May 21, 1940. W. H. TEETER 2,201,596

REFRIGERATING APPARATUS

Filed Feb. 25, 1939 5 Sheets-Sheet 1

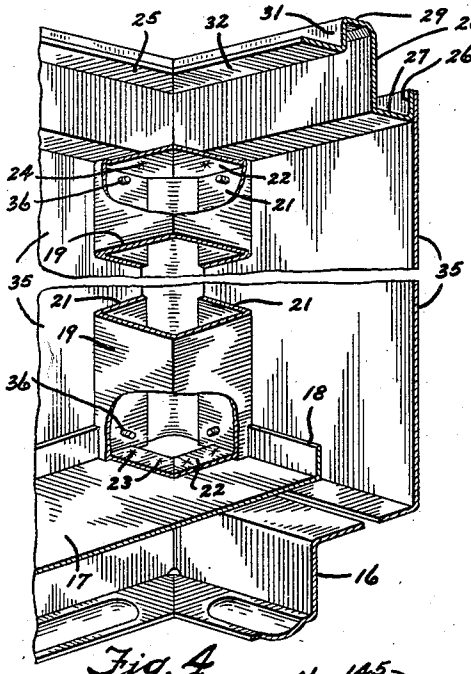

Fig. 4

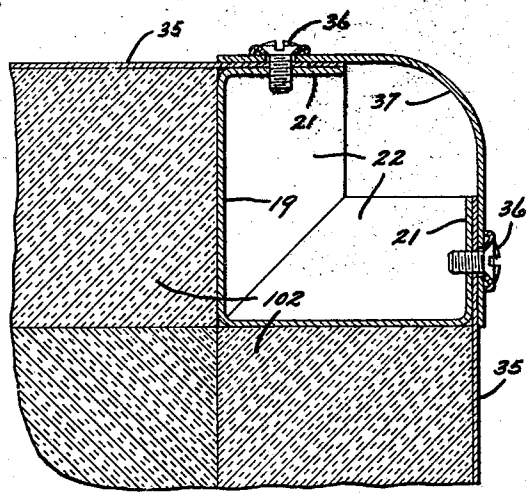

Fig. 3

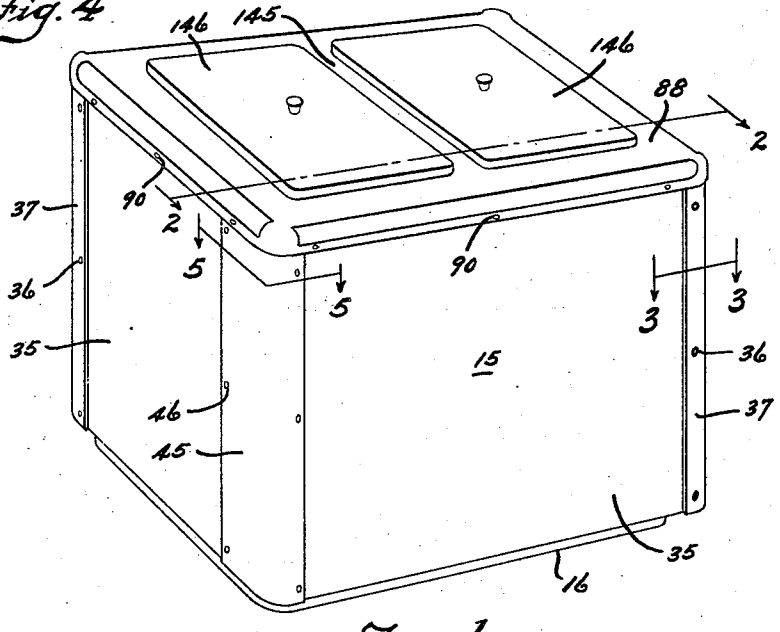

Fig. 1

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REFRIGERATING APPARATUS

Filed Feb. 25, 1939 5 Sheets-Sheet 2

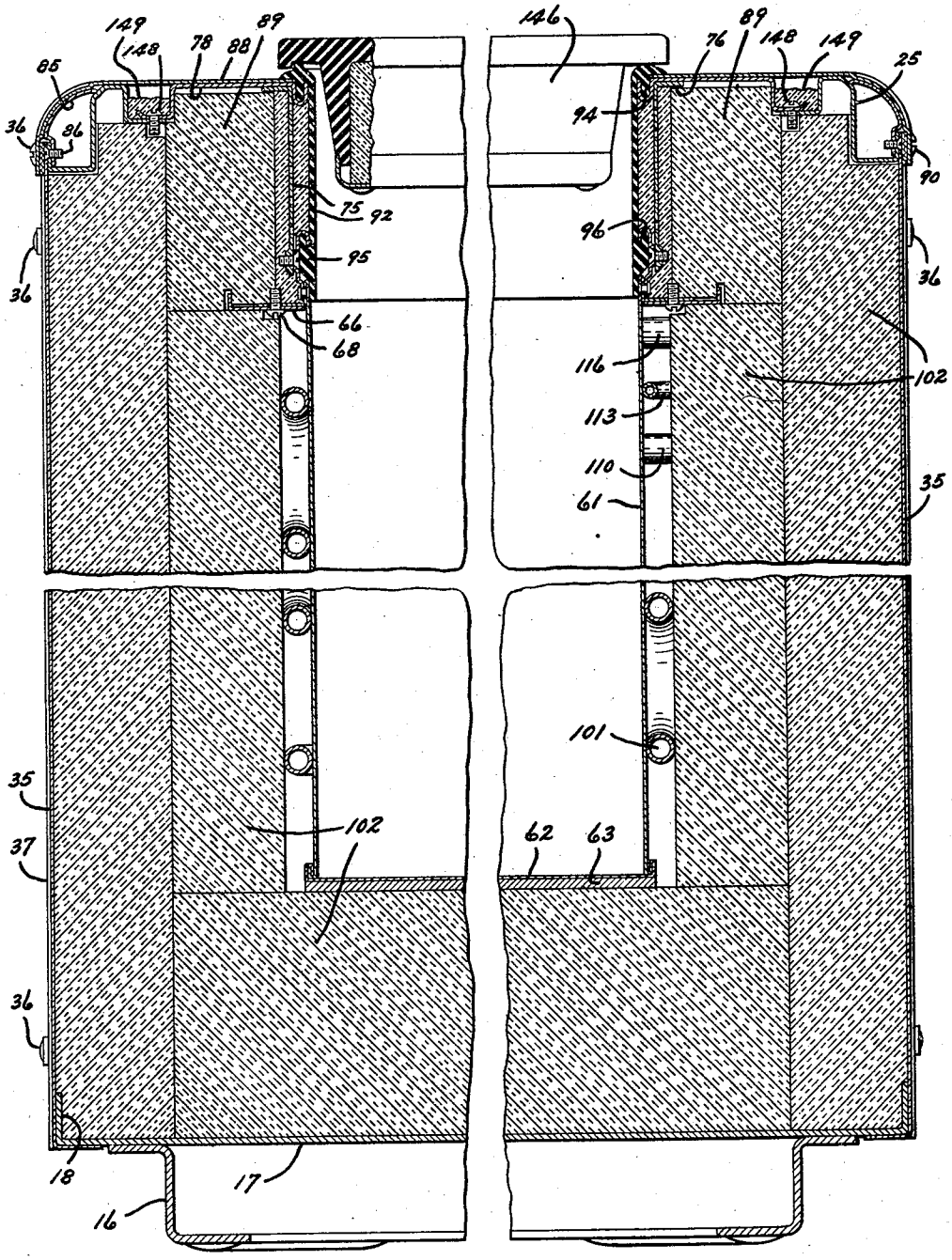

Fig. 2

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REFRIGERATING APPARATUS

Filed Feb. 25, 1939 5 Sheets-Sheet 3

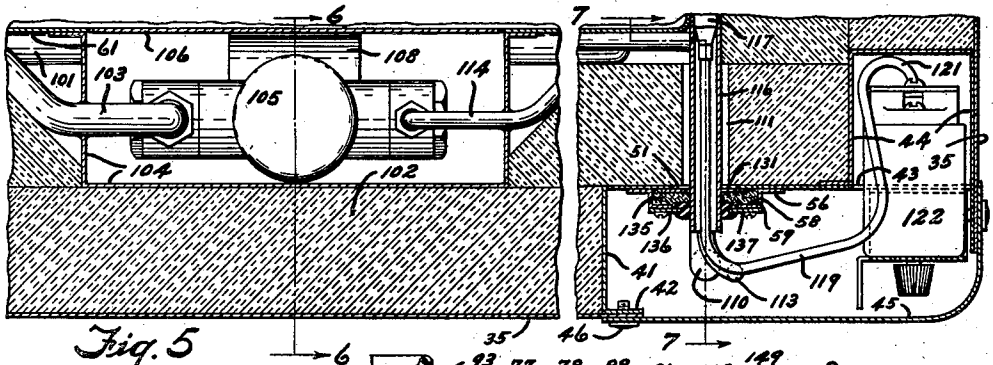

Fig. 5

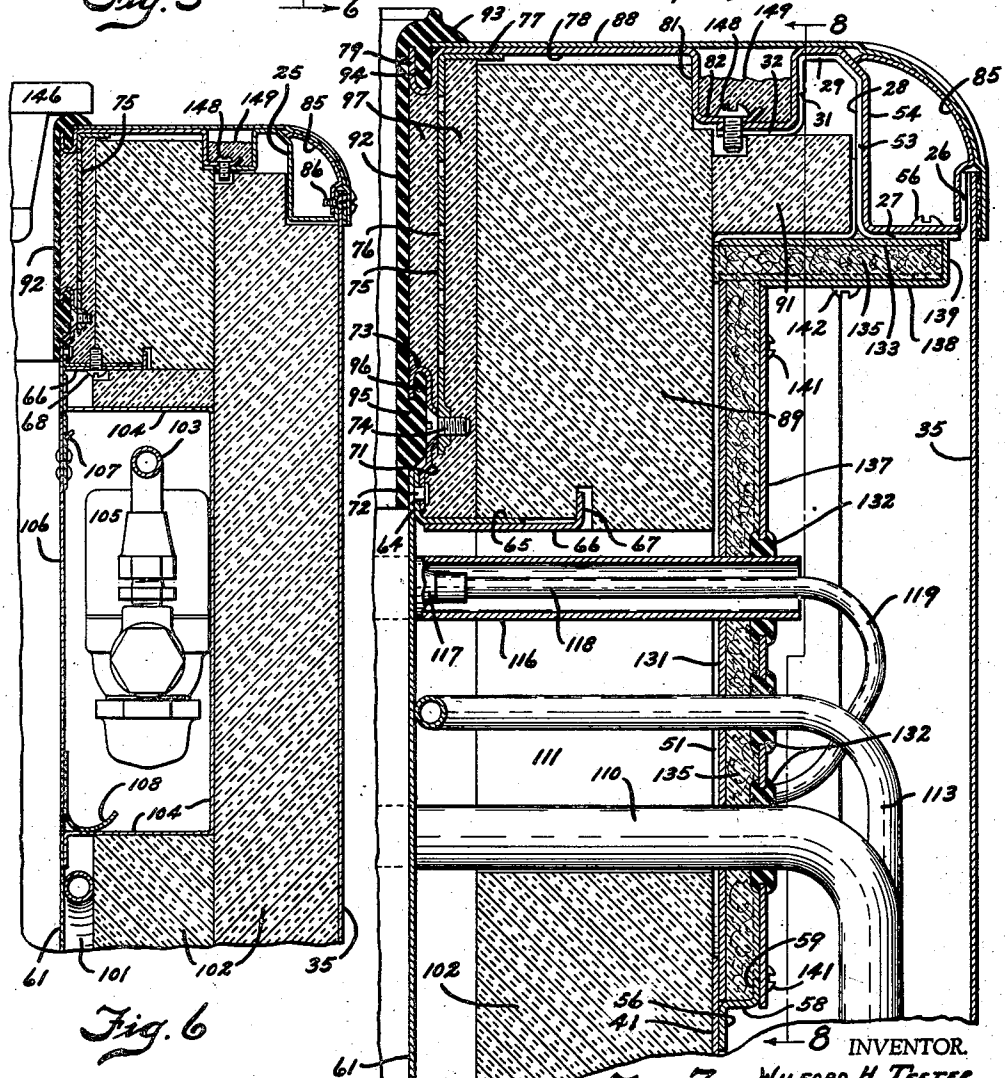

Fig. 6

Fig. 7

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May 21, 1940. W. H. TEETER 2,201,596

REFRIGERATING APPARATUS

Filed Feb. 25, 1939 5 Sheets-Sheet 4

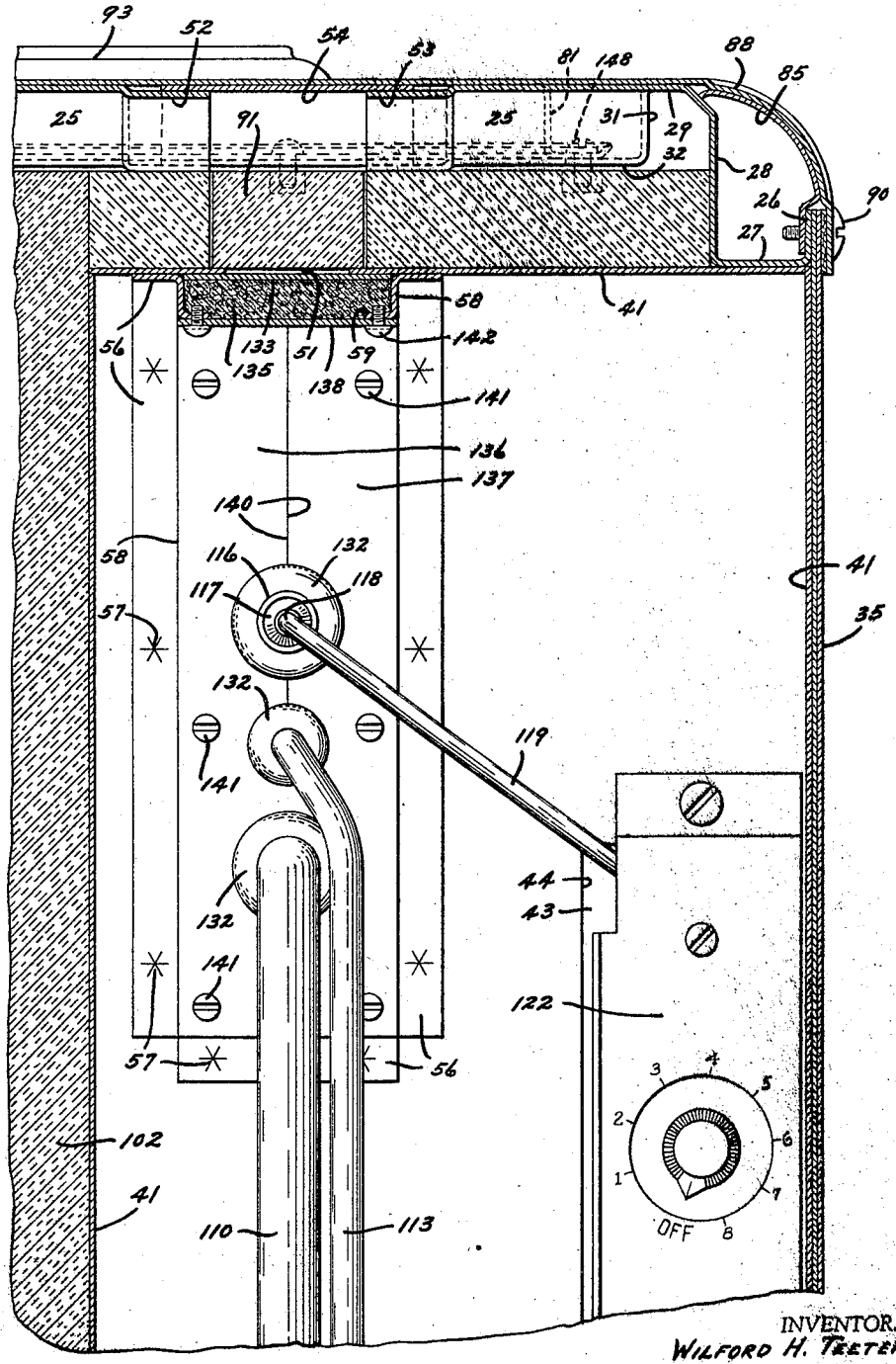

Fig. 8

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REFRIGERATING APPARATUS

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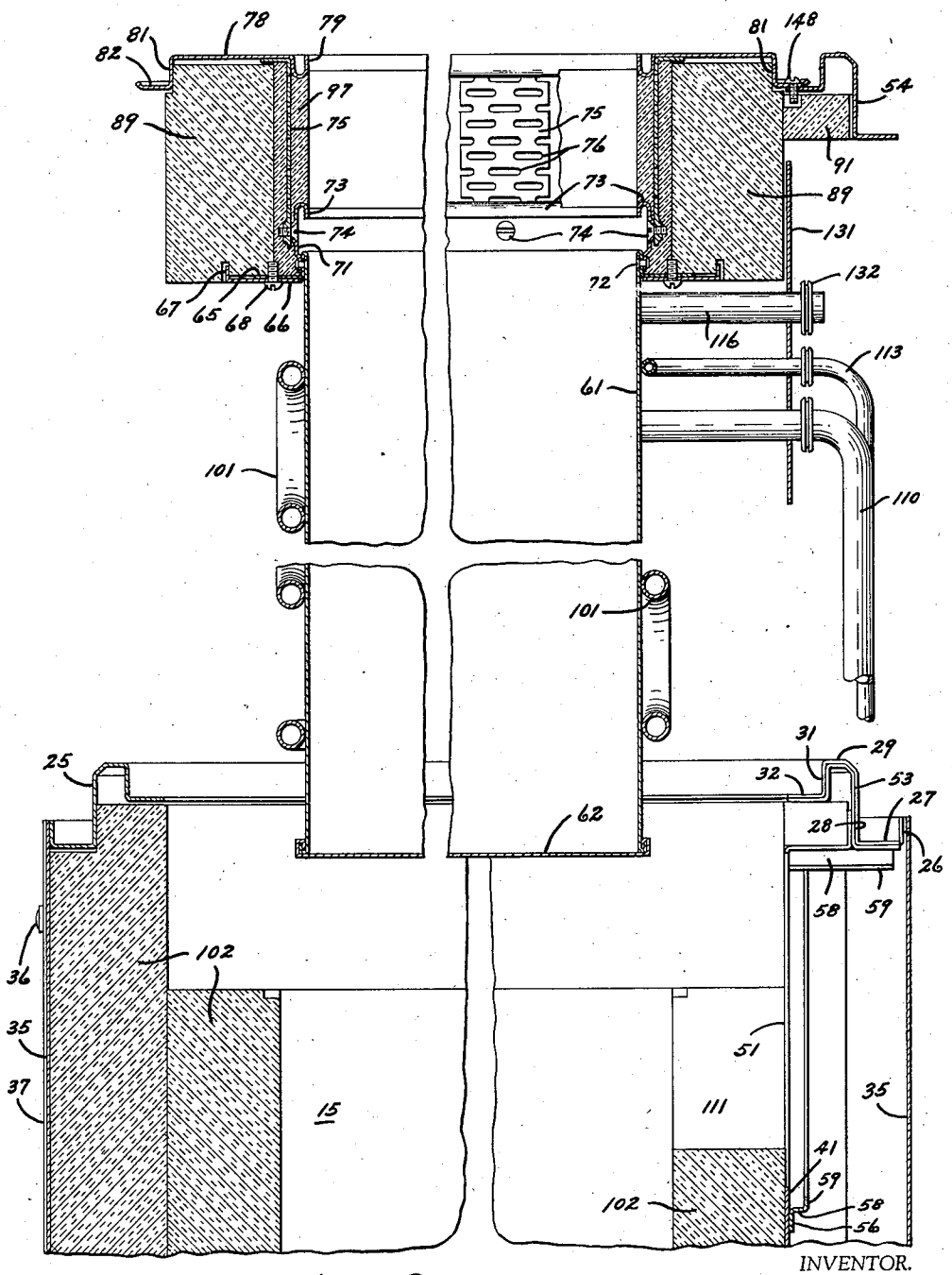

Fig. 9

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Patented May 21, 1940 2,201,596

UNITED STATES PATENT OFFICE

2,201,596

REFRIGERATING APPARATUS

Wilford H. Teeter, Dayton, Ohio, assignor to General Motors Corporation, Dayton, Ohio, a corporation of Delaware

Application February 25, 1939, Serial No. 258,480

13 Claims. (Cl. 62—89)

This invention relates to refrigerating apparatus and particularly to refrigerated ice cream storage cabinets.

Ice cream storage or the like cabinets are usually provided with a removable sub-top to facilitate the assembly or disassembly of the cabinet in order to remove parts thereof for repair and/or replacement. In the past, such ice cream cabinet sub-tops have been formed of relatively thick rigid wood or rubber material, thus rendering the sub-tops heavy and difficult to remove from the cabinet. In the use of wood sub-tops for ice cream or the like storage cabinet constructions, the sub-tops thereof are difficult to seal against moisture entering interior parts of the cabinets and consequently the moisture more readily deteriorates the wood sub-tops and other inner parts of such cabinets. In addition to such sub-tops becoming deteriorated and being difficult to remove from cabinets, the wood thereof does not provide as efficient insulation around or adjacent the top surface of a cabinet as compared to other insulating materials. The relatively thick wood parts of cabinet sub-tops ordinarily occupy a large area which should be more effectively insulated in order to prevent the collection or condensation of moisture on the top surface of an ice cream cabinet, particularly in the vicinity of the door openings therein. I, therefore, propose to more effectively insulate the top portion of an ice cream cabinet, to reduce the weight of the cabinet and to provide for the removal of the low pressure side of a refrigerating system, associated with the cabinet, along with the cabinet sub-top as a unit from the cabinet.

An object of my invention is to provide an improved refrigerated ice cream or the like storage cabinet.

Another object of my invention is to provide a refrigerating apparatus of the ice cream or the like storage type of improved construction which is effectively insulated, of light weight, strong and durable and of low manufacturing cost.

A further object of my invention is to provide a refrigerated ice cream cabinet wherein the top portion thereof is of an improved construction to afford more effective insulating of same and wherein the top portion of the cabinet can be quickly and readily removed from the main cabinet portion.

A still further object of my invention is to provide a refrigerated ice cream cabinet with a sub-top to which the liner, forming walls of the storage compartment within the cabinet, and the refrigerant evaporating element or coil associated with the cabinet and secured to the liner is removable along with the sub-top as a unit from the cabinet.

Still further and more specific objects and advantages of my invention reside in the simplicity of the improved refrigerated ice cream cabinet construction and in novel combinations and arrangements of parts thereof or elements of a refrigerating system associated therewith as will more fully appear in the course of the following description.

In the drawings:

Fig. 1 is a perspective view of a refrigerated ice cream storage cabinet constructed in accordance with my invention;

Fig. 2 is an enlarged transverse vertical sectional view of the ice cream cabinet taken on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged horizontal sectional view of one corner of the ice cream cabinet taken on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary perspective view in a direction toward a corner of the refrigerator cabinet showing the sheet metal construction thereof;

Fig. 5 is an enlarged fragmentary horizontal sectional view of another corner of the ice cream cabinet taken on the line 5—5 of Fig. 1;

Fig. 6 is a fragmentary vertical sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is an enlarged fragmentary vertical sectional view of the refrigerating apparatus taken on the line 7—7 of Fig. 5;

Fig. 8 is a vertical sectional view of the refrigerator cabinet taken on the line 8—8 of Fig. 7; and

Fig. 9 is a vertical sectional view of the refrigerator cabinet similar to Fig. 7 and showing the cabinet sub-top and other parts secured thereto removed from the cabinet outer wall structure.

Referring to the drawings, for illustrating my invention, I have shown in Fig. 1 thereof a refrigerating apparatus in the form of an ice cream can receiving and storage cabinet or the like, generally represented by the reference character 15, and having a refrigerating system associated therewith. The cabinet 15 of the refrigerating apparatus is of a generally square or rectangular form and comprises a metal frame structure (see Fig. 4) including an angled sheet metal supporting base 16 having a base plate 17 welded or otherwise suitably secured thereupon and extending outwardly a short distance from the supporting base with its outer edges bent upwardly as at

18 (see Figs. 2 and 4). At three vertical corners of the frame structure there is a corner post 19 formed of sheet metal bent to provide vertically extending flanged portions 21 and horizontal flanged portions 22 (see Figs. 3 and 4). The lower horizontal flanged portions 22 of post 19 are spotwelded as at 23 to the base plate 17 and the upper horizontal flanged portions 22 of the post 19 are spotwelded as at 24 to the bottom face of an upper part of the cabinet frame. This upper frame part of the cabinet frame structure is generally represented by the reference character 25 and is also formed of sheet metal bent to provide a short upstanding side portion 26, a lower horizontal portion 27, a vertical portion 28, an upper horizontal portion 29, another vertical portion 31 and an intermediate horizontal portion 32 (see Fig. 4). Finished metal side panels 35 are shown secured in abutting relation to the flanged portions 21 of posts 19 upon the frame structure of cabinet 15 by screws or the like 36 which pass through and also clamp finished exterior metal rounded corner members 37 to the cabinet structure. The fourth vertical corner of the frame structure of cabinet 10 (see Figs. 5, 7 and 8) is formed by an upright sheet metal member 41 having a short flanged part 42 and provided with an open part 43. A pocket provided adjacent the open part 43 in member 41 is formed by a metal box-like member 44 welded or otherwise suitably secured to member 41. A finished exterior rounded metal corner member 45 is secured to the member 41 by screws or the like 46 passing therethrough and through the exterior side panels 35 and threaded into the flange 42 on member 41 (see Fig. 5). In addition to the pocket formed by the metal member 44 adjacent the opening 43 in the upright corner post 41 of the cabinet metal frame structure the corner post 41 is also provided with a vertically elongated slot or opening 51 which is disposed in vertical alignment with a break or open portion provided by spaced apart and depressed end portions 52 and 53 (see Fig. 8) of the upper frame member 25 of the cabinet frame structure. The open portion 51 in member 41 also extends across the top wall part of member 41. The open portion or break in the upper frame member 25, provided by the spaced apart end portions 52 and 53 thereof, and the open portion 51 in the one corner post forming member 41 register with one another to provide a slot in the cabinet frame construction for a purpose to be hereinafter more fully described. However, this slot in the cabinet metal frame construction is normally closed by a plate 54 which rests or fits in the depressed end portions 52 and 53 of upper frame member 25. The plate 54 has substantially the same cross-sectional contour as the wall portions 27, 28, 29, 31 and 32 of member 25 and is normally secured to member 25 by screws 56 (see Fig. 7), which screws pass through plate 54 and are threaded into openings provided in the depressed parts of the horizontal portion 27 of member 25. The opening or slot 51 in the top and side walls of upright box-like corner post 41 has a metal member, provided with a flanged part 56 which is spotwelded as at 57 (see Fig. 8) to post 41, a wall part 58 extending outwardly from part 56 thereof and another short flange part 59, extending therearound.

A compartment formed within cabinet 15 by a metal liner 61 is adapted to receive cans containing bulk ice cream or other food products such as packaged frozen foods of various kinds. The metal liner 61 includes a bottom wall 62 which is interlocked with and secured to the upright walls of the liner and which bottom wall 62 normally rests upon a heavy metal plate 63 (see Fig. 2). The edges of the upper open end of liner 61 are bent over upon themselves as at 64 (see Fig. 7) and are then bent or extended horizontally as at 65 to provide a flange to which a plate 66, having an upturned edge 67, is secured by screws 68 (see Figs. 2 and 9). An annular metal member 71 is secured to the upper edge portion of liner 61 by rivets or the like 72. The annular member 71 has its top edge rolled over or reversely bent to provide a hook 73 thereon which extends continuously around the open top of the liner 61. It is to be noted that the hook portion of member 71 is spaced from the main body portion thereof to provide a channel for a purpose to be hereinafter more fully described. Member 71 is also provided with a plurality of spaced apart holes for receiving screws 74 which pass therethrough and are threaded into relatively flat metal pieces 75, preferably perforated as at 76 (see Fig. 9). The metal pieces 75 are preferably of a material having low heat conductivity characteristics, and it should be noted that these pieces 75 are disposed in spaced apart relation around the throat of the compartment formed by liner 61. Metal pieces 75 have their tops bent over to provide a flange portion 77 which is welded or otherwise permanently secured to a sub-top plate 78. The metal sub-top plate 78 has its edge, adjacent the throat of the compartment in cabinet 15 or adjacent the door opening formed by the throat, bent downwardly and thence upwardly to provide same with a hook portion 79. It is to be noted that the hook portion 79 is spaced from the main portion of the metal sub-top plate 78 also for a purpose to be hereinafter more fully described. The other edge portion of the sub-top plate 78 is bent down as at 81 and thence outwardly as at 82 to lay against or rest upon the intermediate horizontal portion or ledge 32 of the frame member 25 of the cabinet frame structure. A member 85 is secured, by screws 86 (see Figs. 2 and 6), to the frame part 25 of the cabinet frame structure and provides a backing or reinforcement for the curved portion of a finished metal top 88 placed over the sub-top 78 and part 25 of the cabinet frame structure. Finished metal top 88 is secured to cabinet 15 by means including a plurality of screws 90 spaced apart around the sides of the cabinet and threaded into the upturned outer lip portion 26 of the cabinet top frame part 25. The upturned edge 67 on plate 66 fits within a slot cut in a slab of corkboard insulation 89 located between the plate 66 and the sub-top plate 78 of the cabinet. Small pieces of corkboard insulation are placed between the frame part 25 and the top wall of corner post 41. One of these small pieces of corkboard 91 extends entirely across the slot or open portion 51 of post 41 and is secured to the corkboard 89 and removable therewith from the cabinet proper. The wall of the storage compartment throat or wall of the door opening above the liner 61 is formed by an annular flexible and resilent molded rubber member 92 which is relatively flat and wide in cross-sectional contour. Rubber member 92 is provided with an integral beaded upper lip or flange portion 93 having an integral downwardly extending leg part 94 which fits within the channel provided by the reversely bent edge part of the sub-top plate 78 to form the hook 79. Rubber member

92 is also provided with a relatively thick portion 95 adjacent its bottom edge and which thick portion 95 has an upwardly directed leg portion 96 fitted within the channel provided by the reversely bent part of the annular metal member 71. The main flat portion of member 92 extends between and fits over the hooks 73 and 79 to maintain the rubber member in place and to provide a wall for the door opening. The rubber member 92 is flexed or stretched to locate its integral legs 94 and 96 in their respective positions, and the force exerted by the resiliency of member 92 maintains the legs locked within the reversely bent portions of member 71 and of plate 78. This stretching of member 92 in place between the liner 61 and cabinet metal top provides a sealed joint at this point, and the member 92 forms a wall which is impervious to moisture. Prior to placing the throat lining or door opening wall-forming rubber member 92 upon cabinet 15, a thermal plastic insulating material 97 such, for example, as hydrolene is packed against the slab of corkboard 89 and around the spaced apart flat metal pieces 75 to further insulate the cabinet top wall portion. In order to cool the storage compartment, formed by liner 61 within cabinet 15, I wrap a pipe or conduit 101 around the liner 61 and solder or otherwise firmly secure the pipe 101 to the liner outer wall surfaces. The pipe or conduit 101 substantially surrounds the liner 61 and forms a refrigerant evaporating element or expansion coil. Refrigerant evaporated within coil 101 cools the interior of the food storage compartment. Slabs of corkboard 102 are placed around the liner 61 and refrigerant evaporating coil 101 to insulate the coil and the storage compartment. The one end 103 of pipe coil 101 extends through a wall of a metal box 104 secured to liner 61 and is connected to an expansion or the like device or valve 105 disposed in the box 104 (see Figs. 5 and 6). The wall of liner 61 adjacent the box 104 is cut away to provide access to the valve 105 from within the food storage compartment. A plate 106 having upper clips 107 and a lower spring clip 108 is removably attached to the liner 61 for normally closing the opening therein, which provides access to valve 105 within the box 104. The removable plate 106 is located in vertical alignment with the side wall portion of liner 61 and provides a continuation thereof adjacent the box 104. The other end 110 of the refrigerant expansion pipe coil 101 extends outwardly from the liner 61 through an opening 111 provided in one of the slabs of corkboard insulation 102 adjacent the opening 51 in the box-like corner post 41. The end 110 of coil 101 extends downwardly and is provided with a removable connection with another pipe which leads to the compressor of a refrigerant liquefying and condensing unit (not shown). Another pipe or conduit 113 extends along the end portion 110 of pipe coil 101 through the opening 111 in the corkboard insulation. This pipe 113 is removably connected with a pipe leading from the condenser or receiver of the refrigerant liquefying and condensing unit. The other end 114 of pipe 113 extends through a wall of box 104 and is connected to the expansion valve 105. The refrigerant liquefying and condensing unit (not shown) withdraws refrigerant from the pipe coil 101 through its end portion 110, thus causing evaporation of refrigerant in the coil 101 to thereby refrigerate or cool the interior of the food storage compartment. Condensed liquefied refrigerant is circulated to the expansion valve 105 from the refrigerating unit through the pipe 113 and this valve controls the entrance of liquid refrigerant to coil 101 in accordance with the refrigeration requirements of the coil.

I secure a tube 116 to liner 61 and this tube forms a well into which I insert a thermostat bulb 117 having one end 118 of a pipe 119 connected thereto. The pipe 119 extends outwardly of the well, formed by a tube 116, and has its other end 121 connected to a bellows or the like (not shown) mounted in an electric switch 122 (see Fig. 5). The electric switch 122 is disposed in the pocket formed by the box 44 adjacent the opening 43 in member 41. Switch 122 controls the starting and/or stopping of the refrigerant circulating unit in accordance with the temperature of the cooling effect produced by the refrigerant evaporating element or coil 101 secured in intimate thermal contact with liner 61 of the food storage compartment. The switch responds to expansion and/or contraction of its bellows in response to pressures of a fluid sealed within the bellows, pipe 119 and thermostat bulb 117 as is conventional in such refrigerating apparatus.

In order to close the vertical part of opening 51 in the wall of the cabinet corner post 41 through which the refrigerant conveying pipe lines 110 and 113 and tube 116 extend, I provide a plate 131 having holes therein which receive the pipes 110, 113 and tube 116 and which plate is slipped over the pipes during assembly of the refrigerating system to the cabinet 5. I also slip a flexible rubber grommet 132 over each refrigerant pipe 110 and 113 and over the tube 116, which is secured to liner 61, after the pipes 110, 113 and tube 116 have been passed through the openings in plate 131. This plate 131 is wider than the opening 51 in the wall of post 41 and is located adjacent the opening 51 and rests upon the bottom horizontal part 58 of the metal member located about the opening 51 and abuts the wall of post 41. A horizontally disposed plate 133 closes the horizontal part of opening 51 in the top wall portion of the corner post 41. In order to secure or force plates 131 and 133 into abutting relation with the walls of post 41, I pack loose fibrous or the like insulating material 135 against the plates 131 and 133. The insulating material is compressed against the vertically disposed plate 131 by two half plates 136 and 137 and against the horizontally disposed plate 133 by a plate 138 having an upturned portion 139 (see Figs. 5, 7 and 8). The complementary half plates 136 and 137 each have three semi-cylindrical slots provided in their registering edges 140 (see Fig. 8), the walls of which slots engage the grommets 132 and fit into annular grooves provided therein. The half plates 136 and 137 are secured to the flanged parts 59 of the metal member, extending along the slot 51 in post 41, by a plurality of screws 141. The upper horizontal plate 138 is secured to the flanged parts 59 of the horizontal portion of the metal member, extending along the horizontal part of slot 51 in box 41, by screws 142. It will be understood that the packing of the insulating material 135 against plate 131 and against plate 133 and the compressing of this material thereagainst by the clamping half plates 136 and 137 and by plate 138 holds the plates 131 and 133 firmly in place while at the same time closing the opening 51 in post 41 and effectively sealing or insulating the opening 51.

The side wall panels 35 of cabinet 15 are usually

coated with paint or enamel and the finished top panel of the cabinet is preferably formed of Monel metal or stainless steel. Cabinet 15 is preferably provided with a central mullion, covered by a part 145 of the metal cabinet top 88 (see Fig. 1), which divides the top of the cabinet into two door openings. The two door openings in the top of cabinet 15 are normally closed by doors 146 which rest upon the beaded finger or flange portion 93 of the rubber member 92. The central mullion, covered by the part 145 of cabinet top 88, may be provided by an integral part of the top frame portion 25 of the cabinet frame structure and is preferably insulated in a manner similar to the method of insulating the other portions of the compartment throat or door opening. Thus, it will be seen that two of the rubber throat linings or annular compartment door opening wall forming members 92 are employed in the construction of my improved cabinet 15.

In order to rigidly clamp and support the sub-top plate 78 of cabinet 15 and other of the elements of the cabinet secured thereto, I pass a plurality of screws 148 through the horizontal flanged part 82 of sub-top 78 and thread these screws into threaded holes provided in the horizontal part 32 of frame portion 25 of the metal cabinet frame structure. The groove around the top portion of the cabinet, covered by the exterior top member 88 and formed by the downwardly extending part 81 and horizontally flanged part 82 of cabinet sub-top 78 registering with the downwardly extending part 31 and horizontal part 32 of frame portion 25, is partially filled with a thermoplastic insulating material 149, such for example as hydrolene. The material 149 fills the cracks at the connection of the parts 82 and 32 and seals same as well as sealing the openings through which the screws 148 pass. This insulating material 149 seals the joint between the cabinet proper and the removable section or portion of the cabinet which will now be described.

In the present apparatus the compartment liner 61, refrigerant coil 101 and tube 116 secured to the liner, box 104 and the expansion valve 105 therein as well as certain upper inner parts of cabinet 15 are removable from the cabinet proper in order to provide for the removal of the portion of the refrigerating system associated with the cabinet for repair or replacement. In disassembling the cabinet 15 for removing the portion of the refrigerating system associated therewith, the lower edge of the rubber door opening wall forming member or rubber compartment throat lining 92 is flexed or pried, by a suitable tool, away from the top edge of compartment liner 61. The thick part 95 of member 92 is then grasped by the hands and flexed away from the annular member 71 to cause its integral leg portion 96 to be withdrawn from the space or channel between the reversely bent or hooked portion 73 of member 71. After removal of the lower part of rubber member 92 from its locking member 71, it is pulled or peeled upwardly, and by inserting a tool under its upper lip 93 its upper mounting leg 94 can be readily withdrawn from the reversely bent or hooked portion 79 on the cabinet sub-top plate 78 to permit removal of the member 92 from the cabinet 15. The removal of the rubber member 92 from cabinet 15 will now permit detachment or removal of the cabinet metal top 88. Therefore, the screws 90, disposed in spaced apart relation around the side walls of cabinet 15, are removed from the part 26 of frame portion 25 of the cabinet frame structure. The cabinet metal top 88 can then be readily removed, and removal of this top 88 provides access to the plastic sealing insulation 149. This sealing insulation 149 is then removed by a screw driver or like tool to provide access to the screws 148. Upon removal of screws 142 and 141, the plates 136, 137 and 138 can be detached from the cabinet to permit removal of the loose fibrous insulation 135. Thereafter, plate 133 is removed to uncover the horizontally extending part of opening 51 in the corner post 41. Now, upon removal of screws 56, which secure the bridging plate 54 to the ends 52 and 53 of frame part 25, and removal of the plurality of screws 148 around the top of cabinet 15 certain parts of the cabinet can be removed from the main part or cabinet proper. Prior to attempting removal of the removable section or portion of the cabinet to now be described, the thermostat bulb 117 is withdrawn from the well or tube 116, the flexibility of the copper pipe 119 permitting such withdrawal, and is placed out of a vertical path of movement of the refrigerant conveying pipes 110 and 113. Thereafter, an upward force applied to the sub-top plate 78 of cabinet 15 will elevate plate 78, metal members 75, the annular metal member 71, liner 61, plate 66 and the top corkboard insulating slab 89 together with tube 116 and pipe coil 101 secured to the liner 61 (see Fig. 9). Thus these identified parts of cabinet 15 form the removable section or portion of the apparatus disclosed. It is to be understood that the pipe ends 110 and 113 terminating below the point at which they pass through the insulating side wall of cabinet 15 are disconnected from their corresponding pipes leading to the refrigerant liquefying and circulating unit prior to elevating the aforementioned parts of the apparatus forming the removable section or unit. Thus, elevation of the parts described causes the tube 116 and refrigerant pipes 110 and 113 to pass upwardly in the slot or opening 51 in post 41 through the horizontal part of opening 51, normally covered by plate 133. The horizontal part of opening 51 affords clearance for the removal of the refrigerant pipes with the liner as a unit with the cabinet sub-top structure through the space provided between the spaced apart ends 52 and 53 of the frame part 25 of the cabinet metal frame structure (see Fig. 9). The closure plate 131, through which the tube 116 and pipes 110 and 113 extend, together with the grommets 132 are raised along with the elevated parts or removable section described. The control switch 122 remains in the cabinet proper by virtue of removal of the thermostat bulb 117 and its switch connecting pipe 119 from the thermostat well 116. However, the box 104 and the refrigerant expansion valve 105 disposed therein is, of course, elevated along with the other raised parts or section of the apparatus. The small segment of corkboard insulation 91 is secured to the cork cabinet top insulating board 89 and is elevated therewith from the cabinet proper. The remainder of the corkboard slabs of insulation 102 all being sealed or secured to one another, preferably with hydrolene cement disposed between their abutting surfaces, remain in their respective positions within the walls of the cabinet structure. The removal of parts or the removable section of the apparatus as described and as illustrated in Fig. 9 of the drawings, permits repair or replacement of various parts of the apparatus at the location

of installation and avoids the necessity of shipping the entire apparatus back to the manufacturer.

My improved refrigerating apparatus and the construction of same permits the top portion of a refrigerator cabinet to be more effectively insulated in that I have entirely eliminated the use of a thick wood sub-top therefrom. Due to the low temperature at which the interior of a cabinet of the type disclosed is maintained, the eliminating of wood from around their tops and the substitution of a more efficient insulating material in place of the wood is an advancement in the art of ice cream cabinet constructions. This advancement not only prevents the collection or condensation of moisture around the door openings on the top surface of the cabinet, but also decreases the weight of the cabinet and renders same of increased structural strength. The location of the expansion valve 105, or other suitable refrigerant flow control means, adjacent the food storage compartment liner 61 and the provision of obtaining access thereto, for permitting adjustment thereof, from within the food storage compartment of the refrigerator cabinet is another feature of my invention. This location of the expansion valve permits the positioning of highly effective insulating material around the valve or its housing box which prevents condensation of moisture thereon, withdrawn from air exteriorly of the cabinet, and frosting of the valve and its refrigerant outlet pipe. Although the cabinet is devoid of wooden parts and has its top portion formed of metallic members, the sealing arrangement at the point of separation of the metal members, which provides the structural strength of the cabinet, forms an air tight joint to thus prevent the entrance of moisture to interior parts of the refrigerator cabinet. In the apparatus disclosed the control switch 122 is concealed to enhance the appearance of the cabinet, but this switch is readily accessible for adjustment or repair upon removing the corner panel 46 which covers the one corner post of the cabinet.

From the foregoing, it will be seen that I have provided an improved low temperature ice cream or other frozen food storage cabinet which can be efficiently insulated, readily disassembled and which is of low manufacturing cost, of decreased weight and of increased structural strength. In the improved refrigerating apparatus disclosed I have concealed certain elements of the apparatus, to which access is frequently necessary, in order to more effectively seal and insulate the cabinet of the apparatus and to improve its exterior appearance, while at the same time providing for access to such elements in a minimum of time and with less dismantling operations. The elimination of wood and other similar parts from the cabinet which readily become deteriorated, renders the apparatus capable of use over a long period of time without repair or replacement.

While the form of embodiment of the invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A refrigerating apparatus comprising in combination, a cabinet having a bottom wall, a plurality of side walls, a top member and a sub-top wall structure, a metallic member forming a compartment within said cabinet, said cabinet top member and said cabinet sub-top wall structure having registering apertures therein providing an access opening to said compartment, said metallic member being rigidly connected to said cabinet sub-top wall structure in spaced relation to said cabinet top member, a refrigerating system associated with said cabinet and including a refrigerant evaporating element extending over and being directly secured to said compartment forming member, said cabinet top member being detachable from said cabinet, and said cabinet sub-top wall structure being detachable from other walls of said cabinet and movable upwardly thereof whereby said rigid connection of said compartment forming member therewith causes removal of said compartment forming member and said refrigerant evaporating element of said refrigerating system along with said sub-top wall structure as a unit from said cabinet.

2. A refrigerating apparatus comprising in combination, a cabinet having a bottom wall, a plurality of side walls, a top member and a sub-top wall structure, a metallic member forming a compartment within said cabinet, said cabinet top member and said cabinet sub-top wall structure having registering apertures therein providing an access opening to said compartment, said metallic member being rigidly connected to said cabinet sub-top wall structure in spaced relation to said cabinet top member, means including a resilient element extending between said members and engaging said top member for securing same upon said cabinet, said means being constructed and arranged to form the wall of said compartment access opening, a refrigerating system associated with said cabinet and including a refrigerant evaporating element extending over and being directly secured to said compartment forming member, said resilient element being removable from said cabinet to permit detachment of said top member from the cabinet, and said cabinet sub-top wall structure being detachable from other walls of said cabinet and movable upwardly thereof to remove said compartment forming member and said refrigerant evaporating element of said refrigerating system along with said sub-top wall structure as a unit from said cabinet.

3. A refrigerating apparatus comprising in combination, a cabinet having a bottom wall, a plurality of side walls, a top member and a sub-top wall structure, a metallic member forming a compartment within said cabinet, said cabinet top member and said cabinet sub-top wall structure having registering apertures therein providing an access opening to said compartment, said metallic member being rigidly connected to said cabinet sub-top wall structure in spaced relation to said cabinet top member, a refrigerating system associated with said cabinet, said system including a refrigerant evaporating element extending over and being directly secured to said compartment forming member, said system also including a device disposed adjacent a wall of said compartment forming member for controlling the flow of refrigerant into said evaporating element, said cabinet top member being detachable from said cabinet, and said cabinet sub-top wall structure being detachable from other walls of said cabinet and movable upwardly thereof whereby said rigid connection of said compartment forming member therewith causes removal of said compartment forming member, said refrigerant evaporating element and said refrigerant flow control device of said refrigerating system along with said sub-top wall structure as a unit from said cabinet.

4. A refrigerating apparatus comprising in combination, a cabinet having a bottom wall, a plurality of side walls, a top member and a sub-top wall structure, a metallic member forming a compartment within said cabinet, said cabinet top member and said cabinet sub-top wall structure having registering apertures therein providing an access opening to said compartment, said metallic member being rigidly connected to said cabinet sub-top wall structure in spaced relation to said cabinet top member, means including a resilient element extending between said members and engaging said top member for securing same upon said cabinet, said means being constructed and arranged to form the wall of said compartment access opening, a refrigerating system associated with said cabinet, said system including a refrigerant evaporating element extending over and being directly secured to said compartment forming member, said system also including a device disposed adjacent a wall of said compartment forming member for controlling the flow of refrigerant into said evaporating element, said resilient element being removable from said cabinet to permit detachment of said top member from the cabinet, and said cabinet sub-top wall structure being detachable from other walls of said cabinet and movable upwardly thereof to remove said compartment forming member, said refrigerant evaporating element and said refrigerant flow control device of said refrigerating system along with said sub-top wall structure as a unit from said cabinet.

5. A refrigerating apparatus comprising in combination, a cabinet having a plurality of insulated walls, means forming walls of a storage compartment within said cabinet, an insulated wall of said cabinet having an opening therein registering with an open end of said compartment wall forming means to provide access to said storage compartment, a refrigerating system associated with said cabinet and including a refrigerant evaporating element disposed in intimate heat exchange relation with said storage compartment for cooling same, said refrigerating system also including a device mounted within one of said insulated cabinet walls adjacent said compartment wall forming means and connected with said refrigerant evaporating element for controlling the flow of refrigerant thereto, said compartment forming means having an aperture in a wall thereof adjacent said device, a cover normally closing the aperture in the wall of said compartment forming means and concealing said device, and said cover being removable from within said storage compartment to provide access to said device through said storage compartment access opening.

6. A refrigerating apparatus comprising in combination, a cabinet having a top, a bottom and a plurality of upright side insulated walls, means forming walls of a storage compartment within said cabinet, said cabinet top insulated wall having an opening therein registering with an open upper end of said compartment wall forming means to provide access to said storage compartment, a refrigerating system associated with said cabinet and including a refrigerant evaporating element disposed about said compartment wall forming means for cooling said storage compartment, said refrigerating system also including a device mounted within one of said insulated upright side walls of said cabinet adjacent said compartment wall forming means and connected with said refrigerant evaporating element for controlling the flow of refrigerant thereto, said compartment forming means having an aperture in a side wall thereof adjacent said device, a cover normally closing the aperture in the side wall of said compartment forming means and concealing said device, and said cover being removable from within said storage compartment to provide access to said device through said storage compartment access opening.

7. A refrigerating apparatus comprising in combination, a cabinet having a plurality of relatively thick insulated walls, a metallic member forming walls of a storage compartment within said cabinet, an insulated wall of said cabinet having an opening therein registering with an open end of said metallic compartment wall forming member to provide access to said storage compartment, a refrigerating system associated with said cabinet and including a refrigerant evaporating element disposed in intimate heat exchange relation with said storage compartment for cooling same, said refrigerating system also including a device mounted within one of said insulated cabinet walls adjacent said metallic compartment wall forming member and connected with said refrigerant evaporating element for controlling the flow of refrigerant thereto, said metallic compartment forming member having an aperture in a wall thereof adjacent said device, a metallic plate normally closing the aperture in the wall of said compartment forming member concealing said device and lying in substantially the same plane with said wall of said compartment forming member to provide a continuation of said wall, and said metallic plate being removable from said compartment forming member from within said storage compartment to provide access to said device through said storage compartment access opening.

8. A refrigerating apparatus comprising in combination, a cabinet having a top, a bottom and a plurality of upright side insulated walls, a metallic member forming walls of a storage compartment within said cabinet, said insulated cabinet top wall having an opening therein registering with an open upper end of said metallic compartment wall forming member to provide access to said storage compartment, a refrigerating system associated with said cabinet and including a refrigerant evaporating coil substantially surrounding said metallic compartment forming member and secured in intimate thermal contact therewith for cooling said storage compartment, said refrigerating system also including a device mounted within one of said insulated upright side walls of said cabinet adjacent said metallic compartment wall forming member and connected with said refrigerant evaporating coil for controlling the flow of refrigerant thereto, said metallic compartment forming member having an aperture in a side walll thereof adjacent said device, a metallic plate normally closing the aperture in the side wall of said compartment forming member and concealing said device, said metallic plate lying in substantially the same vertical plane with said compartment forming member side wall and providing a continuation thereof, and said metallic plate being removable from said metallic compartment forming member from within said storage compartment to provide access to said device through said storage compartment access opening.

9. A refrigerating apparatus comprising in combination, a cabinet having a bottom, top and a plurality of insulated upright side walls, said

cabinet also including a metal frame structure and a metallic member forming walls of a storage compartment within said cabinet, the top insulated wall of said cabinet having an aperture therein registering with an open upper end of said compartment wall forming member to provide an access opening to said storage compartment, a refrigerating system associated with said cabinet and including a refrigerant evaporating element disposed in intimate heat exchange relation with said storage compartment for cooling same, said refrigerant evaporating element having refrigerant conveying conduits connected thereto and extending outwardly therefrom through one of said cabinet upright insulated side walls below said cabinet top insulated wall, a portion of said cabinet insulated top wall, said metallic compartment wall forming member, said refrigerant evaporating element and the refrigerant conduits connected thereto being movable upwardly of other of said cabinet walls as a unit to remove same from said apparatus, said cabinet metal frame structure having a part thereof disposed in the path of elevation of said refrigerant conveying conduits of said unit, and said frame part being detachable from said cabinet frame structure to provide an opening therein through which said refrigerant conveying conduits may pass during elevation of said unit from said apparatus.

10. A refrigerating apparatus comprising in combination, a cabinet having a bottom, top and a plurality of insulated upright side walls, said cabinet also including a metal frame structure and a metallic member forming walls of a storage compartment within said cabinet, the top insulated wall of said cabinet having an aperture therein registering with an open upper end of said compartment wall forming member to provide an access opening to said storage compartment, a refrigerating system associated with said cabinet and including a refrigerant evaporating element disposed in intimate heat exchange relation with said storage compartment for cooling same, said refrigerant evaporating element having refrigerant conveying conduits connected thereto and extending outwardly therefrom through one of said cabinet upright insulated side walls below said cabinet top insulated wall, means secured to said cabinet frame structure for sealing the refrigerant conveying conduits at the point of extension thereof through said cabinet upright side wall, a portion of said cabinet top insulated wall, said metallic compartment wall forming member, said refrigerant evaporating element and the refrigerant conduits connected thereto being movable upwardly of other of said cabinet walls as a unit to remove same from said apparatus, said cabinet metal frame structure having a part thereof disposed in the path of elevation of said refrigerant conveying conduits of said unit, and said sealing means and said frame part being detachable from said cabinet frame structure to provide an opening therein through which said refrigerant conveying conduits may pass during elevation of said unit from said apparatus.

11. A refrigerating apparatus comprising in combination, a cabinet having a bottom, top and a plurality of insulated upright side walls, said cabinet also including a metal frame structure and a metallic member forming walls of a storage compartment within said cabinet, the cabinet metal frame structure comprising a vertically disposed post forming portion and a horizontal portion thereabove, the top insulated wall of said cabinet having an aperture therein registering with an open upper end of said compartment wall forming member to provide an access opening to said storage compartment, a refrigerating system associated with said cabinet and including a refrigerant evaporating coil substantially surrounding and being directly secured to said compartment wall forming member for cooling said storage compartment, said pipe coil having refrigerant conveying conduits connected thereto and extending outwardly therefrom through one of said cabinet upright insulated walls and through an opening in a wall of said post forming portion of said cabinet metal frame structure, a portion of said cabinet insulated top wall, said metallic compartment wall forming member, said refrigerant evaporating pipe coil and the refrigerant conduits connected thereto being movable upwardly of other of said cabinet walls as a unit to remove same from said apparatus, said horizontal portion of said frame structure above the opening in said post forming portion thereof being provided with an open part, means normally closing the opening in said post forming portion of said frame structure, means normally closing the open part in said horizontal portion of said frame structure and providing a continuation of said frame structure across said open part thereof, and both of said means being detachable from said cabinet to provide a vertical slot in the metal frame structure thereof through which the refrigerant conveying conduits may pass during elevation of said unit from said apparatus.

12. A refrigerating apparatus comprising in combination, a cabinet having a bottom wall, a plurality of side walls, a top member and a sub-top wall structure, a metallic member forming a compartment within said cabinet, said cabinet top member and said cabinet sub-top wall structure having registering apertures therein providing an access opening to said compartment, said metallic member being rigidly connected to said cabinet sub-top wall structure in spaced relation to said cabinet top member, means including an element of low heat conductivity extending between said members and having a resilient edge portion engaging said top member about the aperture therein, said means being constructed and arranged to form a non-hygroscopic wall of said compartment access opening, a refrigerating system associated with said cabinet and including a refrigerant evaporation portion extending along said compartment forming member in intimate thermal heat exchange relationship therewith, said element being removable from said cabinet to permit detachment of said top member from said cabinet, and said cabinet sub-top wall structure being detachable from other walls of said cabinet and movable upwardly thereof to remove said compartment forming member and said refrigerant evaporating portion of said refrigerating system along with said sub-top wall structure as a unit from said cabinet.

13. A refrigerating apparatus comprising in combination, a cabinet having a plurality of insulated walls, said cabinet also including a frame structure and a member forming walls of a storage compartment within said cabinet, one of the insulated walls of said cabinet having an aperture therein registering with an opening in said compartment wall forming member to provide an access opening to said storage compartment, a refrigerating system associated with said cabinet and including a refrigerant evaporating por-

tion disposed in intimate heat exchange relation with said storage compartment for cooling same, said refrigerant evaporating portion having refrigerant conveying conduits connected thereto and extending through one of said cabinet insulated walls, said compartment wall forming member, said refrigerant evaporating portion and the conduits connected thereto being movable outwardly of the cabinet walls as a unit to remove same from said apparatus, said cabinet frame structure having a part thereof disposed in the path of movement of said refrigerant conduits of said unit, and said frame part being detachable from said cabinet frame structure to provide an opening therein through which said refrigerant conveying conduits may pass during removal of said unit from said apparatus.

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