Jan. 29, 1929. 1,700,615

D. J. O'BRIEN

HEAT INSULATING SHIPPING CONTAINER

Filed April 4, 1927 2 Sheets-Sheet 1

Fig. 1.

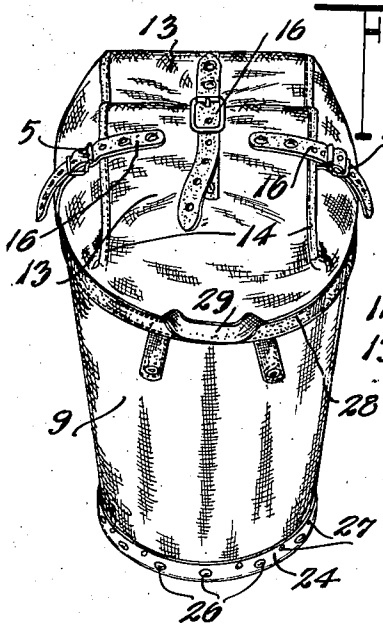


Fig. 2.

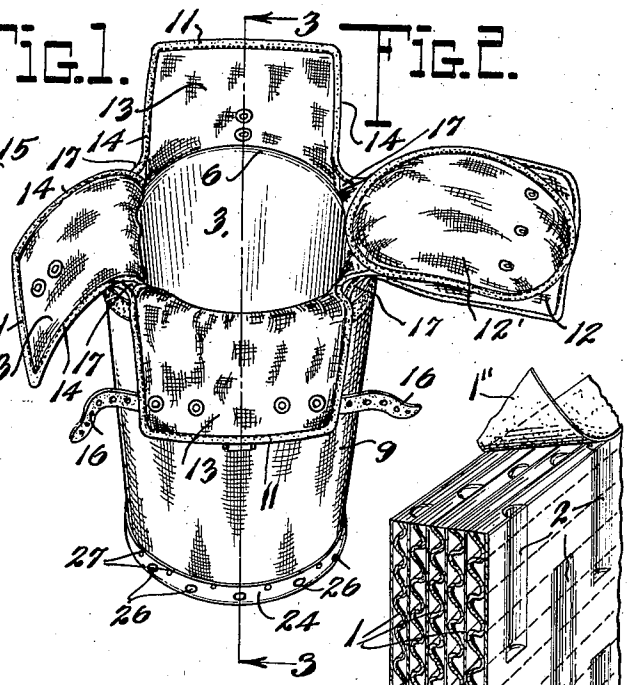


Fig. 3.

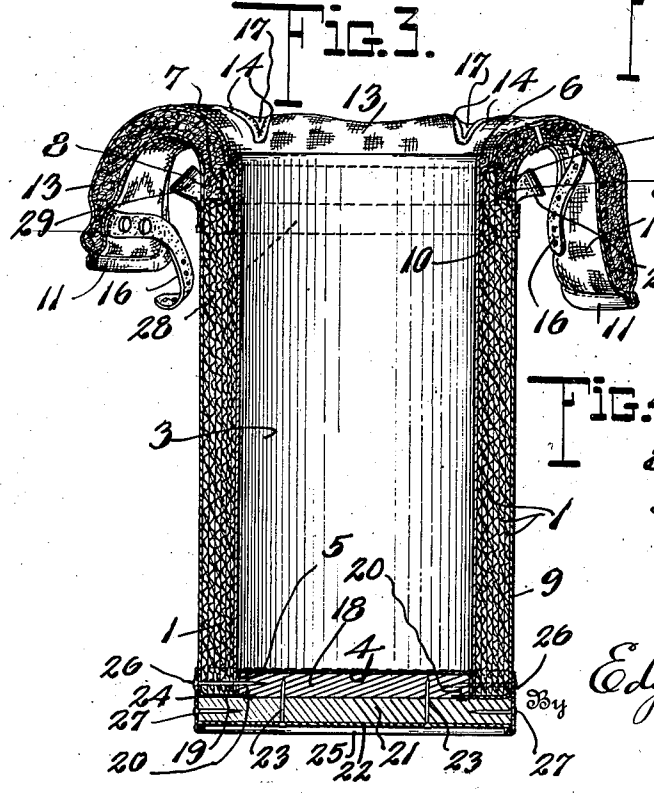


Fig. 4.

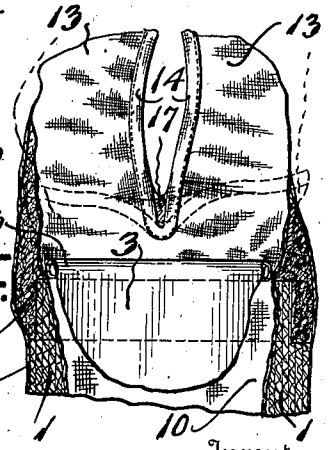


Fig. 9.

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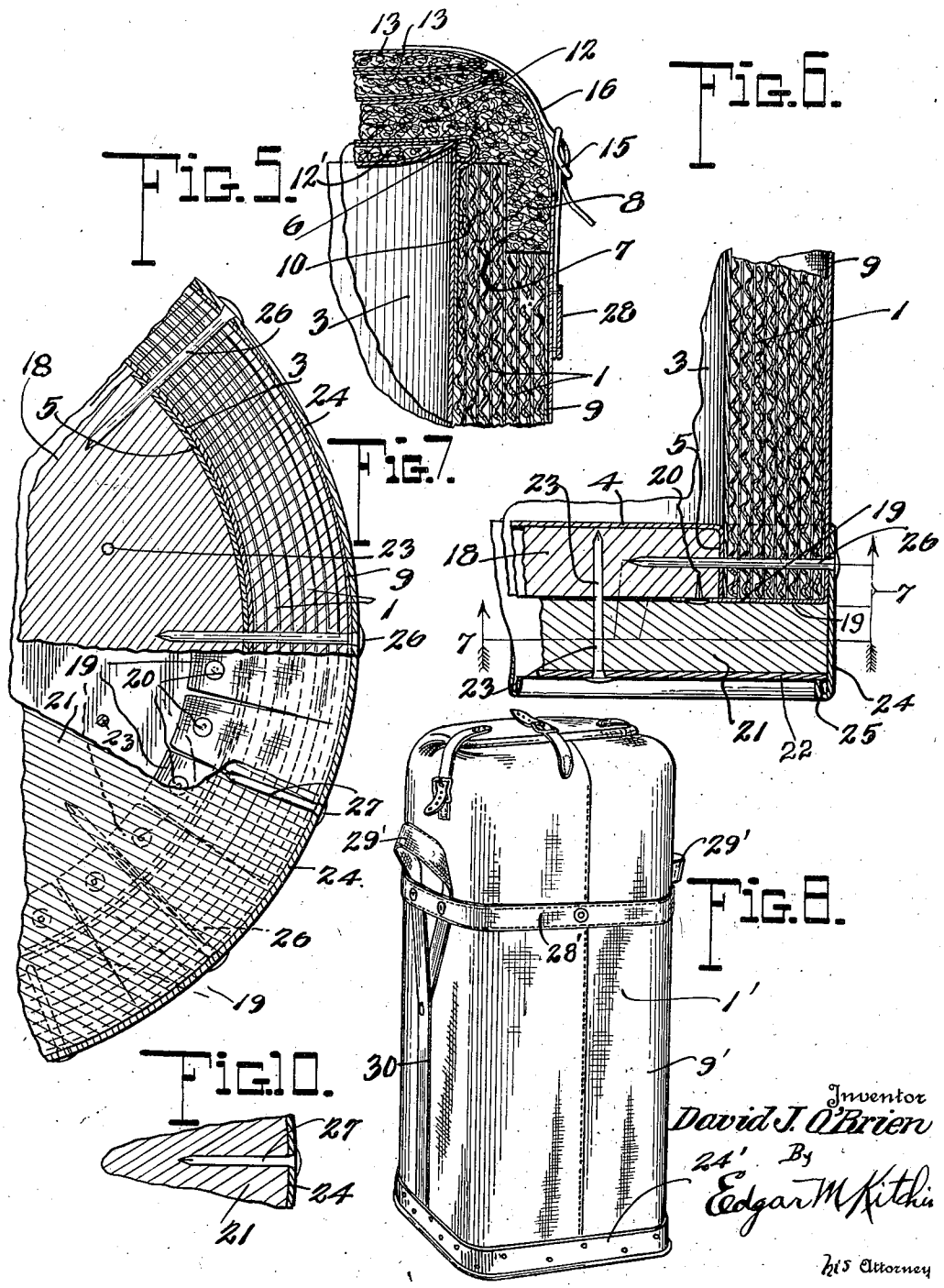
1,700,615

D. J. O'BRIEN

HEAT INSULATING SHIPPING CONTAINER

Filed April 4, 1927

2 Sheets-Sheet 2



Patented Jan. 29, 1929. 1,700,615

UNITED STATES PATENT OFFICE.

DAVID J. O'BRIEN, OF MANHATTAN BEACH, NEW YORK.

HEAT-INSULATING SHIPPING CONTAINER.

Application filed April 4, 1927. Serial No. 180,955.

This invention relates to improvements in heat insulating receptacles of the type adapted for transshipment, handling, and storage of refrigerated food products, such as ice-cream, water ices, and the like, without utilization of refrigerant during such handling.

The essential object in view is the inexpensive production of an especially efficient device of this kind.

A further object is the stabilizing of the structure to sustain rough handling with minimum injury.

With these and further objects in view as will in part hereinafter become apparent and in part be stated, the invention comprises certain other novel constructions, combinations and arrangements of parts as subsequently specified and claimed.

In the accompanying drawings,—

Figures 1 and 2 are perspective views of a structure embodying the features of the present invention, the parts being closed in Figure 1 and open in Figure 2.

Figure 3 is a longitudinal, vertical, central section taken approximately on the plane indicated by line 3—3 of Figure 2 and looking in the direction of the arrows.

Figure 4 is an enlarged, fragmentary, sectional elevation of the upper portion of the receptacle with the cover flaps in the open position

Figure 5 is a similar view with the cover flaps closed.

Figure 6 is an enlarged, fragmentary, longitudinal, vertical section through a lower end portion.

Figure 7 is a fragmentary, inverted, sectional plan of the parts seen in Figure 6.

Figure 8 is a perspective view of a slightly modified embodiment, the parts being seen in the closed condition

Figure 9 is a sectional perspective of a fragment of the insulating wall detached.

Figure 10 is a section similar to the section seen in Figure 6, but advanced angularly to the plane of one of the outer bottom retaining nails

Referring to the drawings by numerals, 1 indicates a wall or body portion preferably of corrugated paper, or other effective insulating material, the wall being substantially cylindrical in the embodiment seen in the several figures, except Figure 8. The wall 1 is preferably formed of laminations of corrugated paper, or the like, with the grooves or corrugations extending transversely about the body and preferably not longitudinally thereof As seen clearly in Figure 9, the wall 1 preferably, in addition to the dead air cells produced by the horizontally extending grooves of the corrugated paper, has those dead air cells interrupted and divided into comparatively short dead air cells by intercepting cross corrugations 2, 2, so disposed as to block the several passageways or dead air chambers caused by the circumferential corrugations or grooves of the material of wall 1. Other arrangements may, of course, be utilized, but these are found especially effective in the production of an inexpensive and successful heat-insulating wall.

A metallic liner 3 is preferably arranged within and in fact forms a part of the wall 1, the liner 3, however, being preferably in the form of a metal can having its bottom 4 upstanding from the lower extremity of the surrounding wall of the can 3 and thus leaving an annular pendent flange 5 surrounding the space beneath the bottom 4. The upper end of the can 3 has its edge preferably rolled to provide a laterally outstanding stiffening bead 6 overhanging the upper extremity of the wall 1. The outward part of the upper end portion of the wall 1 is cutaway to form a rabbet 7 extending entirely about the upper extremity of the wall and filled with insulating material, such as insulating fiber 8. The fiber 8 may be hair, or other acceptable insulating substance. Surrounding the exterior surface of the wall 1 is an impervious jacket 9, preferably of moisture and mildew proof material, such as specially treated canvas. The upper portion of the jacket 9 extends beyond the upper terminus of the wall 1 and forms the outer retaining casing for the insulating fiber 8. A sleeve 10 is preferbly fitted within and against the inner surface of the upper end portion of the wall of body 1, snugly surrounding liner 3, the said sleeve 10 being of the same material as the jacket 9 and extending outward beyond the upper end of the wall of body 1 and forming the inner or other casing for confining the insulating fiber 8. The said two casings meet in a seam 11 at their outer extremity, and the said casings are slit to divide the same up into a cover flap 12 and supplemental cover flaps 13, 13. The material of the inner and outer casings are seamed together at 14,

14, to make the seam 11 continuous about all of the flaps. Flap 12 is provided with a supplemental disc-shaped insulating pad 12′ which is preferably of the same edge contour as the cross sectional shape of can 3. Said can being cylindrical as shown, the pad 12′ is disc-shaped and preferably of a size to correspond substantially to the size of the circle described by the bead 6, and the flap 12 carrying the pad 12′ is preferably proportioned to overlie the bead 6. Thus, when the receptacle is to be closed, the cover flap 12 is hinged down upon the bead 6 and closes the upper end of the can 3, the hinge consisting of the casings made up of the extended jacket 9 and the extended sleeve 10. That flap 13 which is hinged diametrically opposite flap 12 is then folded down upon the cover flap 12, and then the other two flaps 13 are successively hinged down or folded together after the manner seen in Figure 1. Attached to the outer surface of opposing flaps 12 and 13 are buckles 15, 15, designed to receive straps 16, 16, carried by one of the other flaps 13, and the last two flaps 13 carry cooperating buckle and strap connections 16 for enabling the cover parts described to be effectively strapped and buckled in a closed and sealing position. The angles where the several flaps meet are preferably strengthened with appropriate gussets 17, 17, resisting tear in the handling of the parts when the flaps are open, and aiding in completing the sealing action of the flaps when closed.

The space surrounded by the flange 5 and covered by the bottom 4 is filled by a block 18 of stable material, preferably of California red-wood both for its strength and for its heat insulating quality, the perimeter of the block corresponding to the inner contour of the flange 5 and snugly fitting therein. In the instance of the structure seen in the several figures of the drawings, except Figure 8, the block 18 is in the shape of a disc. The jacket 9 extends beyond the bottom of the wall of receptacle 1, and is preferably notched longitudinally to provide serrations or flaps 19, 19, which are folded underneath and across the lower end of the wall of container 1 and extend far enough inward to lap the under face of the block 18. The several flaps 19 are preferably cemented to the lower end of the wall of body 1 and also to the end face of the block 18, and are preferably also held by tacks or other like appropriate securing means 20, extending through the respective flaps 19 and into the block 18. Arranged beneath the block 18 and contacting with the under face thereof is a similar red-wood block or block of similar material 21. Block 21 is also a disc in the embodiment described, but, of course, will be given an edge contour to conform with the cross sectional shape and size of the body 1. The block 21 outstands beyond the edges of block 18 to underlie the lower end of the wall making up the body 1, so that the periphery of block 21 lies flush with the outer surface of said wall. Owing to the hard usage and rough handling of containers of the type under consideration, it is desirable to provide substantial reenforcing means, and, to this end, a plate 22, preferably of metal, underlies the block 21 and is arranged in face contact therewith, the plate 22 having the same peripheral contour as the block 21. Plate 22 may be anchored to the block 21 and to other parts forming the bottom or lower end closure of the body 1 in any of various ways, one acceptable means of anchorage consisting in the utilization of a series of nails or like headed fasteners 23 passed through the plate 22, through the block 21, and into block 18. Thus the fasteners 23 not only anchor the plate 22 to the blocks 21 and 18, but effectively secure said blocks together. Surrounding the block 21 and of a width to extend upward along the outer surface of the body 1 and surrounding the same in snug contact therewith is a band 24 preferably of metal. The lower edge portion of band 24 is turned or rolled inward to form a bead 25 rolled to position to clamp the plate 22 firmly against the under face of block 21. Plate 22 is of a diameter to have its edge lie in contact with the inner face of the band 24, so that the edge portion of the plate 22 is necessarily enclosed by the inturned bead 25. The band 24 is preferably anchored to the blocks 18 and 21 by nails, or like headed fasteners, 26 and 27. The nails 26 extend through the band 24, through the lower portion of the wall of body 1, and into the block 18, while the nails 27, as seen in Figures 7 and 10, extend through the band 24 directly into the block 21. The wall making up the body 1 is thus effectively anchored to a very solid and substantial bottom by means which protect the said wall against injurious stresses. The load stresses between the bottom and the body of the receptacle are distributed through flange 5 and can 3 and through jacket 9, and parts engaged by said can and jacket. Hence, the corrugated paper insulation making up the major material portion of the wall of body 1 is left free of any substantial load stresses and is depended upon essentially for its heat-insulating capacity.

The corrugated paper utilized is preferably enclosed in any appropriate paper covering or superimposed sheet 1′ for sealing otherwise exposed ends or sides of dead air cells, as seen in Figure 9.

As a means of facilitating handling of the package, a belt or girdle 28 is preferably secured about the outside of the jacket 9, and handles 29 may be fixed to said belt 28 and also to the jacket 9, as best seen in Figure 1.

In Figure 8 is shown a complete structure embodying the invention in which the same

identical parts are utilized as above described except that the structure is transversely rectangular. The structure, of course, may be caused to assume any shape desired, but the rectangular form is especially well adapted for storage and shipment of brick ice-cream, and, of course, the structure will be dimensioned to snugly receive a definite predetermined number of bricks or square packages containing bricks. In Figure 8 is seen the body 1′ having the jacket 9′ encircled by the belt 28′ and provided with handles 29′ corresponding to the similar parts in the structure just above described. Band 24′ is applied about the bottom of body 1′, and the handles 29′ are preferably strengthened in their anchorage by being extended in the form of a strap 30 to a point beneath and secured to the band 24′, or the strap 30 may be passed entirely about the lower end or bottom of body 1′.

It will, of course, be understood that while the can 3, or its corresponding part in the receptacle 9′, is capable of directly receiving the food products, it is better practice for sanitary purposes to supply such food products in a supplemental wrapper or container proportioned to snugly fit within the can 3. Regardless of how the can 3 may be used, it affords very gratifying results in being especially well adapted to be washed or otherwise cleansed after use, so that the shipping package is insured of a clean, sanitary condition at all times.

While the elements 20, 23, and 26 have been referred to as a tack or nails respectively, other well known anchorage means may be utilized, such as screws, staples, or other appropriate equivalents for the particular parts illustrated and described.

It should also be apparent that the container illustrated and claimed is especially well adapted to receive a quantity of "dry ice" or like appropriate refrigerant for extending the effective time for retaining the contents of the container chilled, and provision may be made for such refrigerant by the utilization of the details such as are illustrated in my co-pending application Serial No. 75,814, filed December 16, 1925, or otherwise as preferred.

What is claimed is:—

1. In heat insulating shipping containers, the combination, with a heat insulating wall, of a metal liner therein having a pendent flange, a rigid bottom plate enclosed within said flange, and an outer lining for the wall having an extended portion underlying the plate.

2. In heat insulating shipping containers, the combination, with a heat insulating wall, of a metal liner therein having a pendent flange, a rigid bottom plate enclosed within said flange, an outer lining for the wall having an extended portion underlying the plate, and means for anchoring the outer lining to the plate through the flange.

3. In heat insulating shipping containers, the combination, with a heat insulating wall, of a metal liner therein having a pendent flange, a bottom plate enclosed within said flange, an outer lining for the wall having an extended portion underlying the plate, and means for anchoring the flange to the plate.

4. In heat insulating shipping containers, the combination, with a relatively fragile heat insulating wall, of a metal liner therein having a pendent flange, a bottom plate enclosed within said flange, an outer lining for the wall having an extended portion underlying the plate, a metal band surrounding the outer lining, and means for anchoring said band, outer lining and flange of the inner lining to said plate.

5. In heat insulating shipping containers, the combination, with a relatively fragile heat insulating wall, of a metal liner therein having a pendent flange, a bottom plate enclosed within said flange, an outer lining for the wall having an extended portion underlying the plate, a metal band surrounding the outer lining, means for anchoring said band, outer lining and flange of the inner lining to said plate, and a second plate disposed beneath the first-mentioned plate and anchored to said metal band.

6. In heat insulating shipping containers, the combination, with a relatively fragile heat insulating wall, of a metal liner therein having a pendent flange, a bottom plate enclosed within said flange, an outer lining for the wall having an extended portion underlying the plate, a metal band surrounding the outer lining, means for anchoring said band, outer lining and flange of the inner lining to said plate, a second plate disposed beneath the first-mentioned plate and anchored to said metal band, and means anchoring the second-mentioned plate to the first-mentioned plate.

7. In heat insulating shipping containers, the combination, with a relatively fragile heat insulating wall, of a metal liner therein having a pendent flange, a bottom plate enclosed within said flange, an outer lining for the wall having an extended portion underlying the plate, a metal band surrounding the outer lining, means for anchoring said band, outer lining and flange of the inner lining to said plate, a second plate disposed beneath the first-mentioned plate and anchored to said metal band, means anchoring the second-mentioned plate to the first-mentioned plate, and a metal cover sheet for the last-mentioned plate anchored to the metal band.

8. In heat insulating shipping containers, the combination, with a relatively fragile heat insulating enclosing wall, of a liner therein, an exterior liner for the wall, a stable bottom plate within the inner liner, means for an-

choring the liners to the plate, and a second plate beneath the first plate proportioned to outstand beyond the first plate to underhang the insulating material and means connecting the second plate to the first plate.

9. In heat insulating shipping containers, the combination, with a relatively fragile heat insulating wall, an outer liner therefor, a metal casing lining the interior of the heat insulating container, a sleeve of substantially the same material as the outer liner located to surround the metal casing and lie between said casing and said insulating material, the material of the sleeve extending beyond the metal casing and insulating wall, and the outer casing also extending beyond the insulating wall and substantially paralleling the extended portion of the sleeve, a heat insulating filling between the extended portions of said casing and sleeve, said extended portions being divided into flaps and connected at their margins for retaining the interposed insulating material, the flaps being adapted to be folded across and serve as closures for the otherwise open end of said metal lining.

10. In heat insulating shipping containers, the combination, with a relatively fragile insulating wall, of inner and outer fabric linings therefor, a metal inner lining snugly fitting within said wall and stressing the fabric lining against said wall, said metal lining having an open upper end formed with a surrounding bead overhanging portions of the inner lining and stressing the same against terminal portions of the insulating material, and an exterior fabric lining for the insulating wall, the inner fabric lining and the exterior fabric lining being extended beyond the insulating wall and formed into closing flaps.

11. In heat insulating shipping containers, the combination, with a relatively fragile insulating wall, of inner and outer fabric linings therefor, a metal inner lining snugly fitting within said wall and stressing the fabric lining against said wall, said metal lining having an open upper end formed with a surrounding bead overhanging portions of the inner lining and stressing the same against terminal portions of the insulating material, an exterior fabric lining for the insulating wall, the inner fabric lining and the exterior fabric lining being extended beyond the insulating wall and formed into closing flaps, and a bottom for the insulating wall anchored to the metallic lining.

12. In heat insulating shipping containers, the combination of a corrugated paper insulating wall having an outwardly opening rabbet at its upper terminus, inner and outer lining means for said wall extending beyond said upper terminus, insulating fiber between those portions of said linings beyond said upper terminus, said portions being formed into receptacle-closing flaps, and means for retaining the liners and insulating wall in the stated relation.

13. In heat insulating shipping containers, the combination of a corrugated paper receptacle having an open end, the corrugated paper walls of the receptacle being formed with a marginal rabbet at the open end, interior and exterior liners enclosing the corrugated paper receptacle, a stable bottom anchored to said liners, and flexible insulating material lapping the rabbet and extending outward from the open end of the said receptacle as continuations of the wall thereof, the said liners also extending correspondingly outward and enclosing the flexible insulating material.

14. In heat insulating shipper containers, the combination of a corrugated paper receptacle having an open end, the corrugated paper walls of the receptacle being formed with a marginal rabbet at the open end, interior and exterior liners enclosing the corrugated paper receptacle, a stable bottom anchored to said liners, and flexible insulating material lapping the rabbet and extending outward from the open end of the said receptacle as continuations of the wall thereof, the said liners also extending correspondingly outward and enclosing the flexible insulating material, the extended portions of the liners and the flexible insulating material being divided into a plurality of flaps, and one of said flaps being proportioned to substantially conform in shape and size with the opening of the open end of the receptacle.

In testimony whereof I affix my signature.

DAVID J. O'BRIEN.