

Jan. 27, 1970

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3,491,584

DOOR WITH METAL OUTER FACING AND/OR FRAME ASSEMBLY THEREFOR

Filed May 10, 1968

2 Sheets-Sheet 1

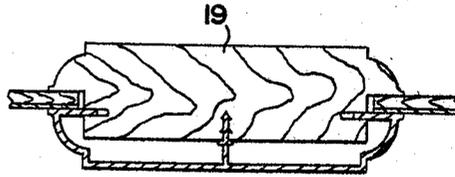
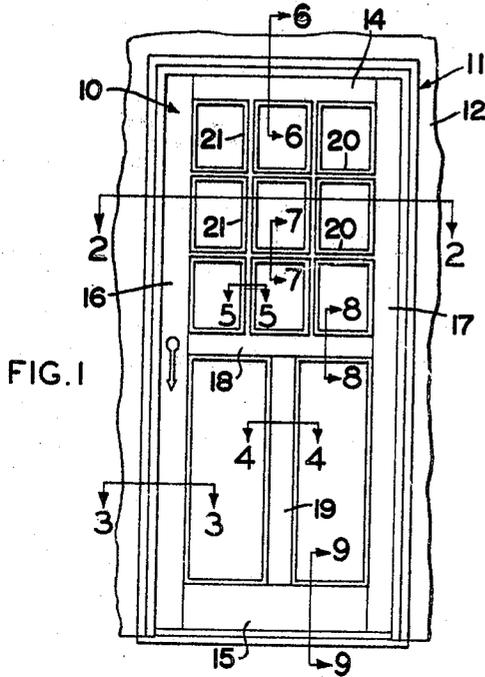


FIG. 4

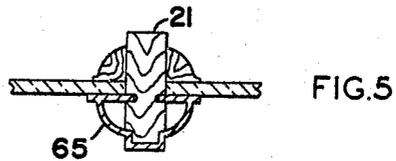


FIG. 5

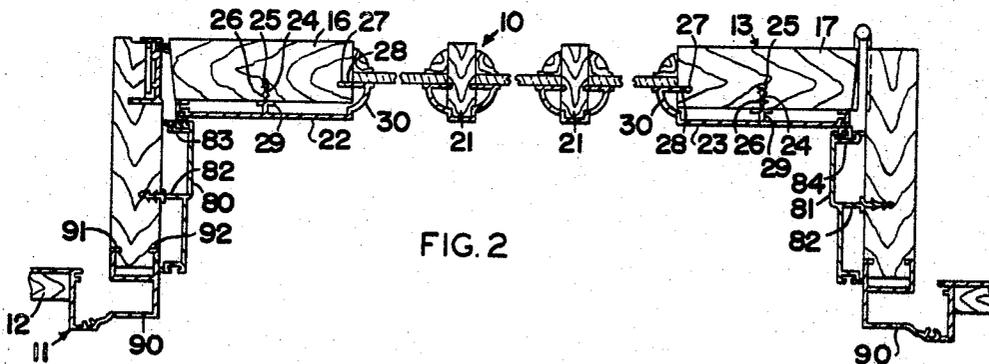


FIG. 2

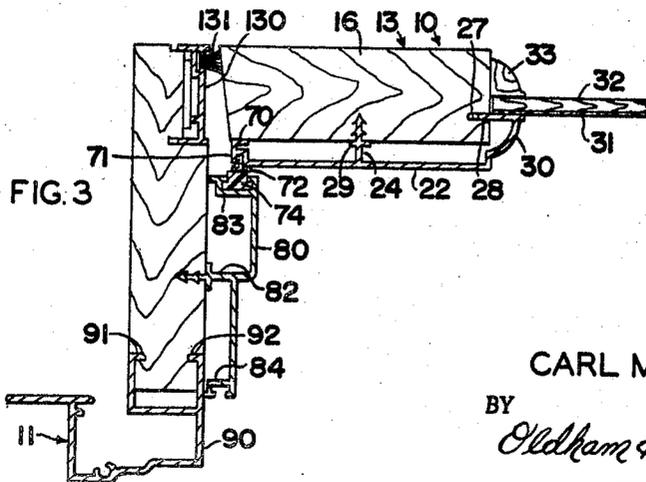


FIG. 3

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2 Sheets-Sheet 2

FIG. 7

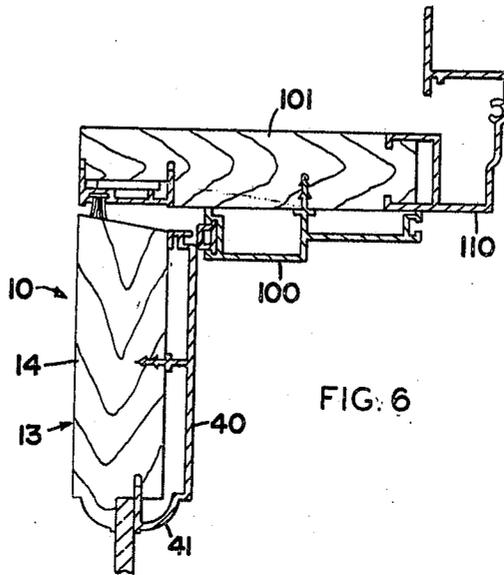
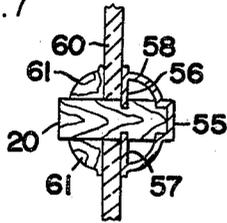


FIG. 6

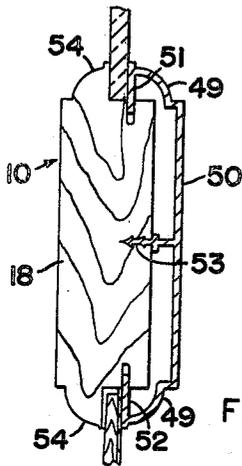


FIG. 8

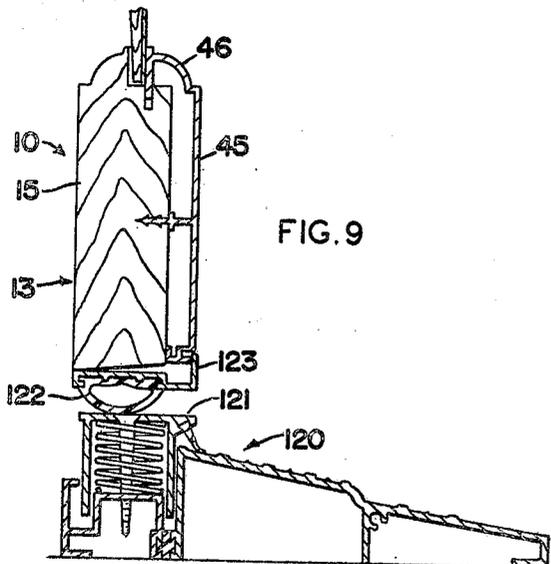


FIG. 9

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3,491,584

DOOR WITH METAL OUTER FACING AND/OR FRAME ASSEMBLY THEREFOR

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 Int. Cl. E06b 3/14, 3/30

U.S. Cl. 49-501

5 Claims

ABSTRACT OF THE DISCLOSURE

A door including top, bottom and side rails or stiles and center panel means is provided and this door has metal facing members secured to such top, bottom and side rails to cover the entire front surface thereof, at least some of such metal facing members having flange portions thereon engaging the panel means to aid in securing them in position. Similar metal facing members are provided for and are mechanically interlocked with side jambs and a top header for the door frame.

The present invention relates to doors, and also to door and frame assemblies, and especially to doors having a durable, attractive metal outer facing thereon.

Heretofore there have been many different types of door constructions provided, but insofar as I am aware, such doors have normally been made from wood or they are made entirely from metal means, and with any desired types of panel or glass members being provided in the door. However, there always is a maintenance problem for all wooden structures, particularly on the outer surfaces thereof where exposed to any types of weather or atmospheric conditions. Such maintenance of doors naturally also extends to the door frames and the means in general used in association with the door for operatively positioning it.

The general object of the present invention is to provide a novel and improved door characterized by the provision of a plurality of metal facing members on the outer surface of the door and suitably interlocked with the portions of the members forming the remainder of the door.

Another object of the invention is to provide special interlocked mechanical engagement between metal facing members for the frame means for a door, and to provide a door unit having metal facing members secured to and carried by the outer surface thereof.

Other objects of the invention are to provide an improved door and/or door frame means assembly which has low maintenance cost and an attractive appearance and which improved construction can be relatively easily produced from a plurality of standard extruded metal parts adapted to be secured thereto.

The foregoing and other objects and advantages of the invention will be made more apparent as the specification proceeds.

Attention now is particularly directed to the accompanying drawings, wherein:

FIG. 1 is a front elevation of a door and a door frame means embodying the principles of the present invention;

FIG. 2 is an enlarged fragmentary horizontal section taken on line 2-2 of FIG. 1;

FIG. 3 is a fragmentary enlarged horizontal section of an edge portion of the door and door frame means of FIG. 1, taken on line 3-3 thereof;

FIG. 4 is an enlarged fragmentary horizontal section taken through a center rail of the door of FIG. 1;

FIG. 5 is a fragmentary enlarged horizontal section taken through a muntin and associated means on line 5-5 of FIG. 1;

FIG. 6 is a fragmentary enlarged vertical section taken

on line 6-6 of FIG. 1 and showing the top rail of the door and associated door frame means;

FIG. 7 is a fragmentary vertical section taken through a horizontal extending muntin of the door of FIG. 1 and taken on line 7-7 thereof;

FIG. 8 is a fragmentary enlarged vertical section taken on line 8-8 of FIG. 1 and showing a divider rail of the door and associated means; and

FIG. 9 is a fragmentary enlarged vertical section taken on line 9-9 of FIG. 1 and showing the bottom rail of the door and associated door members and a bottom stile for the door frame assembly.

When referring to corresponding members shown in the drawings and referred to in the specification, corresponding numerals are used to facilitate comparison therebetween.

In general, the present invention, as one embodiment thereof relates to a door including top, bottom and side rails and center panel means and where the door is characterized by metal facing members secured to the top, bottom and side rails to cover the entire front surfaces thereof, at least some of these metal facing members having flange portions thereon engaging the panel means to aid in securing the same in the door. The invention also relates to the provision of similar metal facing members on the side jambs and top header of the door frame assembly for covering the exposed portions thereof. These metal facing members are mechanically interlocked with the associated door components, side jamb members, or the like.

With reference to the particular details of the structure shown in the drawings, a door embodying the principles of the invention is indicated as a whole by the numeral 10. This door is operatively positioned in a door frame 11, which is secured to a building 12, to provide a door frame assembly.

It is an important feature of the invention that this door 10 comprises a frame means 13 forming the inner portion of the door 10 as operatively positioned, which frame means may be formed from wood and it includes a top rail, or stile 14, a bottom rail or stile 15, and side rails or stiles 16 and 17.

In the particular door 10 shown, in this embodiment of the invention, the middle rail or stile 18 also is provided in the frame means 13 and a lock rail or stile 19 is provided and it extends from the middle rail 18 down to and is suitably engaged with the bottom rail 15. The frame means 13 is completed by a plurality of horizontal muntins 20 extending between the upper portions of the side rails 16 and 17 and by vertically extending muntins 21 that extend between the top rail and the uppermost horizontal muntin 20 and also are provided in sections to extend between and engage the associated adjacent horizontal muntins 20 and the lowest horizontal muntin and down to the middle rail or stile 18.

As an important feature of the invention, a plurality of metal facing members are provided by the invention and are secured to associated portions of the frame means 13 to be carried thereby and provide a metal outer facing on the door 10. These metal members can be made from any suitable material, such as aluminum that can, for example, be extruded into desired contours and be readily sawed or cut to proper lengths whereby such metal members can be engaged with the frame means 13 to cover the same. Obviously, the metal members can be provided with any desired enamel or other protective coating or finished material thereon, in accordance with conventional practice.

FIG. 2 of the drawing shows that a pair of metal facing members 22 and 23 are provided to engage and cover the side rails or stiles 16 and 17 in the doors with

these members 22 and 23 being of the same shape but just being reversed with relation to each other in their positioning in the door. Thus, each of these members 22 and 23 include a prong or flange 24 extending axially thereof and being received in a companion slot 25 suitably formed in the associated surface of the side stiles 16 and 17. The prongs or flanges 24 have barbs 26 formed at and/or adjacent their inner ends whereby the members 22 and 23 can be slid longitudinally of the stiles 16 and 17 into engagement therewith and the barbs 26 aid in retaining the members 22 and 23 in engagement with the walls of slots formed in the side rails or stiles 16 and 17. To aid in maintaining these members 22 and 23 in operative engagement with the rails 16 and 17, a suitable slot 27 is formed in the laterally inner edges of each of the side rails 16 and 17 and a laterally outwardly directed flange 28 is formed on each of the members 22 and 23 and is slidably engaged in such slot 27. Preferably the prong 24 has a stop flange 29 formed thereon and this aids in spacing the main portion of the metal facing members 22 and 23 from the adjacent surface of the side rails 16 and 17. Usually, an arcuately shaped connecting section or bead 30 extends laterally of the assembly and bridges over a lateral edge of the side rail by an arcuate in section bead formed at an edge of a flat face center portion of each of the members 22 and 23 to connect the flanges 28 thereto and form a decorative outer surface or portion on the metal facing members 22 and 23. The flanges or flange sections 28 are axially inwardly offset from the face of the members 22 and 23. It will be seen that the contoured sections 30 and portions of the flat flanges 28 extend laterally beyond the associated side rails 16 and 17 to provide portions adapted to abut against and aid in positioning suitable panel means, such as metal sheets 31. These sheets 31 are provided to cover the interior of the frame means 13 and form a complete enclosure therewith. In this embodiment of the invention, the panels 31 may comprise suitably finished aluminum or other metal sheets, whereas back-up wood sheets 32 which form inner panels or finished portions for the door 10 are held against conventional members, such as bead strips 33, that are secured to the side rails 16 and 17 and combine with the flanges to aid in securing the panels or sheets 31 and 32 in position.

FIG. 6 of the drawings shows that a metal facing member 40 is provided and which is in operative engagement with the top rail or stile 14 in the same manner as is described for the metal facing members 22 and 23, while a similar metal facing member 45 is provided and is in operative engagement with the bottom rail or stile 15, as shown in FIG. 9 of the drawings. Contoured sections or beads 41 and 46 are provided on these members 40 and 45, respectively.

A metal facing member 50, shown in FIG. 8, is similar to those described hereinbefore, but in this instance, a pair of vertically extending flanges 51 and 52 are provided on this metal facing member 50, which is in interlocked engagement with the middle rail or stile 18 of the door. Again, suitable slots are formed in association with the middle rail 18 for receiving the flanges 51 and 52 on the metal facing member 50 and for also engaging with a prong 53 formed thereon so that such members can be brought into slidable interlocked engagement. Contoured sections or beads 49 connect to the flanges. In this instance, the middle rail 18 may have integral bead sections or shoulders 54 formed thereon to aid in positioning the panel means in the door of the invention, in association with the flanges 51 and 52 of the associated metal facing member.

FIG. 7 of the drawings shows that a metal facing member 55 is slidably interlocked with the horizontally extending muntin 20 by a pair of vertically extending flanges 56 and 57 and where the metal facing member 55 preferably extends the length of such horizontal muntin. The horizontal muntin can be secured to the side rails in any conventional manner, as by tendons provided on the hori-

zontal muntin being received in suitable recesses formed in the side rails 16 and 17 to locate these muntins properly in the door frame means 13. Preferably, in the upper portion of the door 10, window panes 60 can be positioned in the openings between the muntins 20 and 21 and any desired bead strips 61 can be secured to the horizontal muntins 20 to aid in positioning such panes or sections of glass 60. Beads or contoured sections 58 connect to the flanges 56 and 57. FIG. 5 shows that the vertically extending muntins 21 have metal facing members 65, the same as the members 55, in slidable association therewith and which position or engage the window glass sections or panes 60 in the same manner as described for the metal facing members 55.

It will be realized that the corner joints formed between the metal facing members 22 and 23 and the associated end portions of the metal facing members 40 and 45 can be mitered so that a smooth connection is formed therebetween. Likewise, any engaging ends of the metal facing members 55 and 65 are contoured complementary to each other to facilitate forming smooth connections therebetween.

One of the features of the invention is that the metal facing members are, in general, spaced from the companion wooden frame means 13 and such metal members can move with relation to the wooden frame members which likewise may have movement in relation to the metal facing members. To aid in supporting the metal facing members in accurately spaced, fixed relationship with relation to the frame means 13, the metal facing member 22, for example, has a longitudinally extending edge flange 70 formed therein which has a flat surface that abuts against the frame means side stile 16, and an axially outwardly facing recess 71 is also formed in the metal facing member adjacent the flange 70 or in a portion thereof. Any suitable sealing means, such as a fibrous or felt strip 72 is positioned in the recess 71 and it is adapted to engage against an associated member for sealing thereagainst as hereinafter described in more detail.

In a similar manner, the metal facing members 23 and 40 have sealing strip means carried thereby and extending the length thereof.

In order to complete a metallic outer surface for the entire door and door framing means of the invention, the drawings clearly show that metal facing members, or side jamb liners 80 and 81 are engaged with portions of the building 12 and the door frame jamb liners provided thereby and cover the major portions of the face surfaces thereof. These metal facing members for lining the door jambs each include a prong 82 thereon for slidable engagement with a complementary shaped slot provided in the door frame side jambs. End flanges 83 and 84 are provided on these metal frame members 80 and 81 and abut on the door jambs to maintain the members in good operative engagement with the door jambs in the building. Suitable metal facing members, or trim strips 90 are provided in good mechanical interlocked and slidable engagement with the axially outer ends of the door jambs to extend laterally and axially outwardly therefrom to be suitably secured to the building 12 in a convenient manner. These trim strips preferably have a pair of converging edge flanges 91 and 92 formed thereon that are in slidable engagement with corresponding slots formed in the door jambs to provide a good mechanical interlock between such metal facing members 90 and the associated building structure.

Likewise, as shown in FIG. 6, a top header strip, or metal facing member 100 is provided and it is generally similar in construction to the metal frame members 80 and 81 and is operatively engaged with a top header 101 in the same manner as described in relation to the assembly shown in FIG. 3. Also, a metal facing member or trim strip 110 is also provided in the door frame means to bridge over and trim the upper portion of the door

frame means and it is secured in position like the trim strip 90.

To facilitate forming good sealed connections between different components of the door and door frame assembly of the invention, the metal frame members 80 and 81 each carry a suitable resilient sealing strip 74 in one of the edge flanges thereof so that the felt sealing strip 72 carried by the associated metal facing members can engage therewith and form a good sealed closure. Similar sealing means are provided at the top and other lateral margins of the door.

Any desired threshold assembly 120 is provided and it usually includes a vertically adjustably positioned strip 121 therein for operative engagement with a resilient bottom trim strip 122 suitably operatively secured to the lower surface of the bottom rail 15 of the door frame means by an edge strip 123. The sealing action on the door when closed is augmented by an additional metal facing member 130, FIG. 3, suitably secured to the left door jamb and which metal facing member extends vertically of the door and suitably operatively positions a felt, fibrous, or other sealing strip member 131 therein for operative engagement with an associated edge of the door 10 when closed.

The bead or decorative sections 30 and equivalent sections formed on other metal facing members may be of any suitable shape to extend axially and laterally inwardly in the door.

The metal facing members of the invention can be readily associated with the frame means 13, or the components of the frame means, as they are assembled so that a good operative engagement is formed therebetween. The barbs or prongs 26 on these inserts or flanges 24 of the metal facing members cut, preferably, into the side walls of the kerf or slots formed in the wooden members forming the frame means 13 to remain in effective interlocked mechanical engagement therewith whereby a good tight association is obtained between the metal facing members and the associated door means when forced into engagement. The door is provided with a durable metal facing but yet has an attractive wooden surface on its inner face. Thus, it is believed that the objects of the invention have been achieved and a door and/or door assembly is provided which has a low maintenance cost and forms a permanent, attractive unit.

While one complete embodiment of the invention has been disclosed herein, it will be appreciated that modification of this particular embodiment of the invention may be resorted to without departing from the scope of the invention as defined in the appended claims.

What is claimed is:

1. A door including top, bottom, and side rails and center panel means and characterized by: extruded metal facing members, each of said members having at least one flange portion extending the length of said member in a spaced, parallel relationship to the principal surface thereof, certain of said members having rib portions extending the length of said members and normal thereto, said flange and rib portions of said members being tightly received in slots extending the lengths of said rails to secure said members to said rails; and metal panels overlying said center panel means and retained by said facing members.

2. A door according to claim 1 further characterized in that certain of said facing members are provided with

arcuately shaped bead portions along at least one edge thereof, said bead portions simulating conventional wooden moulding strips and overlying said metal panels.

3. A door including top, bottom and side rails, and center panel means and characterized by

5 metal facing members secured to said top, bottom and side rails to cover the entire front surface thereof, at least some of said metal facing members having flange sections thereon engaging portions of said panel means to aid in securing the same in the door, muntins being provided in the frame means, and panel means are associated with said muntins, and which include

10 said metal facing members being individually mechanically interlocked with individual ones of said rails or muntins to cover at least one surface thereof, at least some of said metal facing members having flat surfaced flange sections thereon engaging and projecting from an associated surface of said muntins and engaging a panel means to aid in securing the same to said frame means.

4. A door as in claim 3 where said muntin facing members each have a pair of parallel edge flanges thereon lying in a common plane and said edge flanges engage said panels to position them against other means in the door.

5. A door including top, bottom, divider, and side rails forming a frame means and which is characterized by

all of said rails having a slot formed in an edge thereof, a plurality of metal facing members individually mechanically interlocked with individual ones of said rails by flat flange sections on said members projecting laterally from an associated surface of a said rail with a portion of said flange section engaging a said slot, said flange sections being secured to the said metal facing members by beads extending axially inwardly of the door,

center panel means, and

portions of said flat flange sections protrude laterally from the said rail that such flange section engages to engage a portion of a said panel means to aid in securing the same to the door, said side rails including longitudinally extending edge shoulders against which edge portions of said center panel means are supported and firmly positioned by an opposed flange section.

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60 KENNETH DOWNEY, Primary Examiner

U.S. Cl. X.R.

52-456, 727

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3, 491, 584 Dated January 27, 1970

Inventor(s) Carl M. Selzer

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

The correct assignee should be:

Georgia-Pacific Corporation
P. O. Box 311
Portland, Oregon 97207

as an assignment was recorded June 6, 1969 transferring ownership of application Serial No. 728,206 from Weather-Seal, Inc. to Georgia-Pacific Corporation

SIGNED AND
SEALED
JUL 21 1970

(SEAL)

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Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents