Nov. 10, 1936. G. F. FORSTHOEFEL 2,060,756

CABINET CONSTRUCTION

Filed Sept. 1, 1931 2 Sheets-Sheet 1

Fig. 1.

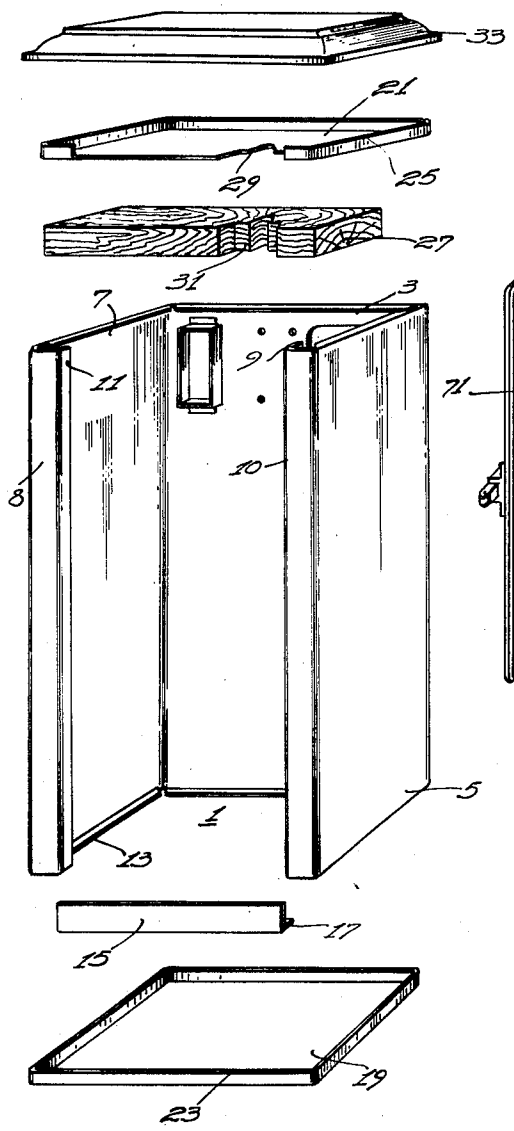
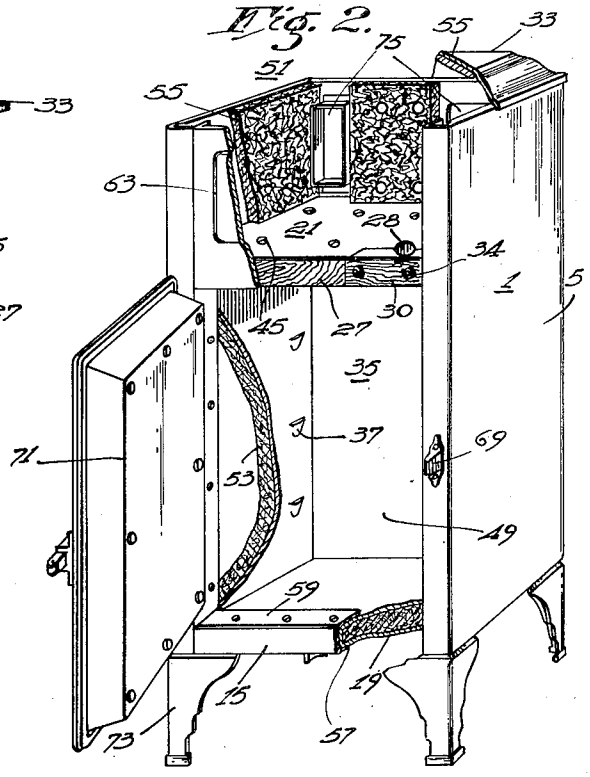


Fig. 2.



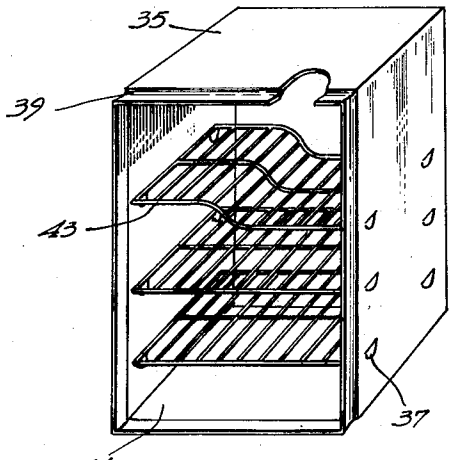


Fig. 3.

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Fig. 4.

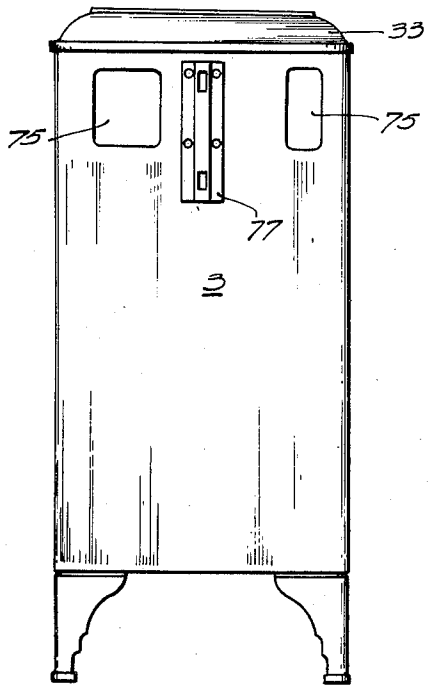


Fig. 6.

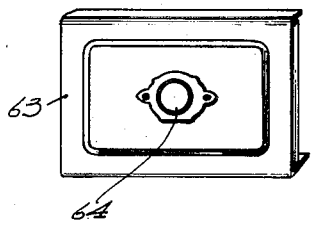


Fig. 7.

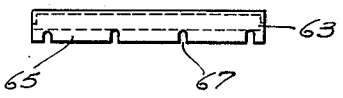


Fig. 8.

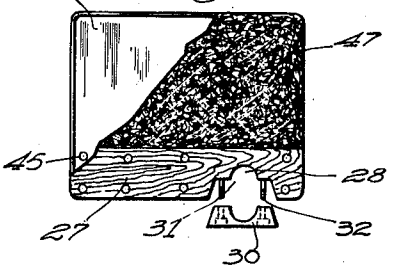
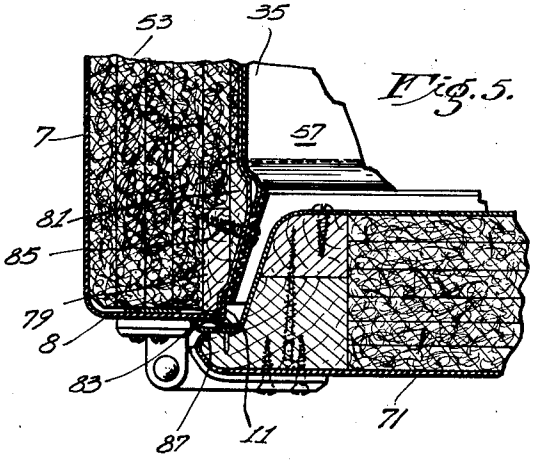


Fig. 5.



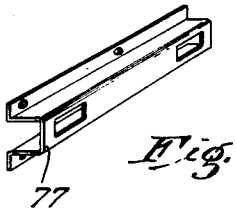


Fig. 9.

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Patented Nov. 10, 1936 2,060,756

UNITED STATES PATENT OFFICE

2,060,756

CABINET CONSTRUCTION

Gregg F. Forsthoefel, Springfield, Mass., assignor to Westinghouse Electric & Manufacturing Company, a corporation of Pennsylvania

Application September 1, 1931, Serial No. 560,563

4 Claims. (Cl. 220—9)

My invention relates to cabinet construction, and particularly to the construction of cabinets which are utilized as refrigerators.

Heretofore refrigerator cabinets have usually been built around a wooden or steel framework which was bolted together. The number of assembly parts and the labor of manufacturing and assembling the parts are costly and furthermore the cabinets so constructed are not usually extremely strong mechanically.

It is, therefore, an object of my invention to provide a refrigerator cabinet of a minimum of parts which may be easily assembled.

It is another object of my invention to provide a refrigerator cabinet of exceptional mechanical strength throughout.

It is a further object of my invention to provide an efficient seal between the metal inner lining and the metal outer shell of a refrigerator cabinet.

It is still a further object of the invention to prevent a metal to metal contact between the refrigerator door and the inner lining, but to provide a tight seal therefor.

It is another object of my invention to provide an outer metallic shell for a refrigerator fabricated from one piece of material into a three sided shell of substantial height having two parallel sides and a side at right angles thereto.

It is another object of my invention to utilize a contiguous five sided box for a metal inner lining.

It is a further object of my invention to so construct the longitudinal edges of the parallel sides of the outer refrigerator cabinet shell that the assembly of the cabinet will be greatly facilitated.

It is an ancillary object of my invention to provide means whereby a circulation of cool air is ensured in the machine compartment of a mechanical refrigerator.

Other objects and advantages of my invention will become apparent from the following description and drawings, wherein,

Figure 1 is an exploded perspective view of the outer shell, top and dividing members of a refrigerator cabinet constructed in accordance with an embodiment of my invention,

Fig. 2 is a perspective view, partly in section of a completely assembled refrigerator cabinet,

Fig. 3 is a perspective view of the inner lining for my refrigerator cabinet,

Fig. 4 is a back view of my cabinet,

Fig. 5 is a sectional view of the door and cabinet construction, and of the seal between the door and outer shell, and the inner lining,

Fig. 6 is a front view of the closure for the machine compartment,

Fig. 7 is a bottom view of the closure shown in Fig. 6.

Fig. 8 is a view, partly in section, of the dividing members for the cooling compartment and the machine compartment, and

Fig. 9 is a perspective view of a projecting member which is disposed on the back of the cabinet as shown in Fig. 4.

Referring specifically to the drawings for a detailed description of the invention, numeral 1 designates the outer shell of a refrigerator cabinet which is formed preferably of metal into three main sides. One side 3 is at right angles to the other two sides 5 and 7 which are parallel to each other. L-shaped turns 9 and 11 are provided on the longitudinal edges of the parallel sides 5 and 7 for reasons explained hereinafter. The lower edge of the shell 1 is turned inwardly and forms a support 13.

A cross member 15 having an inturned edge 17, and upper and lower plates 21 and 19 respectively are formed preferably of metal. The cross bar is substantially the same length as the distance between the turned portions 9 and 11. The plates 19 and 21 are of the same dimensions as the inside of the shell 1 and are provided with upturned portions 23 and 25 respectively.

A member of relatively rigid heat insulating material 27, preferably of wood, is adapted to be fastened to the under surface of the plate 21, and is the same length as the plate. Preferably, portions 29 and 31 are cut out of the plate 21 and the member 27, and correspond in size, shape and position for reasons hereinafter explained.

A top 33 preferably of metal and of any desired shape is provided to cover the shell 1.

An inner lining 35, preferably of metal welded together to form a five-sided body, is provided. Shelf supports 37 adapted to support shelves 43 are preferably pressed into the lining 35, and a depression 39 is provided around the entire edge of the lining at its opening 41.

The assembly of the cabinet is accomplished by welding the cross bar 15, with the edge 17 thereon turned inwardly, to the bottom of the shell 1, as shown in Fig. 2, thus bracing the shell 1. The lower plate 19 is dropped into place and is supported by the inturned edges 13 of the shell 1 and the edge 17 of the cross bar 15. The plate 19 is fastened in place preferably by spot welding the upturned portions 23 on the plate 19 to the

walls 3, 5 and 7 of the shell 1. The upturned flanges 23 may be omitted in which case the edges of the plate 19 are spot welded to the inturned edges 13 of the shell 1.

The upper plate 21 is placed in position in the shell 1 as shown in Fig. 2, and the upturned portions 25 are spot welded to the walls 3, 5, 7, 8 and 10 of the shell 1. The insulating member 27 is fastened to the plate 21 by screws 45 with the cut out portions 29 and 31 of the plate 21 and member 27 coinciding. The cut out portions are preserved and an aperture 28 is cut partly in them and partly in plate 21 and member 27. The member 27 is provided with bolts 32 to support the portion 30 and to receive nuts 34. This allows the mechanical refrigerating unit (not shown) to be placed in the cabinet from the front of the aperture 28, and provides a space for the connection from the compressor to the evaporator (not shown). The insulating member 27 is disposed flush with the L-shaped turns 9 and 11 of the shell 1 in Fig. 2. Two main compartments are thus formed, namely, a cooling compartment 49 and a machine compartment 51. The arrangement of these compartments is shown by way of example, and I do not intend to be limited thereto.

Heat insulating material 53 is applied to the cooling compartment 49 adjacent to the walls 3, 5 and 7, and the plate 19 as shown in Fig. 2. Heat insulating material 47, as shown in Fig. 8, is applied to the portion of the under surface of the plate 21 which is not covered by the member 27. Sound deadening material 55 is applied to the walls of the machine compartment 51 and to the top 33.

A portion of a seal 57 between the shell 1 and the lining 35 is inserted in the cabinet and the inner lining 35 is disposed in the shell 1, preferably fitting snugly against the insulation 53. The remaining portion of the seal 57 is disposed on the first portion and fits into the depression 39 in the lining 35, and a strip of molding 59 is attached to the first portion.

A closure 63, shown in Figs. 6 and 7, is provided for the front of the machine compartment 51, and fits snugly between the L-portions 9 and 11 of the shell 1, and is removably attached thereto by any convenient means. The closure 63 is turned inwardly to form an edge 65 which covers and fits under the member 27, and is provided with apertures 67 adapted to receive screws (not shown) which fasten the closure to the member 27. An aperture 64 is provided in the closure 63 for the refrigerator control (not shown).

Hinges (not shown) and a clasp 69 are provided for hanging and closing a door 71, and are attached to the L-shaped edges 8 and 10 of the shell 1 in any well known manner. Legs 73 are fastened to the bottom of the cabinet and the top 33 is disposed on the shell 1, thus substantially completing the assembly.

Referring to Figs. 2, 4 and 9, apertures 75 are provided in the upper portion of the shell 1, preferably when it is formed, to ensure air circulation in the machine compartment 51. A projecting member 77 is disposed on the outside of the wall 3 of the cabinet and prevents the cabinet from being pushed tightly against a wall so that air circulation is cut off from the machine compartment 53.

Referring specifically to Fig. 5 for a detailed description of the seal 57 and the construction of the door 71, a strip of molding 79 is disposed between the insulation 53 and the L-shaped portion 11, and is held in place by the L-shaped portion 11. A waterproof material 83 is placed under the molding 79 and is held thereby. The inner lining 35 is then placed in the shell 1, and another strip of molding 81, which is preferably beveled is fastened to the first strip 79 by means of the waterproof material 83 which is wrapped around the molding 81, the depression 39 in the lining 35 providing space for the molding 81 and material 83. A third strip of molding preferably of an impervious molded material is fastened to the other strips by screws 85 and bridges the space between the lining 35 and the shell 1. A gasket 87 is attached to the door 71.

The seal 57, therefore, prevents heat conduction from the cooling chamber 49 to the outer shell 1 or the outer portions of the door 71, as there is no metal to metal contact between the various parts. The seal also provides a tight fit between the various members, thus preventing heat leakage to the cooling chamber 49. A further purpose of the seal is to prevent infiltration of moisture laden air into the insulation 53 with resulting condensation therein.

From the foregoing description and drawings, it will also be seen that I have provided a refrigerator cabinet of a minimum number of assembly parts which is mechanically strong. I have furthermore provided an efficient seal for the cooling compartment, and have ensured good air circulation for the machine compartment.

Although I have shown and described specific embodiments of my invention, it is to be understood that modifications and changes may be made by those skilled in the art without departing from the spirit and scope of the appended claims.

I claim as my invention:

1. A refrigerator cabinet construction including a substantially three-sided outer shell, a pair of substantially flat plates, means for fastening one of said plates at one of the longitudinal extremities of said shell, means for fastening the other plate intermediately of the longitudinal extremities of said shell, whereby two compartments are formed, said intermediate plate including main and detachable portions complementally providing an aperture, and a rigid insulating member attached to and at least partially covering a surface of said intermediate plate, said insulating member including main and detachable portions complementally providing an aperture aligned with said first aperture.

2. A refrigerator cabinet construction including a substantially three-sided outer shell, a pair of substantially flat plates, means for fastening one of said plates at one of the longitudinal extremities of said shell, means for fastening the other plate intermediately of the longitudinal extremities of said shell, whereby two compartments are formed, said intermediate plate including main and detachable portions complementally providing an aperture, and a rigid insulating member attached to and at least partially covering a surface of said intermediate plate, said insulating member including main and detachable portions complementally providing an aperture aligned with said first aperture.

3. In a refrigerator cabinet, the combination of a three-sided outer shell, substantially L-shaped portions turned on the longitudinal edges of the shell, a cross bar disposed at the bottom of the shell between the turned portions thereof, a horizontal plate welded to the bottom of the shell, a second horizontal plate welded to the shell near the top thereof, said shell and hori-

zontal plates forming a compartment with five walls and an opening therein, a block of rigid insulating material fastened to the underside of said upper plate, said upper plate and block being provided with coinciding apertures and detachable portions, an insulating material disposed on the remaining under surface of said upper plate not covered by said rigid block, an insulating material disposed adjacent to the remaining walls of the five-sided compartment, a molding strip disposed between said insulation and the L-shaped portions of said shell, a five-sided inner liner having an opening therein disposed in spaced relation to said first five-sided compartment by said insulation with the openings to the shell and inner liner coinciding, a second strip of molding disposed between the open edges of said liner and said first molding strip, and a breaker strip fastened to both of said molding strips and overlapping said five-sided shell including said cross-bar and said five-sided liner at their edges.

4. In a refrigerator cabinet, the combination of an outer casing comprising a back and two adjacent side walls and front wall vertical marginal portions formed of a single blank, intermediate top and bottom walls secured to said back and side walls, whereby a five-sided compartment and a four-sided compartment are formed, a removable cover for the four-sided compartment, heat-insulating material disposed on the inner side of said walls, upper and lower front wall panels extending between the front wall vertical marginal portions and disposed in vertically-spaced relation to provide a door opening therebetween, a five-sided liner adapted to be inserted through said door opening and positioned within the outer casing in spaced relation thereto by said heat-insulating material and with the open side registering with the door opening in the outer casing, and breaker strips extending between the edges of the door opening and the edges of the open side of the liner.

GREGG F. FORSTHOEFEL.