Aug. 20, 1935. F. P. ANDERSON 2,011,746

WINDOW

Filed Jan. 9, 1932 3 Sheets-Sheet 1

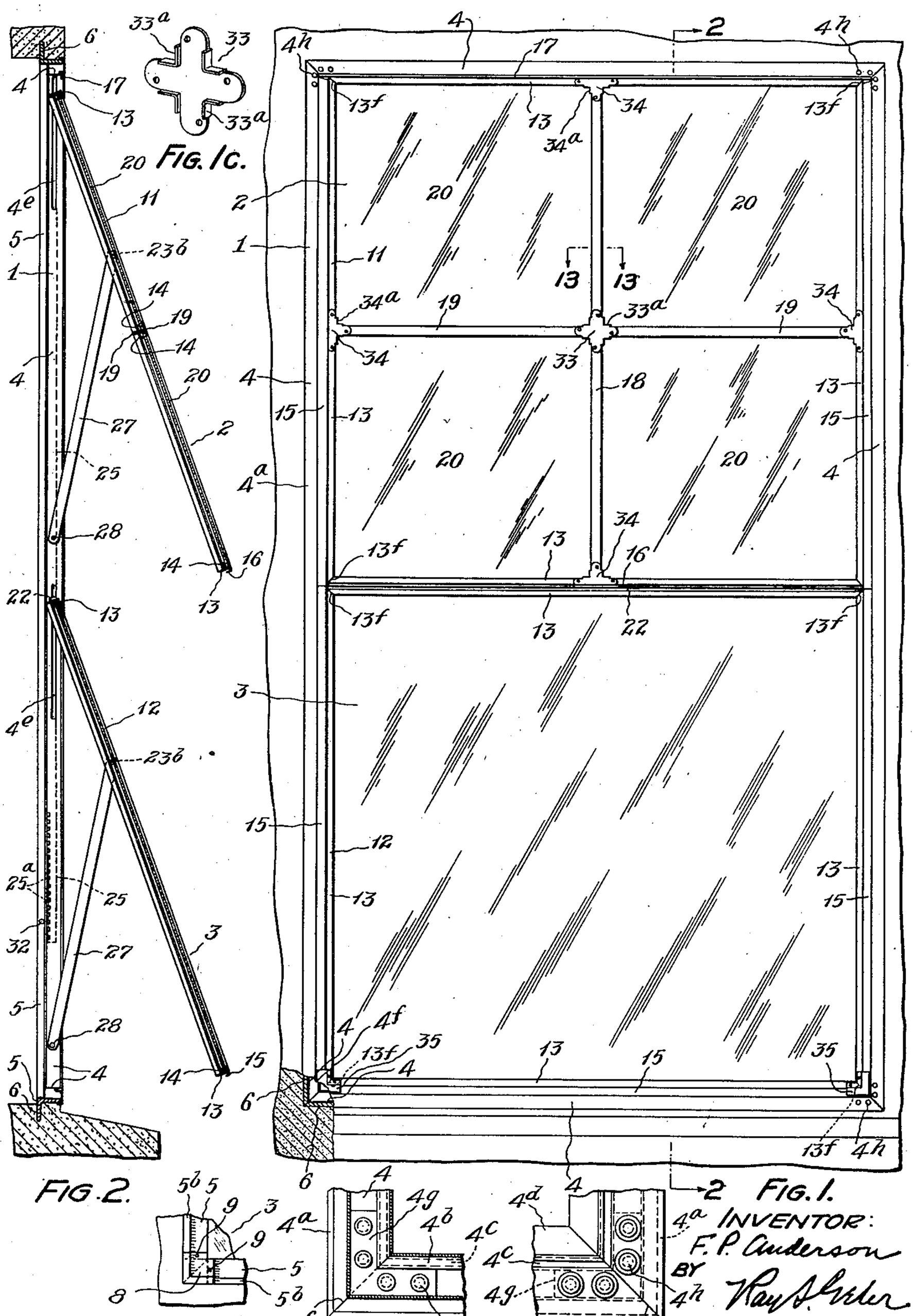


FIG. 1c.

FIG. 2.

FIG. 3.

FIG. 1a.

FIG. 1b.

FIG. 1.

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Aug. 20, 1935. F. P. ANDERSON 2,011,746

WINDOW

Filed Jan. 9, 1932 3 Sheets-Sheet 2

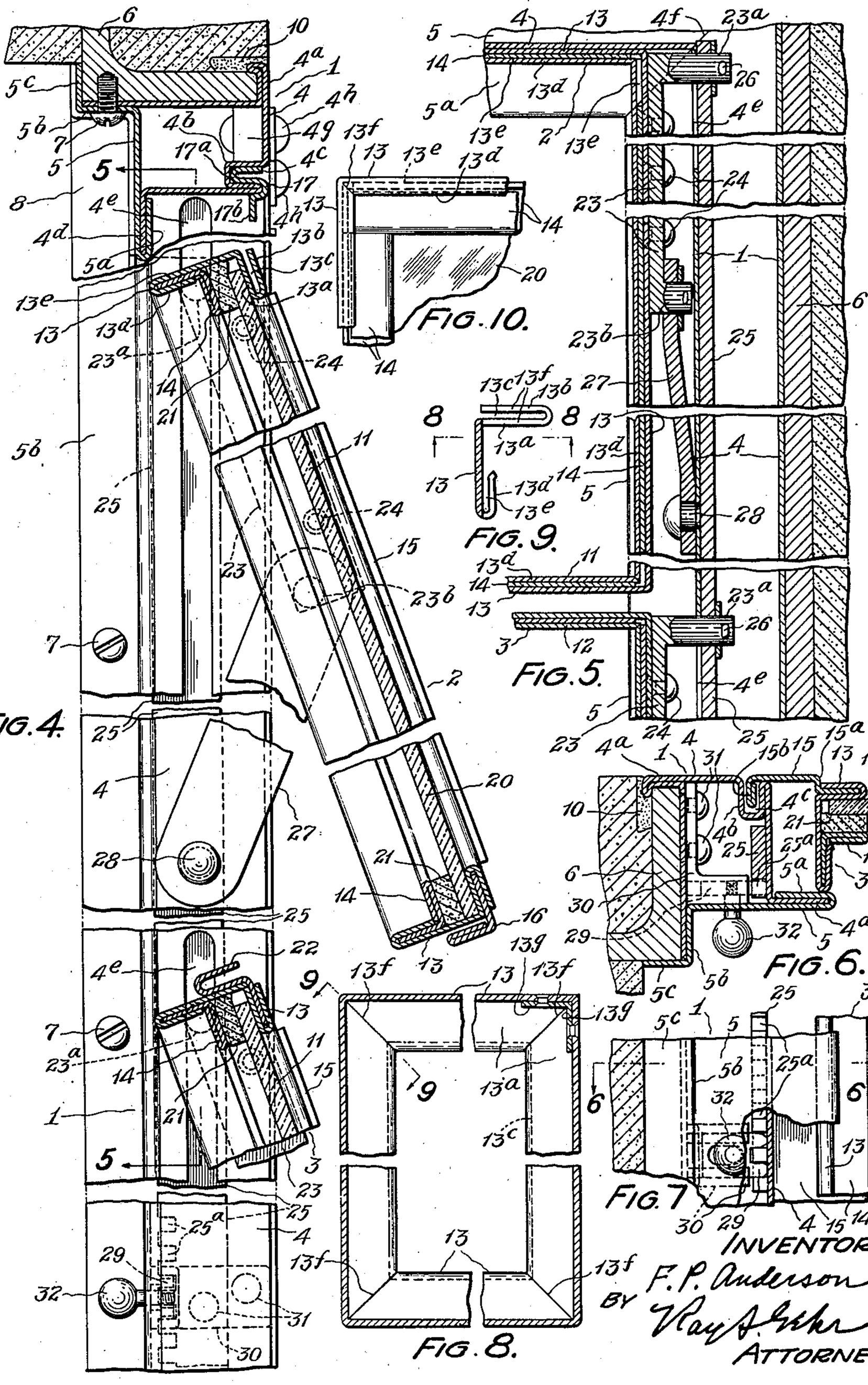


FIG. 10.

FIG. 9.

FIG. 5.

FIG. 6.

FIG. 4.

FIG. 7

FIG. 8.

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Aug. 20, 1935. F. P. ANDERSON 2,011,746

WINDOW

Filed Jan. 9, 1932 3 Sheets-Sheet 3

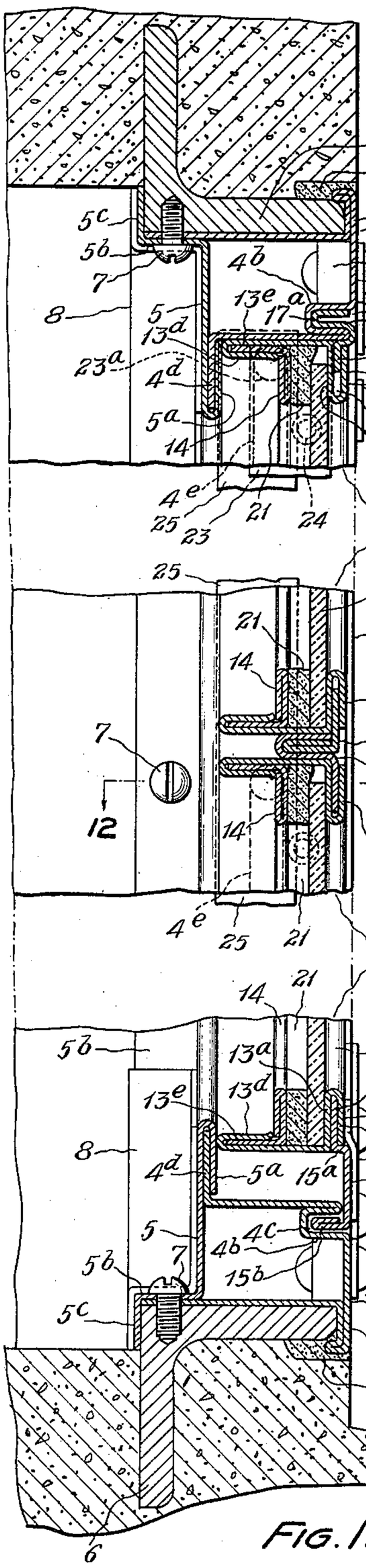

FIG. 11.

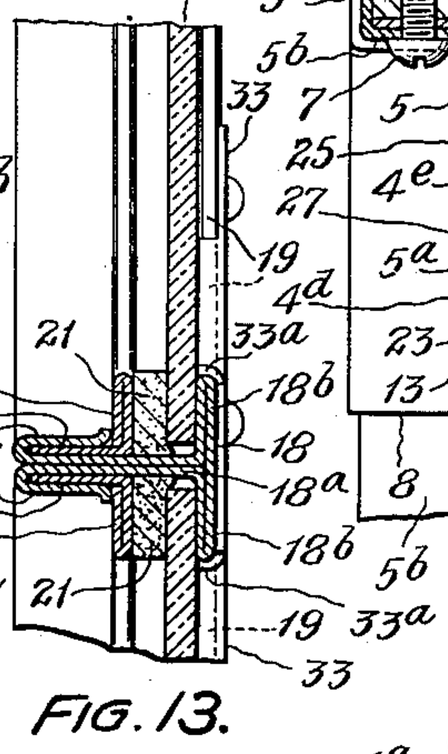

FIG. 13.



FIG. 12.

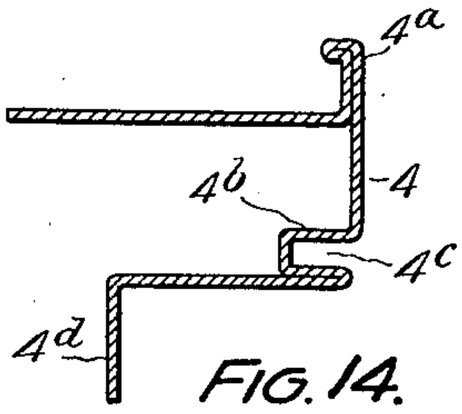

FIG. 14.

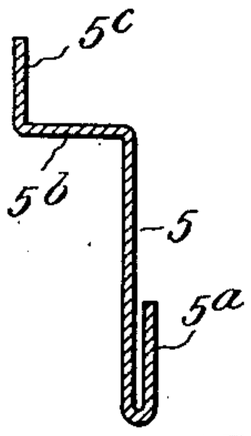

FIG. 15.

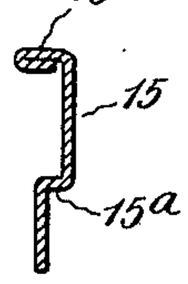

FIG. 18.

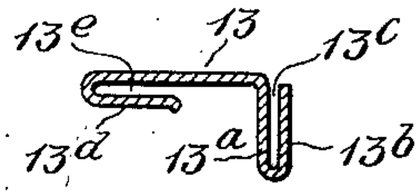

FIG. 16.

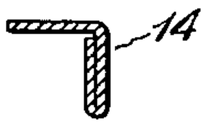

FIG. 17.

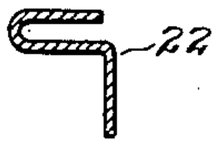

FIG. 19.

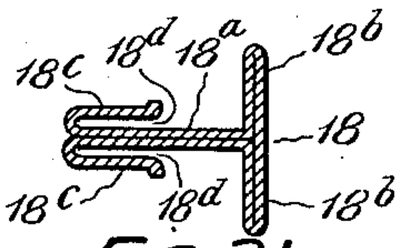

FIG. 21.

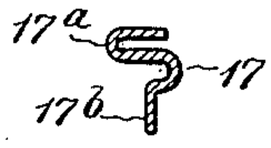

FIG. 20.

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Patented Aug. 20, 1935 2,011,746

# UNITED STATES PATENT OFFICE

2,011,746

## WINDOW

Frank P. Anderson, Cleveland, Ohio

Application January 9, 1932, Serial No. 585,737

13 Claims. (Cl. 189—67)

The invention relates more particularly to windows having metal frame and sash structures and has for one of its objects the provision of metal frame and sash structures that can be fabricated with a minimum amount of labor and at minimum cost.

Another object of the invention is the provision of a metal frame and sash structure that is light in weight yet adequately strong to satisfactorily perform its various functions.

A further object of the invention is the provision of a metal frame and sash structure having an improved mounting for the sash.

Another object of the invention is the provision of improved structural shapes formed of sheet metal and adapted to serve as the main members of window frame and sash structures with a minimum of manual fabrication, for the attainment of the first named object of the invention.

Various other objects of the invention more or less incidental or ancillary to those already mentioned will be apparent from the following description in which one of the preferred embodiments of the invention is described, with reference to the accompanying drawings illustrating the same.

In the drawings, Fig. 1 is an outside elevation of a window structure embodying my improvements, together with broken away portions of the wall in which the window is set.

Fig. 1[a] is an enlarged fragmentary view showing the corner construction of the window frame, the view being a vertical section (looking outward) of the frame at the lower right hand corner of the window as viewed in Fig. 1.

Fig. 1[b] is an enlarged fragmentary outside elevation of the same corner of the window frame.

Fig. 1[c] is an enlarged perspective view of one of the reinforcing plates for the muntin bars of the upper sash of the window.

Fig. 2 is a vertical section on the line 2—2 of Fig. 1 with the windows partially opened.

Fig. 3 is a fragmentary inside elevation of a corner of the window frame showing the construction of the corner joint of the frame.

Fig. 4 is an enlarged vertical section of a portion of the structure shown in Figs. 1 and 2, with parts broken away to permit illustration on the larger scale.

Fig. 5 is a fragmentary section taken on the line 5—5 of Fig. 4 but with the windows in their closed positions.

Fig. 6 is a section on the line 6—6 of Fig. 7.

Fig. 7 is a fragmentary inside elevation of the lowermost portion of the structure shown in Fig. 4, with a part of the window frame structure broken away to illustrate details of the locking device of the window.

Fig. 8 is a vertical section through the lower sash frame of the window, on the line 8—8 of Fig. 9, portions of the sash being broken away.

Fig. 9 is a section through the sash frame, taken on the line 9—9 of Fig. 8.

Fig. 10 is a fragmentary inside elevation, also on an enlarged scale, of the corner of one of the window sashes showing the arrangement of the putty strips.

Fig. 11 is an enlarged vertical section on the line 2—2 of Fig. 1 with portions of the structure broken away.

Fig. 12 is a section on the line 12—12 of Fig. 11.

Fig. 13 is an enlarged horizontal section on the line 13—13 of Fig. 1.

Fig. 14 is a transverse section through the main window frame member.

Fig. 15 is a similar view of the second window frame member which cooperates with the main member in a manner to be described.

Fig. 16 is a transverse section through the main frame member of the window sash.

Fig. 17 is a transverse section through the putty strip.

Figs. 18, 19 and 20 are transverse sections through the three different forms of weather strips employed.

Fig. 21 is a transverse section through the muntin bar of the window.

My invention is applicable, more or less fully, to various forms or types of window construction, but I have chosen to illustrate and explain it as applied to the swinging or pivoted sash type of window.

Referring in detail to the construction illustrated, 1 designates in its entirety the sheet metal window frame in which is mounted an upper, four-pane window and a lower single pane window, respectively designated in their entireties by 2 and 3. Each of the windows is pivotally mounted on a horizontal axis at its top edge in a manner which will later be explained.

The window frame 1 is made up of two sheet metal members 4, 5 which are shown individually and detached in Figs. 14 and 15, respectively, and which are shown in their assembled relations in Figs. 4, 6, 11 and 12.

The member 4, which is formed by bending an elongated strip of sheet metal on longitudinal lines, has a channel shape in cross section with a double thickness flange 4[a] extending laterally

from one of the corners of the channel and with a re-entrant portion $4^b$ adjacent the other corner of the channel forming a groove $4^c$. The member is also formed with a lateral flange $4^d$ which projects from the edge of one of the side walls of the channel, the flange $4^d$ being in a plane offset from a plane through the flange $4^a$.

The frame member 5 also is formed by bending an elongated strip of sheet metal on longitudinal lines and has a lateral fold $5^a$ formed by bending the strip over upon itself with an intervening space which is adapted to receive the flange $4^d$ of the member 4. The member 5 has a portion $5^b$ extending at right angles from the main portion of the member and preferably the portion $5^b$ carries the flange $5^c$ which extends parallel to the main portion of the member.

In making up the window frame, four of the channel members 4 are cut of suitable length with mitered ends $4^f$ which are secured together to form a continuous rectangular frame, as indicated in Fig. 1. The miter joints at the four corners of the frame are preferably secured by heavy angle plates $4^g$ to which the ends of the members 4 are rigidly secured by rivets $4^h$, as shown in Figs. 1, $1^a$, and $1^b$. These miter joints also can be welded, if desired, but this is not ordinarily necessary. This rectangular frame structure formed by the channel members 4 is mounted in the window opening of the building wall by providing in said opening a rectangular frame 6 formed of angle iron which has one leg of the angle embedded and anchored in the wall, as shown in the drawings. The rectangular frame formed by the frame members 4 is made of a size to fit within the anchored frame 6 with the flange $4^a$ of the window frame fitting over and embracing the outer edge of the angle iron. When the frame formed by the members 4 has been thus placed in position four of the sheet metal members 5 cut to suitable lengths are assembled on the frame members 4 by slipping the folds $5^a$ of the members 5 over the flanges $4^d$ of the members 4 and bringing the portions $5^b$ of the members 5 into contact with the opposite side wall of the channel member 4 and with the flanges $5^c$ overlying the inside exposed edge of the frame 6. The four strips or members 5 thus assembled are then secured by inserting screws 7, 7 into holes previously drilled and tapped in the members 4, 5 and 6, thus securing the window frame parts together and rigidly attaching the sheet metal frame structure to the anchored frame 6. The frame members 5 are cut with square ends, as indicated in Fig. 3, and to finish the corner joints on the inside of the frame, corner plates 8 are attached by means of screws 9, 9 or the like. To render the joint between the frame 1 and the wall thoroughly weather proof, cement or suitable calking material may be applied at 10, as shown in Figs. 4, 6, 11 and 12.

The upper and lower sashes of the window, designated in their entireties by 11 and 12, respectively, are substantially alike except that the upper sash has four panes of glass and accordingly comprises muntin bars which the lower sash does not have. Accordingly a description of the upper sash will, for the most part, serve for both it and the lower sash. The top sash 11 comprises a main rectangular frame member 13, a vertical muntin bar 18, two horizontal muntin bars 19, a plurality of putty strips 14 (four for each pane of glass), two weather strips 15, 15 which project from the two upright sides of the sash and a weather strip 16 carried by the lower side of the sash. The main frame bar 13 of the sash is shown in detached section in Fig. 16 and is formed by bending an elongated strip of such metal on longitudinal lines, as indicated in Fig. 16. That is to say, the strip is bent along one edge to form a flange $13^a$ adapted to serve as a glass stop or abutment and preferably this flange is made of double thickness by forming a fold $13^b$ with an outwardly open space or slot $13^c$ between it and the flange $13^a$, the slot $13^c$ being adapted to receive and frictionally hold the weather strip members 15 and 16. Along its other longitudinal side or edge the bar 13 is bent to form a fold $13^d$ with an intervening space or slot $13^e$ which is adapted to receive one leg of the putty strip 14. The cross sectional shape of the putty strip 14 and of the weather strip 16 is shown by Fig. 17 and the corresponding shape of the weather strip is shown in Fig. 18. The putty strip 14 and the weather strip 15 are simple shapes formed by bending elongated strips of sheet metal. The putty strip 14 has an angle shape in cross section with one leg of the angle of double thickness, while the weather strip 15 is offset at $15^a$ and is formed with a flange $15^b$ which is adapted to enter the groove $4^c$ of the window frame.

A weather strip 17 serves to form a tight joint between the top side of the upper sash and the top side of the window frame 1. The strip 17 is shown in detached section in Fig. 20. As in the case of the other weather strips, it is formed from an elongated strip of sheet metal bent on longitudinal lines to the form shown. At its top side it is formed with a fold $17^a$ which is adapted to enter the slot $4^c$ of the frame member 4 with a snug friction fit which secures it in position. The lower portion $17^b$ of the strip 17 is of flat form adapted to enter the slot $13^c$ of the adjacent sash frame member, as shown in Fig. 11.

In fabricating the sash frame a length of the sash bar 13 equal to the length of the four sides of the sash is cut and bent to rectangular form as shown in Fig. 8 with the abutting ends of the bar joining at one corner, in this instance the upper right corner of Fig. 8. To permit this, the bar has its flange and fold portions $13^a$, $13^b$ and $13^d$ cut away to form miter joints when the bar is bent with the flange $13^a$ disposed inwardly and the miter ends or edges of the flange $13^a$ and the folds $13^b$ and $13^d$ brought together on the miter lines $13^f$, $13^f$ as shown in Fig. 8. The joint formed at the upper right hand corner of the frame in Fig. 8 is then welded together and, if desired, the miter joints of the flanges and folds may be similarly welded at the several corners of the sash frame, but this in most cases will not be found essential. I prefer to reinforce the welded joint at the upper right hand corner of Fig. 8 with an angle $13^g$ riveted to the bar 13. A sash frame made up in this manner from a single strip of material has adequate strength and can be fabricated with a minimum amount of labor.

As previously noted, the upper sash 11 is fitted with a vertical muntin bar 18 and two horizontal muntin bars 19, 19. These bars have the cross sectional shape shown in Fig. 21 and are formed by bending an elongated strip of sheet metal into T-shape with the stem $18^a$ and the legs $18^b$, $18^b$ of the T of double thickness and with the stem parts of the sheet bent back upon themselves to form folds $18^c$ with intervening spaces $18^d$ adapted to receive the putty strips 14. The muntin bar 18 may have its ends welded to the top and

bottom sides of the sash frame and the muntin bars 19, which are like the bar 18 in cross section, similarly may have their ends welded to one or the other of the side bars of the sash frame and to the vertical muntin bar 18, thus forming a rigid structure to receive the four panes of glass which are designated by the numeral 20. However, I prefer to secure the muntin bars 18 and 19 together by a cross-shape fitting 33 which is riveted, as shown in Fig. 1, to the parts 18b of the muntin bars; and similarly to secure the ends of the muntin bars to the main sash bar 13 by T-shape fittings 34. The fitting 33, which is formed of sheet metal, has flanges 33a (Fig. 1c) which engage and brace the muntin bars, and the fittings 34 are made with flanges in a corresponding manner. It will be understood that when the sash joints are secured by the riveted fittings they may be welded in addition if desired.

In glazing the sash the glass panes are put in position in the frame of the sash 11 with the glass in contact with the stop flanges 13a and 18b. Putty strips 14 are then inserted in the slots 13e of the sash frame members 13 and the slots 18d of the muntin bars, the distance between the said flanges and the entrance to the said slots being such as to permit such insertion. When the putty strips have been so inserted the intervening space between the putty strips and the glass is filled with putty, as shown at 21, and when the putty has hardened the glass panes are strongly secured with weather tight joints, as will readily be understood.

As previously noted, the lower sash 12 differs from the upper one in that it has a single glass pane and no muntin bars. In addition, the lower sash is fitted at its upper side with a special weather strip 22 which is carried in the slot 13c of the upper side of the main frame member 13 of the sash and which is formed with a recess adapted to receive one leg of the angle weather strip 16 which extends across the bottom side of the upper sash 11. The weather strip 22 is shown in detached section in Fig. 19. The lower sash is also provided at its lower corners with corner plates 35 which are secured by rivets that pass through said plates, the sash bar 13 and weather strips 15. The plates 35 cover the miter joints of said weather strips.

While some of the weather strips are shown as secured to the sash or frame parts which carry them by frictional engagement only, it will be understood that they can if desired be additionally held by welding or by rivets.

The two window sashes are operatively mounted in the window frame in the following manner. To each of the side bars 13 of each of the two sashes an elongated metal bar 23 is secured by rivets 24 (Figs. 5 and 12). At its upper end, each bar 23 is formed with a laterally extending trunnion 23a which extends through a vertically extending slot 4e in the adjacent wall of the frame member 4, the trunnion being adapted to slide in said slot. Each trunnion also is pivotally connected to a vertical bar 25 which is disposed within the hollow chamber of the window frame 1, as shown in Figs. 5 and 12, there being one such bar 25 at each side of the window so that the two window sashes are operatively connected together by their trunnions 23a and the two bars 25 in such manner that the top sides of the two sashes must rise and fall together as the trunnions 23a slide in the slots 4e. The bars 25 are secured on the trunnions 23a by cotter pins 26, 26 which extend through holes in the trunnions.

The iron bars 23 are formed at their lower ends with wrist pin extensions 23b to each of which there is connected a link 27 which is pivotally connected at its lower end to a stud 28 which is riveted to the adjacent wall of the window frame member 4, as shown in Figs. 4 and 5. As shown by Figs. 5 and 12, the links 27 and associated parts are housed in the spaces between the sides of the sashes and window frame when the window is closed.

With the two window sashes mounted in the manner described, said sashes can be swung outward to open position as indicated in Figs. 2 and 4, the weight of the sashes being borne by the links 27. As the lower side of each window sash swings outward its upper side moves downward, being guided by the engagement of its trunnions 23a in the slots 4e. As the amount of the vertical movement of the upper side of each sash is proportional to the amount of the angular movement of the sash and as the two sashes are connected through their trunnions by the vertical bars 25, the two sashes are caused to move in unison. This insures a proper disengagement of the weather strips 16 and 22, at the joint between the bottom of the upper sash and the top of the lower sash as the windows open, and also a proper reengagement of said strips when the windows are again closed. As the top sash is opened its top side is drawn out of engagement with the fixed weather strip 17 and such engagement is again re-effected when the window is closed. The disengagement and reengagement of the weather strips 15 on the vertical sides and on the bottom of the lower sash, with the slots 4c of the window frame will be readily understood.

To permit the window sashes to be held or locked in any desired position, either shut or open, latch devices are provided to control the vertical positions of the bars 25. Each of said bars is formed at its lower end with a series of notches 25a and adjacent the notched part of the bar, within the hollow frame 1, is a toothed bolt 29 slidably mounted in a frame 30 secured by rivets 31 to the frame part 4. An actuating handle 32 on the bolt 29 extends through a slot in the frame member 5 and by movement of this handle 32 the bar 25 can be released for vertical movement and, after such vertical movement, can be secured in position by moving the handle 32 to bring the teeth of the bolt 29 into the notches of the bar 25. See Figs. 4, 6 and 7.

I have referred to the parts 4 and 5 of the window frame and of the various parts of the window sashes, including the weather strips, as formed of sheet metal. My invention is not limited to any particular metal but I prefer and especially contemplate the use of sheet aluminum, meaning by that term of course the usual aluminum alloys of which the commercial sheet is made. Sheet aluminum can readily be formed by bending and rolling machines into the various shapes required for the window frame, sash and weather strips and it is now entirely feasible to weld sheet aluminum parts at the various joints where welding is required. Furthermore, sheet aluminum formed into the shapes which I have devised produces frame and sash structures of adequate stiffness and strength. The stiffness and strength of the frame 1, for example, will be obvious from a consideration of its box form. Similarly, in the case of the sash, the form of the main frame part 13 is obviously adapted to give

it strength and stiffness in all directions and the same is true of the muntin bars 18. Another advantage flowing from the use of aluminum alloys is the lightness of the resultant structure joined with the adequate strength and stiffness referred to. Furthermore, aluminum alloy sheet material presents a pleasing appearance and it is feasible to use the aluminum window frame and sash structures without painting, thus realizing a substantial saving as compared with iron or steel frames and sashes.

One of the chief advantages attaching to my improved window frame and sash construction consists in the ease with which both the frame and the sash can be fabricated, using my improved shapes or forms. The frame members 4 and 5 are easily cut to the desired lengths and when the frame members 4 have been united to form the rectangular frame structure the latter can be mounted in the window opening of the building with great ease and with a very small amount of labor, it being merely necessary to set the rectangular frame formed by the members 4 into the rectangular opening formed by the angle bars 6, then apply the four frame members 5, insert the securing screws 7, and attach the corner finishing plates 8.

The sash structure is also fabricated with a relatively small amount of labor, as will be apparent from consideration of the preceding description of the manner in which the sash frame is made.

The glazing of the sash also is effected with very great ease, as is apparent from mere inspection of the drawings.

It will be understood that within the scope of the invention as defined by the appended claims the forms of the various window frame and sash members can be more or less varied and that said members can be assembled and fabricated to produce a great variety of window structures.

What I claim is:

1. In a metal window sash, the combination of a main frame member of sheet metal having a part constituting a peripheral wall of the sash frame, a flange extending from one longitudinal edge of the peripheral wall part to form a glass stop and a part joining the other longitudinal edge of said peripheral wall part and folded back upon the latter with an intervening space between the two; and a putty strip member of sheet metal in the form of an angle bar, said member having one leg of its angle adapted to enter the said intervening space of the main frame member when the window glass is in position against the glass stop thereof and being adapted when fully inserted into said intervening space to leave a putty space between its other leg and the window glass.

2. In a metal window sash, the combination of a main frame member of sheet metal having a part constituting a peripheral wall of the sash frame, a part forming a glass stop and extending inwardly from the outside (weather) longitudinal edge of the peripheral wall part and folded outwardly upon itself with an outwardly opening intervening space and a part joining the other longitudinal edge of said peripheral wall part and folded back upon the latter with an intervening space between the two; a weather strip secured in and projecting from the first of said intervening spaces; and a putty strip member of sheet metal in the form of an angle bar, said member having one leg of its angle adapted to enter the second intervening space of the main frame member when the window glass is in position against the glass stop thereof and being adapted when fully inserted into said intervening space to leave a putty space between its other leg and the window glass.

3. In a metal window sash, the combination of an integral main frame member of sheet metal having a part constituting a peripheral wall of the four sides of the sash frame, a flange extending from one longitudinal edge of the peripheral wall part to form a glass stop and a part joining the other longitudinal edge of said peripheral wall part and folded back upon the latter with an intervening space between the two; and putty strip members of sheet metal in the form of angle bars, each of said members having one leg of its angle adapted to enter the said intervening space of the main frame member when the window glass is in position against the glass stop thereof and being adapted when fully inserted into said intervening space to leave a putty space between its other leg and the window glass.

4. As a new article of manufacture, a sheet metal form adapted to constitute the main frame member of a metal window sash, said form comprising a part adapted to constitute a peripheral wall of the sash frame, a flange extending from one longitudinal edge of the peripheral wall part and adapted to serve as a glass stop, and a part joining the other longitudinal edge of said peripheral wall part and folded back upon the latter with an intervening space adapted to receive a putty strip.

5. In a combined wall and window frame structure, the combination with a wall formed with a window opening and having a frame secured in said opening; of a separable window frame comprising a sheet metal strip bent on longitudinal lines into the form of a channel having its open side disposed toward the inside of the wall and with a flange extending outwardly from the outer leg of the channel and overlying the said frame secured in the wall and with a flange extending inwardly from the inner leg of the channel, and a second sheet metal strip arranged to close the open side of the channel strip, the second strip being bent on longitudinal lines to form a fold at its inner edge to embrace the last named flange of the channel strip; and fastening devices for securing the two sheet metal frame parts in assembled relation to the said frame secured in the wall.

6. In a window frame and sash structure of the swinging sash type, the combination of a hollow metal frame having an inwardly extending flange adapted to serve as a stop or abutment for a window sash; a plurality of metal window sashes each formed to fit within the frame with an intervening space between the latter and the sash and with the sash engaging the said flange of the frame; and means for operatively connecting the sashes to the frame comprising a pair of trunnions projecting laterally from each sash at the upper end thereof and extending through vertical slots in the adjacent wall of the hollow frame, a pair of control bars disposed, respectively, in the hollow vertical side sections of the frame with the said trunnions of each sash pivotally connected thereto, a pair of links for each sash disposed when the sash is closed in the intervening spaces between the vertical sections of the sash and the frame and pivotally connected at their lower ends to the frame and at their upper ends to the sash, and latch devices

for holding the control bars in different vertical positions.

7. As a new article of manufacture, a window frame member formed of an integral strip of sheet metal bent on longitudinal lines into channel form with a double-thickness flange projecting laterally from one leg of the channel at the junction of said leg with the web of the channel and with a flange projecting laterally from the other leg of the channel in a plane offset from a plane through the other said flange.

8. As a new article of manufacture, a window frame member formed of an integral strip of sheet metal bent on longitudinal lines into channel form with a double-thickness flange projecting laterally from one leg of the channel at the junction of said leg with the web of the channel and with a flange projecting laterally from the other leg of the channel in a plane offset from a plane through the other said flange, the web of the channel having a reentrant portion forming an open slot adapted to cooperate with a weather strip.

9. In a metal window sash, a muntin bar structure comprising a part formed from a single strip of sheet metal bent on longitudinal lines to form a bar of T-section with the stem and the legs of the T of double thickness and with portions of the stem parts at the free edge of the stem folded back upon the stem with intervening spaces, and two members of sheet metal in the form of angle bars, each of said members having one leg of its angle adapted to enter one of said intervening spaces of the T-section member when the window glass is in position against the opposite leg of the T and the other leg of its angle adapted to serve as a glass stop with a space between it and the opposite leg of the T greater than the thickness of the glass so as to afford a space for putty.

10. In a metal window sash the combination of a main frame member of sheet metal having a part constituting a peripheral wall of the sash frame; a flange extending from one longitudinal edge of the peripheral wall part to form a glass stop and a part joining the other longitudinal edge of said peripheral wall part and folded back upon the latter with an intervening space between the two; and a strip of sheet metal in the form of an angle bar, one leg of the angle being adapted to enter the said intervening space of the main frame member when the window glass is in position against the stop flange of said member and the other leg of the angle being adapted to serve as an opposing glass stop with a space between the two glass stops greater than the thickness of the glass so as to afford a space for putty.

11. As a new article of manufacture, an integral sheet metal form adapted to constitute the main frame member of a metal window sash, said form comprising a part adapted to constitute a peripheral wall of the sash frame, a flange extending from one longitudinal edge of the peripheral wall part and adapted to serve as a glass stop, and a part joining the other longitudinal edge of said peripheral wall part and folded back upon the latter with an intervening space adapted to receive a strip constituting an opposing stop for the glass.

12. As a new article of manufacture, an integral sheet metal form adapted to constitute the main frame member of a metal window sash, said form comprising a part adapted to constitute a peripheral wall of the sash frame, a flange extending from the peripheral wall part and adapted to serve as a glass stop, and a part joining one longitudinal edge of the peripheral wall part and folded back upon the latter with an intervening space adapted to receive a strip forming an opposing stop for the glass.

13. In a window structure of the multiple swinging sash type, the combination of a frame, a top sash having near its upper edge sliding pivotal connections with the sides of the frame structure; a second sash below the top sash having near its upper edge sliding pivotal connections with the sides of the frame; operative connections between the two sashes adapted simultaneously to swing them to open position while sliding them downward somewhat on their said pivotal connections or to swing them to closed position while sliding them upward somewhat on said pivotal connections; a separable weather strip joint between the upper edge of the top sash and the top of the window frame comprising a vertically opening slotted member carried by one of the two parts and a tongue member carried by the other of said parts adapted to enter the slot when the sash is moved upward to closed position; and a separable weather strip joint between the lower edge of the top sash and the upper edge of the second sash comprising a horizontally opening slotted member carried by one of the sashes and a tongue member carried by the other sash adapted to enter the said slot when both sashes are simultaneously moved to closed positions.

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