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2,872,095

PORTABLE INSULATED CONTAINER

Filed Dec. 22, 1954

2 Sheets-Sheet 1

Fig. 1

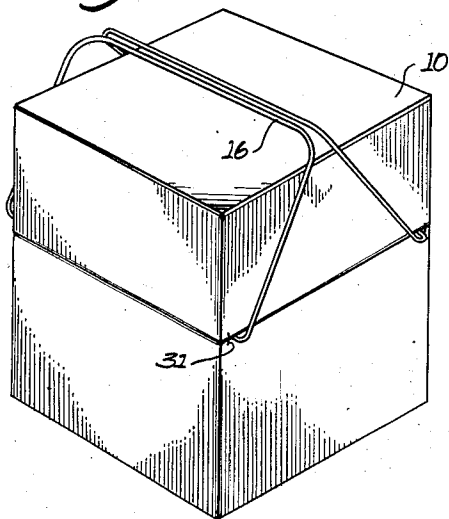


Fig. 2

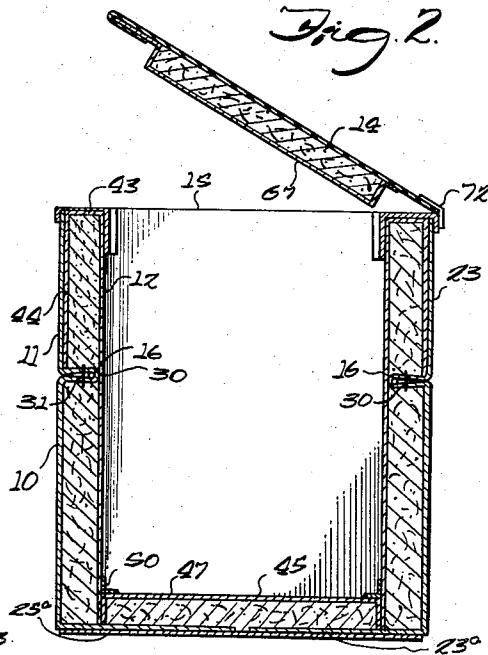


Fig. 4

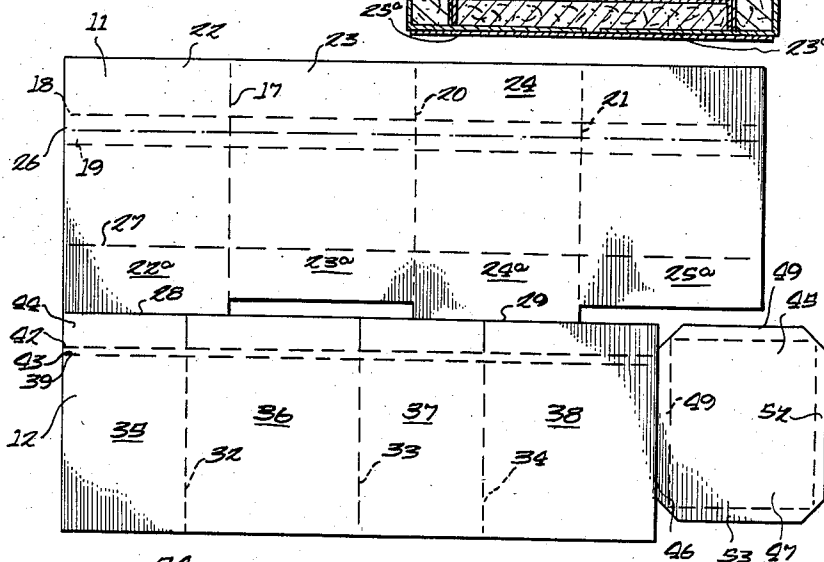
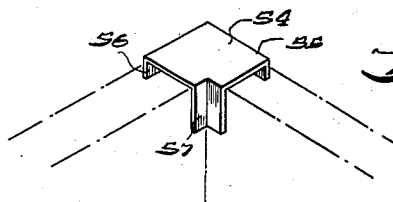


Fig. 3



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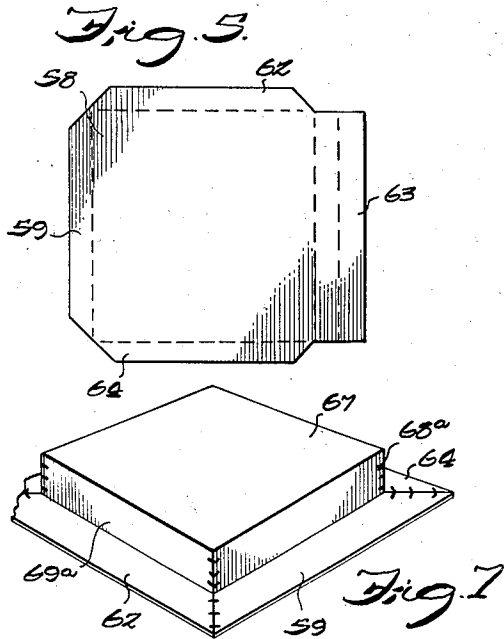
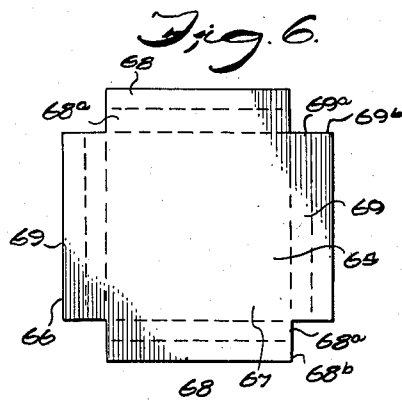
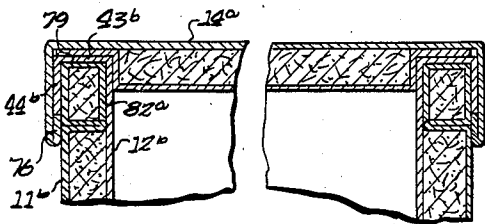
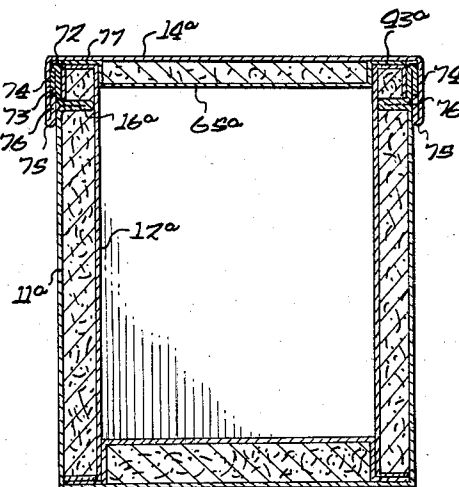
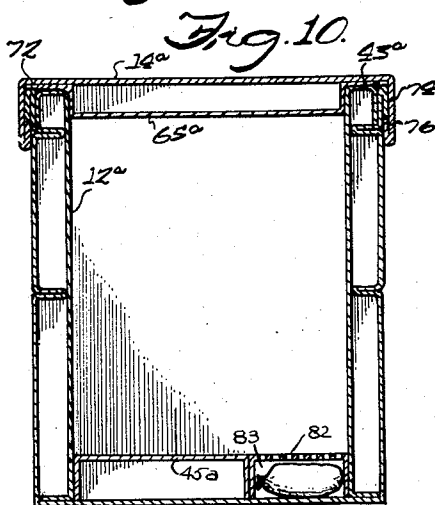
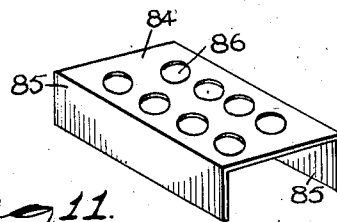
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2 Sheets-Sheet 2



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PORTABLE INSULATED CONTAINER

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3 Claims. (Cl. 229—14)

This invention relates to containers and, more particularly to a container, preferably of corrugated cardboard, which is particularly suitable for shipping purposes, and which is capable of storing articles at a predetermined temperature for relatively long periods.

A primary object of the invention is to provide a container of the portable type which is so constructed to withstand all the shocks and strains incident to normal use.

Another object of the invention is to provide a container of the stated type which is so constructed that the contents are effectively protected from damage due to falls, jars and the like.

Another object of the invention is to provide a device of the mentioned type wherein a minimum number of component parts is required, and wherein these parts are interfitted in a novel manner.

Another object of the invention is to provide a container of the type described which is capable of withstanding a relatively great impact without damage to the contents thereof.

A further object of the invention is to provide a container of the stated type having a closure member which may be efficiently and effectively locked in position.

Another object of the invention is to provide a container of the mentioned character which is air and gas tight and which may be effectively used for the maintenance of predetermined humidity conditions.

A more particular object of the invention is to provide a container of the stated character which is provided with side walls having horizontal creases to provide the requisite rigidity for the purpose intended, certain of these creases serving also to secure in position a pair of bails for easy grasping.

A final object of the invention is to provide a container of the mentioned character which has double walls forming compartments for insulation, these walls being held in fixed relation by means of novel corner caps which function also to minimize damage to the upper corners of the container.

Other and further objects, advantages and features of the present invention will be apparent to those skilled in the art from the following description, taken in conjunction with the accompanying drawing in which similar reference characters relate to similar parts, and in which:

Fig. 1 is a view in perspective of a container made in accordance with the present invention;

Fig. 2 is an elevational view, in section, of the container of Fig. 1, certain parts being removed for the sake of clarity;

Fig. 3 is a fragmentary view in perspective of one of the corner caps utilized with the container of the present invention;

Fig. 4 is a plan view of a blank from which the outer casing and liner of the container are formed;

Fig. 5 is a plan view of a blank used for forming one of the panels of which the container lid is comprised;

Fig. 6 is a plan view of a blank which, according to the

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present invention, is formed into another panel of the lid;

Fig. 7 is a view in perspective of the panels of Figs. 5 and 6 in assembled relation;

Fig. 8 is an elevational view, in section, of a modified form of the present invention;

Fig. 9 is an enlarged fragmentary view of another form of the present invention;

Fig. 10 is an elevational view in section of another form of the container of the present invention; and

Fig. 11 is a view in perspective of an enclosure member used in conjunction with a humidity modification compartment of the form of the invention shown in Fig. 10.

With reference to the drawing and more particularly to Figs. 1 and 2, the form of the invention shown in these figures comprises a container, generally indicated by reference numeral 10, and including an outer casing 11, and an inner liner 12 arranged in spaced relation to the walls of the casing 11. Between the liner and the casing walls is arranged insulation 13 which desirably takes the form of fibreglass bats. A lid 14 completes the enclosure of a chamber 15 defined by the walls of the liner 12.

With reference now more particularly to Figs. 2 and 4, the casing 11 is comprised of a continuous piece of material, such as corrugated cardboard or the like, which is scored along dotted lines 17, 20 and 21 to form side panels 22, 24, and back and front panels 23, 25. The blank is scored along dotted line 27 which extends perpendicularly to the dotted lines 17, 20 and 21 to form bottom panels 22a, 23a, 24a and 25a.

According to the present invention, the walls of the casing are so formed that the entire container is characterized by great strength and rigidity. To this end, a substantially horizontal crease 16 is formed in the walls of the casing 11. With reference now to Fig. 4, it will be noted that this crease is formed by impressing fold lines 18 and 19 (shown in dotted lines) in each of the several panels 22, 23, 24 and 25 of the outer casing. A score line 26 (shown by a dot-and-dash line) assures even and effective folding. It will be understood that the corrugated cardboard of which the present carton is desirably comprised is scored on but one surface so that convenient folding is obtained without sacrificing the inherent strength of the laminate. As shown clearly in Fig. 2, the scored side of the blank faces inwardly in the completed structure. A pair of bails 30 are arranged within the fold 16. By this arrangement, the bails form, in effect, an integral part of the rigid structure of the container. Because of the fact that the lower reaches of the bails engage the casing throughout the entire length of the sides, there is little likelihood of the bails becoming detached from the container because of strain at the point of joinder. For securing the bails in position and retaining the side walls in creased condition a plurality of staples 31 is provided.

It will be noted in Fig. 4 that the blank for forming the liner 12 is in abutting relation to the blank utilized for forming the walls of the casing. By this arrangement great savings are effected because of the minimum amount of wastage involved. Cut lines 28 and 29 separate these two blanks. It will be noted that the panels 23a and 25a are somewhat shorter than the panels 22a and 24a to facilitate forming the bottom of the container, as is the case in conventional cardboard cartons.

The liner 12 is formed from a blank divided by score lines 32, 33 and 34 into panels 35, 36, 37 and 38 dimensioned to conform to the corresponding panels of the outer casing. These panels are scored along lines 39 and 42 to form a plurality of panels 43, one for each of the liner panels, and a corresponding number of panels 44. As shown clearly in Fig. 2, the panels 43 extend substantially horizontally across the top edges of the uppermost

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insulation bats between the liner and the casing, while the panels 44 extend downwardly from the edges of the panels 43 to the crease 16. The bottom edges of the liner panels are arranged in abutting relation to the flaps 23a and 25a. A liner bottom 45 is desirably formed in abutting relation to the blank for the liner 12. In Fig. 4 it will be noted that the corrugated cardboard is severed along cut line 46 to form this liner bottom. The resulting blank is scored along lines represented by dotted lines in Fig. 4 to form a panel 47 and extension panels 48, 49, 52 and 53. As shown in Fig. 2 these panels are bent to assume a position perpendicular to the plane of the panel 47. In practice, these panels support the panel 47 in spaced relation to the bottom of the casing 11. A tape 50 retains the liner bottom 45 and the liner wall panels in fixed relation and serves also as a seal in the event that a meltable refrigerant is employed. For this purpose also, the inner surfaces of the liner are desirably coated with wax. It will be understood, of course, that all of the adjoining edges of the casing and the liner are secured each to the other by any suitable means, such as staples, wire stitching, or the like.

It will be noted that the panels 43 of the liner are arranged to cover only as much of the topmost insulation bats as their dimensions permit. The result is that the bats are exposed at each of the corners of the container. It will be appreciated that these corners would be likely to receive damage while the container is in use. With this in mind, means are provided which are capable of effectively covering these exposed areas and also providing protective enclosures for these vulnerable corners. With reference now to Fig. 3, there is provided at each of the upper corners of the container a cap 54, desirably of plastic or the like. This cap includes a substantially rectangular plate portion 55, a pair of flanges 56 depending from adjoining side edges of the plate 55, and a V-shaped tongue 57. The flanges 56 and the tongue 57 are formed integrally with the plate 55 and are desirably canted at a slight angle towards each other so that the flanges 56 may frictionally engage the top marginal edges of the panels of the casing 11 while the V-shaped tongue 57 engages the panels of the liner 12.

With reference now to Figs. 5 and 6 the lid 14 is comprised of a top panel 58 scored along dotted lines to form panels 59, 62, 63 and 64. A bottom panel 65 is formed in adjacent relation to the top panel 58 and is separated therefrom by a cut line 66. The bottom panel 65 is divided by suitable score lines into a central panel 67, side extension panels 68, and front and back extension panels 69. The panels 68 and 69 are subdivided by suitable score lines into suitable sub-panels 68a and 69a, and 68b and 69b. In forming the lid the sub-panels 68a and 69a are bent into a position substantially perpendicular to the panel 67. The adjoining edges of these panels are then secured each to the other by a suitable fastening means such as staples or the like. The sub-panels 68b and 69b are then bent into substantially the same plane as the central panel 58. In the shallow receptacle thus formed a bat 13 of insulation is placed. The extension panels 59, 62 and 64 of the top panel 58 are then bent over to form a pocket for reception of the sub-panels 68b and one of the sub-panels 69b. It will be noted that the extension panels of the top panel 58 are cut on an angle so as to provide a butt-joint. The meeting edges of this butt-joint are secured each to the other by any suitable means such as staples, wire stitching, or the like. The extension panel 63 is bent at 72 and the outer edge thereof is secured to the upper marginal edge of the panel 23 by means of staples or the like. The free edge of the other of the sub-panels 69b is secured directly to the top panel 58 in like manner.

In Fig. 8 a modified form of the invention is shown in which an outer casing 11a is provided with a crease 16a, similar to the crease 16 in the principal form of the in-

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vention. The upper extremities of the casing 11a are scored at 72 so that the marginal edges may be bent back upon themselves to form a shoulder, as at 73. A lid 14a having depending panels 74 is scored at 75 to afford bending of the marginal edges 76 thereof in abutment with the interior surfaces of the panels 74. This modified form of lid, which is suitable for containers intended for use but one time, is dimensioned so that it may receive the upper edges of the container in a manner that the edges 74 and 76 are effectively interlocked, with the result that the lid is held in position. The lid 14a is provided with a lower panel 65a similar to the lower panel 65 in the principal form of the invention. In this modified form, however, side and end panels 77 are provided which merely rest upon panels 43a of liner 12a. The effective engagement of the lid 14a with the casing 11a retains the lower panel 65a and its enclosed insulation in place.

Fig. 9 shows a form of the invention similar to that disclosed in Fig. 8 with the exception that a liner 12b is provided having substantially horizontal panels 43b and depending panels 44b which are engaged by the edges 76 of the lid 14a. The upper extremities of outer casing 11b are formed to provide substantially horizontal panels 78, upon which the panels 43b rest, and downwardly extending panels 82, the outer surfaces of which are in abutting relation to the outer surfaces of the upper extremities of the liner 12b.

According to another important feature of the present invention means are provided for effectively controlling humidity conditions within any of the above forms of container. Fig. 10, for instance, shows a container of the type shown in Fig. 8 in which the insulation has been omitted and in which a liner bottom 45a of reduced width as compared to the liner bottom 45 of the principal form of the invention is provided. Alongside of the liner bottom 45a is arranged an enclosure 82 defining a compartment 83 for reception of a suitable desiccant or humidifying agent, as may be required. With reference now to Fig. 11 this enclosure 82 is comprised of a top panel 84 and depending flanges 85. A plurality of apertures 86 are formed in the top panel 84 to permit passage of moisture to or from the compartment 83 as may be required.

The portable container of the present invention is particularly suitable for shipping articles which must be protected from temperature changes and shock. In this category are blood plasma, whole blood, and biologicals. In shipping articles such as these abroad, the considerable weight of prior art containers have proved particularly disadvantageous. These containers were often expensive of manufacture, and consequently there was a need for returning them. The container of the present invention is expendable, and may be discarded after one shipment. The above described device may assume a variety of configurations, the disclosed rectangular form being shown only for purposes of illustration. A variety of other articles such as frozen food, dairy products, and the like may safely be transported in this container. In the form of the invention shown in Fig. 11, for instance, delicate mechanical movements may be safely shipped with a suitable desiccant, and in the case of commodity requiring humidification, means for accomplishing this result may be disposed in the compartment provided. It will be apparent that this invention may be embodied in constructions which differ in many respects and details from the particular embodiment disclosed. All modifications which do not go beyond the scope of the invention will readily suggest themselves to those skilled in the art. It is, therefore, not intended that the invention be limited to the exact construction shown and described, but only to the inventive concept as defined in the appended claims.

What is claimed is:

1. A container comprising a casing formed from a

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single piece of corrugated cardboard or the like divided by suitable score lines into side, end and bottom panels, said casing walls being formed with a substantially horizontal inwardly extending crease to provide rigidity, a pair of bails mounted in said crease, the portion of said bails mounted within said crease extending the length of one of said side panels, means for maintaining said bails within said crease, a liner formed from a single piece of corrugated cardboard or the like and divided by suitable score lines into side and end panels, said liner being mounted within said casing in spaced relation to the side and end walls thereof, each of said liner panels being provided with a pair of extension panels one of which being arranged across the mouth of the space between the casing and the liner and the other of which being disposed in engagement with the inner surface of a corresponding casing panel, insulation bats arranged in the space between the casing and the liner, and an insulated lid for said casing.

2. A container comprising a casing formed from a single piece of corrugated cardboard or the like divided by suitable score lines into side, end and bottom panels, a liner formed from a single piece of corrugated cardboard or the like and divided by suitable score lines into side and end panels, said liner being mounted within said casing in spaced relation to the side and end walls thereof, each of said liner panels being provided with a pair of extension panels one of which being arranged across the mouth of the space between the casing and the liner and the other of which being disposed in engagement with the inner surface of a corresponding casing panel, insulation bats arranged in the space between the casing and the liner, a plurality of caps arranged one at each juncture of the casing panels and the liner panels for securing these panels in fixed relation, each of these caps comprising a flat plate, integrally formed depending flanges for engagement with the top marginal edges of adjoining casing panels, and an integrally formed depending tongue for engaging adjoining liner panels, and an insulated lid for said casing.

3. A container comprising a casing formed from a

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single piece of corrugated cardboard or the like divided by suitable score lines into side, end and bottom panels, a liner formed from a single piece of corrugated cardboard or the like and divided by suitable score lines into side and end panels, said liner being mounted within said casing in spaced relation to the side and end walls thereof, each of said liner panels being provided with a pair of extension panels one of which being arranged across the mouth of the space between the casing and the liner and the other of which being disposed in engagement with the inner surface of a corresponding casing panel, insulation bats arranged in the space between the casing and the liner, a plurality of caps arranged one at each juncture of the casing panels and the liner panels for securing these panels in fixed relation, each of these caps comprising a flat plate, integrally formed depending flanges for engagement with the top marginal edges of adjoining casing panels, and an integrally formed depending tongue for engaging adjoining liner panels, said flanges and said tongue being formed to incline inwardly so as to provide a firm frictional engagement with the casing and liner walls, and a lid including a top panel and a bottom panel, the side edges of the top panel being provided with extension panels, the bottom panel being scored to provide a central panel, extension panels arranged in normal relation to the said central panel, an insulation bat disposed in the receptacle thus formed, and edge panels disposed in parallel relation to said central panel and in engagement with the said top panel, the extension panels being folded over said edge panels and secured each to the other along abutting edges.

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