Jan. 28, 1969 I. KIMMEL 3,423,878

DOOR STRUCTURE

Filed Nov. 24, 1967

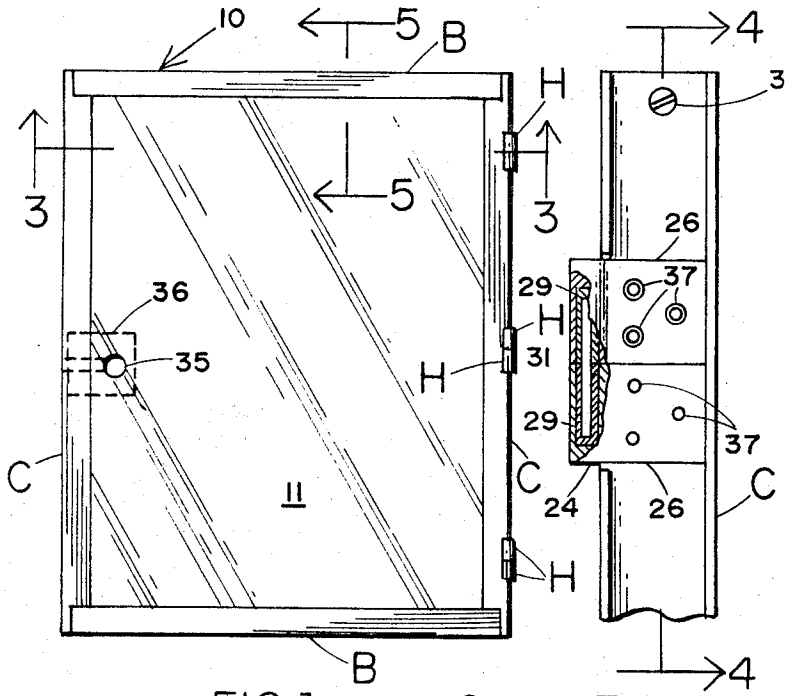


FIG. 1

FIG. 2

FIG. 5

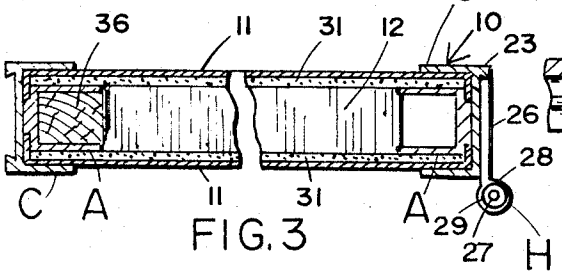


FIG. 3

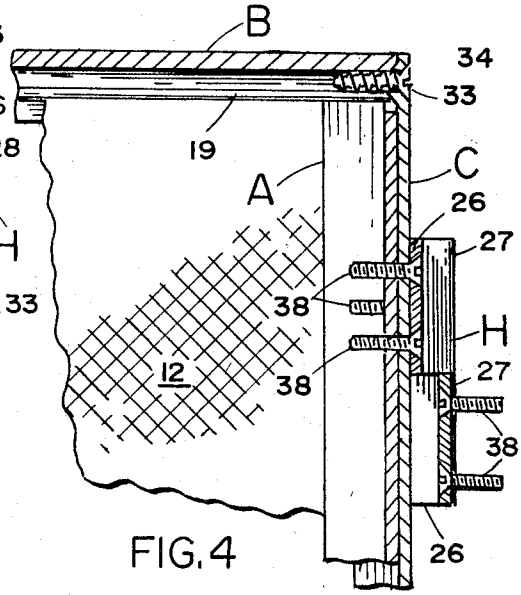


FIG. 4

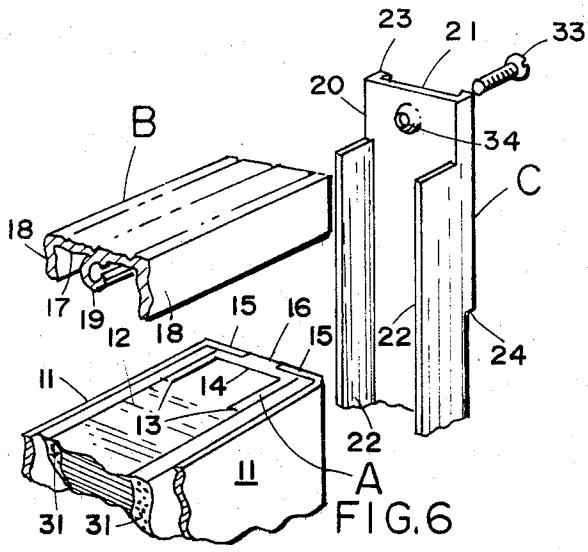


FIG. 6

INVENTOR

IRVINE KIMMEL

BY

Salvatore G. Militana

attorney

United States Patent Office

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DOOR STRUCTURE

Irvine Kimmel, 1231 Stillwater Drive,
Miami Beach, Fla. 33141

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ABSTRACT OF THE DISCLOSURE

A laminated door structure having a plurality of pairs of panel members bonded to each other and to a honey comb extending between the pairs of panels, channel members bonded along edge portions and to the outer surfaces of the panel members, and a pair of vertically disposed channel members bonded along edge portions and to the inner surfaces of the panel members in spaced relation to the first named channel members, hinges mounted on the outer surface of one of the first named channel members, a plurality of screws fastening the hinges to the channel members and extending into the vertically disposed channel members for securing the hinges to the door.

This invention relates to doors but is more particularly directed to a laminated door structure.

A principal object of the present invention is to provide a laminated door of great strength and light weight in which a positive metal screw seat is provided for the hinge screws.

Another object of the present invention is to provide a laminated door that will not sag with time, and will never twist, camber or warp.

A further object of the present invention is to provide a laminated door whose panel and honeycomb structure are bonded securely together and to channel members mounted at the periphery of the door making the door watertight and long lasting.

A still further object of the present invention is to provide a door with channel members that are corner locked that lock the channel members evenly together and to panel members forming the door.

A still further object of the present invention is to provide a laminated door which is simple in construction, yet having a long life of effective operation by precluding any possibility of warping, twisting or of the hinge screws becoming loosened.

With these and other objects in view, the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming a part of this specification.

In the drawing:

FIGURE 1 is a front elevational view of a door structure constructed in accordance with my invention.

FIGURE 2 is a fragmentary end view at approximately the position of the hinge.

FIGURE 3 is a cross sectional view taken along the line 2—2 of FIGURE 1.

FIGURE 4 is a fragmentary cross sectional view taken along the line 4—4 of FIGURE 2.

FIGURE 5 is a similar view taken along the line 5—5 of FIGURE 1.

FIGURE 6 is a fragmentary exploded view showing the construction of one corner of the door, the other corners being identical thereto.

Referring to the drawing wherein like numerals are used to designate similar parts throughout the several views, the numeral 10 refers to my door consisting of front and rear panels 11 made of light weight sheet material such as metal, plastic or any other suitable material. Although the panels 11 are shown as being imperforated, openings may be made in the panels 11 for viewing or entry of light by the insertion of glass panes, jalousies and the like. Bonded to the inner surfaces of each of the panels 11 is a layer of an inflexible panel member 31 such as hardboard, pressed wood and the like which supports the panels 11. Interposed between the spaced apart panel members 31 is a honeycomb cellular structure 12 made of a fibre impregnated with a plastic material and bonded at their edges to the inside surface of the panel members 31 by further plastic material.

The honeycomb 11 serves as a combined separator and spacer and imparts its great strength to offer great resistance to crushing or collapsing force as well as acting as an insulator. The honeycomb 12 extends to the very top and bottom edges of the panels 11 and 31 and terminates a short distance from the side edges of the panels 11. At the side edges of the panels 11 is a hinge supporting channel member A whose leg portions 13 extend at right angle to the web portion 14 and are cemented or otherwise bonded to the inner surface of the panels 31. The edges of the panels 11 which extend beyond the web portion 14 of channel members A are bent so as to lie evenly on the web portion as at 15 and abutting against a raised portion 16 extending medially along the web portion 14 to form an even outer surface with the panel edge portions 15. The raised portion 16 functions also as a seat for hinge screws as will be pointed out in detail hereinafter.

Shrouded over the top and bottom edges of the door 11 is a channel member B which extends to a position short of the side edges of the door. The channel member B is an extruded member consisting of a web portion 17 with leg portions 18 bonded to the outer surface of the panels 11, the outer surface of the web portion 17 being scored for ornamental purposes. Integrally mounted on the inner surface of the web portion 17 and extending longitudinally thereof at its mid-portion is a screw seat 19 having a cross sectional configuration similar to that of the letter C.

The ends of both of the channel members B are received in notches 20 formed in the ends of channel members C. The latter consist of a web portion 21 and leg portions 22 bonded to the outer surfaces of the panels 11. The leg portions 22 extend a relatively short distance beyond the web portion as at 23, which when notched as at 24 receives hinges H. Besides being bonded to the panels 11, the channel members C are fastened by screws 33 which extend through bores 34 formed in the notched portions of the channel members C, the screws 33 being threaded into the extruded screw seat 19.

The hinges H consist of a pair of aluminum leaf members 26 whose pintle support member 27 is provided with a bore 28 for receiving a nylon bushing 29 in which a stainless steel pintle 31 is mounted. The bores 28, which are blind bores extend from one edge of the pintle support member 27 to adjacent the opposite edge whereby the pintle 21 is completely concealed extending between the leaf members 26. The hinge leafs 26 are provided with bores 37 for receiving screws 38 which extend through the web portion 21 of the channel member C and are threaded into the web portion 16, 14 of the channel member A. This construction secures the hinges H most effectively since the screws 38 are seated in and thereby secured to the raised or thickened portion 16 of the web portion 14 of the channel member A. The channel member A replaces the conventional wood blocks that will in time dry out rot and cause the hinge screws to eventually become loosened and the door to sag.

On the other side of the door 10 is a door knob assembly 35 supported by and mounted on a wood block 36 which is positioned between the hardboard members 31.

The wood block **36** is bonded by a phenolic resin and the like to the hardboard **31**.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a laminated door structure having a pair of spaced apart panel members and a core extending between the panel members, the combination comprising a channel member mounted vertically and bonded at one edge of said panel members, said channel member having leg portions, a web portion and a raised portion mounted on said web portion longitudinally of said channel member, said edges of said panel members extending along and bonded to said leg portions and said web portion and abutting against said raised portion, a pair of horizontal channel members and a pair of further vertical channel members mounted at the periphery of said panel members, said pairs of last named channel members having leg portions bonded to the outside surfaces of said panel members, a screw seat integrally mounted on the inner surface of said horizontal channel members, said further vertical channel members having notched portions at their ends receiving the ends of said horizontal channel members, screws extending through said further vertical channel members and threaded into said screw seat securing said channel members together, a plurality of hinges mounted on one of said further vertical channel members and screws extending through openings in said hinges and threaded into said first named and further vertical channel members.

2. The structure as recited by claim **1** wherein said hinges comprise a pair of leaf portions, each having a pintle support portion mounted along one edge, a bore extending from one end of said pintle support portion to a position adjacent the other end, a bushing mounted in each of said bores, and a pintle extending substantially one-half of its length in each of said bores whereby said pintle support portions and said leaf portions are rotatably supported by said pintle.

No references cited.

KENNETH DOWNEY, *Primary Examiner.*

U.S. Cl. X.R.

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