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H. BENKE

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PAPER RECEPTACLE

Filed May 17, 1929

Fig. 1.

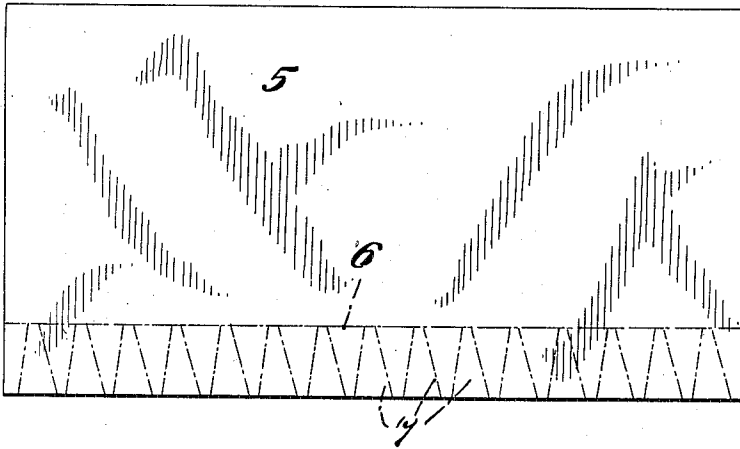


Fig. 2.

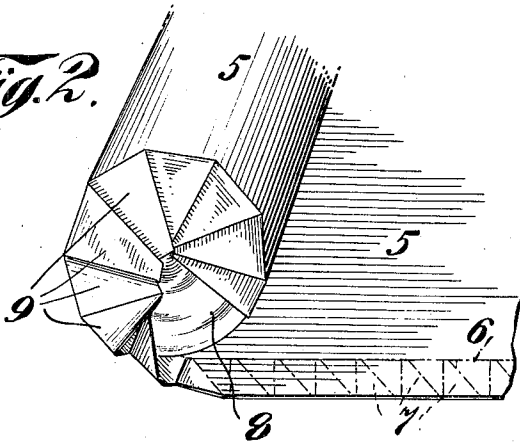


Fig. 3.

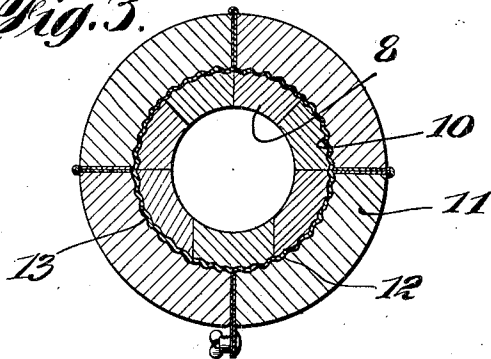
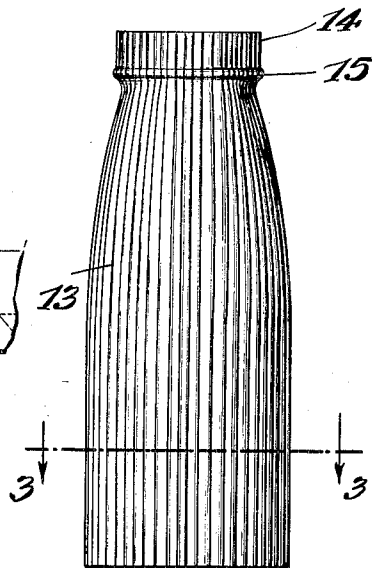


Fig. 4.



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PAPER RECEPTACLE

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This invention relates to paper receptacles and the method of making the same, and has for its primary object and purpose to provide a paper bottle or similar receptacle which can be cheaply and expeditiously manufactured and which is so formed and constructed as to provide a receptacle of large capacity having body walls which are rigid and non-collapsible in the ordinary usage of such receptacle, and which will be thoroughly leak proof.

It is another important object of the invention to provide such a paper bottle or receptacle consisting of a single paper sheet and an improved method of forming and shaping said sheet to produce the body wall of the receptacle and an integral bottom constituting of a multiplicity of inwardly folded superimposed extensions from said body wall.

It is another object of my invention to provide a method whereby such a bottle or receptacle may be readily produced with a body wall with any predetermined desired number of laminations in order to obtain the requisite strength and rigidity thereof in accordance with the particular purpose for which the receptacle is to be used.

With the above and other objects in view, the invention consists in the improved paper receptacle and method of making the same, as will be hereinafter more fully described, illustrated in the accompanying drawings, and subsequently incorporated in the subjoined claims.

In the drawings, wherein I have illustrated one simple and practical embodiment of the invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a plan view of the paper sheet or blank from which the bottle or receptacle is produced;

Fig. 2 is a perspective view illustrating the first step in the method of forming the paper blank to produce the receptacle;

Fig. 3 is a transverse sectional view through the collapsible mandrel and the sectional form whereby the body wall of the recep-

tacle is provided with longitudinally extending pleats or flutes, and

Fig. 4 is a side elevation of the completed receptacle.

In the embodiment of the invention illustrated in the drawings, I have shown the receptacle in the form of a bottle such as is commonly used in the vending of milk and other liquid commodities, but it will become apparent as this description proceeds that insofar as my new method is concerned, the receptacle may be produced in various other sizes and shapes.

Referring now to Fig. 1, the paper sheet or blank is cut from a roll and is of the necessary predetermined length and width to provide a bottle or receptacle of the required height with its body wall composed of a predetermined number of thicknesses or laminations of paper. This paper sheet is first creased as at 6 throughout the lengthwise dimension thereof and in spaced parallel relation to one of its longitudinal edges. Between this crease 6 and the said longitudinal edge of the paper sheet and throughout the length thereof, the suitably spaced oblique lines of creases indicated at 7 are formed in the paper.

The paper blank or sheet thus provided with the creases 6 and 7 is now wound upon a collapsible form or mandrel indicated at 8, said sheet being arranged upon the mandrel with one end face of the latter disposed in line with the longitudinal crease line 6 in the paper sheet. As shown in Fig. 2, as the paper sheet is wound upon the mandrel, the projecting edge portion thereof is folded inwardly along the oblique crease lines 7 to provide the substantially triangular shaped sections 9 with contiguous sections disposed in overlapping superimposed relation upon each other. The narrower ends of these folded sections 9 of the paper sheet are positioned in superimposed relation upon each other at the center of the end of the mandrel.

After the winding of the paper sheet on the mandrel has been completed to provide a wall either of a single thickness of paper or a multiplicity of superimposed laminations, a drop of a suitable adhesive may be applied

at the center of the inwardly folded sections 9 which form the bottom of the receptacle to retain said sections in their folded positions.

The collapsible mandrel 8 may be of any
5 desired construction and the sections thereof are so formed or shaped that their outer surfaces conform to the desired longitudinal and cross sectional contour of the body wall of the receptacle. Preferably, the outer surfaces of
10 the mandrel sections are longitudinally fluted or corrugated as indicated at 10. After the paper sheet has been wound upon the mandrel and the section 9 folded inwardly, a pleating or fluting die 11 is then applied, said
15 die being also of sectional form and the sections thereof having their inner faces fluted or corrugated as at 12. Thus, the body wall of the body of the receptacle will be provided with the continuous longitudinally extending
20 pleats or flutes indicated at 13. One end of the mandrel 8 and the die 11 have complementary portions shaped to produce the neck 14 at the open end of the receptacle and an annular bead 15 at the lower end of said neck
25 forming an internal groove adapted to receive the edge of a paper sealing disc.

The die 11 is now removed and the mandrel 8 collapsed and the sections thereof removed through the neck 14 of the formed
30 receptacle. The paper receptacle is then immersed in heated liquid paraffin, which thoroughly permeates the paper sheet, effectively closing the pores thereof and also uniting the folded sections 9 forming the bottom of the
35 receptacle throughout their contiguous overlapping portions. The paraffin of course, completely coats both the interior and exterior surfaces of the paper and when the same hardens or congeals, reinforces and increases
40 the rigidity of the walls of the receptacle.

From the foregoing description considered in connection with the accompanying drawings, the nature of my present invention and the improved method of producing the paper
45 receptacle will be clearly and fully understood. It will be apparent that by means of this method, such paper receptacles having body walls of any desired thickness may be very rapidly and accurately formed. The receptacles may be made in quart, pint, half-
50 pint or other sizes, and the body walls thereof will be of such rigidity that they will effectively resist all ordinary pressures which may be applied thereon in the usual handling of
55 such receptacles. Since the bottom wall of the receptacle is integrally continuous with the side wall thereof, there is no possibility of leakage as may readily happen where the receptacle is provided with a separate bottom
60 wall or closure connected with the body wall by a joint forming means.

I have herein shown and described an embodiment of my invention, which has been made and tested, and has been found to be
65 very satisfactory in practical use. It will

nevertheless be understood that the essential features of the present disclosure might also be embodied in various other alternative forms, and I accordingly reserve the privilege
70 of resorting to all such legitimate changes therein as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. A method of making paper receptacles which consists in first providing an elongated
75 rectangular paper sheet along one longitudinal edge thereof with spaced fold creases extending inwardly from said edge, then winding said paper sheet around a mandrel
80 to form the cylindrical body wall of the receptacle and progressively folding said longitudinal edge portion along said creases in sections inwardly over one end of the mandrel
85 to position said sections in partly overlapping relation to each other and form the bottom wall of the receptacle, then subjecting the cylindrical receptacle wall while on said
90 mandrel to die pressure to form longitudinally extending pleats or flutes in said wall and convert the same into final shape or form, and finally removing the mandrel from the receptacle and immersing the receptacle in a
95 paraffin solution to render the walls thereof impervious and seal the several parts of the receptacle walls in permanently fixed relation to each other.

2. The method of making a paper receptacle having a wall consisting of a single thickness of material which consists in first
100 forming creases along one edge of a paper blank, the adjacent creases converging inwardly and terminating at their inner ends in spaced relation to each other, then winding the paper blank around a mandrel with the
105 creased edge of said blank projecting beyond one end of the mandrel and progressively folding the projecting part of the blank during the winding operation along said
110 creases inwardly over the end of the mandrel to position the sections between said creases in partially overlapping relation to each other, then removing the mandrel from the formed receptacle, and finally coating all surfaces of the receptacle both interiorly and
115 exteriorly thereof with a paraffin solution to render the receptacle walls impervious and to simultaneously permanently seal said overlapping end portions of the receptacle in fixed relation to each other.

In testimony that I claim the foregoing as
120 my invention, I have signed my name hereto.

HENRY BENKE.