United States Patent

Mann

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[54] PLASTIC REFRIGERATOR WITH REINFORCING FRAMEWORK

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[52] **U.S. Cl.** ..... **220/9 F**, 312/214

[51] **Int. Cl.** **B65d 25/18**

[58] **Field of Search** ..... 220/9 F, 83, 9 G; 312/213, 312/214

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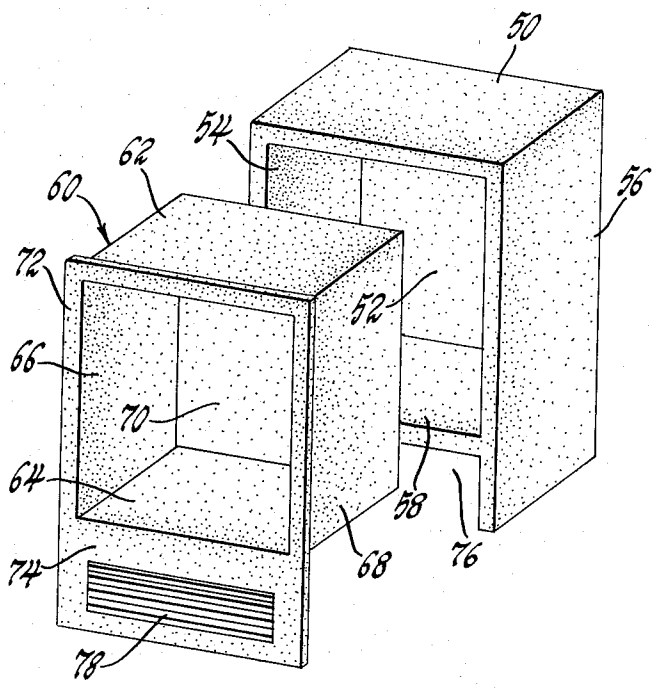
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[57] **ABSTRACT**

In the preferred form of this refrigerator cabinet for installation in a wall, a rectangular framework supports walls of plastic foam insulation surrounding the insulated compartment. This framework is embedded in the insulation. A plastic sheet inner liner extends within and lines the insulated compartment and has outwardly extending flanges forming the front of the cabinet and hiding the foam insulation.

1 Claim, 4 Drawing Figures



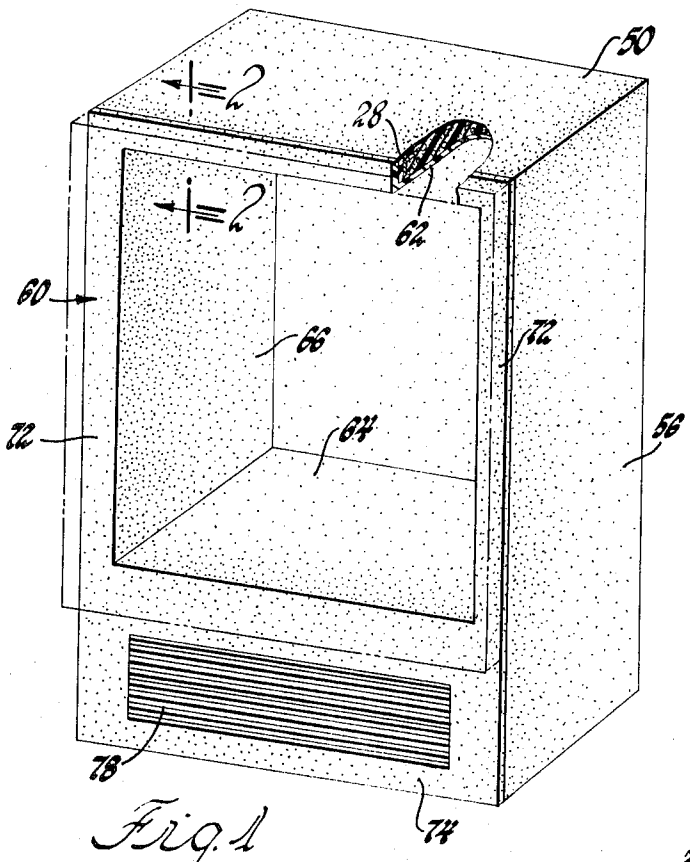


Fig. 1

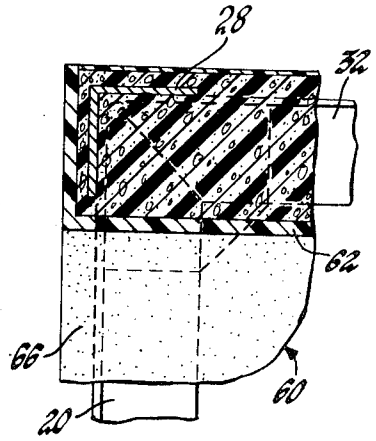


Fig. 2

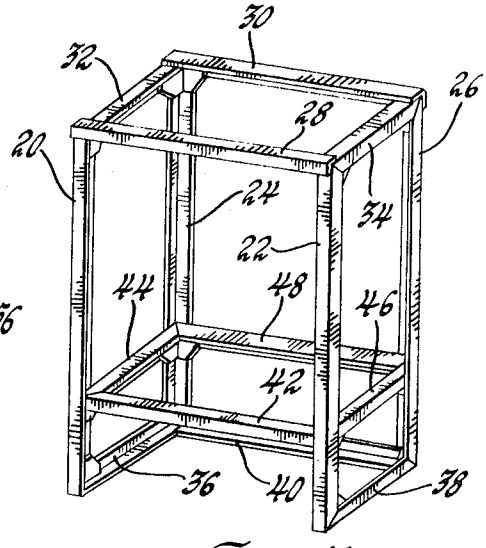


Fig. 3

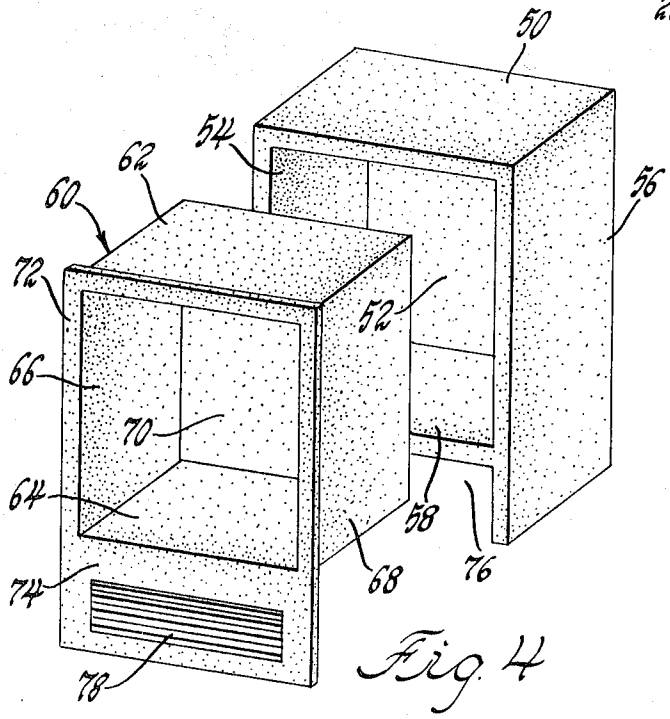


Fig. 4

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PLASTIC REFRIGERATOR WITH REINFORCING FRAMEWORK

Kitchen styling in recent years has favored building appliances such as ovens and surface heaters into the wall and counter tops. Since refrigerators are predominantly built in large production as separately styled units, the installation of refrigerators into the wall has been kept at a minimum.

It is an object of this invention to provide a low cost efficient safe refrigerator cabinet for installation in a wall which will have a low tooling, low material and low material cost for mass production and which can be readily and quickly made and also which can be readily changed in design and appearance.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein preferred embodiments of the present invention are clearly shown.

In the drawings:

FIG. 1 is a perspective view of a refrigerator cabinet embodying one form of my invention;

FIG. 2 is a fragmentary vertical sectional view taken along the lines 2—2 of FIG. 1;

FIG. 3 is a perspective view of the framework of the cabinet; and

FIG. 4 is an exploded perspective view of the inner liner and the remaining walls of the cabinet.

Referring now to the drawings and more particularly to FIG. 3, there is shown a rectangular framework which is made up of four upright angle members forming four vertical corners of the framework with the front uprights being designated **20** and **22** and the rear uprights being designated **24** and **26**. These uprights are connected at the top by a set of four horizontal angle members with the member **28** connecting the top of the front members **20** and **22**, the member **30** connecting the tops of the rear upright members **24** and **26** and the side angle members **32** and **34** connecting the upright members **20** and **24** and **22** and **26** along the sides of the framework.

At the bottom is the angle member **36** connecting the bottoms of the upright members **20** and **24**, the angle member **38** connecting the bottoms of the upright members **22** and **26** and the angle member **40** connecting the bottoms of the upright members **24** and **26**. Spaced above the bottom are four horizontal angle members in which there is a front angle member **42** connecting the upright members **20** and **22**, side angle members **44** and **46** connecting respectively the upright members **20** and **24** and **22** and **26**. The rear angle member **48** connects the rear upright members **24** and **26**. All of these members are L-shaped in cross section and fastened together at their intersections by welding, rivets, gussets or any other convenient means of bonding. They are preferably made of thin steel which may be coated with any suitable material. If desired, they may be provided with outer reinforcing flanges and may be perforated in any manner desired.

Cast over this framework shown in FIG. **3** are the walls of the cabinet which are formed of any suitable plastic foam insulation material. However, I prefer to cast the walls of polyurethane foam containing insulating gas such as monofluorotrichloromethane. As shown particularly in FIG. **4**, the cabinet is formed of plastic foam insulation walls cast as a unit over and about the framework with the top wall **50** extending over and between the top set of horizontal members **28** to **34** and with a rear wall **52** cast over and between the rear set of members **24**, **26**, **30**, **40** and **48**. The left side wall **54** is cast over and between the side members **20**, **24**, **32**, **36** and **44** while the right side wall **56** is cast over and between the side wall members **22**, **26**, **34**, **38** and **46**. The bottom wall **58** is cast over and between the lower set of horizontal members **42** and **48**. This casting is done as a complete unit with the foam insulation material surrounding the members of the framework as illustrated in FIGS. **1** and **2**. The refrigerating system is supported and attached to the framework after completion of the cabinet.

The cabinet is completed by a plastic inner liner member **60** preferably formed of sheet plastic of any suitable type. It includes a box shaped portion including the top and bottom walls **62** and **64**, side walls **66** and **68** extending to the floor and rear wall **70**. The front of this member **60** is provided with outwardly extending flanges **72** on the top and sides and a more extensive flange **74** which extends downwardly to provide a front for the machinery compartment **76** which is located beneath the bottom wall **58**. This downwardly extending portion **74** is provided with an integral louvered opening **78** which provides for the circulation of air into and out of the machinery compartment **76**. The liner **60** may be provided with any of the many well known arrangements for supporting refrigerator shelves therein.

When the liner member **60** is inserted into the cabinet it will fit against and be supported by the interior walls of the foam insulation material and the outward flanges **72** and **74** and cover the front of the insulation and provide a suitable front to the cabinet. The cabinet may be provided with any form of insulated door which will harmonize with the design of the kitchen. The hinges for the door may be fastened through the flanges **72** to either of the front upright members **20** or **22** of the framework. The outer surface of the foam insulation material forming the walls of the cabinet may be sealed by any suitable coating such as polyethylene, asphalt coated paper, polyester of ethylene glycol and terephthalic acid or metal foil or foil coated paper or other metal film coating.

Inasmuch as the cabinet is to be built into the wall the sides, top, bottom and rear walls will be concealed and therefore do not require a finished surface. The cabinet will be very light in weight and easy to install. The inner liner member **60** is preferably made in one piece. Inasmuch as all parts of the cabinet can be readily made without expensive tooling and since the number of exposed finished surfaces are limited, changes in dimension and design can be readily made without incurring a large tool cost. This cabinet, therefore, will promote the building of refrigerator cabinets into the walls of kitchens.

While the embodiments of the invention as herein disclosed constitute preferred forms, it is to be understood that other forms might be adopted.

I claim:

1. A refrigerator cabinet for installation in a kitchen wall including a steel frame of rectangular parallelepipedal shape comprising four elongated corner upright members of L-shaped cross section and an upper set of four elongated horizontal members of L-shaped cross section fastened to said upright members in a rectangular configuration extending between the tops of said upright members, three elongated bottom horizontal members of L-shaped cross section in a front opening U-shaped configuration extending between said upright members so as to connect the bottoms thereof along each side and the rear of said frame, a lower set of four elongated horizontal members of L-shaped cross section fastened to said upright members in a rectangular configuration extending between said upright members and spaced above said bottom horizontal members defining a machinery compartment therebetween with rectangular shaped forward and rearward facing opening between said lower set of four members and said three bottom members, cabinet walls of polyurethane plastic foam insulation material molded about and extending between said upper and lower sets of horizontal members and between said upright members on the top, sides and rear of said frame, said frame being embedded within and supporting said cabinet walls, a rectangular parallelepipedal shaped liner member performed of sheet plastic material extending within said cabinet walls between said upper and lower sets of horizontal members and having at the front relatively short integral outwardly extending top and side flanges completely covering the front edges of said cabinet walls as to be flush with said cabinet top and side walls, said inner liner having a bottom relatively long integral flange extending downwardly in flush relationship with the lower edges of said frame side walls so as to completely cover the front opening of said machinery compartment, said downwardly extending bottom flange having louvered openings molded therein to allow for

the circulation of air into and out of said machinery compartment, and said cabinet side, top, bottom and rear wall outer surfaces being sealed by a coating material forming an outer cabinet shell whereby said cabinet is located in the kitchen wall.

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