Feb. 14, 1956 E. F. REPKING ET AL 2,734,349

REFRIGERATED CONTAINER

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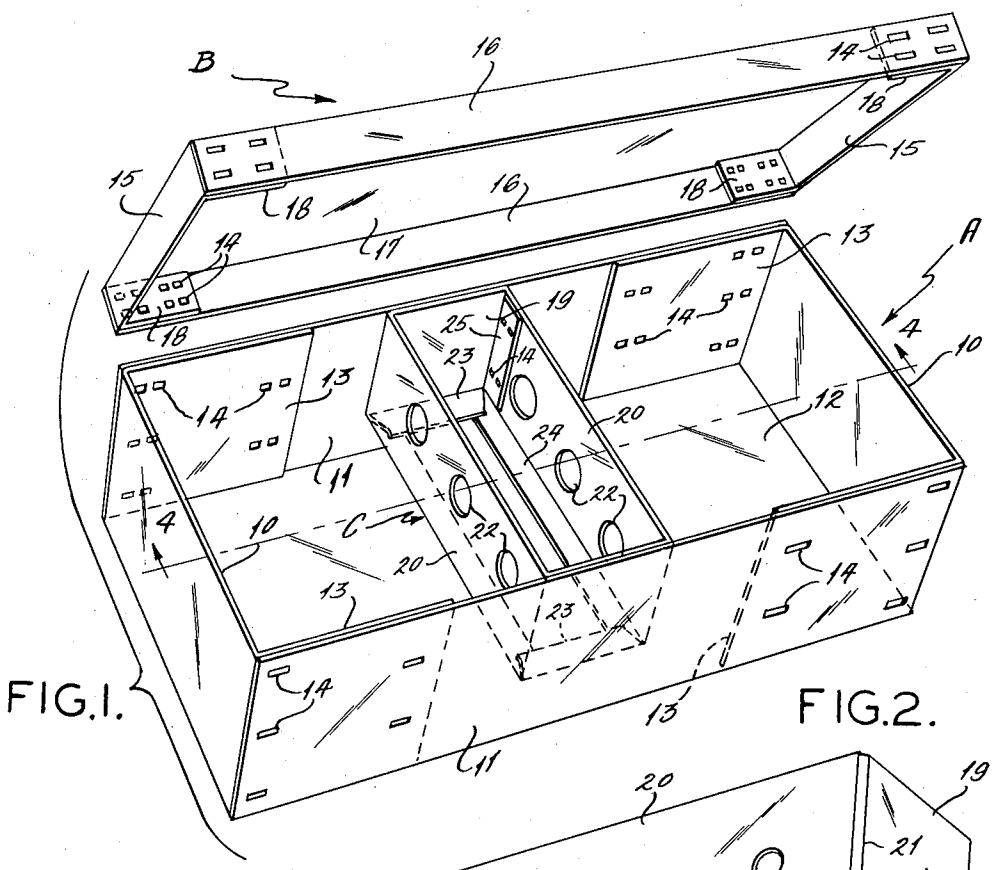


FIG.1.

FIG.2.

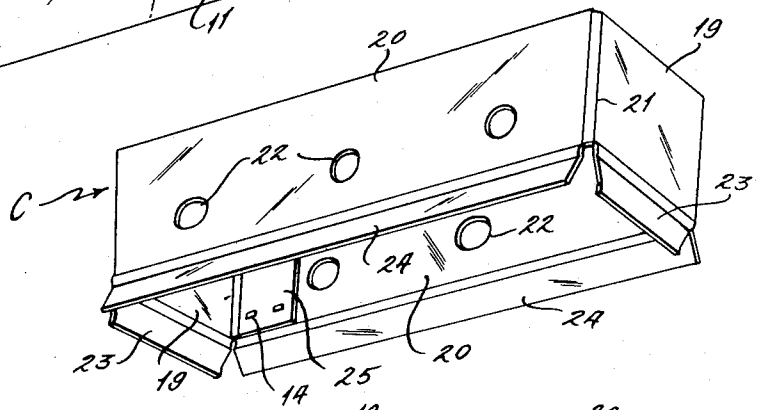
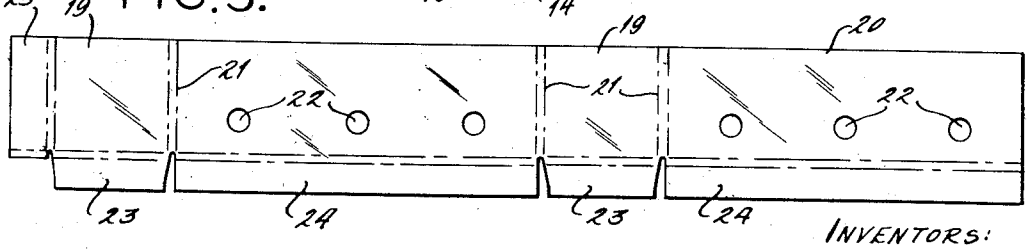


FIG.3.



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FIG. 4.

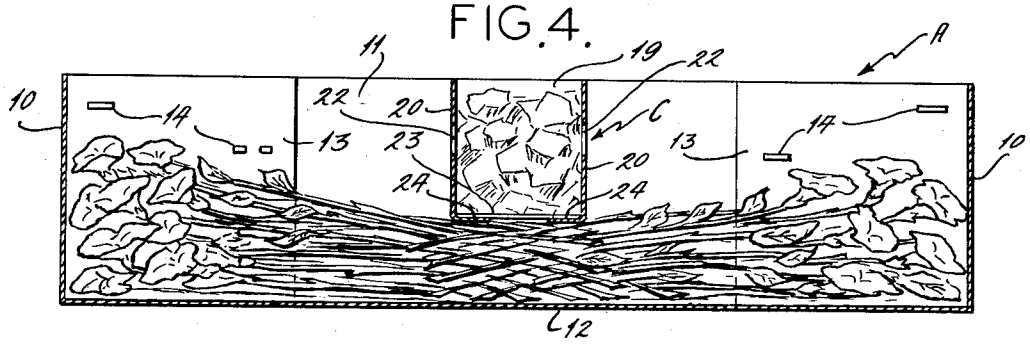


FIG. 5.

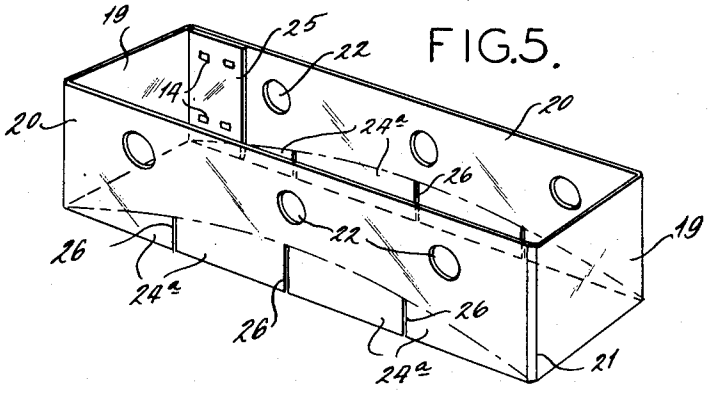
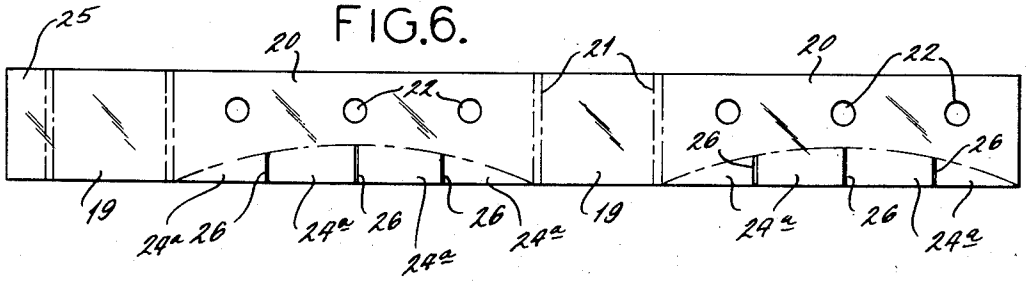


FIG. 6.



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2,734,349

REFRIGERATED CONTAINER

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Application April 21, 1952, Serial No. 283,456

5 Claims. (Cl. 62—83)

This invention appertains to containers of the type used to transport perishables at reduced temperatures and more particularly to a container having a novel retaining and reinforcing insert adapted to receive a heat absorbing material. The container employing this invention may be made of solid fibreboard, corrugated fibreboard or any other suitable material.

The successful shipping of relatively fragile, perishable articles such as flowers and the like has long presented a difficult packaging problem. For instance, it is often required that long stemmed flowers be shipped great distances at substantially depressed temperatures. Due to fragile nature of the flower buds, it is important that the flowers be kept firmly anchored or secured within the container. Regardless of the care with which the packages are handled, damage will often occur to the fragile contents if they are permitted to loosely move about within the container. In some of the prior art containers, the exterior of the package is made of corrugated fibreboard or similar material and a retaining insert or cross-member is made of wood. Usually the long stemmed flowers are placed lengthwise within the container with the buds placed adjacent each end wall with the stems extending inwardly toward the opposite ends. The narrow cross-piece or retaining member of wood is then positioned across the middle of the container and forced tightly against the ends of the stems of the contents. In this position, the narrow cross-piece or retaining member is usually secured to the side walls of the container by nails or similar fastening means. Since wood is relatively heavy and also relatively expensive, the insert is generally made as narrow as possible. Furthermore, since stems of the flowers do not usually occupy a very large portion of the total height of the container, the upper edge of the narrow wood cross-piece or retaining member is usually considerably below the level of the tops of the container walls thus affording no reinforcement for stacking of the containers. It is equally apparent that since the end area of the narrow retaining member is small that there is a minimum-bearing surface against the container wall, causing difficulty in properly securing the member in place. The rigid nature of the wood makes the retaining member less resistive to impact than if a more resilient material were used. When the wood retaining member is used there is generally no place inside the member to place the coolant, so it is a common practice to cool the contents within the container by a random introduction of loose ice or similar coolant. Therefore, the portion of the flowers in direct contact with the coolant are often over cooled while the remainder of the contents or flowers are not cooled sufficiently to prevent deterioration. Furthermore, when the container is roughly handled, the loose ice will be displaced and strike the fragile contents causing damage.

It is therefore an object of this invention to provide a container having a reinforcing cross-member positioned laterally within and secured to the inner side walls of the container to prevent deflection and buckling of the side walls.

A further object of this invention is to provide a reinforcing insert for a container which will act to retain the contents snugly in position as well as to provide for extra vertical stacking strength for the container.

Another object is to provide in a container an interior member having provision for containing heat absorbing material as well as to provide for optimum circulation of the refrigerated air within the container.

A further object is to provide an inexpensive reinforcing insert for a container which can be shipped to the user in a knocked-down flatwise condition and which may be readily erected for use with minimum effort.

Other objects and advantages of this invention will be apparent upon a full and complete understanding of the specification and claims appearing herein.

This invention is embodied in a hollow retaining and reinforcing insert for a container, the insert having upstanding walls, the end walls of the insert being securely fastened to the inner faces of the side walls of the container, the upper margins of the insert being in substantially edgewise contact with the cover member of the container and the lower margins of the insert being in snug retaining contact with the contents of the carrier.

The invention also consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed. In the accompanying drawings which form part of this specification and wherein like numerals and symbols refer to like parts wherever they occur:

Fig. 1 is a perspective exploded view of the interior of an outer container with the preferred form of the reinforcing insert in place and with the cover member thereabove,

Fig. 2 is a perspective view of a preferred form of a reinforcing and retaining insert,

Fig. 3 is a plan view of a blank of a preferred form of the reinforcing and retaining insert,

Fig. 4 is a cross-sectional view taken along the line 4—4 of Fig. 1, with flowers shown in position,

Fig. 5 is a perspective view of a modified form of the reinforcing and retaining insert, and

Fig. 6 is a plan view of a blank of the modified form of the insert shown in Fig. 5.

In the preferred embodiment of the invention, shown in Figs. 1 and 2, a substantially rectangular outer container A is provided with opposing ends 10 disposed at right angles to opposing sides 11. A bottom panel 12 is connected to the lower edges of the ends 10 and the sides 11. The ends 10 are connected to the sides 11 by end flaps 13 which are foldably connected to the end margin of the ends 10 and secured to the inner face of the end portion of the adjacent side 11 by stitches 14, glue or other means.

A cover member B, also shown in Fig. 1, is adapted to fit snugly over the upper margins of the outer container A. The cover member B is provided with opposing cover ends 15 and opposing cover sides 16 both foldably and right angularly connected to the cover top panel 17. The cover ends 15 are provided at their ends with end tabs 18 which are secured to the inner faces of the inner faces of the adjacent cover sides 16 by stitches 14 or by any other suitable means.

The outer container A and the cover member B are merely preferred forms of a container which is particularly adapted to receive the novel insert of this invention. However, any other suitable style of container may be used, for example, upper marginal closure flaps may be used in place of the cover member B described. Furthermore, adhesive tape may be used in lieu of the end flaps 13. Still other variations of the outside container are

applicable and fall equally well within the scope of the invention.

An insert C is best shown in Figs. 2 and 3. A novel insert C, shown in Figs. 2 and 3, is provided with end walls **19** and side walls **20** connected along fold lines **21**. Each side wall is provided with openings **22** to facilitate the circulation of the air refrigerated by the coolant within the insert C. Each end wall **19** is provided with an end wall flap **23** foldably connected thereto along its lower margin while each side wall **20** is provided with a side wall flap **24** also foldably connected thereto along its lower margin. A sealing flap **25** is provided foldably connected along one of fold lines **21**.

The outer container A is preferably erected first. This may be accomplished by folding the ends **10** upwardly into right angular relation with the bottom panel **12**. The end flaps **13** are then folded inwardly to a position at right angles with the ends **10**. The sides **11** are then bent inwardly into flatwise relation with the outer faces of the previously positioned end flaps **13**. In this position the sides **11** are secured to the end flaps **13** by means of stitches **14**, glue or other suitable means.

In a similar manner, the cover member B is erected by folding the cover ends **15** inwardly into right angular relation with the cover top panel **17**. The end tabs **18** are then folded inwardly into right angular relation with the cover ends **15**. The cover sides **16** are then folded inwardly until the end portions are in flatwise contacting relation with the outer faces of the previously positioned end tabs **18**. Cover sides **16** and the end tabs **18** are then secured together by stitches **14**, glue or any other suitable means.

A preferred method of erecting the insert C is to fold the end walls **19** and the side walls **20** into right angular relation to each other to form a rectangular enclosure as is shown in Fig. 2. The sealing flap **25** is then bent inwardly so as to be in flatwise relation with the inner face of the adjacent wall. The sealing flap **25** is secured, in this position, to the adjacent wall structure by stitches **14** or other suitable means. The securing of the sealing flap **25** to the inner face of the adjacent wall is a matter of choice, since the flap **25** may be secured to the outer surface of the adjacent wall if desired. The insert C is susceptible of still other modifications, for example, the sealing flap **25** may be omitted and glue or tape may be substituted. With the sealing flap **25** in position, it is secured by stitches **14**, glue or any other means to the end margin of the opposing insert wall. The opposing end and side walls **19** and **20** are then positioned to form the rectangular insert C. The side wall flaps **24** are then folded inwardly rightly angularly to the lower margins of the side walls **20** and the end wall flaps **23** are then folded inwardly right angularly to the lower margin of the end walls **19**. The insert is now ready to be secured within the container.

After the container is erected for use, the contents are placed in the bottom of the container as shown in Fig. 4. When, for instance, flowers are used, the buds are placed adjacent each end of the container and the stems of the flowers are positioned longitudinally. The length of the container is such that it is slightly less than two times the length of the stems of the flowers. Thus the long stems from each series of the buds overlap slightly substantially midway the length of the container. With the flowers in this position, the insert C is placed inside the container A so that the end walls **19** are in flatwise relation with the inner faces of the opposing sides **11**, approximately midway the length thereof. The side walls **20** are positioned across the container in right angular relation to the sides **11**. The insert C is then forced vertically downwardly, until the end wall flaps **23** and the side wall flaps **24** snugly engage and firmly hold the overlapping stems of the previously positioned flowers. The lower, flat surfaces of the flaps **23** and **24** act as bearing surface so as to prevent injury to the stems of the flowers.

In this position the upper edges of the walls **19** and **20** of the insert C are substantially even or flush with the upper edges of the sides **11** of the outer container A. The insert C is then filled with ice or other heat absorbing material for cooling the contents of the container. The bottom layer of ice will be in contact with the overlapping portions of the stems directly beneath the insert C. The size of the pieces of ice should preferably be larger than the openings **22** so that the ice will not fall outside the insert and damage the other contents of the container. Various other heat absorbing materials within the insert C may be employed, for example solid carbon dioxide may be added if longer temperature depression is desired or if lower temperatures are required to keep the contents from spoiling. As the ice melts, the liquid residue thereof is allowed to spread over the stems of the flowers, for example and run into the interior of the container but at no time is the coolant allowed, in its solid state, to be in contact with the contents of the container. Also the size, frequency and shape of the openings **22** may be varied to advance or retard the melting of the heat absorbing substance. Furthermore, the size of the insert C may be increased or decreased for varying demands of refrigeration. More than one insert C may be used if desired.

The insert C may be further modified to exactly suit the particular contents carried. One change for example is shown in Figs. 5 and 6. In this particular modification the long side wall flaps **24** and the end wall flaps **23** are eliminated. The lower margin of the side wall is provided with slits **26** of varying height to form modified side wall flaps **24***a*. The modified side wall flaps **24***a* are preferably folded inwardly about the upper ends of the slits **26** thus forming a curved surface to more firmly and securely engage the stems of the flowers or other contents. This modified form of the insert C is particularly useful to grip more firmly contents formed in a pile of varying or graduated height. This modified form of the insert has found merit in that it tends to keep the contents in the center of the container rather than permit them to spread out through the entire width thereof.

If desired, more than one of the inserts may be employed. For instance, inserts may be placed in each end of the container should extra reinforcement and added refrigeration be desired.

This invention is intended to cover all changes and modifications of the examples of the invention herein chosen for the purposes of disclosure, which do not constitute departures from the spirit and scope of the invention.

What we claim is:

1. An insert for use in a container for carrying articles at a reduced temperature, said insert comprising a pair of opposing walls secured to the inner faces of opposing sides of the container and a pair of opposing side walls foldably and right angularly connected thereto, said side walls being provided with spaced vertical slits in their lower margins, said slits being graduated in length, forming the sides of flaps, said flaps being inwardly and foldably connected to said side wall along the ends of said graduated slits, said flaps firmly contacting and retaining the contents of said container to prevent movement thereof, said insert being adapted for receiving a heat absorbing substance therein, one of said side walls being provided with an opening to permit circulation of the cooled air, the upper edges of the said side walls being in substantial flatwise relation with the upper margins of said container.

2. A container for maintaining articles at a depressed temperature and a reinforcing insert therefor, said container having foldably connected opposing ends, opposing sides and a bottom panel, and a top closure, said insert comprising a pair of opposing end walls and a pair of opposing side walls with openings therethrough, said side walls being provided with retaining flaps angularly connected thereto along the lower margins thereof, said

insert being positioned intermediate the sides of said container, the end walls of said insert being fixedly secured to the opposing sides of said container, said retaining flaps being disposed substantially right angularly inwardly and being adapted to firmly contact and retain the contents of said container, said insert being adapted to be provided with a heat absorbing material, the upper margins of said insert being substantially co-planar with the upper margin of the sides of said container, at least one pair of opposing insert walls being less in height than the height of the container.

3. In a container for shipping and storing perishable articles at reduced temperatures, a rectangular unitary insert comprising a pair of parallel end walls connected together by a pair of parallel side walls, said end walls being secured in contacting reinforcing relation to the inner faces of the opposing sides of the container, the lower edges of said side and end walls having article retaining flaps foldably connected thereto, said flaps being disposed substantially right angularly to said walls and snugly contacting and securely retaining said articles in predetermined fixed position in the lower portion of said container, said insert having air circulating openings in a side wall and being adapted to receive a coolant for depressing the normal temperature of the air surrounding said articles, said insert walls being of less height than the height of the container.

4. The unitary insert claimed in claim 3 wherein the upper edges of the side and end walls thereof are substantially flush with the upper edges of the sides of the container.

5. A container for maintaining articles at a depressed temperature and an insert therefor, said container having a body portion with a bottom panel and foldably connected, upstanding side and end walls, said cover member having a top closure panel with downwardly depending side and end marginal flanges, said insert comprising rectangularly disposed pairs of opposing, upstanding side and end walls connected together along vertical corner defining fold lines, said insert being positioned transversely intermediate the ends of the container body with the insert end walls fixedly secured to adjacent portions of the body side walls, the lower margins of the insert and side end walls being provided with foldably connected retaining flaps disposed in substantially horizontal relation toward the interior of the insert in spaced relation from the bottom panel of the body portion and adapted to firmly engage and contact the contents of the container.

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