Nov. 15, 1955 W. E. PETTERSEN 2,723,732

DOORS OR THE LIKE

Original Filed May 1, 1951 2 Sheets-Sheet 1

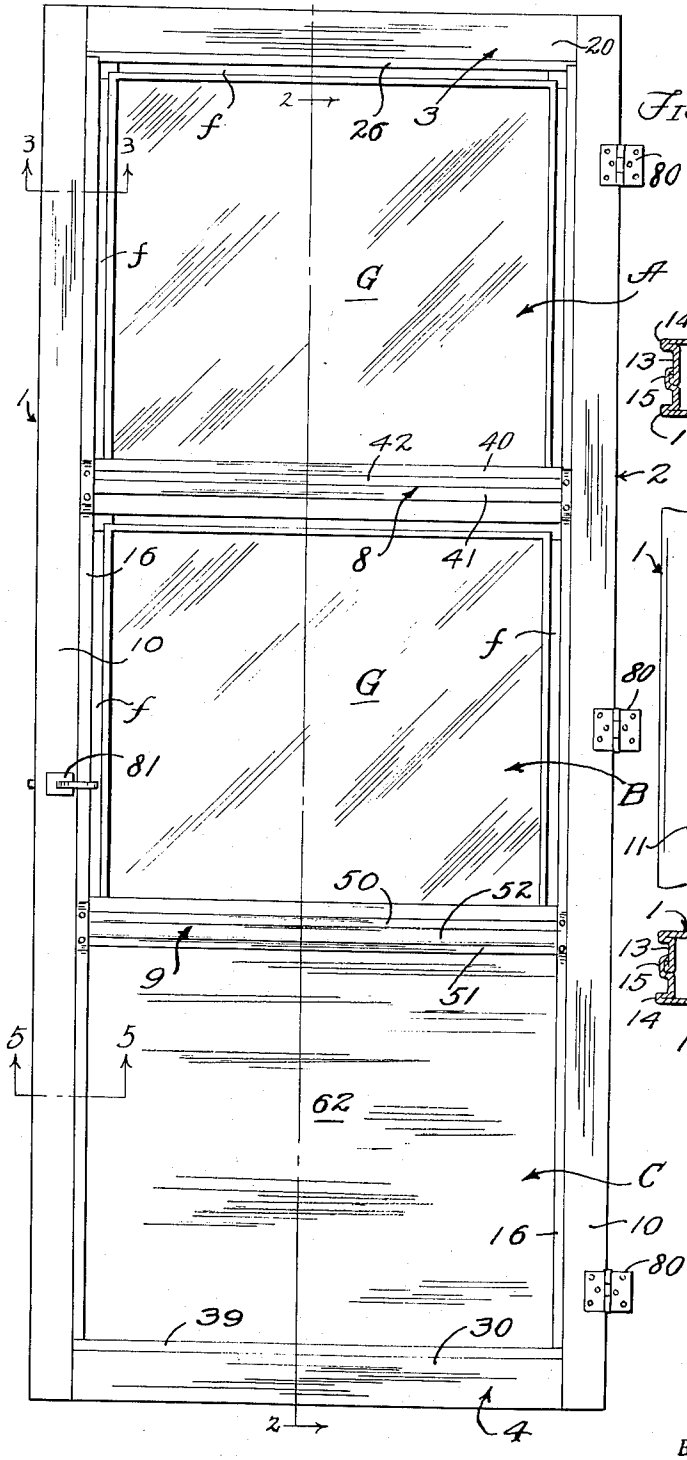


FIG. 1

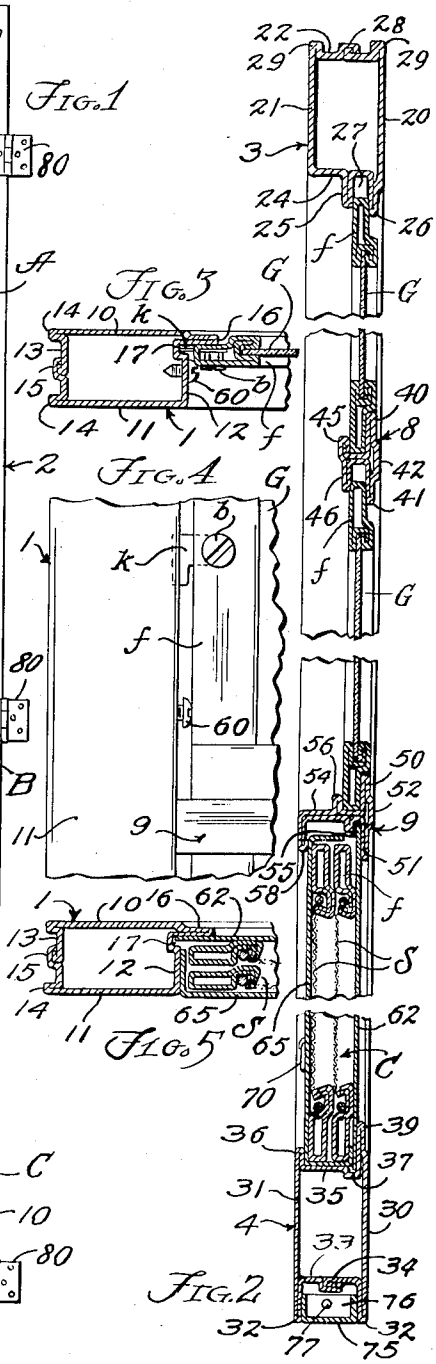


FIG. 2

FIG. 3

FIG. 4

FIG. 5

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DOORS OR THE LIKE

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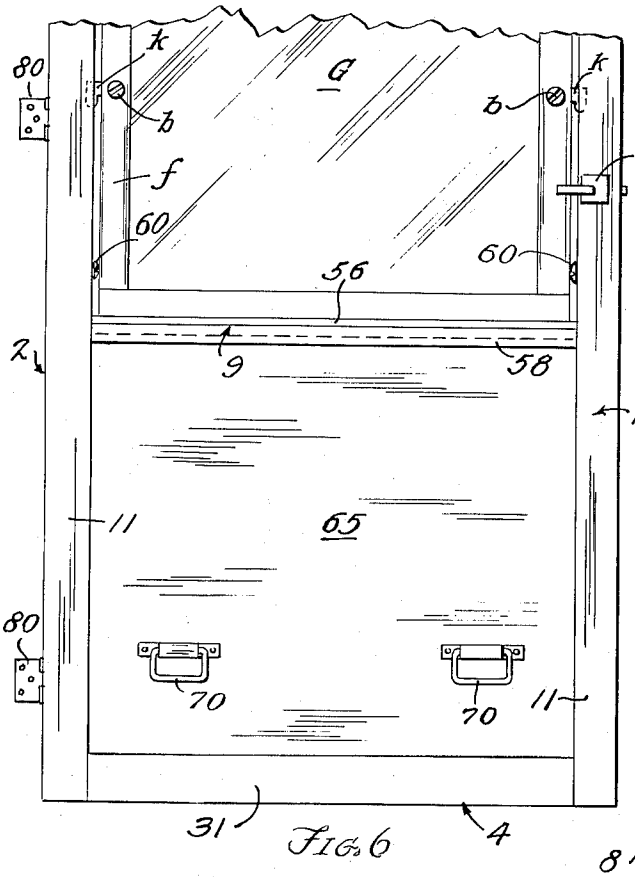


FIG. 6

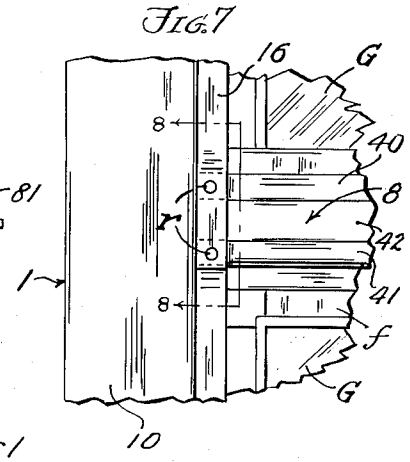


FIG. 7

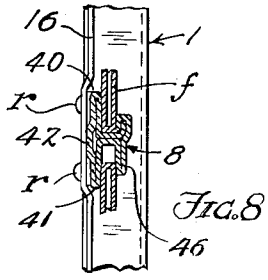


FIG. 8

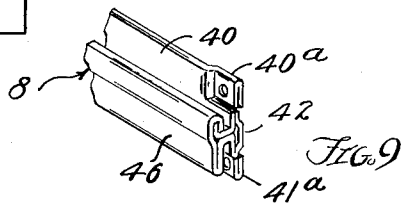


FIG. 9

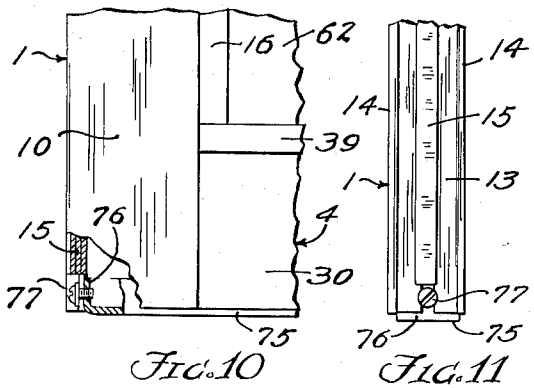


FIG. 10

FIG. 11

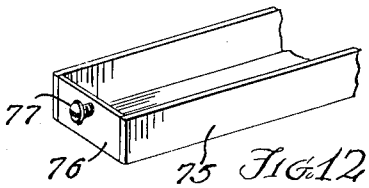


FIG. 12

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2,723,732

DOORS OR THE LIKE

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Original application May 1, 1951, Serial No. 223,866. Divided and this application March 18, 1952, Serial No. 277,109

6 Claims. (Cl. 189—46)

This invention relates to doors, especially auxiliary doors, or the like.

The present application is a division of one filed by me on May 1, 1951, Serial No. 223,866.

Among the objects of the instant invention are to provide a door or the like that is neat and attractive in appearance; that is relatively simple and economical of construction, and that is very substantial and durable.

Another object of the invention is to provide a construction for doors or the like wherein the frame parts consist of hollow, elongated sheet metal elements having cross sectional shapes facilitating fabrication, and which may be readily cut to the required lengths for producing doors or the like of various sizes and proportions.

Another object is to provide, in a sheet metal door construction, a simple, inconspicuous and conveniently adjustable bottom strip.

A further object of the invention is to provide, in a door or the like comprising a frame defining a sash opening and a sash removably fitted therein, means for centering or transversely positioning the sash in said opening; and a still further object is to provide means for holding the sash firmly in place, and in such manner that the sash cannot be removed from outside.

The foregoing objects and advantages, with others hereinafter appearing, are attained in the construction illustrated in the accompanying drawings, wherein like parts are designated by like reference characters and in which:

Fig. 1 is an elevational view of my improved door as it appears from the outside;

Fig. 2 is a vertical section through the door, on the line 2—2 of Fig. 1, and on a scale considerably enlarged over that of the previous view, parts being broken out for the purpose of contracting the view in a vertical direction;

Fig. 3 is a section on the line 3—3 of Fig. 1, drawn to the same scale as Fig. 2;

Fig. 4 is a fragmentary inside elevational view, showing the parts appearing in Fig. 3;

Fig. 5 is a section on the line 5—5 of Fig. 1;

Fig. 6 is a fragmentary inside elevational view of the door, drawn to the scale of Fig. 1;

Fig. 7 is an enlarged detail of the door as viewed from the outside, in the region of a joint between one of the cross rails and one of the stiles;

Fig. 8 is a section on the line 8—8 of Fig. 7;

Fig. 9 is a perspective view of the end portion of the cross rail shown in Figs. 7 and 8;

Fig. 10 is an enlarged detail of the lower left hand corner of the door, as viewed in Fig. 1, with parts broken away to show the adjustable bottom strip;

Fig. 11 is an elevational view looking from the left of Fig. 10, and

Fig. 12 is a fragmentary perspective view of the bottom strip.

In the production of the door, an open frame is constructed of stiles 1 and 2, a top rail 3, and a bottom rail 4; and the opening of this frame is separated into a number (three in the present instance) of subdivisions of substantially equal size, by cross rails 8 and 9.

The stiles and rails are made of sheet metal, according to the present preferred embodiment of the invention, and each is formed, as by conventional rolling operations, to a cross sectional shape peculiarly suited to its purpose, as will hereinafter more fully appear.

The invention is disclosed herein as embodied in an auxiliary door of the kind commonly known as a combined storm and screen door. The top and intermediate subdivisions of the door frame provide sash openings, designated A and B, respectively, and the bottom subdivision, designated C, constitutes a storage compartment. With each frame are provided two glazed sashes G, and two screen sashes S. When two of the sashes are in use in the openings A and B, the idle sashes are stored in the compartment C.

The stiles 1 and 2 consist of hollow elongated elements of the same cross section cut to the required length for the door that is to be constructed. Each stile, as best appears from Figs. 4 and 5, includes parallel front and rear walls 10 and 11, an inner edge wall 12, and an outer edge wall 13, the latter being inset from the corresponding edges of said front and rear walls; and inasmuch as the stile is constructed from a single strip of sheet metal, the foregoing formation results in flanges 14 of double thickness of sheet metal that extend along the edges of the wall 13 and impart rigidity to the stile. The longitudinal edges of the elongated piece of sheet metal from which the stile is fabricated are connected together by an interlocking seam 15, and this seam, which further enhances the stiffness of the stile, is disposed inside the plane of the outer edges of the flanges 14. The inner edge wall 12 is configurated to provide a relatively deep inwardly extending flange 16, formed by a double thickness of the material, and a narrow groove 17 closely adjacent the rear side of said flange. The flange 16 is desirably inset slightly from the plane of the front wall 10.

The top rail 3 includes parallel front and rear walls 20 and 21, respectively; an inset top wall 22, and an inner edge wall 24, the latter being formed to provide an inner double thickness flange 25, and a similar but deeper outer flange 26, shown as inset slightly from the plane of the front wall 20. The flanges 25 and 26 define a downwardly opening channel 27. The longitudinal edges of the strip of sheet metal from which the rail 3 is fabricated are connected together by an interlocking seam 28. The front and rear walls 20 and 21 join the top wall 22 through flanges 29 of double thickness, and the seam 28 lies inside the plane of the top edges of said flanges.

The bottom rail 4 includes front and rear walls 30 and 31 that join, through relatively deep double thickness flanges 32, the inset bottom wall 33 that incorporates an interlocking seam 34 by which the longitudinal edges of the piece of material of which the bottom rail is constructed are secured together. The upper edge of the rear wall 31 joins the top wall 35 through a double thickness flange 36, said top wall having a reentrant portion that provides a narrow groove 37 at the base of a relatively deeper inwardly extending flange 39. When the door frame is assembled, the groove 37 registers with the grooves 17 of the stiles 1 and 2, and the flange 39 aligns with the flanges 16 of the stiles.

The cross-rail 8 is given a cross sectional formation that provides relatively deep outer flanges 40 and 41, inset slightly from the front plane of a central bead 42, which, when the door is assembled, is in substantially the plane of the front walls of the stiles 1 and 2. The flanges 40 and 41 are of double thickness and their inner sides join,

through right angle portions, the forward sides of inner flanges 45 and 46, the latter being of double thickness, while the flange 45 is produced by an interlocking seam that connects together the longitudinal edges of the strip of sheet metal from which the rail is formed. Both inside flanges are narrower than the outer flanges, the inner flange 46 exceeding in depth the height of the flange 45. By the formation described, upwardly and downwardly opening sash receiving channels are provided.

The cross rail 9 has the same outside appearance as the cross rail 8, and is of the same vertical dimension. It includes relatively deep double thickness outside flanges 50 and 51, separated by a bead 52. In about the central horizontal plane of the rail 9, the material from which the rail is fabricated is turned abruptly inwardly from the inner sides of the flanges 50 and 51 to provide a web 54 of double thickness, parts of the top and bottom layers of the same being configurated to provide flanges in inwardly spaced parallel relation to the flanges 50 and 51, thereby to define a downwardly opening narrow groove 55, that registers with the grooves 17 of the stiles, and a wider upwardly opening channel 56, in vertical alignment with the channel defined by the flanges 41 and 46 of the rail 8. The inner edge portions of the layers of the web 54 are turned downwardly and are interlocked at their lower edges to provide a relatively deep flange 58 along the inner side of the rail 9, the exposed surface of said flange 53 being substantially flush with the rear walls of the stiles 1 and 2.

The sashes G and S include relatively thin frames *f*, desirably formed from sheet metal, and incorporated in the side members of the frames *f* are keys *k* consisting of flat pieces of metal appropriately shaped, that are secured to buttons *b* that are rotatably mounted in the frames *f* and have slotted heads, resembling the heads of screws. These keys, of themselves, form no part of the invention, as they are common in the art.

As a simple and convenient means of positioning or centering the sashes in the sash openings, screws 60 are threaded through the inner edge walls 12 of the stiles 1 and 2, a suitable distance above the bottom of each sash opening, as best shown in Figs. 3, 4 and 6. By adjusting the screws 60, the sashes may be properly located transversely of the openings, and any slight irregularities in the width of the sashes may be compensated for.

The storage compartment C is permanently closed at the front by a panel 62, the same being rectangular and of such size that its edges are confined within the grooves 17 of the stiles, the groove 27 of the bottom rail 4 and the groove 55 of the cross rail 9. 65 denotes a receptacle for the idle sash, when stored in the compartment C. The receptacle consists of a panel-like wall of somewhat less area than the panel 62, and extending forwardly from the edges of said wall are top, bottom and side flanges, the bottom flange terminating at its rear edge in a shallow upstanding lip. The receptacle is equipped with handles 70.

To insert the sashes within the sash openings A and B, their top edges are engaged within the channels at the tops of said openings, and the sashes are then swung forwardly so that their lower edges may be dropped into the channels along the bottoms of the openings, as will be readily understood by reference to Fig. 2. With the sashes thus inserted, the buttons *b*, by means of a screw driver or other suitable device, are turned to project the keys *k* into the grooves 17 of the stiles 1 and 2. This locks the sashes against inward displacement so that any attempt to remove them by lifting them so as to disengage their lower edges from the bottom channels of each of the sash openings and swinging the sashes inwardly, is effectively foiled.

As I have previously pointed out, the bottom wall 33 of the bottom rail 4 is inset a considerable distance from the bottom edges of the flanges 32; and within the space thus provided is a bottom strip 75, shown in Figs. 2, 10, 11 and 12. This strip desirably consists of a sheet metal channel. The strip is provided with end walls 76, within threaded openings of which screws 77 are engaged. Adjacent the lower end of each stile 1 and 2, the interlocking seam 15 is cut away and said wall is notched or slotted therebelow to receive the adjacent screw 77, as will best appear from Figs. 10 and 11. The bottom strip 75 may thus be adjusted in properly spaced relation to the threshold of the door and locked in such position by the screws 77.

The stile 2 is shown as equipped with conventional hinges 80, by which the door may be attached to a door frame, and a latch 81 is incorporated in the stile 1. At each corner of the door, the end of a stile, and the adjacent end of the top or bottom rail, are suitably secured together in right angular relation and so as to provide a strong and rigid connection between the parts; and the intermediate cross rails 8 and 9 are fastened to the stiles, desirably by riveting the ends of the top and bottom flanges of the cross rails to the inwardly extending flanges of the stiles. The present preferred manner of connecting the ends of the cross rails to the stiles is illustrated in detail in Figs. 7, 8 and 9, the joint shown being that between the stile 1 and the adjacent end of the cross rail 8. The ends of the flanges 40 and 41 are severed from the adjacent central portion of the rail along longitudinal lines a distance about equal to the width of the inwardly extending flange 16 of the stile, to produce lugs 40^a and 41^a that are offset forwardly to provide clearance for the heads of the rivets *r* that are extended through apertures in said lugs and through aligned holes in the flange 16. As will best appear from Fig. 8, the flange 16 is offset forwardly in the region of the joint.

Having thus described my invention, what I claim is:

1. In a door or the like, laterally spaced substantially parallel vertically disposed stiles exhibiting along their opposed edges adjacent their front sides inwardly extending flanges, rails spaced apart in a vertical direction and connecting the stiles and defining therewith a sash opening, the opposed edges of said rails being configurated to provide narrow horizontal and vertical walls defining sash-receiving channels of the same width, the channel of the upper rail being considerably deeper than the channel of the lower rail and the vertical walls that define the front sides of said channels being in the vertical plane of the rear sides of the aforesaid flanges, a sash occupying said opening with its top and bottom edges in the channels of said rails and bearing outwardly along its lateral edges against said flanges, the sash being substantially narrower than the space between the opposed edges of the stiles and of a height sufficiently less than the distance between the horizontal walls of said channels to allow insertion of the sash, and positioning means adjustably carried by one of the stiles for engagement by the adjacent lateral edge of the sash thereby to position the sash transversely of said opening.

2. In a door or the like, laterally spaced substantially parallel vertically disposed stiles exhibiting along their opposed edges adjacent their front sides inwardly extending flanges, rails spaced apart in a vertical direction and connecting the stiles and defining therewith a sash opening, the opposed edges of said rails being configurated to provide narrow horizontal and vertical walls defining sash-receiving channels of the same width, the channel of the upper rail being considerably deeper than the channel of the lower rail and the vertical walls that define the front sides of said channels being in the vertical plane of the rear sides of the aforesaid flanges, a sash occupying said opening with its top and bottom edges in the channels of said rails and bearing outwardly along its lateral edges against said flanges, the sash being substantially narrower than the space between the opposed edges of the stiles and of a height sufficiently less than the distance between the horizontal walls of said channels to allow insertion of the sash, and screws threaded into said stiles for engagement by the lateral edges of the sash whereby the sash is adapted to be positioned centrally

between the stiles, said screws having their axes in a plane substantially parallel to that of the sash.

3. In a door or the like, laterally spaced substantially parallel vertically disposed stiles exhibiting along their opposed edges adjacent their front sides inwardly extending flanges and narrow grooves immediately at the rear of said flanges, rails spaced apart in a vertical direction and connecting the stiles and defining therewith a sash opening, the opposed edges of said rails being configurated to provide narrow horizontal and vertical walls defining sash-receiving channels of the same width, the channel of the upper rail being considerably deeper than the channel of the lower rail and the vertical walls that define the front sides of said channels being in the vertical plane of the rear sides of the aforesaid flanges, a sash comprising top, bottom and side members occupying said opening and arranged with its top and bottom edges in the channels of said rails and bearing outwardly along its lateral edges against the aforesaid flanges, the sash being of a height sufficiently less than the distance between the horizontal walls of said channels to allow insertion of the sash, and key blades movably carried by the side members of the sash adjacent the lateral edges of the latter for projection into the aforesaid grooves of the stiles, each stile being fabricated from a single elongate piece of sheet metal to provide substantially parallel front and rear walls, an inner edge wall that is composed of the central longitudinal portion of said piece and is disposed at substantially right angles to the former walls, the inner edge wall being configurated to provide said inwardly extending flange and said narrow groove, the outer edge wall of the stile being formed by longitudinal edge portions of said piece of sheet metal, said edge portions being connected together by an interlocking seam, and said outer edge wall being inset from and in parallel relation to the plane of the adjacent edges of said front and rear walls so as to dispose said seam within said plane and provide flanges of double thickness of sheet metal along said adjacent edges.

4. In a door or the like, laterally spaced substantially parallel vertically disposed stiles exhibiting along their opposed edges adjacent their front sides inwardly extending flanges and narrow grooves immediately at the rear of said flanges, rails spaced apart in a vertical direction and connecting the stiles and defining therewith a sash opening, the opposed edges of said rails being configurated to provide narrow horizontal and vertical walls defining sash-receiving channels of the same width, the channel of the upper rail being considerably deeper than the channel of the lower rail and the vertical walls that define the front sides of said channels being in the vertical plane of the rear sides of the aforesaid flanges, a sash comprising top, bottom and side members occupying said opening and arranged with its top and bottom edges in the channels of said rails and bearing outwardly along its lateral edges against the aforesaid flanges, the sash being of a height sufficiently less than the distance between the horizontal walls of said channels to allow insertion of the sash, and key blades movably carried by the side members of the sash adjacent the lateral edges of the latter for projection into the aforesaid grooves of the stiles, one of said rails being formed from a single elongate piece of sheet metal to provide substantially parallel front and rear walls, an inner edge wall composed of the central longitudinal portion of said piece of sheet metal and disposed at substantially right angles to the former walls, the inner edge wall being configurated to provide said narrow horizontal and vertical walls that define the sash-receiving channel, said vertical

walls being of double thickness of sheet metal, the outer edge wall of the rail being formed by longitudinal edge portions of said piece of sheet metal, said edge portions being connected together by an interlocking seam, and said outer edge wall being inset from and in parallel relation to the plane of the adjacent edges of said front and rear walls so as to dispose said seam within said plane and provide flanges of double thickness of sheet metal along said adjacent edges.

5. In a door or the like, laterally spaced substantially parallel vertically disposed stiles exhibiting along their opposed edges adjacent their front sides inwardly extending flanges and narrow grooves immediately at the rear of said flanges, rails spaced apart in a vertical direction and connecting the stiles and defining therewith sash openings, the opposed edges of said rails being configurated to provide narrow horizontal and vertical walls defining sash-receiving channels of the same width, the downwardly opening channel of the rail at the top of each sash opening being considerably deeper than the upwardly opening channel of the rail therebelow and the vertical walls that define the front sides of the channels of said rails being in the vertical plane of the rear sides of the aforesaid flanges, a sash comprising top, bottom and side members occupying each opening and arranged with its top and bottom edges in the channels of the rails and bearing outwardly along its lateral edges against the aforesaid flanges, the sash being of a height sufficiently less than the distance between the horizontal walls of said channels to allow insertion of the sash, and key blades movably carried by the side members of the sash adjacent the lateral edges of the latter for projection into the aforesaid grooves of the stiles, one of said rails being located intermediate sash openings and being constructed of a single strip of sheet metal turned inwardly and over upon itself along laterally spaced longitudinal lines to define the top and bottom edges of the rail, the parts of the strip outwardly of said lines continuing toward each other to about the vertical center of the rail to form the outer walls of the sash-receiving channels, said parts being turned inwardly at substantially right angles to form the horizontal walls of the channels of the rail and thence in opposite directions at substantially right angles to said horizontal walls to provide the inner walls of the channels, one edge portion of the strip being turned back upon itself and across and thence about the edge of the other such portion, all walls of the channels, by reason of the formation defined, being of double thickness of sheet metal.

6. A door or the like according to claim 5, wherein the part of the strip of sheet metal that constitutes the outside wall of said rail is offset forwardly throughout its central longitudinal region to provide a bead.

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