

PUBLISHED
MAY 25, 1943.
BY A. P. C.

E. SCHOELLER
PAPER CONTAINER
Filed Aug. 19, 1939

Serial No.
291,094

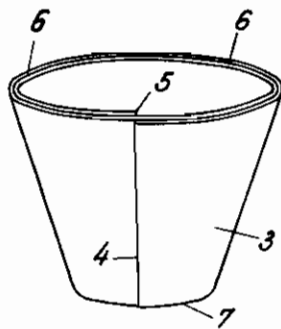


Fig. 1

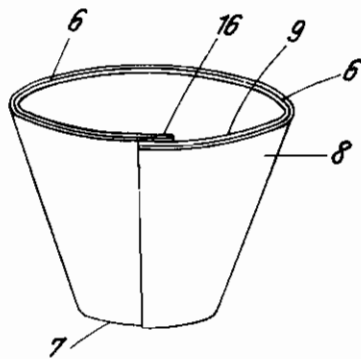


Fig. 2

Inventor:
Ewald Schoeller
J. J. Linnell Atty

ALIEN PROPERTY CUSTODIAN

PAPER CONTAINER

Ewald Schoeller, Berlin-Charlottenburg, Germany; vested in the Alien Property Custodian

Application filed August 19, 1939

This invention relates to impregnated paper receptacles or vessels and to a method of producing same.

It is an object of the invention to reduce the quantity of impregnating substance required for the receptacles.

With this and further objects in view, as may become apparent from the within disclosures, the invention consists not only in the structures herein pointed out and illustrated by the drawings, but includes further structures coming within the scope of what hereinafter may be claimed.

The character of the invention, however, may be best understood by reference to certain of its structural forms, as illustrated by the accompanying drawings in which—

Fig. 1 is a perspective view of one embodiment of my invention and

Fig. 2 is a perspective view of another embodiment.

Referring first to Fig. 1, the side walls of the paper vessel consist of a sheet of paper 3 which is wound up in the form of two turns, in such a manner that the outer end edge 4 thereof is opposed to the inner end edge 5 of the paper sheet. The inner adjacent faces of the paper sheet between the two turns are covered with a layer 6 of glue or paste before the winding action so that the sheet retains its wound-up shape. Secured to the lower end 7 of the cone thus formed is a bottom (not shown) which preferably consists also of two paper layers which are pasted together. The paste advantageously consists of a mixture of animal glue and formaldehyde.

By way of example, 10,000 paper receptacles having a capacity of 1 liter each may be made of a paper of a strength corresponding to a weight of 220 grams per square meter from which the sheets 3 and the bottoms are cut out. The respective portions of the sheet are then spread with a glue of the following composition:

Skin glue or size (glue from hides)	percent by weight	13
Hydrogen peroxide	percent	0,6
Formaldehyde	do	0,5
Water	do	89,9

About 45 kgs of this glue are required for the said 10,000 paper vessels.

The paper sheets are now wound up to form a cone as shown in Fig. 1 and the lower end 7 is closed by a bottom consisting of two layers of the same paper pasted together by the same glue and secured to the lower end 7 of the cone by the same glue. The vessel thus formed is now filled with hot, liquid paraffine and the paraffine is then poured out and the vessel is dried in a hot air current with its open end downward

so that the excessive amount of paraffine may drip off.

Due to the separating layer 3 of glue inserted between the two layers of paper the paraffine cannot penetrate into the outer layer of paper so that only the inner layer thereof is impregnated. Therefore, the quantity of paraffine which would be normally required for the outer layer of paper is saved and, assuming that about 34 to 40 percent by weight of paraffine are absorbed by the paper in question which is a reasonable practical figure, only 17 to 20 percent of the total paper weight of the cup are required instead of 34 to 40 percent as in the known types of paper vessels. The saving thus effected means a considerable reduction in the cost of the paper vessels.

Referring now to Fig. 2, it will be seen that the cone in this case consists of two superposed separate paper sheets 8 and 9 which are secured together by an intermediate layer 6 of an adhesive and bent round to form a cone the seam of which is also secured by a layer of adhesive 16. The lower end 7 of the cone may be closed in the same manner as described with reference to Fig. 1.

It is now possible, with the arrangement shown in Fig. 2, to use a thinner paper for the inner paper layer 9 than for the outer paper layer 8 so that the amount of impregnating substance required for the impregnation of this inner layer may be further reduced with respect to the total amount of paper forming the vessel.

In view of the reduction of impregnating substance thus afforded it becomes possible to use very stable impregnating substances which could not be used in the existing types of paper vessels due to their high price, such as for instance, artificial resins and hard wax. Paper vessels impregnated with such substances offer the advantage that they are stable against heat and, therefore, may be used for the reception of very hot liquids.

By way of example, a paper web of 60 grs/square meter is pasted on a paper web of 200 grs/square meter, by means of a pasting machine, using a paste of the following composition:

Skin glue	percent by weight	10
Hydrogen peroxide	percent	0,5
Formaldehyde	do	1
Water	do	88,5

About 80 grs of this paste are required per square meter. The sheets required for the walls, bottoms and covers of the paper vessels are then stamped or cut out of the composite paper web, the wall sheets are bent round in such a manner that the thin paper layer of 60 grs/square meter strength becomes the inner wall, the seams are

pasted and the bottom is inserted. The paper vessel may now be impregnated as above mentioned, by filling it with the impregnating substance, or by spraying the inside of the vessel. Thus, the impregnating substance penetrates into the inner layer 9 of the vessel but, due to the separating layer 8 formed by the paste, is prevented from entering into the outer layer 8 thereof.

It will be noted that it is possible in this manner to reduce the quantity of impregnating substance to about one fifth of that normally required.

Any suitable impregnating substances other than those above mentioned may be used for my novel paper containers to render them watertight or fat-proof. For example, albumen substances which are hardened by formaldehyde, such as animal glue, are known to be suitable to render paper fat-proof.

Also, any suitable paste may be used which is adapted to form a separating layer between the paper layers and to stop the impregnating substance from entering into the outer paper

layer. Especially, albumen-containing substances which are hardened by formaldehyde or the like were found to be suitable, an embodiment thereof being the above mentioned mixture of animal glue (for example, bone glue, skin glue, gelatine) with formaldehyde. This mixture is particularly suitable where paraffine is used as an impregnating substance. In order to prevent the dissolved glue from coagulating or congealing too quickly, a retarding agent, such as, hydrogen peroxide, may be added as above mentioned. Contrary to the starch paste normally used for such paper containers the aforementioned glue is absolutely impermeable to paraffine and to most of the artificial resins which may be used for a watertight impregnation.

The method of the present invention has been described in detail with reference to specific embodiments. It is to be understood, however, that the invention is not limited by such specific reference but is broader in scope and capable of other embodiments than those specifically described and illustrated in the drawing.

EWALD SCHOELLER.