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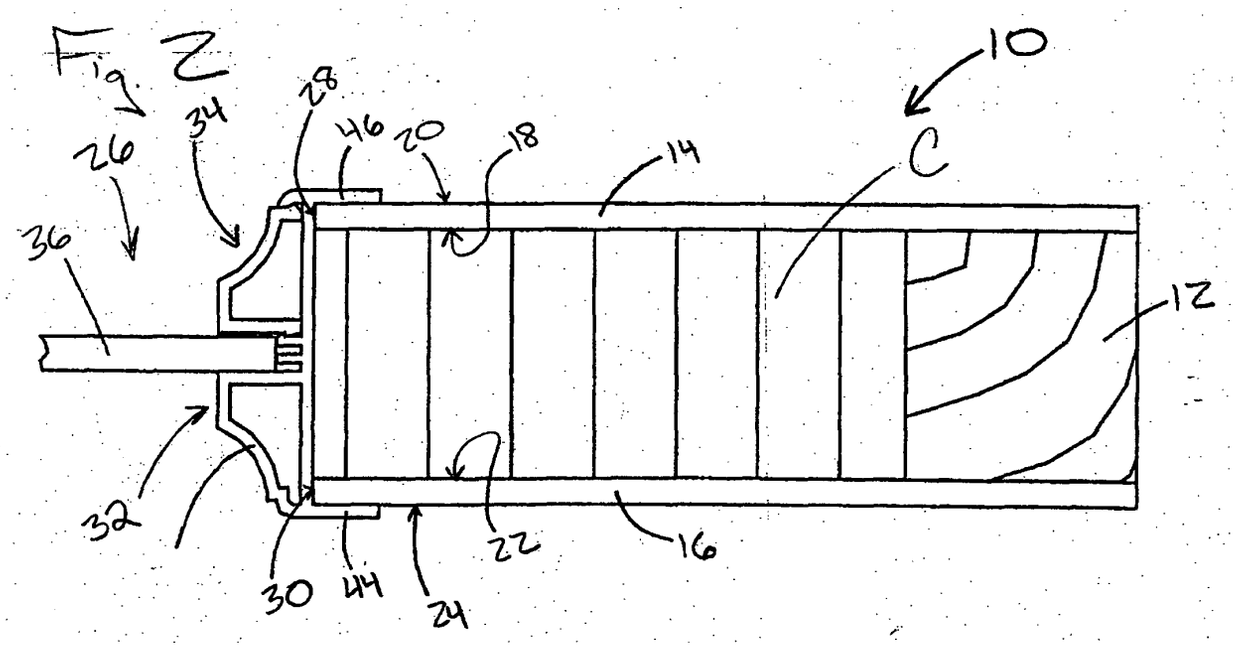
(54) Method of forming a glazed door, and glazed door

(57) A glazed door comprises a peripheral doorframe, and first and second door facings secured to opposing sides of the doorframe. Each door facing has an opening. A saddle is secured to the first and second door facings and surrounding the opening. A glazing bead is secured to the saddle. A glazing panel is secured between the saddle and the glazing bead. A method of forming a glazed door is also disclosed.



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Description

[0001] The present invention relates to a glazed door comprising a peripheral doorframe, and first and second door facings secured to opposing sides of the doorframe. Each door facing has an opening. A saddle is secured to the first and second door facings. The saddle surrounds the opening. A glazing bead is secured to the saddle. A glazing panel is secured between the saddle and the glazing bead. A method of forming the glazed door is also disclosed.

[0002] As known in the art, door facings may be secured to a support structure or frame to form a hollow core door. Such facings may be molded from a planar cellulosic mat, which typically includes cellulosic fibers or particles and a resin binder. The mat may be molded to include one or more depressions or grooves, such as one or more square or rectangular depressions. These depressions may define the perimeter of one or more simulated panels. Alternatively, the facings may be flush.

[0003] It is sometimes desirable for such doors to have a glazing unit, frequently provided in the form of a cassette. A cassette is a framed window assembly adapted to be mounted to a door. In addition to a perimeter frame, the door facings are secured to a window frame. A portion of each door facing is routed or cut out in an area corresponding to the area defined by the window frame. The cassette is mounted within the window frame, and secured to the window frame using screws, pins, or the like.

[0004] Various cassette designs have been developed. Many designs comprise first and second halves that hold a glass unit. The first halve of the cassette is positioned against one facing. The glass is then placed in position, and the second halve is positioned against the opposing facing, sandwiching the glass therebetween. The cassette is then secured in place on the door using pins or screws.

[0005] Cassettes are typically bulky, having a thickness greater than the thickness of the doorframe. As such, cassettes often protrude outwardly from the exteriorly disposed surfaces of the door facings. The cassette on such a glazed door may be easily damaged, particularly during transit, given it protrudes from the exterior plane of the door facings. The fixings used to secure the cassette to the door are usually visible and can be unsightly.

[0006] Manufacturing methods for glazed doors having conventional glazing units is relatively expensive. Doors that are to be glazed must be specially made with an internal window frame. The cassette halves are typically fragile, and must be stored and handled with care to avoid damage. The cassette halves and glass unit must be carefully positioned and secured with pins or screws, thereby increasing labor costs for such doors.

[0007] Therefore, there is a need for a glazed door, and a method of making a glazed door, that is cost efficient, aesthetically pleasing to consumers and allows glass to be retrofitted to a standard hollow core door.

[0008] A glazed door comprises a peripheral doorframe, and first and second door facings secured to opposing sides of the doorframe. Each of the door facings has an opening. A saddle is secured to the first and second door facings so that the saddle surrounds the opening. A glazing bead is secured to the saddle. A glazing panel is secured between the saddle and the glazing bead.

[0009] A method of forming a glazed door is also provided. A door is provided comprising first and second door facings secured to opposing sides of a peripheral doorframe. Each of the facings has a panel portion. The panel portion is removed from each of the facings to form an opening in the door. A saddle is secured to the door facings surrounding the opening. A glazing panel is positioned within the opening and against a protrusion extending from the saddle into the opening. A glazing bead is secured to the saddle so that the glazing panel is secured between the protrusion and the glazing bead.

[0010] The invention will now be further described by way of example with reference to the accompanying drawings in which:

Figure 1 is a front elevational view of a glazed door according to an embodiment of the present invention;

Figure 2 is a fragmentary cross-sectional view of the glazed door of Figure 1 taken along line 2-2 and viewed in the direction of the arrows;

Figure 3 is a side elevational view of a saddle according to an embodiment of the present invention;

Figure 4 is a side elevational view of a glazing bead engageably securable to the saddle of Figure 3;

Figure 5 is a fragmentary side elevational view of a glazing panel secured between the saddle and glazing bead of Figures 3 and 4;

Figure 6 is a front plan view of a door having an opening;

Figure 7 is a fragmentary cross-sectional view of a door having a panel defined by a molded portion;

Figure 7A is a fragmentary cross-sectional view of the circled portion 7-7 of the door of Figure 6;

Figure 8 is a front plan view of a door with portions broken away showing a honeycomb core;

Figure 9 is a fragmentary cross-sectional view of a door having an opening;

Figure 10 is a fragmentary cross-sectional view of the door of Figure 9 with a saddle surrounding the opening;

Figure 11 is a fragmentary cross-sectional view of the door of Figure 10 with a glazing panel positioned on the saddle and a glazing bead engageably securable to the saddle; and

Figure 12 is fragmentary cross-sectional view of a glazed door with the glazing panel of Figure 11 secured between the saddle and the glazing bead.

[0011] As best shown in Figures 1 and 2, a glazed door 10 comprises a peripheral frame 12, and first and second door facings 14, 16. Facing 14 includes an interior surface 18 and an exterior surface 20. Likewise, facing 16 includes an interior surface 22 and an exterior surface 24. Interior surfaces 18, 22 are secured to opposing sides of peripheral frame 12 by adhesive or the like. At least one opening 26 extends through facings 14, 16. Opening 26 is defined by a first edge 28 of first facing 14 and a second edge 30 of second facing 16. A saddle 32 extends from first edge 28 of first facing 14 to second edge 30 of second facing 16. A glazing bead 34 is secured to saddle 32. A glazing panel 36, such as provided by a glass pane, is secured between saddle 32 and glazing bead 34 within opening 26. Door 10 may also include a core C disposed between first and second door facings 14, 16. Core C is preferably a paper honeycomb core material.

[0012] As best shown in Figures 2 and 3, saddle 32 includes first and second ends 38, 40, and a central planar portion 42 intermediate first and second ends 38, 40. A first leg 44 extends outwardly from first end 38, away from opening 26, and onto exterior surface 20 of first facing 14, as best shown in Figure 2. A second leg 46 extends outwardly from second end 40, away from opening 26, and onto exterior surface 24 of second facing 16. First leg 44 may be substantially parallel to second leg 46. First and second legs 44, 46 may be substantially perpendicular to central portion 42.

[0013] First and second legs 44, 46 are preferably flush with, and grip, exterior surfaces 20, 24 of first and second facings 14, 16, respectively, thereby securing saddle 32 in place around opening 26. An adhesive, such as polyvinyl acetate, may also be used to secure saddle 32 in place. However, first and second legs 44, 46 are preferably configured such that saddle 32 may be securely fitted in place without the use of an adhesive or other fastening means. In this way, saddle 32 may be quickly and easily clipped around opening 26 during manufacture of glazed door 10. To ensure a secure fit, legs 44, 46 should be spaced from each other a distance that is substantially equal to the thickness of door 10. In addition, legs 44, 46 should extend onto exterior surfaces 20, 24 a sufficient amount to securely grip facings 14, 16.

[0014] Saddle 32 also includes a protrusion 48 extending outwardly into opening 26. Protrusion 48 includes an inner surface 50 extending from central portion 42, which abuts one side of glazing panel 36. Protrusion 48 may include a contoured portion 52, though a planar angular side may also be provided. Contoured portion 52 may provide additional support to protrusion 48 and inner surface 50. Alternatively, inner surface 50 may have sufficient thickness so that no additional structural support by contoured portion 52 is required. Contoured portion 52 preferably extends from first end 38 to inner surface 50. Contoured portion 52 preferably is configured to enhance the decorative appearance of door 10. It should be understood that the configuration of contoured portion 52 might vary. However, contoured portion preferably does not extend outwardly beyond the plane of exterior surfaces 20, 24 to reduce the possibility of damaging the glazing system. In this way, any damage to doors 10 during transport, or when stacked, is minimized.

[0015] Saddle 32 also includes an inner clip 54 and an outer clip 56. Inner clip 54 extends outwardly from central portion 42 into opening 26, and is proximate inner surface 50. Clips 54 and 56 preferably extend parallel to inner planar surface 50. Outer clip 56 extends into opening 26, and is proximate second end 40. Outer clip 56 may be coplanar with second leg 46. Inner and outer clips 54, 56 preferably include hooked ends 58, 60, respectively, which curve inwardly toward each other.

[0016] Saddle 32 may also include a central stud 62, which extends outwardly into opening 26, as best shown in Figures 2 and 3. Stud 62 is intermediate inner surface 50 and inner clip 54. Preferably, the length of stud 62 is substantially equal to the length of inner clip 54. In this way, glazing panel 36 rests against both stud 62 and the top of inner clip 54.

[0017] Saddle 32 is preferably formed of plastic, such as polyvinyl chloride, in order to provide sufficient flexibility to allow saddle 32 to be clipped into place about opening 26 and yet have sufficient rigidity to maintain glazing panel 36 secured during use of door 10. In addition, all of the components of saddle 32 are preferably integrally formed. It should be understood that the precise dimensions of saddle 32 may vary depending on the dimensions and thickness of door 10, as well as the dimensions and thickness of glazing panel 36. Further, the dimensions of saddle 32 may vary depending on the material used to form saddle 32. For example, protrusion 48 may extend into opening 26 so that inner surface 50 provides sufficient support to glazing panel 36. Legs 44, 46 should be sufficiently spaced, and have a sufficient length, so that saddle 32 grips facings 14, 16.

[0018] As best shown in Figure 4, glazing bead 34 may include a first hooked end 64 and a second hooked end 66. First and second hooked ends 64, 66 are configured and spaced to engage and snap-fit with inner and outer clips 54, 56, respectively. Glazing bead 34 includes a second inner surface 68, which is adjacent glazing panel 36. Glazing panel 36 is secured between inner surface 50 of saddle 32, and second inner surface 68 of glazing bead 34. Glazing bead 34 may also include a second contoured portion 70, which preferably corresponds to the configuration of contoured portion 52, as best shown in Figure 5. Glazing bead 34 may also include an inner surface tip 72 extending outwardly from second inner surface 68. After securing glazing bead 34 to saddle 32, tip 72 is tensioned against glazing panel 36, thereby ensuring a tight fit for glazing panel 36 on door 10 and minimizing any rattling. Because glazing panel 36 rests against, or is supported by, stud 62, inner

clip 54 is not bent by glazing panel 36 when glazing panel 36 is positioned on door 10. In this way, the engaging members (i.e. first hooked end 64 and hooked end 58 of inner clip 54) securely lock together so that second inner surface 68 either abuts, or is close to, glazing panel 36. The effects of any gap between second inner surface 68 and glazing panel 36, if any, is negated by tensioned tip 72, as best shown in Figures 2 and 5.

[0019] Glazing bead 34 is preferably formed of plastic, such as polyvinyl chloride. As with saddle 32, the precise dimensions of glazing bead 34 may vary depending on the dimensions of door 10 and glazing panel 36, as well as the material used to form glazing bead 34.

[0020] There will now be described a method of forming a glazed door, such as glazed door 10. As best shown in Figures 6 and 7, a hollow core door D is provided. Door D includes first and second door facings 14, 16, which are secured to opposing sides of perimeter frame 12. As best shown in Figure 8, door D preferably includes a paper honeycomb core C disposed within frame 12 and between facings 14, 16 (facing 14 is not shown in Figure 8 to illustrate core C). Door D includes at least one panel portion P, as best shown in Figure 7. One or more panel portions P are removed from each facing 14, 16, along with any core C material therebetween, to form opening 26, as best shown in Figures 6 and 7A.

[0021] Panel portions P on each facing 14, 16 are defined by molded portions M, which are preferably entirely removed along a cut line 80 to form opening 26 through door D, as best shown in Figures 7 and 7A.

[0022] Glazing panel 36 may then be secured to door D within opening 26 using saddle 32 and glazing bead 34, as best shown in Figures 9-12. As best shown in Figure 9, opening 26 is defined by first edge 28 of facing 14, and second edge 30 of facing 16. Saddle 32 is secured to facings 14, 16 around opening 26, as shown in Figure 10. Specifically, legs 44, 46 are slid past first and second edges 28, 30, and onto exterior surfaces 20, 24. Saddle 32 slides over facings 14, 16, but is configured to tightly fit against facings 14, 16. Further, saddle 32 is sufficiently rigid so that legs 44, 46 do not bend away from facings 14, 16.

[0023] Next, glazing panel 36 is positioned against inner surface 50 of protrusion 48 on saddle 32, as best shown in Figure 11. The edge 82 of glazing panel 36 rests against stud 62 and inner clip 54. Stud 62 and inner clip 54 are preferably the same length. After glazing panel 36 is in place, glazing bead 34 is clipped onto saddle 32, as best shown in Figure 12. First and second hooked ends 64, 66 engage inner and outer clips 54, 56, respectively, to securely lock glazing bead 34 in place, as best shown in Figures 5 and 12. Glazing panel 36 is thereby secured between inner surface 50 of saddle 32 and second inner surface 68. Tip 72 is tensioned against glazing panel 36, thereby ensuring a tight fit for glazing panel 36 and minimizing any rattling.

Claims

1. A glazed door, comprising:

a peripheral doorframe;
first and second door facings secured to opposing sides of said doorframe, each of said door facings having an opening;
a saddle secured to said first and second door facings, said saddle surrounding said opening;
a glazing bead secured to said saddle; and
a glazing panel secured between said saddle and said glazing bead.

2. The glazed door of claim 1, wherein said saddle comprises spaced first and second legs extending along exterior surfaces of said first and second facings.

3. The glazed door of claim 2, wherein said first and second legs are parallel.

4. The glazed door of either claim 2 or claim 3, wherein said saddle further comprises a protrusion extending into said opening.

5. The glazed door of claim 4, wherein a side of said glazing panel is positioned against said protrusion.

6. The glazed door of claim 5, wherein said glazing bead includes a projecting tip that is tensioned against a second side of said glazing panel.

7. The glazed door of any one of claims 4 to 6, wherein said protrusion includes a contoured portion.

8. The glazed door of claim 7, wherein said protrusion includes an inner surface abutting a side of said glazing panel.

9. The glazed door of claim 8, wherein said contoured portion extends from a first end to a central portion of said saddle.

10. The glazed door of claim 9, wherein said saddle further comprises an inner clip extending outwardly from said central portion into said opening.

11. The glazed door of claim 10, wherein said glazing bead includes a first hooked end engageably secured to said inner clip.

12. The glazed door of claim 10, wherein said saddle further comprises an outer clip spaced from said inner clip and extending outwardly from a second end of said saddle.

13. The glazed door of claim 12, wherein said glazing

bead includes first and second hooked ends engageably secured to said inner and outer clips, respectively.

14. The glazed door of any one of claims 10 to 13, wherein said saddle further comprises a stud intermediate said protrusion and said inner clip and extending outwardly into said opening.

15. The glazed door of claim 14, wherein said stud has a length substantially equal to the length of said inner clip.

16. The glazing door of any preceding claim, further comprising a core disposed between said first and second door facings.

17. The glazed door of claim 16, wherein said core is a paper honeycomb core.

18. The glazed door of any preceding claim, wherein said saddle is formed from polyvinyl chloride.

19. The glazed door of any preceding claim, wherein said glazing bead is formed from polyvinyl chloride.

20. A method of forming a glazed door, comprising the steps of:

providing a door comprising first and second door facings secured to opposing sides of a peripheral doorframe, each of the facings having a panel portion;
removing the panel portion from each of the facings to form an opening in the door;
securing a saddle to the door facings surrounding the opening;
positioning a glazing panel within the opening and against a protrusion extending from the saddle into the opening;
securing a glazing bead to the saddle so that the glazing panel is secured between the protrusion and the glazing bead.

Fig 1

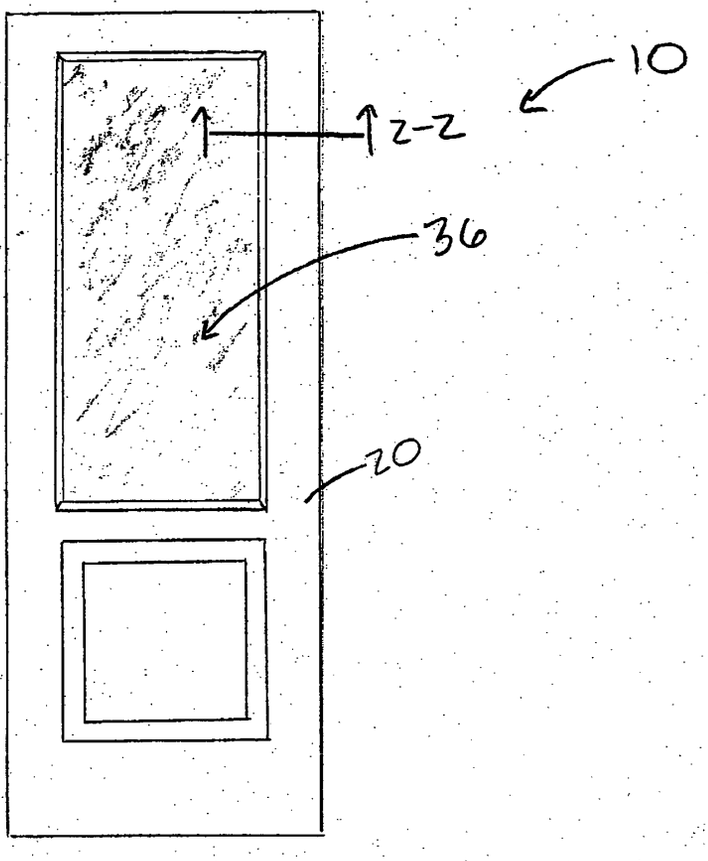


Fig. 2

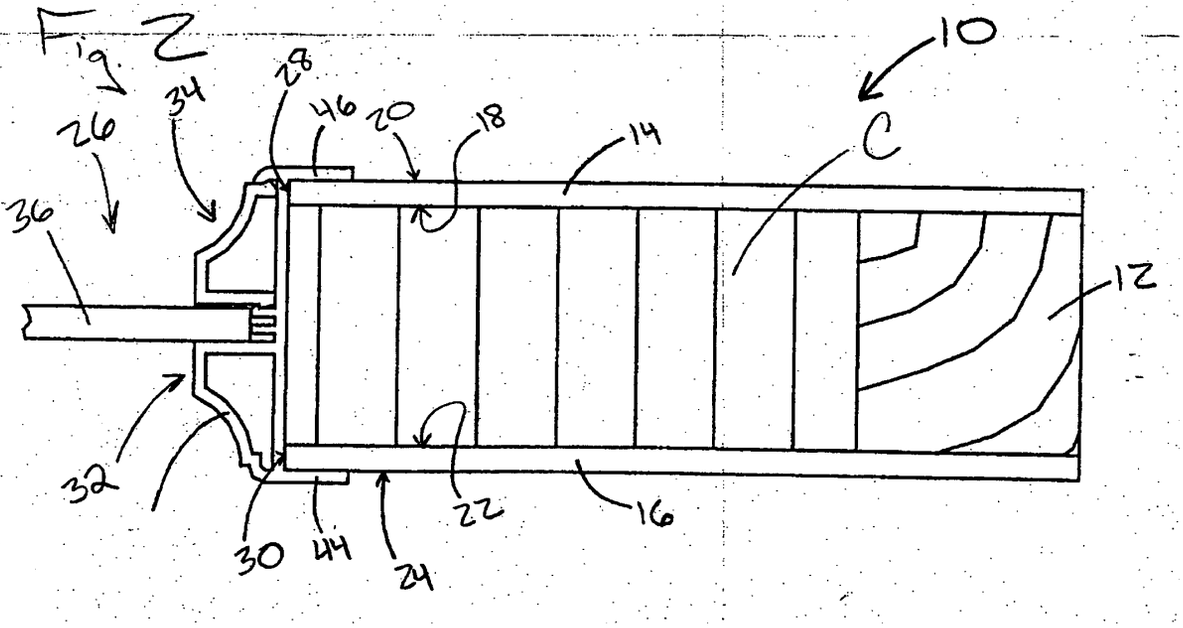


Fig. 4

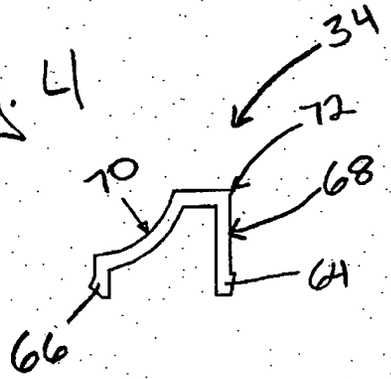


Fig. 3

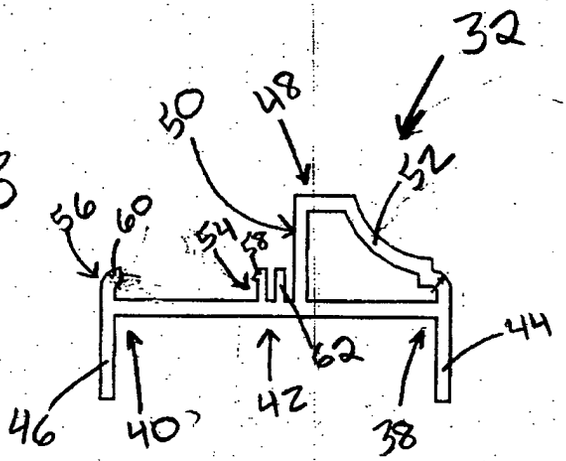


Fig 5

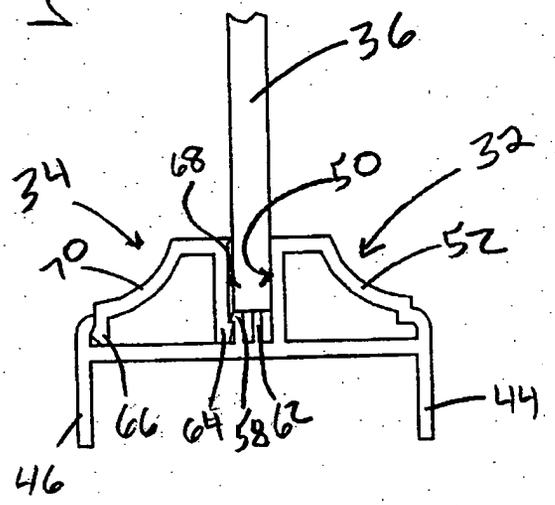


Fig 6

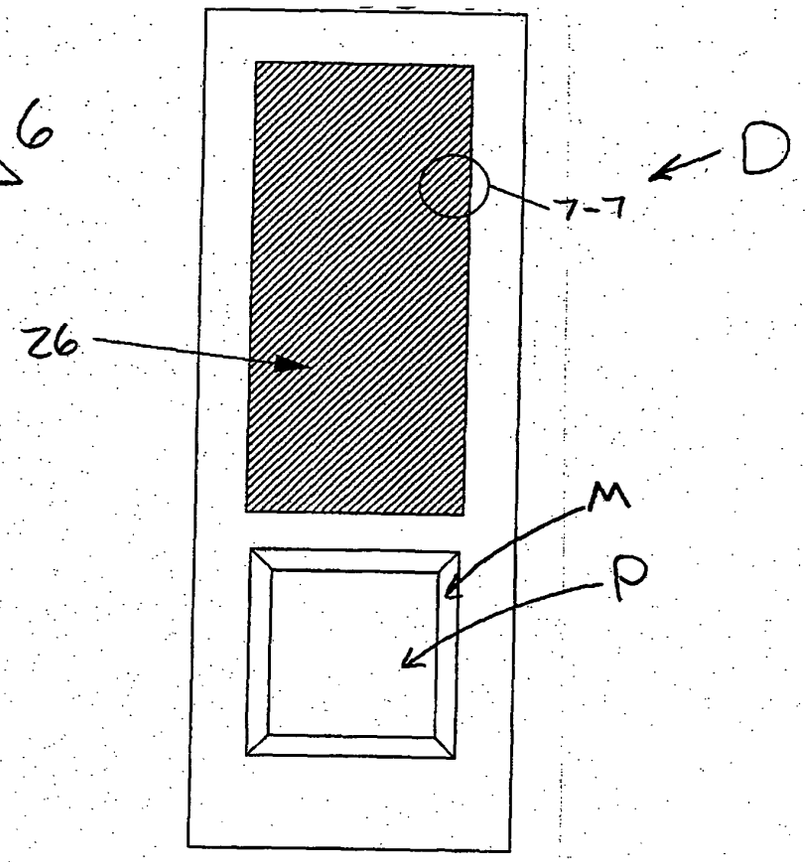


Fig 7.

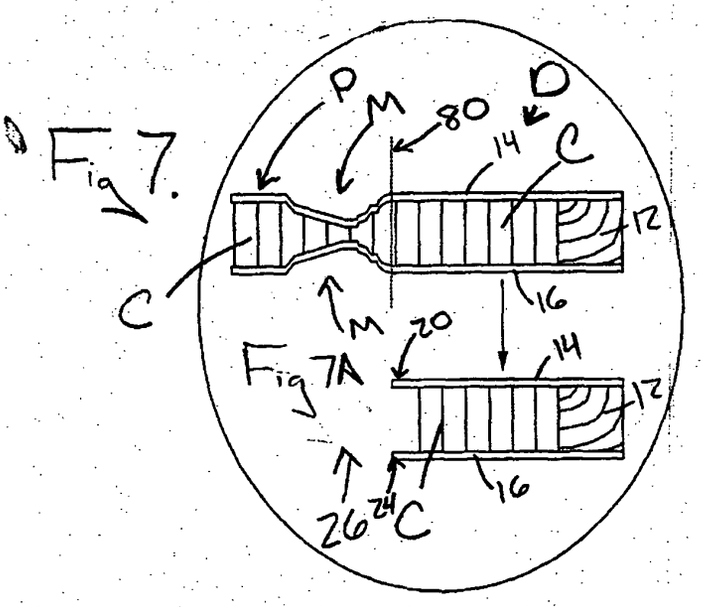
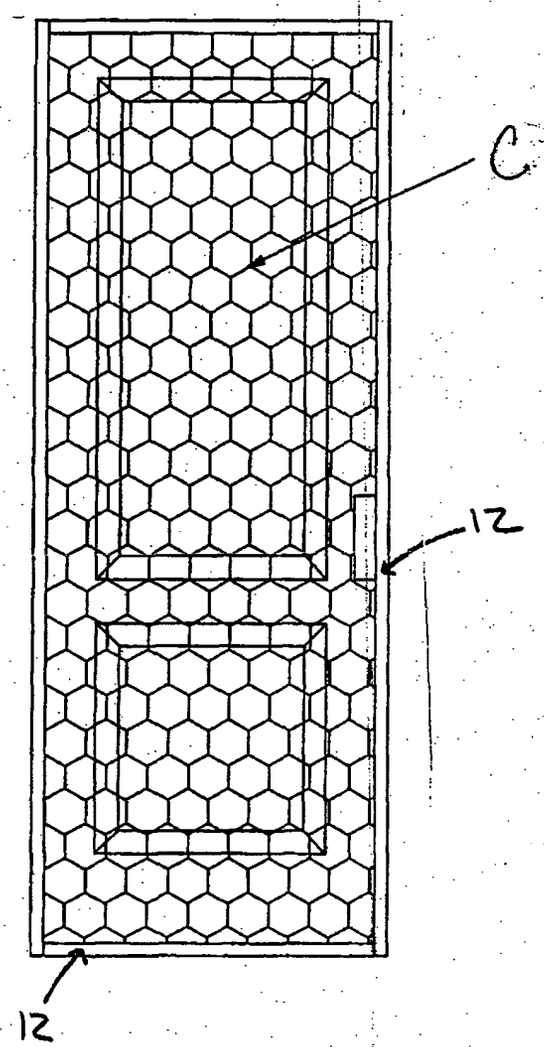


Fig 7A

Fig. 8



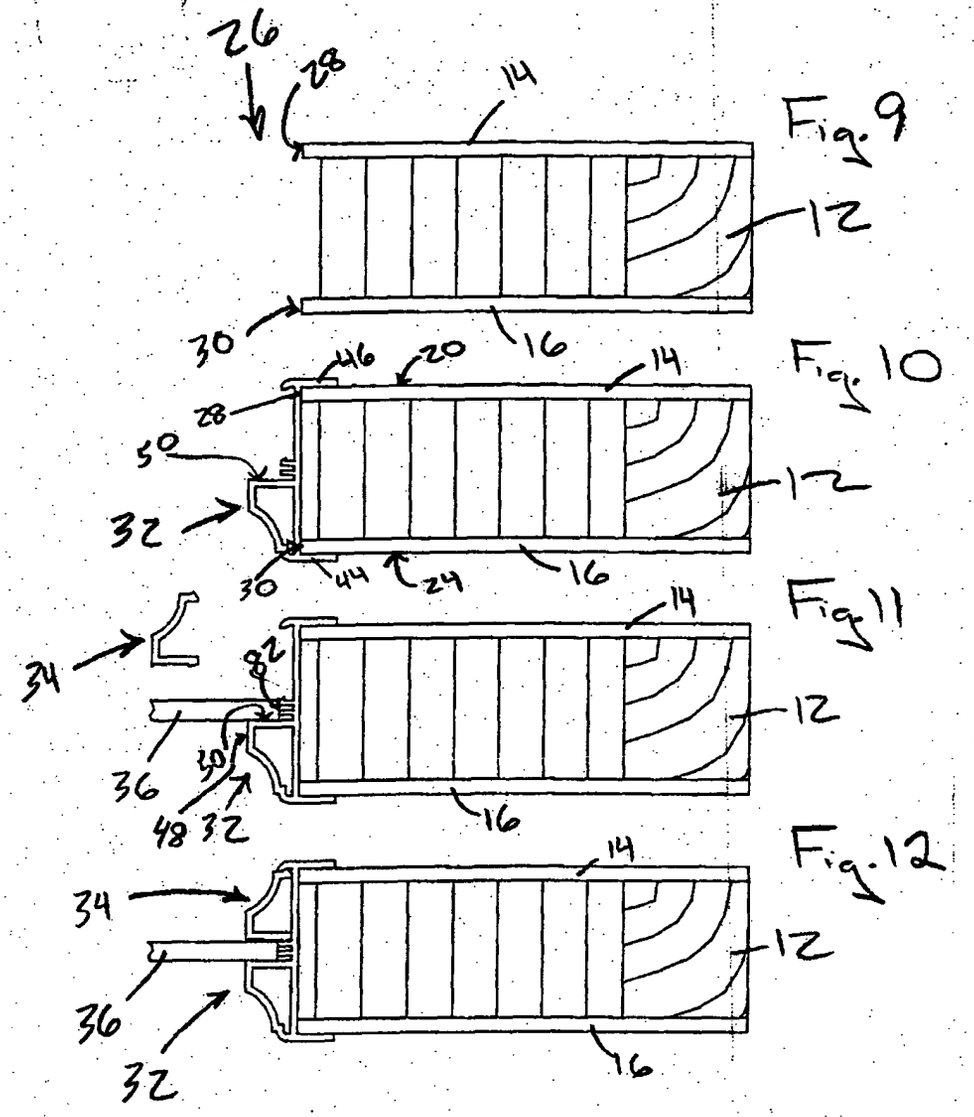

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Fig. 9
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Fig. 10
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Fig. 11
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Fig. 12

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EUROPEAN SEARCH REPORT

Application Number
EP 03 25 7017

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 25 18 927 A (KLEINEMAS GEB SCHUMACHER RUTH) 11 November 1976 (1976-11-11) * the whole document * ---	1-20	E06B3/58
X	US 4 628 648 A (WINYARD RODNEY W) 16 December 1986 (1986-12-16) * column 1, line 55 - column 3, line 34 * * figure 2 * ---	1-20	
X	US 2003/046887 A1 (CHUBB RICHARD A) 13 March 2003 (2003-03-13) * page 1, paragraph 4 * * figure 3 * -----	1-20	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29 March 2004	Verdonck, B

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 25 7017

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29-03-2004

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