whereby, after assembling of the window, the spring balance tape 38 may be pulled down to engage the staple 51 over the hook member 52 on the sash 2, the turned-down end 56 of said hook member having a central cut-out at 61 for clearance of the loop 62 of the wire 60 incident to this operation. After the hooking of the staple 51 has been accomplished, the wire 60 is of course removed.

As a means to hold the sashes 2, 3 against movement during shipment, and to prevent distortion or springing of the window frame 1 during installation, temporary angle clips 65 are provided. These angle clips 65 are made as rights and lefts depending as to whether they are used on one or the other side of the window, the one illustrated in perspective in Fig. XIX being for use at the lower corners of the sashes 2, 3. As shown, one of the flanges of the clip 65 is centrally apertured at 66 while the other is partly cut away with formation of a lug or projection 67. In order that the jamb rails 5 of the frame 1 may be effectively braced during shipment, the sashes 2, 3 are moved to partly open position as shown in Fig. XV and the clips 65 applied to the jambs 5 by means of screws 68 passing through the apertures 69 in the side rails 9 of the sash frame 1 near upper and lower corners, then through the apertures 66 in the clips and taking into preallocated tapped apertures 70 in the jambs 5, as variously shown in Figs. XVI–XVIII. From these illustrations it will be noted that the projecting lugs 67 of the clips 65 engage over and under the sash corners, thereby securing the sashes 2, 3 against movement. The apertured flanges of the clips 65 on the other hand fill the clearance spaces between the free side edge flanges 13, 14 of the sashes 2 and 3 and the contiguous jamb rails 5 of the frame 1. The frame 1 is thereby effectively braced crosswise at the levels of the horizontal rails of the sashes 2, 3, in Fig. XV, and thereby protected against being distorted or sprung inwardly from opposite sides as the masonry is filled in around the frame 1 during installation. In connection with the lower sash corner clips 65 it will be noted from Figs. XVII and XVIII that the screw 68 passes through the upper opening 53 of the tape staple 51.

The manner in which the frame 1 is set

into the opening provided for it in the wall of a building is illustrated in Figs. II and III. As there shown, the frame 1 is supported at the bottom on the sill 71 of the window opening with the flange 6*b* of the sill rail 6 resting on the sill shoulder 72 and the flange 6*a* lapping said shoulder at the front with interposition of calking at 73. The position of the frame 1 is otherwise determined through abutment of the outward flanges 4*c*, 5*c* of the head and jamb rails 4 and 5 against the face 74 of a recess 75 in the masonry 76 around the top and sides of the window opening. To hold the window against displacement during installation, use is made of angle clips such as shown at 77 in Fig. II, the same bearing against the in sides of the frame flanges 4*c* and 5*c* and being secured by screws 78 let into the masonry 76. As the plaster 79 is applied around the frame 1, the flanges 4*c*, 5*c*, as well as the holder clips 77, the latter become permanently embedded in the masonry and thereby function as effective anchorages for the frame 1.

Fig. XII shows a modified cross section for either the top or jamb rails 4, 5 for the window frame 1 in which the main web 5*d* is extended beyond the inner flange 5*b* as at 5*e* to afford the plaster 79 additional support as well as to serve as a rebate for an inside screen 80.

Fig. XIII shows another modified section of frame rails 4, 5 in which the main web 5*d* is extended outwardly as at 5*f* to operate as a gage with relation to the masonry 76. This additional flange 5*f* also provides a shelf for calking 81 and affords convenient means for attaching awnings as well as a rebate for a screen 82.

The alternative cross-section of the frame rails 4, 5 shown in Fig. XIV combines the features shown in Figs. XII and XIII, that is, it has its main web 5*d* extended inward as well as outward as at 5*e* and 5*f* to serve for either inside or outside screens 80, 82, as well as for calking of the window frame at the exterior of the wall. In all cases the in side flanges 5*b* of the frame 1 afford, as exemplified in Fig. II, surfaces convenient for attachment of brackets 83 for roller shades 84.

Having thus described our invention, we claim:

1. In a metallic window, a frame, sashes slidably guided within the frame; and channel section parting strips at opposite sides of the frame to guide the sashes, the said strips having outwardly-directed medial longitudinal tongues fitting central lengthwise positioning grooves in the jamb rails of the window frame.

2. In a metallic window, a frame; sashes slidable within the frame; and channel section parting strips at opposite sides of the window frame with lateral flanges affording slots in their outer faces to receive the corresponding edges of the sash, and medial longitudinal tongues on their web backs fitting central lengthwise positioning grooves in the jamb rails of the window frame.

3. In a metallic window, a frame of channel section rails; sashes slidable in the frame, the said sashes having perimetric rails of channel section affording projecting flanges; and similar section parting strips on opposite jambs of the window frame with relatively thick lateral flanges affording parallel guide slots in their faces to receive the inner contiguous projecting flanges of the sashes, and medial longitudinal tongues on their backs fitting central lengthwise positioning grooves in the jamb rails of the window frame.

4. In a metallic window, a frame; sashes slidable within the frame, the said sashes having perimetric rails of channel section affording projecting flanges; and parting strips on opposite jambs of the window frame with parallel guide slots to receive contiguous flanges of the sashes, the said slots being counter recessed with provision of narrow beads to intimately engage the sashes without imposition of undue friction likely to interfere with sliding movement of the sashes.

5. In a metallic window, a frame of channel section rails; sashes slidable in the frame; and parting strips on opposite jambs of the window frame with parallel guide slots in their faces to receive projecting side flanges of the sashes, said guide slots being counter-recessed to provide beads for engagement with projecting flanges on the sashes, and medial longitudinal tongues at the backs of the parting strips to engage central lengthwise positioning grooves in the jamb rails of the frame, and each of the parting strips being formed in two sections for the purpose of facilitating assembling of the window with said sections abutting end to end medially of the height of the window.

6. In a metallic window, a frame of broad channel section rails; sashes slidable in the frame of similar section material; parting strips on opposite jambs of the window frame with parallel guide slots in their faces to receive the laterally projecting side flanges of the sashes, said guide slots being counter-recessed to provide beads for engagement with projecting flanges on the sashes, and medial longitudinal tongues at the backs of the parting strips to engage central lengthwise positioning grooves in the jamb rails of the frame, each of the parting strips being formed in two sections for the purpose of facilitating assembling of the window with said sections abutting end to end medially of the height of the window, and a weathering block at each side of the frame in the central hollows of the parting strips and overlapping the juncture between the two sec-

tions thereof and forming a seal with the ends of meeting rails of the sashes.

7. In a metallic window, a frame; sashes slidably guided in the frame, one of said sashes having a beveled meeting rail for coaction with the beveled flange of a channel section weathering bar carried by the other meeting rail and said flange being grooved for lodgment of a compressible sealing strip.

8. In a double hung metallic window, a frame; sashes slidably guided within the frame; one of the sash meeting rails being beveled for coaction with a similarly inclined flange of a channel section weathering bar secured to the other sash meeting rail, and a compressible tubular sealing strip lodged within a groove in the beveled flange of the weathering bar aforesaid.

9. In a sliding sash window, a frame formed from metallic rails of channel cross section having lateral flanges directed inwardly of the frame to marginally lap the sashes, and an outwardly projecting flange coextensive with one of the lateral flanges aforesaid for anchorage around the opening provided in the wall of a building to receive the frame.

10. In a sliding sash window, a frame formed from metallic rails of channel cross section having lateral flanges directed inwardly of the frame to marginally lap the sashes, and their main webs extending beyond one of said flanges to form a rebate for a screen.

11. In a sliding sash window, a frame formed from metallic rails of channel cross section having lateral flanges directed inwardly of the frame to marginally lap the sashes, and their main webs extending beyond the lateral flanges to form rebates for either inside or outside screens.

12. In a metallic window, a frame of channel cross-section rails with an outwardly projecting perimetric extension co-planar with one of the rail flanges to abut against the face of a recess in an opening provided in the wall of a building for reception of the frame; and angle clips, with means to secure them to the masonry of the wall, for engaging the frame flange extension from the rear and thereby holding the frame against displacement incident to filling in the recess thereabout with plaster.

13. In a metallic window, a frame; sashes slidably guided within the frame; and clips for securing the sashes against movement in the frame incident to shipment, the said clips having projections adapted to engage over and under the top and bottom corners of the sashes and being secured to the jamb rails of the frame by securing means passing through the side rails of the sashes.

14. In a metallic window, a frame; sashes slidably guided within the frame; and clips for securing the sashes against movement in the frame incident to shipment and for preventing distortion or springing of the frame during installation, the said clips being of angular configuration with flanges to fill side clearance spaces between the sash edges and the contiguous frame jambs and with notched flanges to engage over and under the top and bottom sash corners, and said clips being secured by fastening means taking into the frame jambs.

15. In a metallic window comprising, a frame, sashes slidably guided within the frame, devices with sash suspension tapes, and open staples at the ends for engaging hook members in the bottom horizontal rails of the sashes; clips for securing the sashes against movement in the frame incident to shipment and for preventing distortion or springing of the frame during installation, said clips being of angular configuration with apertured flanges to fill side clearance spaces between the sash edges and the contiguous frame jambs, and having notched flanges to engage over and under the top and bottom sash corners, and said clips being secured by fastening means passing through the side rails of the sashes, the opening of the suspension tape staples aforesaid, and the apertured flanges of the clips and taking into the frame jambs.

In testimony whereof, we have hereunto signed our names at Philadelphia, Pennsylvania, this first day of November, 1930.

BENJAMIN H. POLLOCK.
JOSEPH H. SHEARD.