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CELLULOSIC CONTAINER FOR OILS

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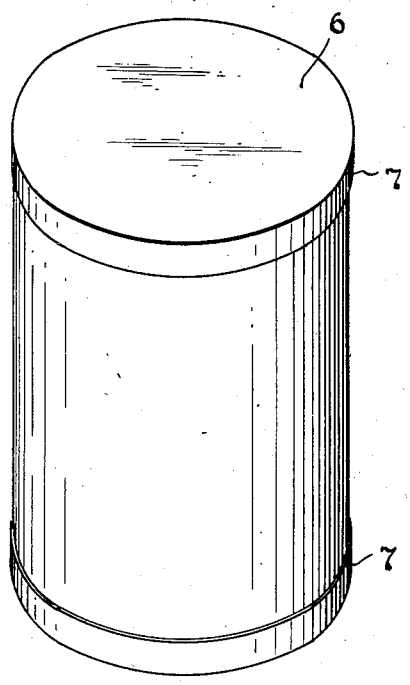


Fig. 1

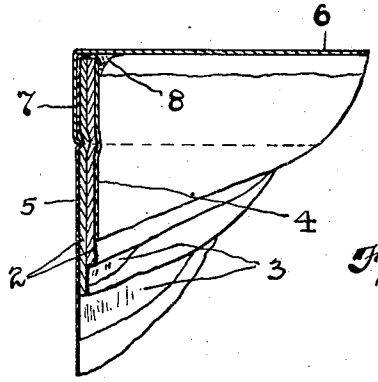


Fig. 2

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CELLULOSIC CONTAINER FOR OILS

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3 Claims. (Cl. 229—3.1)

While paper containers or cans for the marketing of milk and the marketing of solid greases such as lard and butter have been in successful use for a long time, practical marketing of petroleum oil in paper containers has not been attained. In the marketing of milk, lard and butter, of course the material is not left in the container for very long periods of time. Furthermore, such materials do not have a very intensive penetrating or capillary activity. In the case of petroleum oil, the can may have to stand storage in the dealer's stock for several years. Again, petroleum is exceedingly penetrating and exhibits a surprising tendency to work its way through almost anything. Many efforts have been made to produce an oil container of paper. The customary attempts have been to employ a porous stock such as chip board and line it with parchment paper or some coating material, it being supposed that the oil could not get through such barrier, or that if any did get through it would be held by the absorbent body layer. I have now found that in time the oil will work through such structure, and when the oil once infiltrates in the porous layer the container is doomed. Furthermore, where there is a seam having surfaces of dissimilar material, the capillary penetrating tendency of the petroleum is accentuated, and the usual metal caps rolled or crimped on the ends of the paper body provide a vulnerable seam even where the ends of the paper have a sealing coating which may have been temporarily softened for the heading operation. The rolling or crimping on of the heads also sets up stresses, which continue to readjust themselves for quite a prolonged time afterward, and in this readjustment some slight loosening occurs at some point with a seal which has become set or non-flowing and a potential source of trouble is started. A container which can successfully hold petroleum under varied storage conditions and over long periods of years, is accordingly an important desideratum in the art, and fundamentally desirable.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

Fig. 1 is a perspective view of an embodiment of the invention; and Fig. 2 is an enlarged fragmentary section.

Referring more particularly to the drawing, there is shown a container which is laid up of a plurality of layers of cellulosic material wound spirally or convolutely. The layers 2, although cellulosic, are non-absorptive of oil, being filled or impregnated with material suitable therefor. While the impregnation may be carried out after the container wall is built up, it is preferable to employ a web stock which has been treated. The impregnating material may be for instance a modified sodium silicate composition, or a gelatin or glue treated with an insolubilizing agent, or an insolubilized resin. The modified sodium silicate composition may desirably be made up of sodium silicate, gum arabic, glycerol, and oleic acid soap. The manner of impregnating the cellulose being immaterial here, description thereof is unnecessary. The layers of non-porous cellulosic material 2 are joined together by a suitable adhesive 3, which may be a glue or a sodium silicate composition. Upon the inner wall of the container is a surfacing 4 of a modified sodium silicate of for example 1.95:1 SiO_2 to Na_2O content 65–85 per cent, glycerol 10–30 per cent, gum arabic ½–3 per cent, dextrine or corn syrup 0.5–2.5 per cent, and up to 0.2 per cent of a liquid soap, as a sodium soap of oleic acid or the like, or preferably potassium oleate. The gum arabic may be initially dissolved or dispersed in a small amount of water, for instance not over 3 per cent of the total composition, if desired. This inner surfacing is applied after the body wall is formed. In some instances an outside or over-all layer of kraft stock 5 is also desirable, and may be secured by adhesive 3.

The ends are closed by end-closures 6 which are flanged over as at 7, and are tightly crimped into place, the top header being put on after the can is filled. With a sheet metal header or cap, there is a possible differential of expansion and contraction as compared with the cellulosic body wall, and if the container happens to be on exhibition in a sunny location, as sometimes occurs in a service station, stresses tending to develop, leaks may occur; and a header material of cellulosic character similar to the body wall may be preferred in many instances. However, by the feature now to be referred to, satisfactory joints may be had in either instance. At the seam between the body and the header, I provid a material which not only covers the seam at the point 8, but also retains sufficient fluency or plasticity to allow of following such slight relative move-

ment of the adjacent surfaces as may be incurred variously in handling, exposure to heat and cold, etc. This fluid material is of course oil-resistant, and may be made for instance of a thicker composition of modified sodium silicate, as for instance 80–95 per cent of a sodium silicate of 3.25:1 SiO_2 to Na_2O ratio, 2½–15 per cent of glycerol, 0–2 per cent of corn syrup, 1–4 per cent of gum arabic, and 0.2–0.5 per cent of potassium oleate. Whatever composition is employed at this point, its characteristic is that it remains of sufficient slight plasticity to follow any changes in the joint, and the seams present an inner oil-excluding surface as does also the inner wall.

Exteriorly, the can may be water-proofed further if desired, by a special water-proofing coating, wax, etc.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided, however, the features stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A container for oils etc., having a wall of cellulosic material non-absorptive of oil, and an inner oil-excluding surface of sodium silicate including about a half to three per cent of gum arabic and an alkali metal soap in effective amount up to about two-tenths per cent, and ends secured to said wall.

2. A container for oils etc., having a wall of cellulosic material non-absorptive of oil, and an inner oil-excluding surface of sodium silicate including about a half to three per cent of gum arabic and an alkali metal soap in effective amount up to about two-tenths per cent, and ends secured to said wall the seams by which the ends are joined being provided internally with a light color oil-excluding mass of constitution having plasticity to follow changes in the joint.

3. A container for oils etc., having a wall of cellulosic material non-absorptive of oil, ends secured thereto, and the seams by which the ends are joined being provided internally with a non-hardening slightly fluent oil-excluding mass including sodium silicate eighty to ninety-five per cent, glycerol two and a half to fifteen per cent and gum arabic one to four per cent, having plasticity to follow changes in the joint.

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