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MANUFACTURE OF CARTONS, POTS, AND LIKE RECEPTACLES
OF THIN METAL AND PAPER, CARDBOARD, AND THE LIKE
Filed May 24, 1933

2,019,412

Fig. 1.

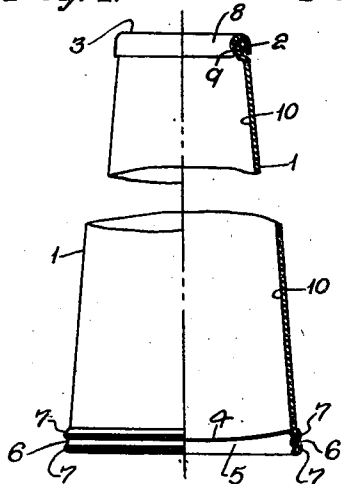


Fig. 2.

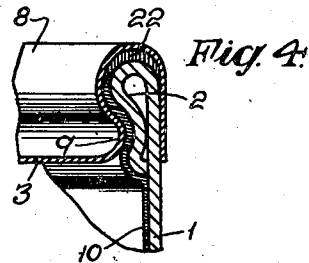
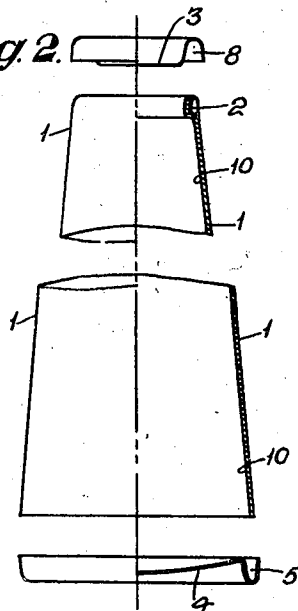


Fig. 3.

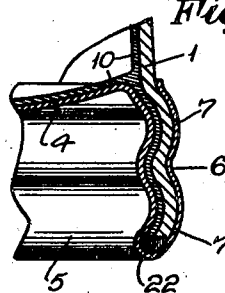


Fig. 5.

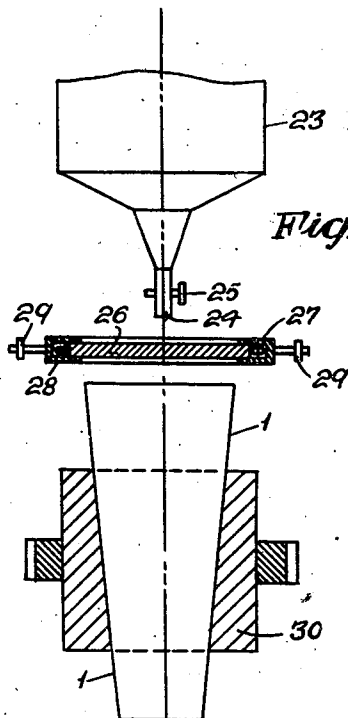
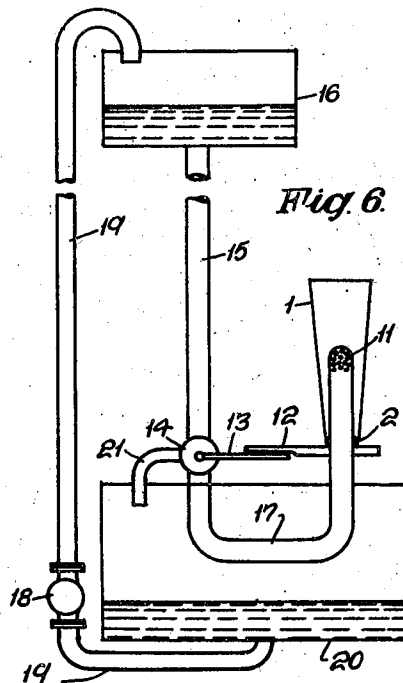


Fig. 6.



WITNESSES

[Signature]

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INVENTOR

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UNITED STATES PATENT OFFICE

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MANUFACTURE OF CARTONS, POTS, AND
LIKE RECEPTACLES OF THIN METAL AND
PAPER, CARDBOARD, AND THE LIKE

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Application May 24, 1933, Serial No. 672,531
In Great Britain January 20, 1933

3 Claims. (Cl. 229—3.1)

This invention relates to pots and like containers generally, particularly pots mainly composed of fibrous materials such as paper or cardboard, and provides improvements in such rolled or similarly constructed liquid-containing pots, especially those comprising a body and suitably affixed metal end closure discs to seal the contents.

According to my invention, I apply to one end—preferably the lower end—or to both ends of a pot or container, prior to fitment of the base, or fitment of each end closure, a sealing substance or material such as tar pitch or an oil residue as sold under the name of asphalt which, upon attachment of the end closure or closures to the pot body, constitutes within a peripheral body-gripping channel of the or each closure a filling medium of such a nature as to readily set and so provide in the channel an efficient and durable seal which serves to positively resist extrusion of liquids and semi-liquids generally, but particularly oils and other liquids and substances of an oily, fatty, or greasy character, from the base or/and top of the container.

The pot body may be made of any suitable material, but is preferably composed of a shaped blank of paper or cardboard, suitably pasted and rolled into the form of a truncated cone or cylinder having one or more complete layers or thicknesses of material with an overlap of appropriate width at the seam, and in order to render such body impermeable to contents of an oily, greasy, or fatty nature the body material has applied to it either internally or/and externally, or/and between the body layers a suitable proofing in liquid, plastic, or sheet form consisting, say, of wax, wax-paper or metal foil. I propose, however, to treat the pot body preferably internally with an oil-resisting proofing composed of casein hardened with formal, and preferably incorporating a suitable proportion of glycerine which prevents cracking of the proofing should the pot be deformed whilst being handled, such proofing being conveniently sprayed in liquid form onto the interior of the receptacle by apparatus such as hereinafter described.

The sealing medium, which may be applied also to the body seam, is placed on one or both ends of the pot body in any convenient manner, but preferably apparatus as hereinafter described is employed for this purpose. One or both ends of the pot body may also be flanged to enhance the anchorage of the end closure or closures and the end seal or seals.

I will further describe my invention with the aid of the accompanying sheet of explanatory

drawing which illustrates by way of example only, one mode of carrying the same into effect, it being understood that in the drawing departures from the general proportions and thicknesses of the respective parts are made where necessary or desirable in order to clearly illustrate the construction.

In said drawing:—

Fig. 1 is an elevation, partly in section and more or less in diagram, of a pot or carton constructed in accordance with the invention; and Fig. 2 is a similar view of the pot, but prior to the fitment of the end closure discs.

Fig. 3 is a fragmentary sectional view, drawn to an enlarged scale as compared with Fig. 1, showing, in detail, the mode of attachment of the metallic base closure disc to the fibrous body of the pot and the method of sealing the joint at this end of the receptacle.

Fig. 4 is a sectional view, similar to Fig. 3, showing the mode of securing the metallic closure lid or cover to the body of the receptacle and the method of sealing the joint at this end of the pot.

Fig. 5 illustrates, in diagram, one suitable form of apparatus for applying the joint-making material to one or both ends of the pot body; and

Fig. 6 is a diagrammatic illustration of a convenient form of apparatus for spraying the interior of the path with the oil-resisting proofing material or substance.

In the several views like characters of reference denote like or equivalent parts wherever they occur.

Referring first to Figs. 1 to 4, inclusive, 1 generally designates the fibrous body portion of the receptacle which is produced by rolling a suitably shaped and pasted blank of stout paper or thin cardboard in the usual manner upon an appropriately constructed mandrel, and 2 denotes a bead or flange created at the upper end of said body 1 by placing a die of convenient shape in contact with the body and imparting relative rotary motions to both the die and body in order to roll the end material of the body either inwardly, as shown, or outwardly, as may be desired, such bead or flange being provided to enhance the rigidity of the fibrous body and also to permit of efficient anchorage of the upper end closure disc or member 3 which constitutes the lid or cover of the receptacle and is preferably made of a light and thin metal such as aluminium. The fibrous body 1 may be similarly beaded or flanged at its lower end or base for the anchorage of a second end closure disc or member of aluminium

constituting the base or bottom of the receptacle, but preferably, a base member 4 made of a heavier metal such as tinplate is used, in which case, the base may be effectively secured to the body 1, as shown, without necessitating the formation of a special beading or flange.

In the particular construction illustrated, said metallic base 4 is formed with a peripheral channel 5 which receives the lower end portion of the body 1 and is pressed into engagement with the body material in the known manner to provide an annular groove or indentation 6 with outwardly curved parts 7 above and below the groove, whilst the metallic lid or cover 3 is likewise formed with a peripheral channel 8 which receives the upper end portion of the body 1 and is anchored thereto by having its inner wall pressed outwardly at 9 in order to cause deformation of the body beading or flange 2.

Applied to a suitable thickness over the whole of the inner wall or surface of the body 1—preferably prior to the fitment of the metallic base or bottom 4—is a material or substance generally designated 10, composed of casein hardened with formal, which constitutes an oil-resisting internal proofing for the fibrous body portion and so renders the receptacle suitable for containing oils and other liquids and substances of an oily, fatty or greasy nature or character: such proofing preferably incorporates a suitable proportion of glycerine for preventing cracking of the coating in the event of the body portion of the receptacle being crushed or dented somewhat whilst being handled.

Said proofing material or substance 10 is preferably applied in liquid form to the interior of the body 1 of the receptacle by a suitable spraying apparatus such, for example, as that shown in Fig. 6. In apparatus of this construction, the body is placed over a perforated spraying nozzle 11 and gradually moved in a downward direction and by such action opens, through the medium of the levers 12, 13 and a valve 14, communication between a pipe 15—leading from the supply tank 16 in which the proofing liquid is contained—and a delivery pipe 17 of the nozzle, so that the liquid under pressure will be sprayed onto the receptacle in the continued operation of a pump 18 placed in a pipe line 19 leading from a liquid-collecting tank 20 to said supply tank 16. Upon removal of the receptacle from the spraying nozzle the valve 14 is operated to again place the tank 16 in communication with tank 20 by way of pipe 15 and a by-pass 21, thus shutting off delivery of the proofing liquid to the spraying nozzle 11. The receptacle itself is drained of any surplus liquid and then allowed to dry in a well aerated atmosphere at a uniform temperature not exceeding 30° centigrade to 40° centigrade, such drying being carried out without artificial heating by means of a stove, or the like, so as to obviate risk of cracking of the internal coating 10 while it is being hardened.

To counteract also the tendency of liquid oils from passing by capillary attraction around the peripheral channel 5 of the metallic base member 4 to the fibrous body material, a suitable joint-making material or substance 22—see Fig. 3—is applied to the lower edge of the body 1 so as to fill the base of said channel 5 and thereby combine with the metallic bottom 4 to create an efficient base joint or seal at this end of the receptacle: a similar joint-making material or substance 22 is also preferably applied to the upper edge of the fibrous body 1—see Fig. 4—to seal

the joint upon fitment of the metallic lid or cover 3.

Said joint-making material or substance 22 may be a tar pitch, which is a residue left in the production of illuminating gas by a process of distillation and is drawn off at a temperature of approximately 145° centigrade when in a plastic condition. The residues produced by refining mineral oil, which is sold at low cost under the name of asphalt, is also suitable for the intended purpose, satisfactory results having been obtained with "Texaco Asphalt No. 10" which is used at a temperature of about 165° centigrade.

Preferably said material or substance 22 is applied to one or both ends of the fibrous body 1 by a suitable apparatus such as that illustrated in Fig. 5. In this form of apparatus the material or substance is contained in a supply tank 23 and is heated to the required extent by an electric-resistance heater which may be immersed in the material since the latter is a non-conducting medium. At the base of said tank 23 a discharge outlet 24 is provided, controlled by a tap or valve 25 which serves to regulate delivery of the material onto an absorbent pad or disc 26 of felt or other suitable substance positioned below the tank within a supporting channel ring 27 wherein an electrical resistance element 28 is housed to maintain the desired heating of the saturated pad 26. Said ring 27 is operatively connected by a forked or ringed lever 29 with one or more cams or other means whereby the pad may be lowered into and raised out of contact with the upper end of the fibrous pot body 1 mounted within a rotary supporting element 30, the pad, through the medium of its carrier ring 27, being arranged to exercise a slight pressure on the adjacent end of the pot body whilst rotary motion is imparted to the body so that an even and uniform thickness of joint-making material will be distributed over the whole end circumference of the pot body. It is advisable that the metallic base 4, or both upper and lower closure discs 3, 4, shall be applied to the pot body as soon as possible after application of the joint-making material 22, otherwise this material may, upon cooling, become too hard to allow of the attainment of an efficient seal.

In the manufacture of a pot or carton as hereinbefore described, a machine having five body-supporting elements or dies, as 30, revolving about their own axes and also about a common central axis may be used, the dies assuming in turn, five positions corresponding, for example, to the following operations:—

- (1) Placing the pot body 1 in the machine;
- (2) Applying the joint-making material 22 to the base of the pot body;
- (3) Fitting the metallic base or bottom 4 to the pot body;
- (4) Locking the metallic base 4 to the pot body and simultaneously forming the beading or flange 2 at the opposite end of the pot body;
- (5) Ejecting the pot from the machine.

Preferably the base discs 4 are stored in a chute (being embossed or otherwise formed in order to prevent them locking one inside the other when so stored) and are individually carried into required position and fitted onto the ends of the pot bodies by a gripping and releasing mechanism of vacuum-controlled type or of any other convenient construction. The pots are also conveniently ejected from the machine by an inclined ramp which tips the pots into a suitable receiver or onto an appropriately arranged con-

veyor. The operation of filling the pots and fitting and locking the metallic lids or covers 3 to the pot bodies—and also applying the joint-making material 22 to the top of the pots—may be performed automatically on a machine similar to those now in general use for filling and sealing milk pots.

Whilst the invention has been described in relation to its preferred form, it will be understood that various alterations or modifications may be made without departing from the spirit and scope of the same as defined by the claims. For example, the fibrous body portion 1 of the receptacle may be lined internally with an oil-resisting coating consisting, say, of a wax paper secured by a suitable adhesive to the inner wall or surface of the body, such coating or wrapping being applied preferably to the body blank prior to the formation of the truncated body and used in substitution for or in conjunction with the liquid proofing 10. Or again, a thin sheet of metal foil, such as aluminium, may be applied to the body material prior or subsequent to the formation of the blank so as to provide, upon rolling of the blank into the form of a truncated cone, a metallized outer surface for the fibrous body, such external wrapping, whilst adding to the cost of production, being beneficial in that it prevents evaporation of the oil contents, enhances the rigidity of the receptacle, and prevents marking of the fibrous body due to accidental cracking of the oil-resisting internal proofing, and that, furthermore, it improves the appearance and attractiveness of the receptacle. If the body be of laminated structure, proofings such as described may be provided internally or/and externally of the body 1 or/and between the body layers. In these alternatives, however,

sealing by the aid of the medium 22, is made at one end, preferably the lower end, or both ends of the receptacle.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A container having a tubular fibre body and metallic ends, an oil-resisting coating covering the inner walls of said body and metallic ends each of said ends being formed integrally with an annular channel embracing an end of the said body and in direct tight contact with the outside surfaces of said body and also with the inside surface of the body and an oil-resisting composition arranged within the annular channel of each metallic end and contacting the opposed ends of said body whereby a seal will be effected between the body and said metallic ends.

2. A container comprising a tubular fibre body having its opposed ends opened, a metallic closure for one of the opened ends of said body, an annular channelway formed with said closure, an oil-resisting composition positioned within said channelway, said annular channelway being crimped about said body whereby said oil resisting composition will form a seal between said body and said closure therefor and an oil-resisting coating for the inner walls of said body and closure.

3. A container comprising a tubular fibre body, a beading formed with one end of said body, an oil-resisting composition positioned upon said beading, a closure for said body, an annular channelway formed with said closure, adapted to be placed over said beading and the composition positioned thereupon, said composition forming a seal between said body and closure therefor, and an oil-resisting coating covering the entire inner surface of said body.

PIERRE HEYNDRICKX.