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METALLIC DOOR CONSTRUCTION

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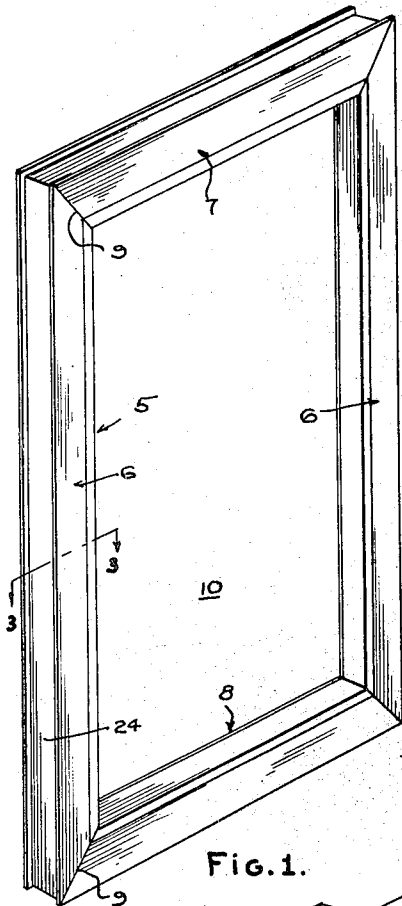


Fig. 1.

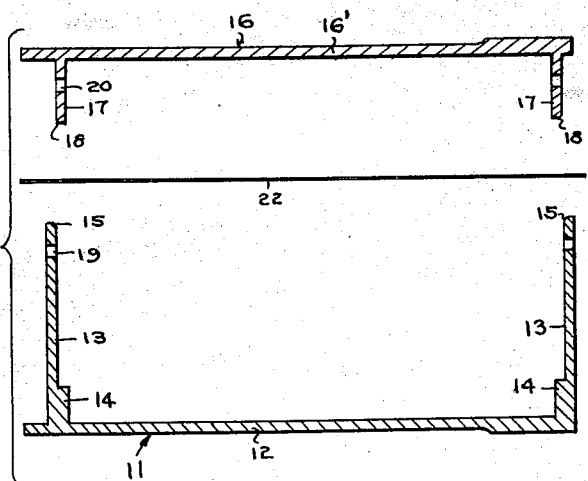


Fig. 2.

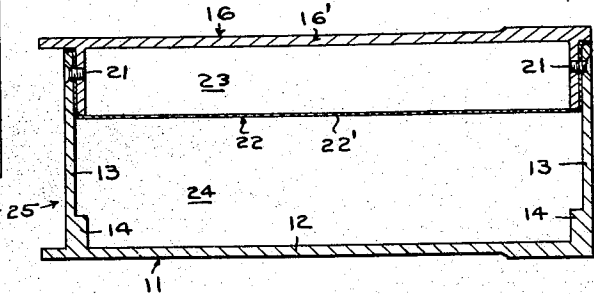


Fig. 3.

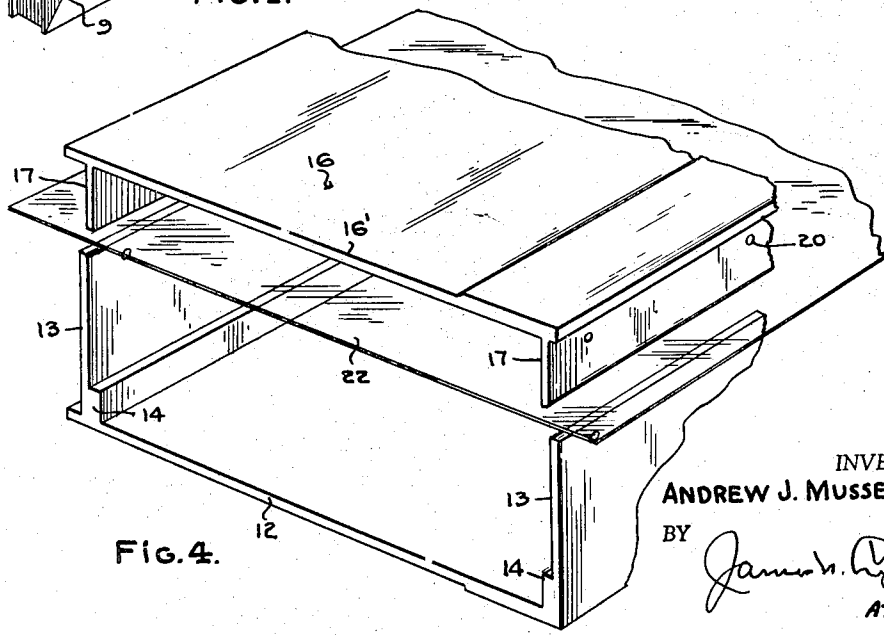


Fig. 4.

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METALLIC DOOR CONSTRUCTION

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2 Claims. (Cl. 189-46)

This invention relates to metallic door structures and particularly to a door construction having parallel stiles and a parallel header and sill member that is formed of aluminum or the like extrusions.

The invention contemplates a metallic door structure wherein sections embodying the stiles, the header and the sill are formed of substantially identical extrusions and with the extrusions of each of the members being formed in two parts to be substantially telescopic with respect to each other and whereby to form rigid hollow members whereby the sections when assembled form a door structure of substantially recognized thickness and width.

The invention further contemplates a novel means of sound deadening material that is assembled with the units to substantially reduce the commonly objectionable noise when the door is slammed or otherwise shifted to the close position and with the sound deadening means providing chambers for the full length of the members that materially reduces condensation upon the door.

Novel features of construction and operation of the device will be more clearly apparent during the course of the following description, reference being had to the accompany drawings, wherein has been illustrated a preferred form of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

Figure 1 is a perspective view of a door constructed in accordance with the invention,

Figure 2 is a composite transverse sectional view through one of the door forming members, showing the parts in separated relation prior to assembly,

Figure 3 is a transverse section taken substantially on line 3-3 of Figure 1 and,

Figure 4 is a perspective view of the parts of one member in separated relation prior to assembly.

Referring specifically to the drawings, the numeral 5 designates a door including stiles 6, a header rail 7 and a sill rail 8. The several members constituting the stiles, the header and the sill are substantially identical in dimensions transversely and with the members at the opposite ends being mitered at 9 to be connected rigidly together to form an open frame 10, wherein may be disposed any desirable form of closure, such as a glass panel or the well known jalousie assembly.

Each of the members constituting the door embodies a main channel member 11 of U-shape, having a side wall 12 and end walls or flanges 13. The end walls 13 at their point of connection with the side wall 12 are formed relatively thick, as at 14 to impart a major rigidity to the end walls 13 against flexing. The member 11 is preferably extruded from aluminum having the desired thickness. The upper marginal edge of each end wall 13 is inwardly rounded at 15, for a purpose to be presently described. The member 11 is formed open at one side for its full length, as clearly shown.

Adapted to have mating and relatively telescopic con-

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nection with the member 11 as a closure for the open side thereof, is a closure section or member 16, embodying a closure wall 16', having a length substantially identical with the wall 12. The wall 16 is provided with integral longitudinally extending right angle flanges 17 spaced inwardly from the marginal edges of the wall 16 and spaced apart a distance slightly less than the spacing between the end walls 13 of the member 11. The marginal edges of the flanges 17 are outwardly rounded at 18, for a purpose to be described. The end walls 13 and the flanges 17 are apertured at 19 and 20 respectively and with the apertures 20 preferably threaded for the reception of connecting screws 21. The apertures 20 are suitably spaced apart longitudinally of the end walls 13 and flanges 17 and with the apertures 19 and 20 at assembly, being in axial alignment. Each of the members 11 and 16 are thickened at corresponding sides to form an ornamental reveal around the inner marginal sides of the door opening 10 and this reveal constitutes an ornamental feature of the construction. Adapted to be disposed over the open side of the member 11, to extend outwardly beyond the end walls 13 at assembly, is a sheet of Pliofilm 22.

Operation

In the assembly of the units for the stiles, the header and the sill, the extrusions 11 and 16 are selected for a maximum length and at assembly, the sheet of Pliofilm 22 is placed over the open side of the unit 11 and for the full length of the unit. The unit 16 is then shifted downwardly in a manner to cause its flanges 17 to telescope between the end walls 13, forcing the sheet 22 downwardly to be frictionally bound between the outer sides of the flanges 17 and the inner sides of the walls 13, presenting a taut section 22' for the full length of the member. After the unit 16 has been fully seated with respect to the unit 11, as illustrated in Figure 3, suitable fastening screws 21 are then inserted through the apertures 19 and 20, securely binding the two units together. The sheet 22 forms sound deadening chambers 23 and 24. After the units have been assembled, the edges of the sheet 22 are cut away. The purpose in rounding the marginal edges of the end walls 13 and the flanges 17 is to prevent cutting or otherwise damaging the sheet 22 at assembly. After the units have been assembled and secured by the screws 21, the ends of the formed members are preferably mitered as shown in Figure 1 and the corners are interlocked and connected in any desirable manner. The assembled members thus present an outer circumferential channel 25, while the inner portions of the members present a flush and flat walled open frame 10, clearly shown in Figure 3. The channel 25 is particularly useful for the flush mounting of conventional hinge elements and with the hinges being attached in any convenient manner.

It will be apparent from the foregoing that a very novel form of door structure has been provided. The sections 11 and 16 are extruded in an economical manner and assembled with the sheet 22 in a relatively easy press fit, greatly reducing the cost of assembly and greatly reducing the overall cost of the door. In actual practice, the use of the Pliofilm sheet 22, forming the chambers 23 and 24 has been found to very substantially reduce the sound present in most metallic doors when they are closed. It may be found in certain instances that the inner surfaces of the walls 12, 13, 16' and the flanges 17 may be coated with a film of mastic which will additionally reduce any objectionable noise in the closing of the door. It will be noted that the flanges 17 of the closure member 16 are materially shorter than the side walls or flanges 13 so that the plane of sheet 22 is at a point where said sheet is materially spaced from both of the walls 12 and 16. This

leaves the dead air spaces comprised by 23 and 24 which are of very considerable amplitude. It will also be noted that the terminal edges of sheet 22 lie between the upper edges of flanges or walls 13 and the overhanging portions of wall 16. Thus, there is no metal-to-metal contact between any part of the closure member and the main channel member. The presence of a sheet of impervious plastic, lying in materially spaced relation to both the front and back faces of the assembled rail, and which sheet prevents metal-to-metal contact between the front and rear sides of the rail not only deadens the sound when the door is closed but these large area insulating air chambers 23 and 24, prevent such rapid heat transfer through the rails as would cause condensation or sweating upon the inner face of the door when outside temperatures fall below a given point.

The formation of the two interesting front and rear sections, so arranged that the insulating sheet 22 is brought into operative relation thereto by the mere act of thrusting the rear or closure section into the main section, results in the important advantage that up to the time that the two sections are finally brought together the sections are free of any objects which would prevent ready access to the mitered ends of the rails for the purpose of securing them together. Therefore, the work of uniting them may be done on the inside of the sections.

It is to be understood that the invention is not limited to the precise construction shown, but that changes are contemplated as readily fall within the spirit of the invention as shall be determined by the scope of the subjoined claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A metallic door made up of a plurality of rails comprising two stiles, a header and a sill, the said rails being substantially identical in cross section, each of said rails comprising a front, outer main channel section and a rear,

inner closure channel section, said front channel section being of U-shape in cross section comprising an outer front wall and a pair of inwardly directed flanges lying substantially perpendicular to said front wall and adjacent the outer sides thereof, and said rear channel section likewise being of U-shape in cross section, and comprising an inner rear wall and a pair of flanges lying perpendicular to said rear wall, said last named flanges being so spaced from each other as to enter and telescope between the flanges of the front channel section, a sheet of impervious plastic lying in substantial parallelism with said front and rear walls of the sections and extending throughout the length of the sections and also extending across the inner closure section, with the terminal side portions of said sheet being turned over the inner edges of the flanges of the inner section and entering and being held between the telescoping flanges of the inner and outer sections, the flanges of the closure channel section being shorter than the flanges of the main channel section to position the said sheet of plastic at a distance from the front and rear walls so as to leave an air space of substantial depth between said sheet and each of said front and rear walls.

2. A structure as recited in claim 1 wherein the rear wall of the inner closure section projects outwardly over the free edges of the flanges of the outer section, the terminal edge portions of the said sheet being turned outwardly to lie between said outwardly projecting portions of the rear wall of the closure section and the free edges of the flanges of the outer section, whereby to prevent metal-to-metal contact between said outwardly projecting portions and said flanges.

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