Oct. 21, 1958 R. D. TOLBERT, JR., ET AL 2,857,076

CONTAINER

Filed Nov. 8, 1956 2 Sheets-Sheet 1

Fig. 1.

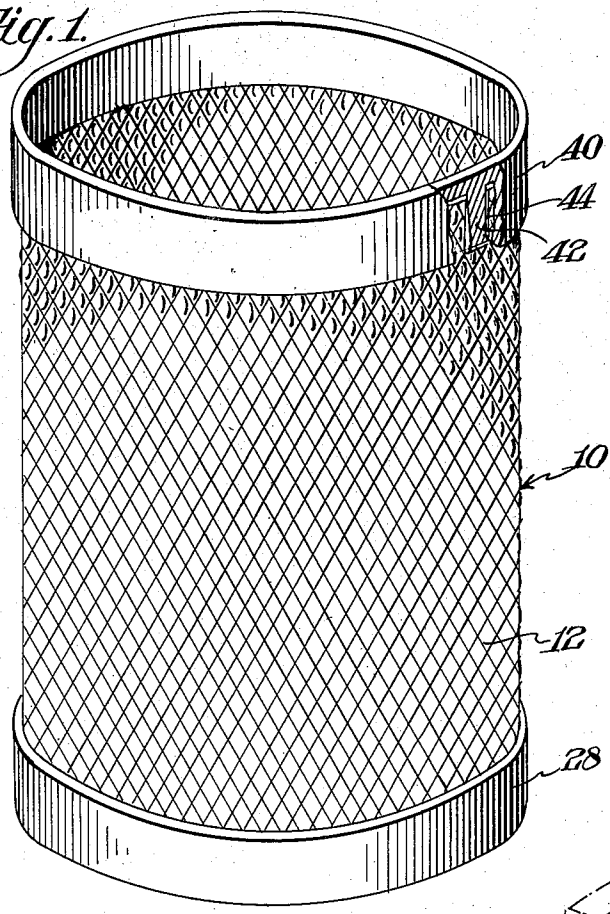


Fig. 3.

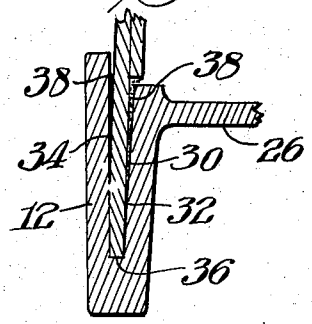


Fig. 4.

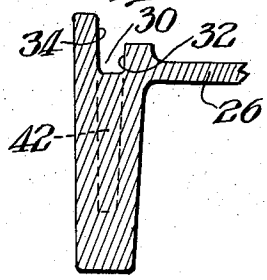


Fig. 5.

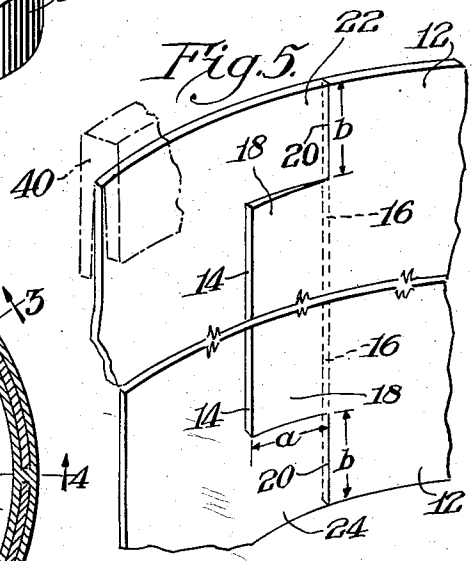
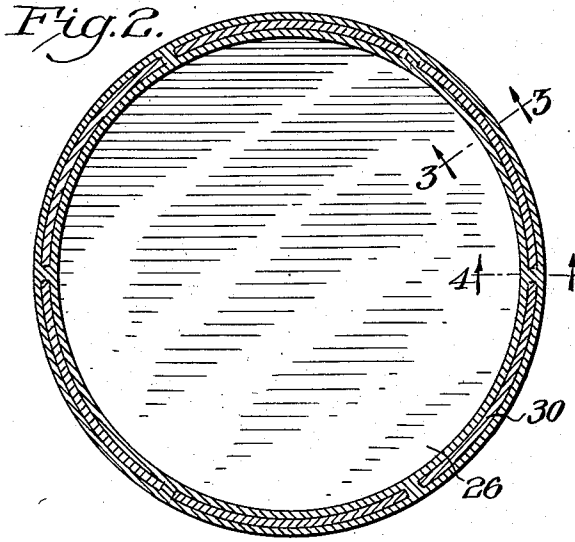


Fig. 2.



INVENTORS:
RALPH D. TOLBERT, JR.
JOSEPH E. BACINO and
HJALMAR T. LUNDQUIST

BY Connolly and Hutz

THEIR ATTORNEYS

Oct. 21, 1958 R. D. TOLBERT, JR., ET AL 2,857,076

CONTAINER

Filed Nov. 8, 1956 2 Sheets-Sheet 2

Fig. 6.

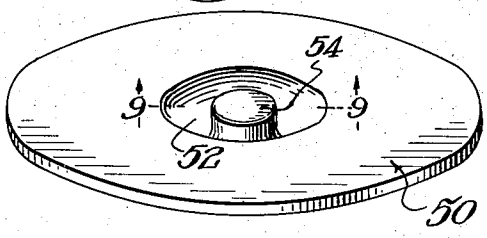


Fig. 8.

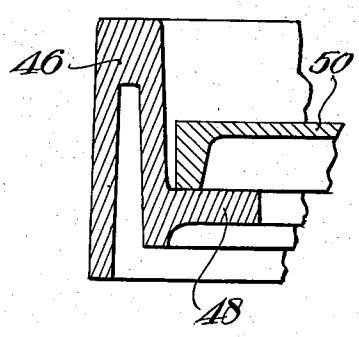


Fig. 7.

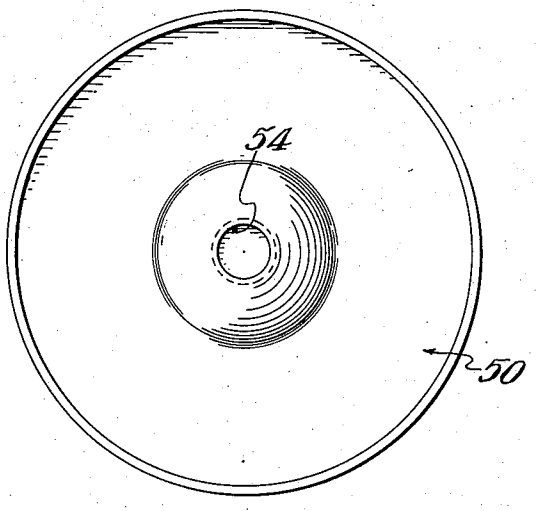


Fig. 10.

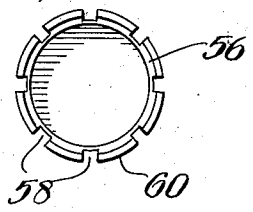


Fig. 9.

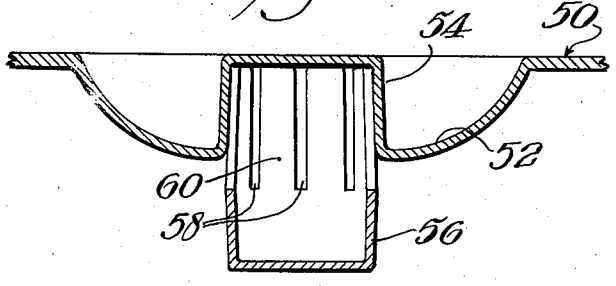
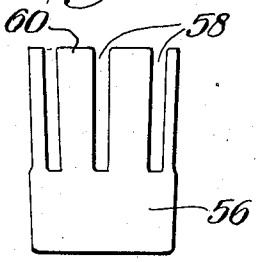


Fig. 11.



INVENTORS:
RALPH D. TOLBERT, JR.
JOSEPH E. BACINO and
HJALMAR T. LUNDQUIST

BY Connolly and Hutz

THEIR ATTORNEYS

United States Patent Office 2,857,076 Patented Oct. 21, 1958

2,857,076

CONTAINER

Ralph D. Tolbert, Jr., West Grove, and Joseph E. Bacino and Hjalmar T. Lundquist, Kennett Square, Pa., assignors to National Vulcanized Fibre Co., Wilmington, Del., a corporation of Delaware

Application November 8, 1956, Serial No. 621,151

5 Claims. (Cl. 220—67)

The present invention relates to a new and improved container having a side wall formed from sheet material with opposite ends thereof arranged to provide an improved joint accommodating reinforcing top and bottom rims. More particularly, the present invention provides an improved container of simplified construction.

Containers of the type within the scope of the present invention include, for example, trash receptacles, soiled clothes receptacles, yarn containers and a variety of similar receptacles for industrial as well as domestic use. Such containers must not only be constructed of light weight and durable material but, in addition, must be neat in appearance, free of protruding edges which would tear or otherwise injure stored contents, prevent loss of materials stored therein, and exclude foreign particles, such as dust, from entering.

Another requirement of such containers is that they be constructed of relatively low cost materials and be easily fabricated so as to provide a container within the economic reach of the purchaser.

Accordingly, the present invention is concerned with providing an improved container of the aforesaid characteristics.

With reference to the drawings:

Fig. 1 is a perspective view, partially in section, of one form of container in accordance with the present invention;

Fig. 2 is a top plan view, partially in section, of the bottom of the container of Fig. 1;

Fig. 3 is an enlarged partial cross-sectional view along the line 3—3 of Fig. 2;

Fig. 4 is an enlarged partial cross-sectional view along the line 4—4 of Fig. 2;

Fig. 5 is an enlarged partial perspective view of the side wall joint of the container of Fig. 1;

Fig. 6 is a perspective view of a cover suitable for use with a modified form of the container of Fig. 1;

Fig. 7 is a bottom plan view of the cover of Fig. 6;

Fig. 8 is an enlarged partial cross-sectional view of a modified form of top rim for use with the cover of Fig. 6;

Fig. 9 is an enlarged side elevational view, in section, of the central portion of the cover of Fig. 6 including a deodorant container;

Fig. 10 is a top plan view of the deodorant container of Fig. 9; and

Fig. 11 is a side elevational view of the deodorant container of Fig. 9.

With reference to the drawings, the container **10** includes a side wall **12** formed from sheet material with opposite ends **14** and **16** thereof in overlapping relation at **18**. The inner overlapping end **14** is notched at each of its corners **20** a peripheral distance *a* substantially equal to the length of the overlap to provide top and bottom rim receiving areas **22** and **24** of a single sheet thickness and of a predetermined height *b*. Hence, the joint joining the ends **14** and **16** of the side wall **12** includes an overlapped joint portion **18** and top and bottom

butt jointed portions **22** and **24** respectively. The bottom **26** of receptacle **10** includes a vertically extending peripheral rim **28** having a side wall receiving groove **30**. Groove **30** is formed by converging side walls **32** and **34**, the inner side wall **32** being shorter than the outer side wall **34**. The width of the groove at the bottom **36** thereof is substantially equal to the single sheet thickness forming the side wall **12**. This arrangement permits easy insertion of the bottom edge of the sheet **12** in groove **30**. For the purpose of bonding the bottom **26** to the side wall **12**, a liquid adhesive composition is either coated on the bottom edge of wall **12** or placed in the bottom of groove **30**. By virtue of the convergency of the walls **32** and **34**, the inner side of wall **34** being substantially vertically arranged, and the width of the bottom of groove **36**, excess adhesive **38** is forced upwardly between the side walls **32** and **34** and the outer surfaces of sheet **12** to form a sealed joint. In the absence of such convergency, excess adhesive would overflow into the bottom of the receptacle or on to the outer surface of the rim **28** and would not only be unattractive in appearance, but would also in many instances interfere with the functional utility of the container. By this arrangement, however, a sealed joint between rim **28** and the upper edge of side wall **12** is obtained.

In order to provide a tight joint between the bottom of the receptacle **26** and the side wall **12** and thereby prevent loss of particulated material stored in the container and prohibit entrance of foreign particles, such as dust, there is, in accordance with the present invention, a definite relation between the lengths of the side walls **32** and **34** of the rim **28** of bottom **26** and the predetermined height *b* of the notched area **24**. In accordance with this relation, side wall **34** is of a length greater than height *b* and side wall **32** is of a length less than height *b*. This arrangement not only permits groove **30** to be substantially the same cross-section throughout its peripheral length, but in addition, the length of side wall **34** assures the tight joint above referred to without detracting from the appearance of the container **10**.

The receptacle **10** of the present invention preferably includes a top rim **40**. This rim, as shown in phantom in Fig. 5, is of the same structure as is rim **28** of the bottom **26** but does not include a bottom portion.

In accordance with a further preferred feature of the present invention and for the purpose of reinforcing the receptacle **10**, a plurality of reinforcing bridges **42**, as shown in Figs. 1, 2 and 4 are spaced about the periphery of, and interrupt the groove **30**. As shown, reinforcing bridges **42** form an integral part of the rims **28** and **40**. In order to accommodate the reinforcing bridges **42**, the top and bottom edges of the side wall **12** are provided with complementary spaced apart notches **44**.

The preferred material of construction of the side wall **12** is vulcanized fibre, a tough, resilient, hornlike material, made by the chemical treatment of cellulose. Cellulose, in the form of fibres, is formed into paper and the paper is then treated with a suitable jelling agent such as zinc chloride. The treating agent is applied and removed in a number of successive stages with the concentration of the treating agent decreasing in each successive stage as is well known in the art. While the fibres of the paper are in a semi-gelatinous condition, enough plies of the paper are pressed together to produce the desired thickness, the jelling agent is thereafter removed by leaching and the material is subsequently dried and finished.

In the finished state, vulcanized fibre of 0.040 inch thickness has an average tensile strength of approximately 10,900 pounds per square inch, an average Gurley stiffness of 137 gm., and a bursting strength of 625 pounds per square inch. Although these values are

adequate for most of the uses of the receptacles of the present invention, it has unexpectedly been discovered that if vulcanized fibre is embossed with a diamond-embossed pattern as illustrated in the drawings, the Gurley stiffness and bursting strength are unexpectedly increased without substantially effecting the tensile strength. Thus, vulcanized fibre of 0.040 inch thickness with a diamond-embossed pattern having a diamond with a major diagonal axis of approximately ⅜ inch and a minor diagonal axis of ¼ inch, has an average tensile strength of approximately 11,170 pounds per square inch, an average Gurley stiffness of approximately 183 gm., and a bursting strength of 835 pounds per square inch. Similarly, unembossed 0.050 inch thick vulcanized fibre has an average tensile strength of 13,370 pounds per square inch, an average Gurley stiffness of 260 gm., and a bursting strength of 875 pounds per square inch while a diamond-embossed vulcanized fibre of 0.050 inch thickness and a diamond pattern as described above has an average tensile strength of 12,520 pounds per square inch, an average Gurley stiffness of 329 gm., and a bursting strength of over 1,000 pounds per square inch. Similar improved properties are obtained when embossing vulcanized fibre with other dimensioned diamond patterns, as well as other shaped patterns, for example, a diamond-embossed pattern having a major diagonal axis of approximately 1¼ inch and a minor diagonal axis of ½ inch. Accordingly, the container wall **12** of the present invention is preferably embossed in order to improve the stiffness and bursting strength properties.

In accordance with another feature of the present invention, upper and lower rims **28** and **40** are preferably of one piece molded plastic, a preferred plastic being a high-impact polystyrene molding compound which provides strength, low cost, and resistance to cold flow and dimensional changes.

The overlapped portion **18** of the joint of wall **12** is preferably bonded by the use of a hot setting resorcinol resin glue such a "Penacolyte," a proprietary product. However, for the purpose of bonding the upper and lower edges of wall **12** within the grooves **30** of rims **28** and **40**, a different type of adhesive is preferably employed, a preferred adhesive being one having a slight solvent action on the molded rim parts. A suitable liquid solvent is methyl ethyl ketone or methyl isobutyl ketone. In addition, the adhesive for binding the side wall to the rims must also contain a sufficient amount of resinous and filling materials to form a viscous adhesive which will stay within the groove **30** until the molded rim portion has been softened slightly by the solvent liquid and the whole cemented into a solid mass. "Contact Bond" adhesive, a proprietary product of Armstrong Cork Co., is an adhesive of the type which meets these requirements.

With reference to Fig. 8, modified upper rim **46** is identical with upper rim **40** as shown in Fig. 5 but includes an inner peripheral flange portion **48** for supporting the cover **50** as illustrated in Figs. 6, 7, and 9. Cover **50**, preferably of one-piece construction, includes a centrally depressed portion **52** annularly surrounding a raised portion **54**, the latter serving gripping means on the upper side for lifting the cover from the receptacle **10**. For reasons more apparent hereinafter, raised portion **54** is preferably of cylindrical shape at least towards the closed end thereof.

Raised portion **54**, in addition to its function as a means for permitting removal of the cover **50** from receptacle **10**, also provides a convenient means for retaining a deodorant container **56** in fixed position within the confines of the container. Deodorant container **56** serves to retain a solid deodorant within its confines for use in preventing mildew of materials such as dirty clothes stored in the container and also counteracts natural odors of such stored contents.

With reference in particular to Figs. 9–11, deodorant container **56** includes a plurality of slots **58** circumferentially spaced about the open end of the container to provide finger **60**. Construction of container **56** of a resilient material, such as metal, permits fingers **60** to be flared outwardly and to present a container diameter, at the open end, greater than the inner diameter of the upper end of raised portion **54**. This arrangement permits container **56** to be retained in position within the confines of raised portion **54**. Slots **58** also serve the additional function of permitting deodorant escape to the interior of the covered container **10**.

The foregoing description of the present invention is for the purpose of illustration only, and is not limiting to the scope thereof which is set forth in the claims.

What we claim is:

1. A container including a side wall formed from sheet material with opposite ends thereof in overlapping relation, one overlapping end being notched at one of its corners a peripheral distance substantially equal to the length of the overlap to provide a bottom rim receiving area of single sheet thickness and of predetermined height, and a bottom including a vertically extending peripheral rim, said rim including a side wall receiving groove having converging side walls with the inner wall shorter than the outer wall, the width of said groove at the bottom thereof being substantially equal to the side wall single sheet thickness, the length of the outer wall of the groove being greater than, and the length of the inner wall of the groove being less than said predetermined height and said rim receiving area being inserted in said groove a distance causing the outer wall of the groove to overlap a terminal portion of the length of the overlapping ends of said side wall.

2. A container as set forth in claim 1, wherein reinforcing bridges interrupt the groove of said bottom rim at spaced points along its length and the bottom edge of said side wall is provided with complementary spaced apart notches receiving said bridges.

3. A container including a side wall formed from sheet material with opposite ends thereof in overlapping relation, one overlapping end being notched at each of its corners a peripheral distance substantially equal to the length of the overlap to provide top and bottom rim receiving areas of single sheet thickness and of predetermined heights, a bottom including a vertically extending peripheral rim and a top rim for said container, the top and bottom rims each including a side wall receiving groove, said grooves each having converging side walls with the inner wall of each groove shorter than its outer wall, the widths of said grooves at the bottoms thereof being substantially equal to the side wall single sheet thickness, the length of the outer walls of the grooves being greater than, and the lengths of the inner walls of the grooves being less than the predetermined heights of their respective rim receiving areas and said rim receiving areas being inserted in their respective grooves a distance causing the respective outer walls of said grooves to overlap terminal portions of the length of the overlapping ends of said side wall.

4. A container as set forth in claim 3 wherein reinforcing bridges interrupt the grooves of said top and bottom rims at spaced points along their lengths and the top and bottom edges of said side wall are provided with complementary spaced apart notches for receiving said bridges.

5. A container including a side wall formed from diamond embossed vulcanized fibre with opposite ends thereof in overlapping relation, one overlapping end being notched at one of its corners a peripheral distance substantially equal to the length of the overlap to provide a bottom rim receiving area of single sheet thickness and of predetermined height, and a bottom including a vertically extending peripheral rim, said rim including a side

wall receiving groove having converging side walls with the inner wall shorter than the outer wall, the width of said groove at the bottom thereof being substantially equal to the side wall single sheet thickness, the length of the outer wall of the groove being greater than, and the length of the inner wall of the groove being less than said predetermined height and said rim receiving area being inserted in said groove a distance causing the outer wall of the groove to overlap a terminal portion of the length of the overlapping ends of said side wall.

References Cited in the file of this patent

UNITED STATES PATENTS

53,922	Halsey	Apr. 10, 1866
1,487,118	Miller	Mar. 18, 1924
2,157,255	Bumpass	May 9, 1939
2,720,332	Holt	Oct. 11, 1955
2,737,313	Schell	Mar. 6, 1956

FOREIGN PATENTS

799,366	France	Apr. 4, 1936