March 8, 1960 R. K. ADAMS 2,927,720

PORTABLE INSULATED CONTAINER

Filed Nov. 28, 1958 2 Sheets-Sheet 1

Fig. 1

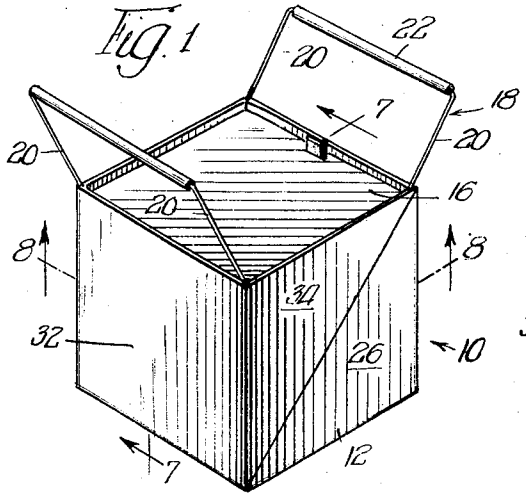


Fig. 2

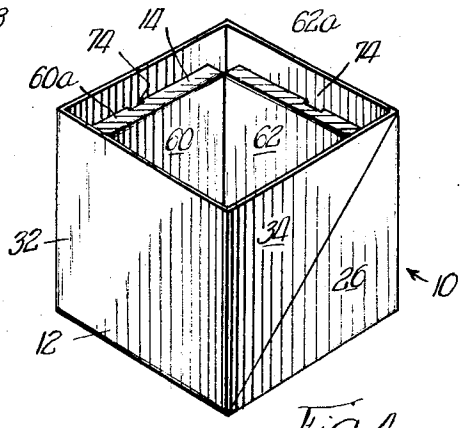


Fig. 3

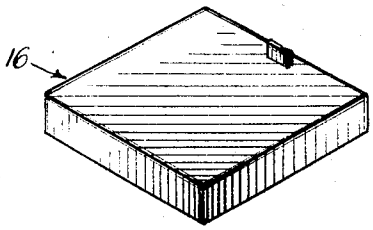


Fig. 4

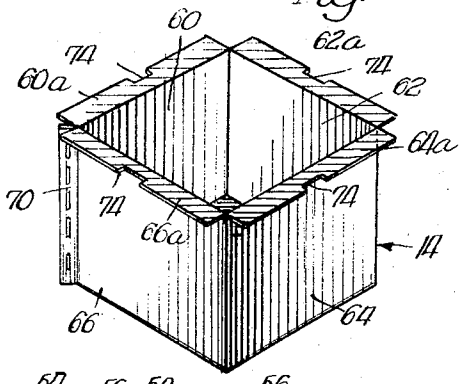


Fig. 5

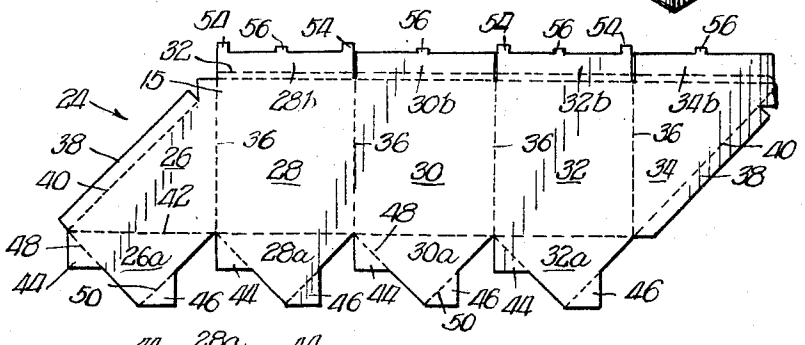
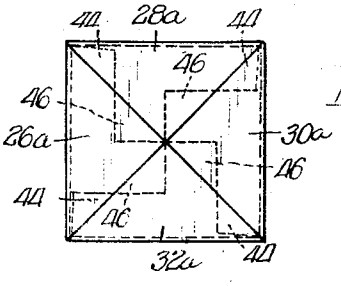


Fig. 6



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PORTABLE INSULATED CONTAINER

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Fig. 7

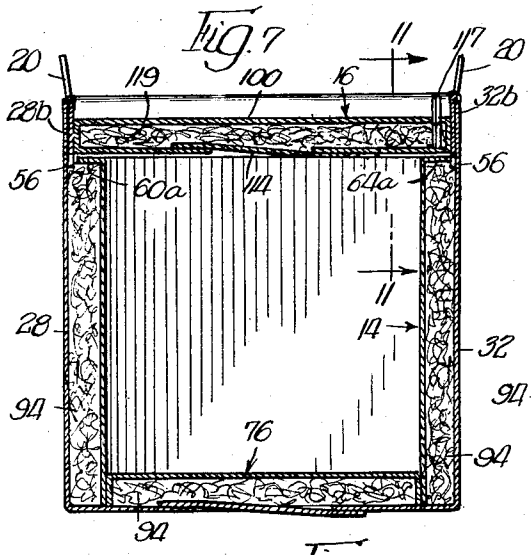


Fig. 8

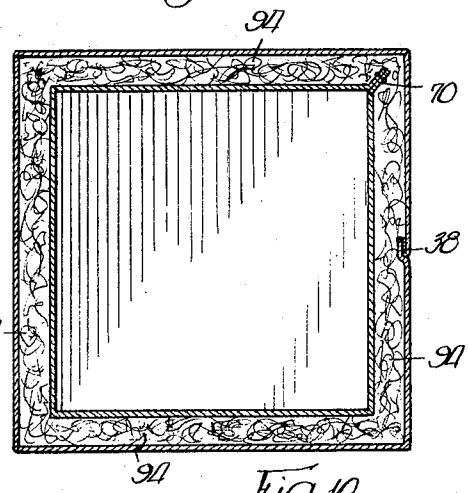


Fig. 9

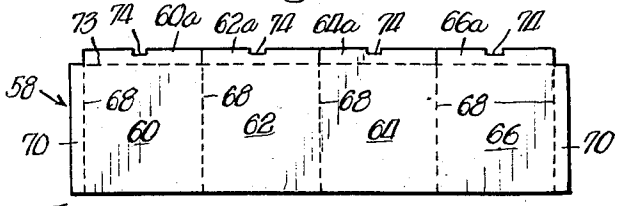


Fig. 10

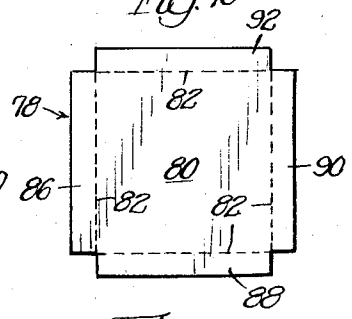


Fig. 11

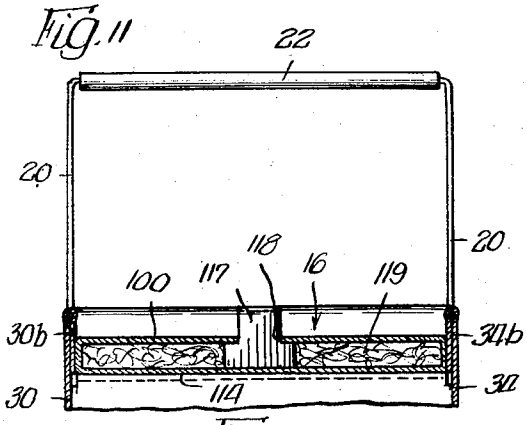


Fig. 12

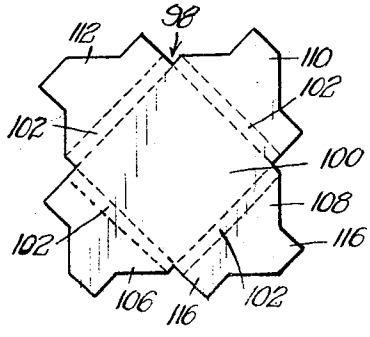
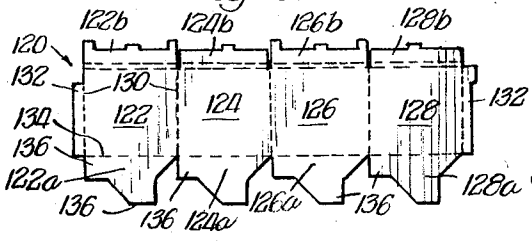


Fig. 13



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United States Patent Office

2,927,720

Patented Mar. 8, 1960

2,927,720

PORTABLE INSULATED CONTAINER

Robert K. Adams, Chicago, Ill.

Application November 28, 1958, Serial No. 776,775

5 Claims. (Cl. 229—14)

This invention relates to a container and in particular to an insulated container of a relatively inexpensive but efficient construction so that it is especially suited for a single or a plurality of uses.

One of the foremost features and objects of this invention is to provide an insulated container of a simple but novel construction.

Another object is to provide an insulated container that is of a lightweight construction and is readily portable.

Another object of the invention is to provide an insulated container that may be constructed of a variety of materials but in particular of cardboard of some other paper material.

Another object of the invention is to provide an insulated container that is relatively inexpensive so that it may be discarded after a single use or only a few uses.

Another object of the invention is to provide a container that will insulate its contents from the ambient temperature and maintain them at a given temperature for a considerable period of time.

Another object of the invention is to provide a container that may be attractively decorated so that it is readily commerciable.

These and other objects of the invention will be apparent upon reading of the specification with reference to the following drawings:

In the drawings:

Figure 1 is a perspective view of one form of the container embodying the invention.

Figure 2 is a perspective view similar to Figure 1 with some of the parts removed for purposes of clarification.

Figure 3 is a perspective view of the lid used in the construction of the container shown in Figure 1.

Figure 4 is a perspective view of the inner casing used in the construction of the container.

Figure 5 is a plan view of one form of the blank from which the outer casing may be constructed.

Figure 6 is a bottom view of the container shown in Figure 1.

Figure 7 is a sectional view taken along lines 7—7 of Figure 1.

Figure 8 is a sectional view taken along lines 8—8 in Figure 1.

Figure 9 is a plan view of the blank from which the side walls of the inner casing may be constructed.

Figure 10 is a plan view of the blank from which the bottom of the inner casing may be constructed.

Figure 11 is a plan view of the blank from which the lid may be constructed.

Figure 12 is a segmental view in section of the container in greater detail.

Figure 13 is a plan view of a blank from which a modified form of the outer casing may be constructed.

It will be apparent upon reading of the specification that the various elements comprising the container other than the insulation, bails, staples, and the like, may be fabricated from numerous materials. However, the elements are particularly suited for construction from paper-like materials, especially corrugated cardboard, which is relatively inexpensive, and consequently expendable material. These elements are so designed that they may be assembled from blanks which are precut from a single sheet of material and scored so as to facilitate the assembly of the box. The score lines generally face inwardly so that there are no open or raw edges presented on the outside surfaces of the container. The fastening means used for securing various flaps and edges of the container, as will be indicated hereinafter, may consist of staples, rivets, wire stitching or the like.

Referring now to Figures 1 and 2, there is shown one form of the container generally denoted by the numeral **10**. The container includes an outer casing **12**, an inner casing **14**, and a lid member **16**. The outer casing **12** is generally rectangular in shape and is provided with the wire bails **18**. The lid **16** is of the same general cross-sectional shape as the outer casing and is adapted to be received therein so as to provide a substantially airtight seal, as will be explained in greater detail later on.

Referring now to Figure 5, there is shown one form of the blank from which the outer casing **12** may be constructed. The blank **24** consists of a single sheet of cardboard or the like, suitably scored so as to form the various elements of the outer casing. The side panels **26**, **28**, **30**, **32**, and **34**, are separated by the vertical score lines **36**. The end side panels **26** and **34** are triangular in shape and co-operate to form a completed side such as that formed by the panels **28**, **30**, and **32**, as can be seen in Figure 1. A flap member **38** depends from the diagonal edges of the end side panels **26** and **34** and are separated therefrom by the score line **40**. The flap members **38** are folded inwardly and staple together to hold the sides in their folded position, as shown in Figure 8.

A plurality of flap members **26***a*, **28***a*, **30***a*, and **32***a* are separated from their respective associated side panels **26** to **32** by means of the horizontal score line **42**. The flap members **26***a* to **32***a* are triangular in shape and are folded inwardly to form the bottom of the outer casing **12**. The triangular members **44** and **46** depend from each of the flap members and may or may not be separated therefrom by the score lines **48** and **50**. When the flap members **26***a* to **32***a* are folded inwardly as shown in Figure 6 to form the bottom of the container, the triangular members **44** and **46** extend under adjacent flap members so that the flap members are held in interlocking engagement. In this manner it is possible to eliminate the use of staples or any other auxiliary means for securing the flap members together so as to facilitate the assembly of the outer casing.

The double score line **52** separates the panel members **28***b*, **30***b*, **32***b*, and **34***b* which are folded into a re-entrant position along their associated respective side panels **28** to **34**, as shown in Figure 7. By folding the panel members **28***b* to **34***b* in this manner, all raw or cut edges are eliminated at the top of the container. The panel members **28***b* to **34***b* further serve to position the inner casing with respect to the outer casing, as will be seen later on. The tabs **54** and **56** co-operate with the inner casing **14** so as to hold the associated panel members **28***b* to **34***b* in their re-entrant positions.

Referring now to Figure 9, the inner casing **14** is formed in part from the blank **58** consisting of a single sheet of cardboard or the like. The side panels **60**, **62**, **64**, and **66** of the inner casing **14** are formed by the vertical score lines **68**. The flap members **70** are provided on each end of the blank **58** and are folded outwardly and stapled together, as shown in Figure 8. The horizontal score lines **72** separate the panels **60***a*, **62***a*, **64***a*, and **66***a*, from the associated side panels **60** to **66**. Each of the panels **60***a* to **66***a* are provided with the notched

portions 74 and are folded outwardly as shown in Figure 4. The flap members 60*a* through 66*a* position the sides 60 through 66 of the inner casing 14 and at the same time hold the panels 28*b* through 34*b* in their re-entrant positions. The notched portions 74 receive the tabs 56 of the panels 28*b* to 34*b* as shown in Figure 7. The corners formed by the flap members 60*a* to 66*a* are open so that the tabs 54 on the panels 28*b* and 32*b* are received therein. The free edges of the panels 28*b* to 34*b* other than the tabs 54 and 56 rest on the panels 60*a* to 66*a*. In this manner the panels 28*b* to 34*b* when in their re-entrant position secure the inside casing 14 within the outside casing 12.

The bottom 76 of the inside casing 14 is formed from the blank 78 consisting of a single sheet of cardboard or the like. The bottom panel 80 is formed by the score lines 82 which separate it from the flaps 86, 88, 90, and 92. The flaps 86 to 92 are folded downwardly and lie in substantially co-extensive and substantially touching relationship with the sides 60 to 66 of the inner casing 14. The flaps 86 through 92 may be secured by some suitable means such as staples or adhesive to the associated sides of the inner casing 14.

As was mentioned previously, the sides of the inner casing 14 are spaced from the sides of the outer casing 12 in the manner shown in Figure 7. In its preferred embodiment a fiber glass batting 94 is placed between the sides of the outer casing and the inner casing. The fiber glass batting 94 is also placed between the bottom panel 80 and the bottom of the outer casing 12. In this manner, it is possible to insulate the contents of the container from the ambient temperature on all four sides and on the bottom.

The bails 18 may consist of the wire struts 20 which are secured at one end to the outer casing 12 between the re-entrant panels 28*b* and 32*b* and the associated sides 28 and 32, so as to eliminate any tendency to pull out. The other ends of the struts 20 are affixed to the tubular cardboard members 22 which furnish a suitable handle. It should be pointed out that other forms of construction may be used for the bails 18.

Referring now to Figure 11, there is shown a blank 98 consisting of a single sheet of cardboard or the like from which the lid 16 may be constructed. The blank 98 includes the panel 100 formed by the double score lines 102. The flap members 106, 108, 110, and 112 depend from the panel member 100 along the score lines 102. The flap members 106 through 112 are folded inwardly to form the bottom panel 114 of the lid 16. The tab members 116 which depend from each of the flap members 106 through 112, extend under adjacent flap members so as to hold them in interlocking engagement. This interlocking construction is substantially the same as that of the bottom of the outer casing 12 and can be readily seen in Figure 6. As mentioned previously, this arrangement eliminates the necessity of any auxiliary fastening means such as staples, rivets, or the like.

When the various elements of the lid are folded into their respective positions, the lid is formed into a tubular construction in which the bottom 114 is spaced from the top 100. A fiber glass batting 119 is positioned intermediate the top 100 and the bottom 114 to provide the desired insulating properties, as shown in Figure 7. The lid 16 is adapted to be received within the outer casing 12 in the portions defined by the flap members 28*b* through 34*b*. The shoulders formed by the flap members 60*a* through 66*a* serve to support the lid 16 in the manner shown in Figure 7. It is possible to construct the lid 16 so that it is in tight engagement with the panel members 28*a* through 34*b* when inserted into the outer casing 12 due to the flexibility of the cardboard. In this manner it is possible to virtually seal the contents of the container from the surrounding atmosphere. The contents can, therefore, be maintained at its respective temperature for a substantial period of time due to the fact that it is surrounded by the insulation battings and is substantially sealed off from the surrounding atmosphere.

As best shown in Figure 7, the lid 16 is provided with the tab 117 to facilitate its removal from the container. The tab 117 consists of a small piece of cardboard which extends through the slot 118 in the panel 100.

Referring now to Figure 13, there is shown another form of a blank from which the outer casing 12 may be constructed. The blank 120 consists of the panels 122, 124, 126, and 128 separated by the score lines 130. At the ends of the blank 120 are the flap members 132 which are folded inwardly and stapled together in a conventional manner so as to secure the ends together. The members 122*a*, 124*a*, 126*a*, and 128*a* are formed by the score line 134 and are adapted to fold inwardly to form the bottom panel of the outside casing. The flap members 122*a* through 128*a* are held in interlocking engagement by the tabs 136, depending therefrom. This arrangement is substantially the same as that shown in Figure 6 and as was described previously. At the upper edges of the panels 122 through 128 are the panel members 122*b*, 124*b*, 126*b*, and 128*b*, which are formed by the double fold line 138. The panel members 122*b* through 128*b* are folded into a re-entrant position which is in touching relationship with the associated sides 122 through 128. This construction is the same as that described previously with regard to the first embodiment of the blank used in the construction of the outer casing.

In the event that a meltable refrigerant is employed in the container, it is generally desirable that the inside container 14 be coated with some water impervious substance. Paraffin is particularly suitable for this use and may be readily applied to the cardboard material used in the construction of the inside casing 14.

The portable container of the present invention is particularly suitable for shipping articles which must be protected from temperature changes. In this category are blood plasma, whole blood, and biologicals. In shipping articles such as these abroad, the considerable weight of prior art containers has proved particularly disadvantageous. These containers are often expensive to manufacture and consequently there was need for returning them. The container of the present invention is expendable and may be discarded after one shipment.

It is also possible due to the virtual sealing engagement of the lid with the outer casing to protect the contents of the container from atmospheric moisture. A suitable desiccant may be placed inside the container so as to eliminate all moisture which may happen to enter the container.

The container may also be used for the shipment of articles such as frozen food, dairy products and the like. As a result of the insulated properties of the container, it is possible to store articles such as frozen foods and dairy products for a considerable length of time without danger of spoilage. These containers may also be used by individuals for transporting food for picnics, catering services, and the like.

It should be pointed out that the cardboard, in particular the exposed surfaces, and the outside casing and the lid 16 may be attractively decorated or colored so as to enhance the commerciability of the container.

The container has been described in terms of cardboard or some similar paper material; however, it is contemplated that other materials such as plastic or the like may be used in its construction.

Although the container has been described in terms of a preferred embodiment, it is to be understood that this is merely by way of example and is in no manner to be construed as a limitation. It is contemplated that certain modifications may be made within the scope of the claims without departing from the spirit of the invention.

What is claimed is:

1. A portable insulated container comprising: an outer casing formed from an integral sheet, having a plurality of outer sides formed along predetermined score lines, inwardly extending flange members formed along predetermined score lines depending from the bottoms of said sides, said inwardly extending flange members co-operating to form a bottom closure for said outer casing, and tab members formed along predetermined score lines depending from the tops of said sides, said tab members being folded into re-entrant positions along their associated sides; an inner casing including a sheet, formed into a plurality of sides along predetermined score lines, outwardly extending flange members at the tops of said inner sides for maintaining said inner casing in spaced relation from said outer casing, and a bottom closure member secured to said inner sides, said bottom closure having downwardly depending flange members for spacing said inner casing from said bottom closure of said outer casing; insulation batting disposed between said side walls and said bottom closures of said outer casing and said inner casing; a lid member including a closure member substantially complementary to the top of said outer casing, downwardly depending flange members at the sides of said closure member formed along predetermined score lines, and inwardly extending flange members co-operating to form a substantially planar element substantially parallel with said closure member and spaced therefrom; and bail members extending along the score line between the tops of the sides of said outer casing and said return bent tabs.

2. A portable insulated container comprising: an outer casing formed from an integral sheet having a plurality of sides formed along predetermined score lines with a right triangular half of one side at one end of said sheet and a complementary right triangular half of one side at the other end of said sheet, a tab member depending from the hypotenuse of at least one of said right triangular halves for interlocking said right triangular halves to form a completed side when said outer casing is assembled, inwardly extending flange members formed along predetermined score lines depending from the bottoms of said sides, said inwardly extending flange members co-operating to form a bottom closure for said outer casing, and tab members formed along predetermined score lines depending from the tops of said sides, said tab members being folded into re-entrant positions along their associated sides; an inner casing including a sheet, formed into a plurality of sides along predetermined score lines, outwardly extending flange members at the tops of said inner sides for maintaining said inner casing in spaced relation from said outer casing, and a bottom closure member secured to said inner sides, said bottom closure having downwardly depending flange members for spacing said inner casing from said bottom closure of said outer casing; and a lid member including a closure member substantially complementary to the top of said outer casing, downwardly depending flange members at the sides of said closure member formed along predetermined score lines, and inwardly extending flange members co-operating to form a substantially planar element substantially parallel with said closure member and spaced therefrom.

3. A portable insulated container comprising: an outer casing formed from an integral sheet, inwardly extending flange members formed along predetermined score lines depending from the bottoms of said sides, said inwardly extending flange members co-operating to form a bottom closure for said outer casing, and tab members formed along predetermined score lines depending from the tops of said sides, said tab members being folded into re-entrant positions along their associated sides; an inner casing including a sheet formed into a plurality of sides formed along predetermined score lines, outwardly extending flange members at the tops of said inner sides for maintaining said inner casing in spaced relation from said outer casing, and a bottom closure member secured to said inner sides, said bottom closure having downwardly depending flange members for spacing said inner casing from said bottom closure of said outer casing; and a lid member adapted to rest on the outwardly extending flanges at the top of said inner casing including a closure member substantially complementary to the top of said outer casing, downwardly depending flange members at the sides of said closure member formed along predetermined score lines, and an inwardly extending wedge-shaped member depending from each of said flange members, said wedge-shaped member having a tab member depending therefrom for interlocking said wedge-shaped members with wedge-shaped members depending from adjacent sides so as to form a second closure member spaced from and substantially parallel with said first closure member.

4. A portable insulated container comprising: an outer casing formed from an integral sheet, having a plurality of outer sides formed along predetermined score lines, an inwardly extending wedge-shaped member depending from the bottom of each of said sides, said wedge-shaped member having a tab member depending therefrom for interlocking said wedge-shaped member with wedge-shaped members depending from adjacent sides so as to form a bottom closure for said outer casing, and tab members formed along predetermined score lines depending from the tops of said sides, said tab members being folded into re-entrant positions along their associated sides; an inner casing including a sheet, formed into a plurality of sides along predetermined score lines, outwardly extending flange members at the tops of said inner sides for maintaining said inner casing in spaced relation from said outer casing, and a bottom closure member secured to said inner sides, said bottom closure having downwardly depending flange members for spacing said inner casing from said bottom closure of said outer casing; and a lid member adapted to rest on the outwardly extending flanges at the top of said inner casing including a closure member substantially complementary to the top of said outer casing, downwardly depending flange members at the sides of said closure member formed along predetermined score lines, and inwardly extending flange members co-operating to form a substantially planar element substantially parallel with said closure member and spaced therefrom.

5. A portable insulated container comprising: an outer casing formed from an integral sheet having a plurality of sides formed along predetermined score lines with a right triangular half of one side at one end of said sheet and a complementary right triangular half of one side at the other end of said sheet, a tab member depending from the hypotenuse of at least one of said right triangular halves for interlocking said right triangular halves to form a completed side when said outer casing is assembled, an inwardly extending wedge-shaped member depending from the bottom of each of said sides, said wedge-shaped member having a tab member depending therefrom for interlocking said wedge-shaped member with wedge-shaped members depending from adjacent sides so as to form a bottom closure for said outer casing, and tab members formed along predetermined score lines depending from the tops of said sides, said tab members being folded into re-entrant positions along their associated sides; an inner casing including a sheet formed into a plurality of sides along predetermined score lines, outwardly extending flange members at the tops of said inner sides for maintaining said inner casing in spaced relation from said outer casing, and a bottom closure member secured to said inner sides, said bottom closure having downwardly depending flange members for spacing said inner casing from said bottom closure of said outer casing; and a lid member adapted to rest on the outwardly extending flanges at the top of said inner casing including a closure member substantially complementary to the top of said outer casing, downwardly depending flange members at the sides of said closure member formed along predeter-

mined score lines, and an inwardly extending wedge-shaped member depending from each of said flange members, said wedge-shaped member having a tab member depending therefrom for interlocking said wedge-shaped members with wedge-shaped members depending from adjacent sides so as to form a second closure member spaced from and substantially parallel with said first closure member.

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