Oct. 25, 1949. G. H. NORQUIST 2,485,646

INSULATED CONTAINER STRUCTURE

Filed June 23, 1945 3 Sheets-Sheet 1

Fig. 1

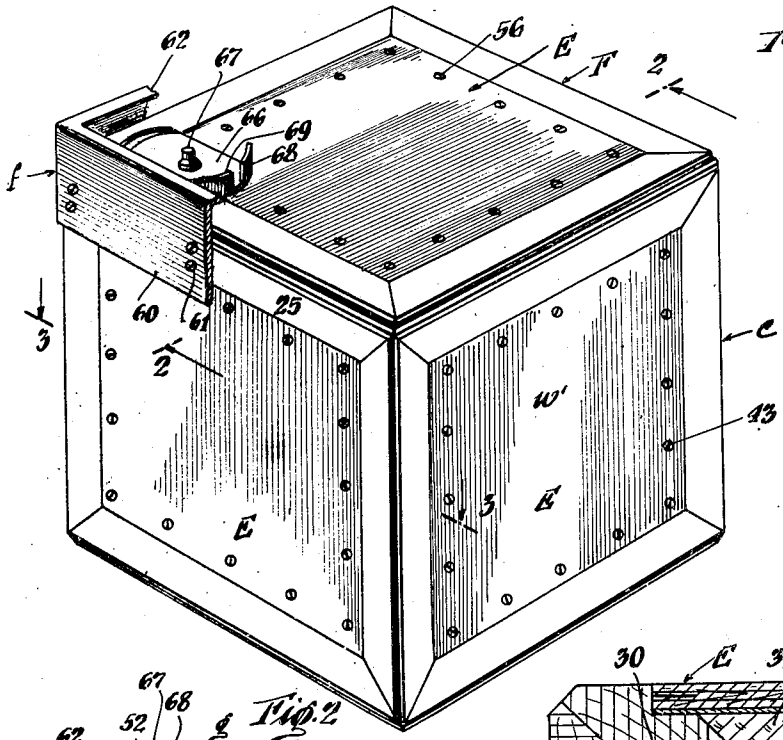


Fig. 3

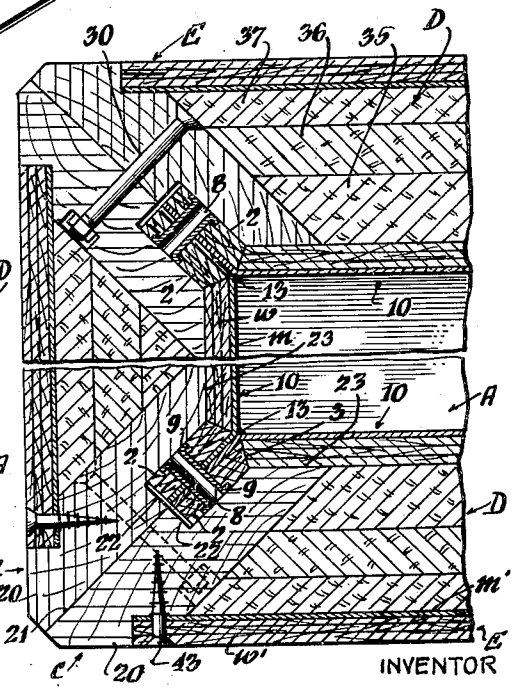
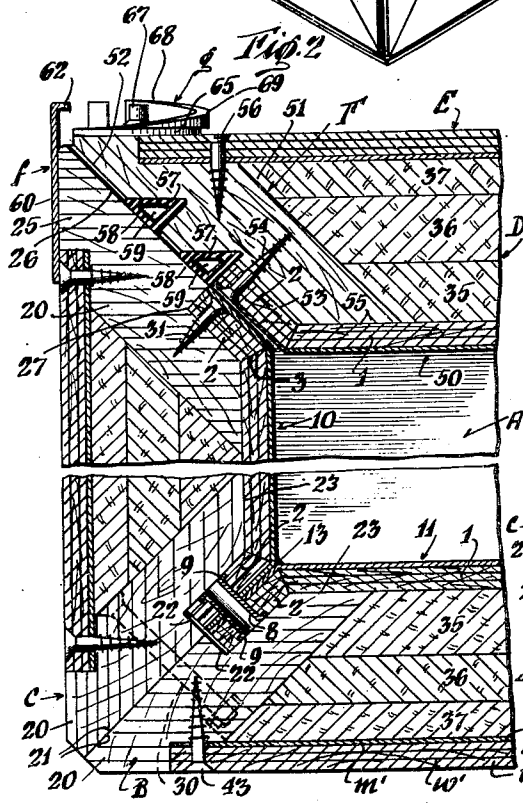


Fig. 2



INVENTOR

Glenn H. Norquist

BY

Austin, Wilhelm & Carlson

ATTORNEYS

Oct. 25, 1949. G. H. NORQUIST 2,485,646

INSULATED CONTAINER STRUCTURE

Filed June 23, 1945 3 Sheets-Sheet 2

Fig. 4

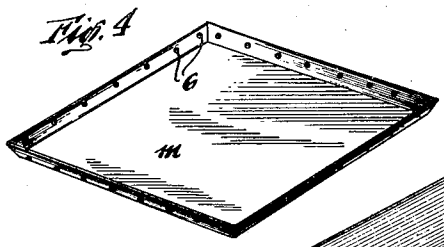


Fig. 5

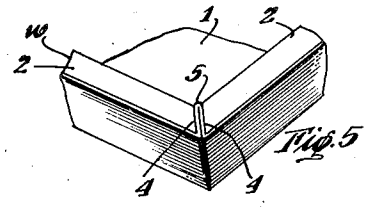


Fig. 6

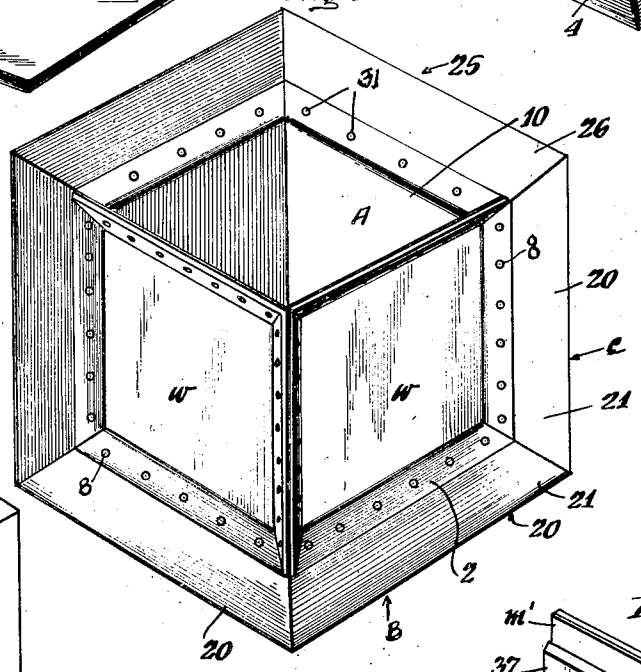


Fig. 7.

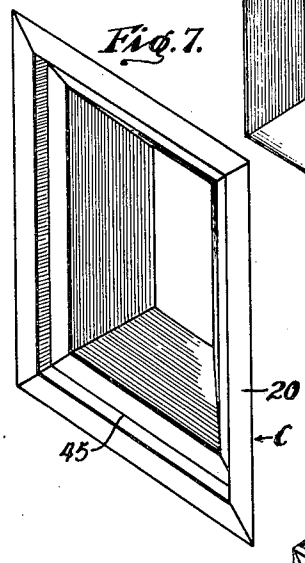


Fig. 9

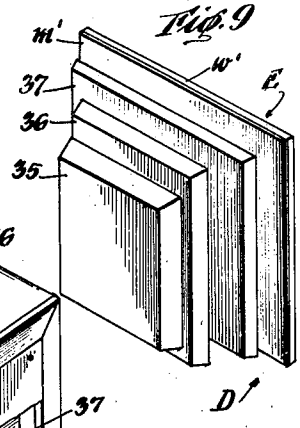
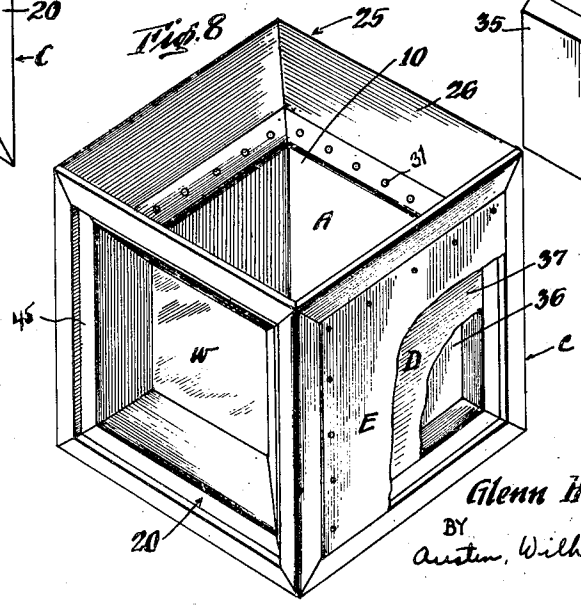


Fig. 8



INVENTOR
Glenn H. Norquist
BY
Austin, Wilhelm & Carlson
ATTORNEYS

Oct. 25, 1949. G. H. NORQUIST 2,485,646

INSULATED CONTAINER STRUCTURE

Filed June 23, 1945 3 Sheets-Sheet 3

Fig. 11

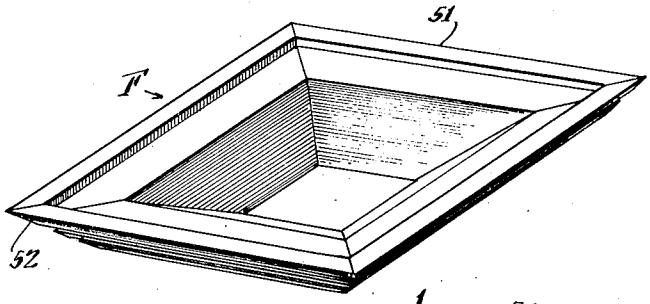


Fig. 12

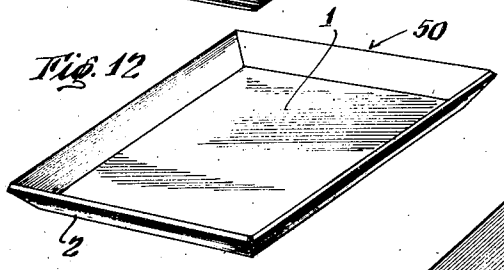


Fig. 10

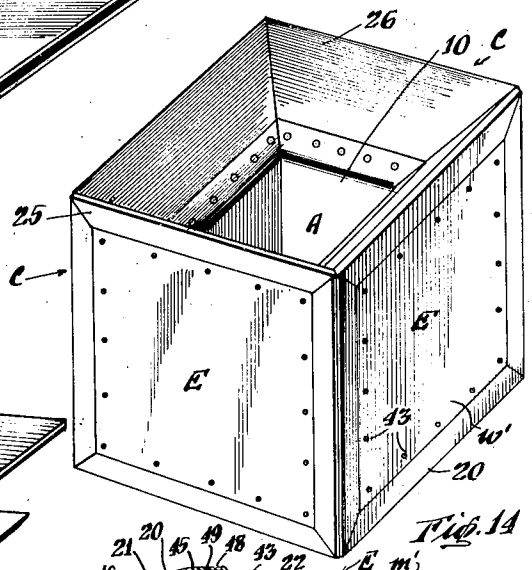


Fig. 13

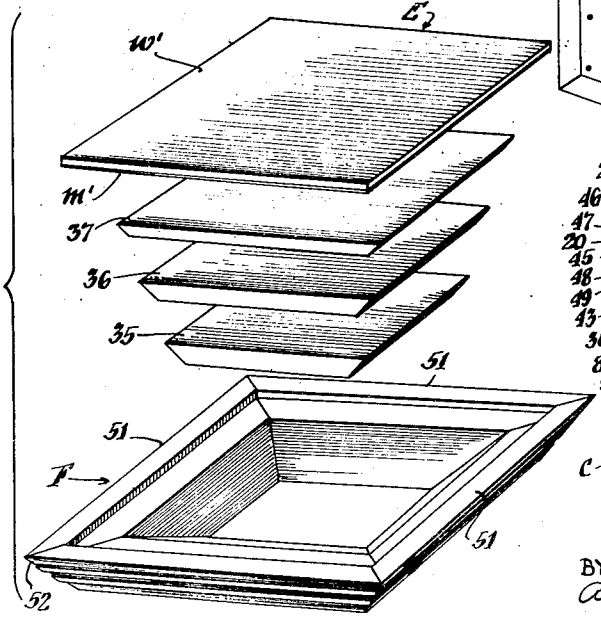
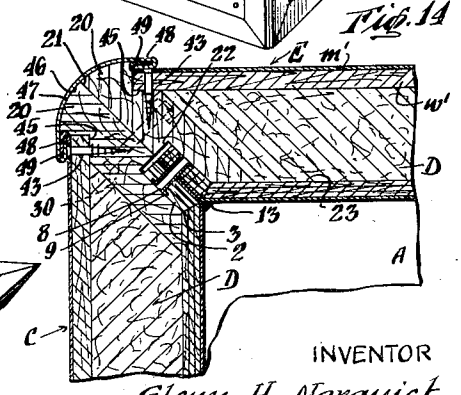


Fig. 14



INVENTOR
Glenn H. Norquist
BY
Austin, Wilhelm & Carlson
ATTORNEYS

Patented Oct. 25, 1949

2,485,646

UNITED STATES PATENT OFFICE

2,485,646

INSULATED CONTAINER STRUCTURE

Glenn H. Norquist, Jamestown, N. Y.

Application June 23, 1945, Serial No. 601,214

14 Claims. (Cl. 220—9)

1

This invention relates to insulated container structures and more particularly to a container structure which is sturdy and lasting in construction, economical to assemble and construct, and which possesses improved insulating characteristics.

Refrigeration boxes, ice chest and insulated container structures have heretofore employed structural and other metal parts which extend between the inner and outer surfaces thereof, with the result that substantial heat transfer takes place through such highly thermal conductive metal parts, thereby greatly reducing the insulating efficiency of the structure. To maintain the interior of such container structures at the proper low temperature, refrigeration equipment and coolants have been used having a substantially larger cooling capacity, than would otherwise be required.

In accordance with this invention, an insulated container structure is provided wherein all metal parts extending between the exterior and interior surfaces thereof have been eliminated without sacrifice of strength or durability. The container structure essentially comprises an inner shell constructed of metal clad plywood panels assembled together to provide reinforcing flanges at the edges and corners thereof. The inner shell is light in weight and yet possesses an abundance of strength. The metal faces of these panels are arranged to form an air-tight metal liner for the shell interior which may be kept clean and sanitary.

The inner shell, which provides the insulated container with ample structural strength, is enclosed within an insulating framework extending around the edges and corners of the inner shell. This framework provides support for insulating material packed within the framework. Since the framework need not be relied upon to give structural strength to the container, the framework can be made of materials which have relatively high insulating efficiency.

Cork or other insulating materials, either in loose or slab form, is packed against the outer wall surfaces of the inner shell and between and within the confines of the insulating framework. Plywood panels which may be metal lined, provide a strong outer sheathing for the container and serve to contain the insulating packing between the sheathing panel and adjacent wall of the inner shell. The sheathing panels may be secured to the insulating framework in any suitable manner.

The body of the container as thus constructed

2

presents no metal parts between the inner and outer surfaces thereof through which heat may be transferred. The insulating framework, the insulation packing and the outer plywood sheathing together provide an insulating blanket which completely encloses and surrounds the interior metal-lined container shell. This insulating blanket is so formed and assembled that no highly thermal conductive connection between the inner and outer surfaces of the completed container structure is presented.

The cover closure for the insulated container body is also constructed to resist heat transfer between the exterior and interior surfaces thereof. The cover closure as constructed comprises a metal clad liner panel having flanges secured to an insulating frame. Insulating material, either in slab or loose form, is sealed within the confines of the insulating frame and the metal clad liner panel by an outer plywood sheathing panel which is secured to the insulating frame. The cover frame is so constructed as to fit snugly on the inclined seating faces of the container body. One or more gasket rings may be secured around the periphery of the cover framework to provide an air-tight seal between the cover closure and cover seat associated with the container body. The closure cover may be secured or locked to the container body as may be required or desired.

Insulated container structures constructed in accordance with this invention may be formed in various shapes and sizes and for various uses, and may have associated therewith refrigerating equipment or coolants for maintaining the interior thereof at the desired low temperature. This invention is applicable to the design and construction of refrigerators for household and commercial establishments, of cold storage rooms and deep freeze chests. This invention may also be employed in the design and construction of insulated containers for the storage and shipment of various frozen products, such as frozen foods and the like, where Dry Ice may be employed to maintain the contents in the desired frozen condition for extended periods.

An object of this invention is to provide an improved insulated container structure which possesses unusually high insulating characteristics and which is so constructed as to resist to a maximum degree the transfer of heat between the interior and exterior surfaces thereof.

Another object of this invention is to provide an improved insulated container structure which is strong and sturdy in construction, rela-

tively light in weight, and which can be manufactured and assembled at substantially less cost than insulated container structures as now presently constructed.

Another object of this invention is to provide an improved insulated container structure having high insulating qualities, which presents a highly sanitary interior, which may be made pressuretight, and which can be constructed in various shapes, sizes and patterns for numerous and varied uses.

A further object of this invention is to provide an improved insulated container structure which comprises a substantially air-tight and sanitary interior shell of great structural strength and rigidity, encased and enclosed within an insulating blanket possessing highi nsulating characteristics and low heat conductivity and wherein all heat conductive connections between the exterior and interior surfaces of the container structure have been eliminated.

Other objects and advantages of this invention will become additionally apparent as the disclosure proceeds.

Although the characteristic features of this invention will be particularly pointed out in the claims appended hereto, the invention itself, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part hereof, in which:

Fig. 1 is a perspective view of one form of insulated container structure made in accordance with the invention.

Fig. 2 is a fragmentary vertical cross sectional view of the container showing certain structural details of the walls thereof as the same appears when viewed along line 2—2 of Fig. 1.

Fig. 3 is a fragmentary horizontal cross sectional view of the container showing additional structural features thereof as the same appears when viewed along line 3—3 of Fig. 1.

Fig. 4 is a perspective view of one of the metal clad plywood panels used in the assembly of the inner shell of the container.

Fig. 5 is an enlarged fragmentary view of a corner portion of the metal clad panel shown in Fig. 4 illustrating particularly the corner reinforcing construction.

Fig. 6 is a perspective view of the body portion of the inner container shell showing a part of the insulating framework assembled thereon.

Fig. 7 is a perspective view of one of the insulating frames ready for attachment to one of the side walls of the inner shell.

Fig. 8 is a perspective view of the inner shell with the insulating framework attached thereto, one of the frames being shown filled with slabs of insulation retained in position by a sheathing panel secured to the frame, certain parts being broken away to illustrate structural details thereof.

Fig. 9 is an exploded view of the insulation slabs and sheathing panel before application thereof to one of the insulating frames of the container.

Fig. 10 is a perspective view of the fully assembled insulated container body, showing the insulating framework, insulation slabs and sheathing panels encasing the inner container shell.

Fig. 11 is a perspective view of the insulating frame forming a part of the closure cover.

Fig. 12 is a perspective view of the metal clad plywood panel which is attached to the cover

frame shown in Fig. 11 to provide the inner shell of the cover;

Fig. 13 is a perspective view of the cover frame after the cover shell has been secured thereto, the insulation slabs and sheathing panel for the cover being shown in exploded position ready for placement within and securement to the cover frame to provide the completed insulated cover; and

Fig. 14 is a fragmentary cross sectional view of a slightly modified insulated container structure having metal sheathing encasing the outer surface thereof.

Similar reference characters refer to similar parts throughout the several views of the drawings and specification.

The improved insulated container structure made in accordance with this invention derives its strength and rigidity substantially and entirely through the use of an interior container shell A, constructed of laminated plywood having metal facing sheets bonded to the plywood and lining the interior thereof. The inner container shell is enclosed within an insulating framework, assembled from a rectangular shaped bottom forming frame B and rectangular shaped side forming frames C secured together to provide a rigid framework which extends around the edges and corners of the inner container shell. Since the assembled insulated container body achieves all the strength it requires from the inner container shell, the insulating framework may be formed from materials which have particularly high insulating characteristics, even though the framing material possesses correspondingly lessened structural strength. For example, the framework, comprising the bottom frame B and the side frames C, may be constructed of relatively soft porous woods which possess a particularly high insulated value, but less strength than hardwoods or metal. The bottom insulating fram B and the side insulating frames C are packed with insulating material D having a high insulating value. The insulating material D may comprise cork, insulating fibre, rock wool, porous rubber compositions, or other insulating materials of high insulating value. The insulating material D may be assembed within the insulating frames either in loose form or in slab form. The insulating material D is contained within the frames and protected by a sheathing panel E secured to the frames as by screws or other securing means.

The inner container shell A is constructed from a plurality of metal clad panels which have been suitably flanged and formed as illustrated in Fig. 4 and 5. Each of these panels are formed and shaped to the required size and comprise a base sheet *w* having a metal sheet *m* firmly and permanently cemented to one side thereof. The base sheet *w* is preferably formed of plywood or veneer layers bonded together by phenolic or urea resins, the metal surfacing sheet *m* also being bonded to the base sheet *w* by phenolic or urea resins. The metal sheet *m* greatly reinforces and strengthens the plywood and additionally provides a metal surface for the interior of the container.

Grooves 3 are cut in the base sheet so that side flange sections 2 are formed which extend approximately at an angle of 45° to the main section 1. The corners of the base sheet are also notched out, but the metal sheet is uncut and unweakened at the corners. Each exposed corner section of the metal sheet is crimped and

folded inwardly to provide an inturned plural ply reinforcing rib 5 as shown in Fig. 5, which is wedged between the ends 4 of the flange sections 2 of the base sheet. The inturned metal reinforcing ribs 5 measurably strengthen the corners of the container shell. Prior to flanging, space hole 6 may be punched in the flange sections 2 thereof through which rivets or hollow eyelets may be inserted when the flanged panels are assembled to provide the inner shell body.

A plurality of flanged metal clad panels in the form shown in Fig. 4 are assembled together to form the side walls 10 and the bottom wall 11 of the shell body. In assembling the inner shell, the metal clad panels which are to form the side walls 10, are arranged as shown in Fig. 3 with the flanges 2 thereof arranged in pairs, with the metal faces of the paired flanges in overlapping relationship. The holes 6 punched through the flanges 2 thereof should then be in alignment. Hollow rivets or eyelets 8 are then driven through these aligned holes and the ends thereof headed over as at 9, to firmly clamp and hold the paired flanges of the two adjacent side wall panels together in rigid assembly. The bottom forming panel 11, as shown in Fig. 2, is applied by securing the flange sections 2 thereof in paired relationship to the corresponding flange sections 2 of the adjacent side wall panels 10. Rivets or eyelets 8 are inserted into the aligned holes 6 in these paired flanges, the ends of the eyelets being headed over as at 9. The inside corner joints defined between the bottom wall panel 11 and the adjacent side wall panels 10 are covered by seams of solder 13. The solder 13 seals together the metal liner sheets and provides a leak tight seal therebetween. Some of the molten solder will seep between the contacting metal surfaces of the paired flange sections 2 and thereby further secure the paired flange sections together in rigid assembly.

As thus constructed, the inner shell A possesses astonishing strength. The paired metal clad flanges 2 form in effect, an edging framework which braces the inner shell to a maximum. The bonded plywood base sheet possesses unusual stiffness and rigidity, and the liner sheet *m* gives the shell unsual tensile strength. While the inner shell is relatively light in weight, it nevertheless presents a structural body which will absorb all the strains and stresses which would be imposed on the insulated container. The unusual strength of the inner shell permits the employment of insulating materials to encase the inner shell which primarily possess high insulating characteristics.

The insulating casing may be advantageously constructed by employing a relatively deep insulating bottom frame B and corresponding side frames C which may be suitably secured together in a manner to avoid heat transfer between the inner and outer surfaces of the container. These frames may be built of wood, such as soft woods or like relatively porous materials having substantial heat insulating characteristics. As shown more particularly in Figs. 1 and 2, the insulating bottom frame B may be constructed from soft wood frame members 20 whose ends are mitered and secured together as by wood glue, or screws, to provide a rectangular frame B. Each of the frame members 20 has a flat face 21, which when applied to the inner shell, is substantially in alignment with the metal face of the adjacent flange section 2 of the bottom forming panel 11 of the inner shell. The outside face of each frame member 20 is provided with a groove 22 to snugly

receive the adjacent flange section 2 of the bottom panel 11. The inner end of each frame member 20 is provided with a flat face 23 which snugly abuts the outside face of the plywood base sheet which forms the bottom section 1 of the bottom forming panel 11 of the inner shell. It will be noted that the frame members 20 need not be attached to the flanges 2 of the bottom panel, and that the frame members 20 may be of sufficient depth to contain a generous amount of insulating material D.

The side frames C are constructed of framing members 20, which may be similar to the framing members 20 of the bottom frame B, and a top frame member 25 which may be slightly different in shape. The adjacent ends of the bottom and side frame members 20 and the top frame member 25 of each side frame C may be mitered and secured together as by adhesive or screws to provide a side frame as shown perspective in Fig. 7. The bottom frame member 20 of each side frame C presents a flat face 21 which snugly matches with the flat face 21 of the adjacent frame member 20 to the bottom frame B. The lower frame member 20 of each side frame C is also provided with a groove 22 to snugly receive the metal clad flange section 2 of the side wall panel 10 of the inner shell. The side frame members 20 of the side frames C, as shown in Fig. 3, also present flat faces 21 and grooves 22 to receive the metal clad flanges 2 of the side panels 10. Each of the frame members 20 of the side frames C has a flat face 23 which snugly abuts the outside face of the main section 1 of the side wall panels 10. The top frame member 25 of each side frame C is provided with an inclined face 26 to provide a seat for the closure cover and the lower end of the inclined face 26 is provided with a groove 27 to snugly receive the adjacent metal clad flange 2 of the side wall panel 10 of the inner shell.

The bottom frame B and the side frames C may be assembled around the flanged bottom and side edges of the inner shell in a manner more particularly illustrated in Figs. 2, 3, 6 and 7. The outwardly flared flanges 2 at the bottom panel 11 of the inner shell are snugly seated within the grooves 22 of the bottom frame B. Each side frame C is applied in a manner so that the flanges 2 of the side panels 10 of the inner shell seat within the adjacent grooves 22 provided in the frame members 20 and the adjacent groove 27 provided in the upper frame member 25 of the side frame C. When thus assembled, it will be noted that the flat faces 21 of the frame members 20 of the bottom frame B will snugly match with the flat faces 21 of the adjacent bottom frame member 20 of the side frame C as shown in Fig. 2, and the flat faces 21 of the adjacent side frame members 20 of the side frames C will smoothly match together as shown in Fig. 3. If desired, suitable insulating material or adhesive may be positioned between the matching faces 21 of the adjacent frame members. The adjacent paired frame members 20 of the bottom frame B and the side frames C, and the adjacent paired side frame members 20 of the side frames C, are rigidly bolted together as by bolts 30, thereby clamping the paired flanges 2 of the inner shell therebetween, as shown in Figs. 2 and 3. The upper flange 2 of the inner side wall panels 10 may be secured as by screws 31 to the upper frame members 25 of the side frame C, as shown in Fig. 2.

For convenience and speed in assembly, it will be noted that the bottom frame B and the side

frames C may be constructed as separate rectangular units. The bottom frame B and the side frame C may be quickly applied to the inner container shell and bolted together as by transversely extended bolts 30 which are completely out of contact with the liner sheets *m*. The bolts 30 can be applied without difficulty or obstruction before the insulating material D or the sheathing panels E are applied. The insulating framework, comprising the bottom frame B and the side frames C, is thus hung and clamped to the lateral extending flanges 2 of the inner shell. Exterior blows delivered to the insulating framework are transmitted to and absorbed by the inner container shell so that little or no stress or strain is imposed upon the insulating framework.

When the bottom frame B and side frames C have been assembled to the inner shell as above described, the frame interiors may be filled with any selected insulating material D. This insulating material, such as cork, rock wool, insulating fiber, or porous rubberous materials, as selected and desired, may be conveniently formed and applied in the form of one or more slabs of economical thickness. As illustrated in Figs. 2, 3, 8, and 9 of the drawings, three separate slabs 35, 36 and 37 have been conveniently employed. If desired, the interior insulation slab 35 may be secured as by adhesive to the adjacent outside face of the interior shell, and the adjacent slabs 35, 36 and 37 may, if desired, be also secured together by a bonding adhesive.

No stresses or strains are imposed upon the insulating material filling, and insulating materials can therefore be selected and used which have high insulating values, irrespective of strength. The insulating material is enclosed and retained within each of the side frames C and the bottom frame B by a sheathing panel E. The sheathing panel E is preferably composed of a base sheet *w'* comprising plywood or veneer layers covered by a metal facing sheet *m'*, the plywood and the metal sheet *m'* being bonded together as by suitable phenolic or urea adhesive. For most efficient insulation, the sheathing panel E is preferably arranged so that the plywood surface thereof forms the exterior surface of the container body, as shown in Figs. 2 and 3. The outer edge of the sheathing panels E may be inset in a groove provided in the adjacent frame members 20 and 25 and secured thereto as by screws 43.

Fig. 14 illustrates an arrangement wherein the metal faces of the sheathing panels E face outwardly, giving the insulated container structure a metal sheathed outer surface. The ends of the sheathing panels E are inset in grooves 45 provided in the frame members 20, and the sheathing panels E are secured to the frame members 20 as by screws 43. The exposed rounded outer ends 46 of the framing members 20 may be covered by a sheet metal corner strip or pilaster cover 47 having the side edges thereof re-bent to provide inturned flanges 48 constructed to interlock with re-bent flanges 49 formed by rebending the adjacent side edges of the metal facing sheet *m'* of the adjacent sheathing panel E. The heads of the screws 43 may thus be entirely concealed by the sheet metal corner or pilaster strips 47, thus providing an attractive and finished appearing metal sheathing for the outer surface of the container structure. The rounded metal pilaster cover 47 is made to smoothly fit the ends 46 of the frame members 20 and are thereby stiffened. It will be appreciated that Fig. 14 is merely illustrative of the manner in which this invention may be employed to provide a highly efficient insulating structure which has attractive exterior appearance, in cases where exterior appearance is an important requisite.

The closure cover shown in Figs. 1 and 2 may be assembled from the parts illustrated in Figs. 11, 12 and 13. A metal clad plywood panel 50 as shown in Fig. 12, of proper size and dimensions, is formed and constructed similar to the metal clad plywood panel illustrated in Figs. 4 and 5 and above described. The metal clad panel 50 is attached to a rectangular cover frame F formed from four insulating frame members 51 whose ends are mitered and fitted together, and then secured into the form of a rectangular frame as by adhesive or other securing means. Each of the frame members 51 as shown more particularly in Fig. 2 is provided with a flat face 52 adapted to snugly seat upon the flat seating face 26 of the adjacent frame member 25 of the adjacent side frame C. The inner end of each cover frame member 51 is provided with a groove 53 adapted to snugly receive the flange section 2 of the metal clad liner panel 50. Each of the flange sections 2 of the liner panel 50 may be secured to the adjacent frame member 51 as by screws 54. The inner end of each frame member 51 is provided with a flat surface 55 shaped to snugly fit against the outside face of the main section 1 of the interior facing panel 50.

Insulating material D, which may comprise a plurality of insulation slabs 35, 36 and 37, are fitted within cover frame F and if desired may be secured in position by a suitable bonding adhesive. A cover sheathing panel E is secured to the cover frame members 51 as by screws 56. One or more gasket rings 57, formed of soft rubber, may be applied to the exterior flat face 52 of the cover frame members 51. Each gasket ring 57 is preferably triangular in cross section with a corner thereof snugly set within a correspondingly shaped groove cut in the face 52 of the cover frame F and extending continuously therearound. By so shaping the gasket rings 57, these rings can be bent smoothly around the corners of the cover frame F. Each of the gasket rings 57 is provided with a flat face 58 designed to snugly and tightly seat against the flat seating face 26 of the adjacent top frame member 25 of the adjacent side frame C. If desired, each of the gasket rings 57 may be provided with a longitudinally extending tubular hole 59 therein.

The closure cover as thus constructed provides a maximum of insulation between the interior and exterior surfaces thereof, with no metal connecting parts therebetween. By the employment of two or more spaced rubber gasket rings 57, a substantially air-tight fit can be obtained between the seating cover and the cover seating faces 26 of the container body. Any open space between the gasket rings 57 provides an insulating dead air space, which would not be objectionable from an insulating standpoint. It will be further noted that there is no metal connection at the joint between the closure cover and the container body which would provide a heat transfer medium between the inner and outer surfaces of the container, when the closure cover is in closed position.

Any desired means may be used to releasably secure the closure cover in leak tight position to the container body. By way of example, a latch-

ing assembly, as fragmentarily illustrated in Figs. 1 and 2, may be employed for this purpose. The latching assembly here illustrated comprises a latching flange *f* having a wall **60** secured as by screws **61** to the adjacent frame member **25** of the container body. The latching flange *f* has an inturned lip **62** adapted to cooperate with a plurality of cam latching devices *g* attached in spaced relationship to the closure cover adjacent the periphery thereof. Each of the cam latching devices *g* may comprise a base plate **65** secured adjacent the periphery of the closure cover. A cam latch having a flat base section **66** is rotatably secured to the base plate **65** by a sturdy stud pin **67**. A semi-circular latching rim **68** extends upwardly from the semi-circular periphery of the base section **66** of the rotatable cam latch. The latching rim **68** has a cam shaped upper edge **69** which may be rotated under and into engagement with the overhanging lip **62** of the latching flange *f*, and thus exert any desired downward sealing pressure upon the closure cover.

While one form of latching device has been illustrated, it will be appreciated that other latching and securing means may be provided to secure the closure cover in tight sealing position upon the container body. It will also be appreciated that the closure cover may be suitably hinged by various hinging devices to the container body and various latching or securing devices used to releasably secure the closure cover in closed and sealed position. The closure cover may be of such shape and size as to constitute only a fractional part of one of the walls of the container structure and the container structure may be provided with two or more closures of any desired size and shape.

Container structures may be constructed in accordance with this invention in various sizes and shapes to provide refrigeration boxes for household and commercial establishments, cold storage rooms and compartments, and containers in which frozen foods and other products may be contained and shipped. The insulating features embodied in this invention may be applied to container structures, either stationary or movable, which may be constructed at relatively low cost and with the attainment of maximum insulating values for the materials used.

It is understood that various modes and methods of applying the principles of this invention may be employed, change being made in regard to details required by the particular application, and that changes and modifications in the form, construction and arrangement and combination of the several parts may be made and substituted for those herein shown and described without departing from the principles of this invention.

What is claimed is:

1. An insulated container structure comprising an inner containing shell having structural strength adapted to resist and absorb substantially all the stresses and strains imposed upon the container, said inner shell being inclosed within an insulating casing of high insulating value, said inner shell being formed of flanged metal clad panels, each of said panels comprising a fibrous base sheet cemented to a liner-forming metal sheet and presenting a wall section and laterally extending flange sections, the adjacent flange sections of adjacent panels being in substantially face-to-face abutment and providing a reinforcing framework for the shell, said insulating casing including a plurality of panel frames, each of said panel frames being formed by frame members of low thermal conductivity fitting over the flange sections of each of said panels, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed in said adjacent frame members snugly receiving the adjacent paired flange sections of adjacent panels, and means for securing adjacent frame members of adjacent panel frames together.

2. An insulated container structure comprising an inner containing shell having structural strength adapted to resist and absorb substantially all the stresses and strains imposed upon the container, said inner shell being inclosed within an insulating casing of high insulating value, said inner shell being formed of flanged metal clad panels, each of said panels comprising a fibrous base sheet cemented to a liner-forming metal sheet and presenting a wall section and laterally extending flange sections, the adjacent flange sections of adjacent panels being secured together in face-to-face abutment providing a reinforcing framework for the shell, said insulating casing comprising a plurality of panel frames fitting over the flange sections of each of said panels, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove between adjacent frame members snugly receiving the paired laterally extending flange sections of adjacent panels, and means for securing adjacent frame members of adjacent panel frames together.

3. A container structure of high insulating value comprising an inner containing shell having structural strength adapted to resist and absorb substantially all the stresses and strains imposed upon the container, said inner shell being incased within an insulating casing of high insulating value, said casing including a framework of low thermal conductivity, and insulating packing supported by said framework, said inner shell being formed of flanged metal clad panels, each of said panels comprising a fibrous base sheet cemented to a liner-forming metal sheet and presenting a wall section and laterally extending flange sections, the adjacent flange sections of adjacent panels being secured together in face-to-face abutment, said framework including a plurality of panel frames fitting over the flange sections of each of said panels, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed between adjacent frame members snugly receiving the paired laterally extending flange sections of adjacent panels, and means for securing adjacent frame members of adjacent panel frames together.

4. An insulated container structure including in combination, an inner shell formed from metal clad panels, each of said panels comprising a fibrous base sheet cemented to a metal liner sheet presenting a wall section and flange sections, the adjacent flange sections of adjacent panels being secured together to reinforce and strengthen said shell, a framework of low thermal conductivity incasing said paired flange sections, and insulating material packed within the confines of said framework, said framework comprising a plurality of panel frames, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of ad-

jacent panel frames having face portions in substantially face-to-face abutment, a groove formed between adjacent frame members snugly receiving the paired laterally extending flange sections of adjacent panels, and means for securing adjacent frame members of adjacent panel frames together.

5. An insulated container structure including in combination, an inner shell formed from metal clad panels, each of said panels comprising a fibrous base sheet cemented to a metal liner sheet presenting a wall section and laterally extending flange sections, the adjacent flange sections of adjacent panels being secured together to provide a reinforcing framework for said shell, a framework of low thermal conductivity incasing said paired flanges, insulating material within the spaces defined by said framework, and sheathing panels enclosing the insulating material within said framework, said insulating framework comprising a plurality of panel frames fitting over the flanges of each of said panels, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed in the adjacent frame members snugly receiving the paired laterally extending flange sections of adjacent panels, and securing bolts for securing adjacent frame members of adjacent panel frames together.

6. An insulated container structure including in combination, an inner shell formed from metal clad panels, each of said panels comprising a plywood base sheet cemented to a metal liner sheet presenting a wall section and laterally extending flange sections, the adjacent flange sections of adjacent panels being secured together to provide a reinforcing framework for said shell, insulating framework incasing said paired flanges, insulating material filling the spaces within said framework, and exterior sheathing panels enclosing the insulating material within said framework, said framework comprising a plurality of panel frames fitting over the flanges of each of said panels, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed in the adjacent frame members snugly receiving the paired laterally extending flange sections of adjacent panels, and securing means for securing adjacent frame members of adjacent panel frames together.

7. An improved insulated container structure including in combination, an inner container shell formed from metal clad panels having laterally extending flanges providing a reinforcing structure for the inner shell, an insulating framework inclosing and incasing said flanges, insulating filler packed within the confines of said framework, and sheathing panels inclosing the insulating filler within said framework, said framework comprising a plurality of panel frames fitting over the flanges of each of said panels, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed in the adjacent frame members snugly receiving the paired laterally extending flanges of adjacent panels, and securing means for securing adjacent frame members of adjacent panel frames together.

8. An improved insulated container structure including in combination, an inner container shell

formed from metal clad plywood panels presenting an interior metal liner for the container and laterally extending flanges providing a reinforcing structure for the inner shell, a wood framework inclosing and incasing said flanges, insulating filler packed within the confines of said framework, and sheathing panels inclosing the insulating filler within said framework, said framework comprising a plurality of panel frames fitting over the flanges of each of said panels, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed in the adjacent frame members snugly receiving the paired laterally extending flanges of adjacent panels, and securing means for securing adjacent frame members of adjacent panel frames together to provide a unitary framework.

9. An improved insulated container structure including in combination, an inner container shell formed from metal clad plywood panels presenting an interior metal liner for the container and laterally extending flanges providing a reinforcing structure for the inner shell, a framework of low thermal conductivity inclosing and incasing said flanges, insulating filler packed within the confines of said framework, and plywood sheathing panels secured to said framework and inclosing the insulating filler within said framework, said framework comprising a plurality of panel frames fitting over the flanges of each of said panels, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed in the adjacent frame members snugly receiving the paired laterally extending flanges of adjacent panels, and securing means for securing adjacent frame members of adjacent panel frames together to provide a unitary framework.

10. An improved insulated container structure including in combination, an inner containing shell having an interior metal liner stiffened and reinforced by exterior fibrous sheathing and laterally extending flanges, an exterior framework of low thermal conductivity incasing said flanges, insulating material filling the spaces defined by said framework, and sheathing panels secured to said framework for confining the insulating material within said spaces, said framework comprising a plurality of panel frames fitting over the flanges of each of said panels, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed in the adjacent frame members snugly receiving the laterally extending flanges of adjacent panels, and securing means for securing adjacent frame members of adjacent panel frames together to provide a unitary framework.

11. An improved insulating container structure including in combination, an inner container shell having a metal liner exteriorly stiffened and reinforced by plywood sheathing and laterally extending flanges, an exterior framework of low thermal conductivity incasing said flanges, insulating filler packed within the confines of said framework, and metal clad plywood sheathing panels confining the insulating filler within the framework, said framework comprising a plurality of panel frames, each of said panel frames being

formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, a groove formed in the adjacent frame members snugly receiving the adjacent laterally extending flanges of said inner shell, and securing means for securing adjacent frame members of adjacent panel frames together to provide a unitary framework.

12. An improved insulating container structure including in combination, an inner container shell having fibrous inclosing panels interiorly sheathed by a metal liner bonded thereto, said shell having laterally flared flanges providing a reinforcing structure adapted to resist and absorb the stresses and strains imposed upon the container, insulating panel frames incasing and inclosing the flanges of said inner shell, means for securing said insulating panel frames together to provide an insulating framework extending around the edges and corners of said inner shell, insulating filler packed within the confines of said panel frames, and sheathing panels secured to said panel frames confining the insulating filler therein, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, and a groove formed in the adjacent frame members snugly receiving the adjacent laterally extending flanges of said inner shell.

13. An improved insulating container structure including in combination, an inner container shell presenting plywood inclosing panels having an interior metal sheathing bonded thereto providing a substantially air-tight metal liner, said shell having laterally flared flanges providing a reinforcing structure adapted to resist and absorb the stresses and strains imposed upon the container, wood insulating panel frames incasing and inclosing the flanges of said inner shell, means for securing said insulating panel frames together to provide an insulating framework extending around the edges and corners of said inner shell, insulating filler packed within the confines of said panel frames, and plywood sheathing panel secured to said panel frames confining the insulating filler therein, each of said panel frames being formed by frame members of low thermal conductivity, the adjacent frame members of adjacent panel frames having face portions in substantially face-to-face abutment, and a groove formed in the adjacent frame members snugly receiving the adjacent laterally extending flanges of said inner shell.

14. An insulated wall section for a container including, a panel comprising a fibrous base sheet cemented to a metal sheet and presenting a wall section and flange sections extending at an angle of approximately 45° to the plane of said wall section, said flange sections being joined at the corners thereof by a plural-ply metal reinforcing rib, a panel frame fitting over the flange sections of said panel, said panel frame being formed by frame members of low thermal conductivity, each of said frame members having a groove formed therein snugly receiving the adjacent flange section of said panel, insulating filler packed within the confines of said panel frame, and a sheathing panel secured to said panel frame confining the insulating filler therein.

GLENN H. NORQUIST.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
401,723	Stubbers	Apr. 16, 1889
689,582	Greenstreet	Dec. 24, 1901
844,369	Kosztovits	Feb. 19, 1907
1,318,771	Koren et al.	Oct. 14, 1919
1,452,272	Gwyer	Apr. 17, 1923
1,520,409	Elmendorf	Dec. 23, 1924
1,630,858	Meyercord	May 31, 1927
1,964,795	Frary	July 3, 1934
2,034,114	Moody	Mar. 17, 1936
2,196,373	Wallach	Apr. 9, 1940
2,220,501	Wallach	Nov. 5, 1940
2,231,981	Zalkind	Feb. 18, 1941

FOREIGN PATENTS

Number	Country	Date
26,587	Great Britain	1896
182,900	Great Britain	July 10, 1922