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GLASSINE LINED OIL CONTAINER

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Fig-1

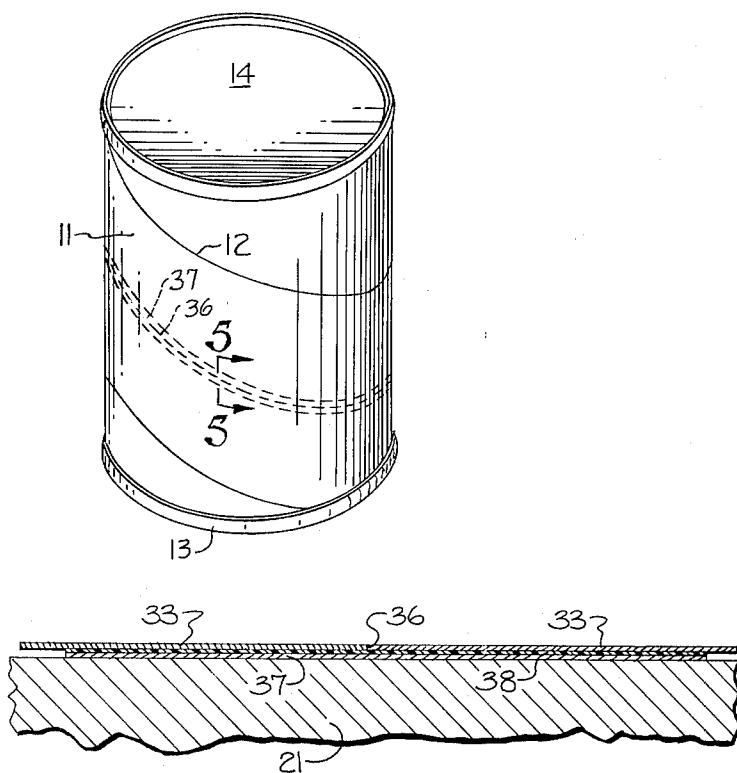


Fig-2

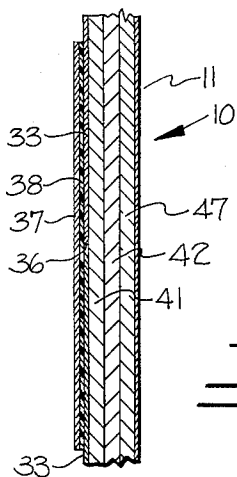


Fig-3

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GLASSINE LINED OIL CONTAINER

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4 Claims. (Cl. 229—4.5)

This application is a continuation-in-part of application Serial Number 180,606, now U.S. Patent Number 3,159,519, entitled Method and Apparatus for Making Composite Oil Containers of Spirally Wound Strips, filed Mar. 19, 1962 by Charles K. Dunlap.

This invention relates to containers and more particularly to wound multi-ply containers for the packaging of oil and similar materials.

In the packaging of liquid materials and in particular oil, widespread use is made of wound fibre containers suitably lined with oil impervious material so as to prevent leaking or wicking of the packaged oil. These containers are commonly referred to as "composite containers" and are generally sealed at each end with seamed on metal ends. For example, such composite containers are used widely for the packaging of engine oil for sale to the typical motorist and are commonly provided in a one quart size. As a result of the many advantages of such composite containers including low cost and light weight, they have, in many cases, replaced cans made entirely of metal.

Composite containers made today are generally wound from a plurality of fibre or paper strips together with a weather-resistant printed label outer strip such as suitably imprinted metal foil laminated to paper and an inner strip such as metal foil laminated to paper which is impervious to the packaged oil. All of these strips are generally spirally wound into a tube which is severed into uniform lengths. Such tube lengths form container bodies having open ends subsequently closed by metal discs or ends and the inner metal foil liner prevents leaking or wicking of the packaged oil. A suitable seam construction is generally provided for the inner spiral seam to prevent oil leakage or wicking. In one construction for sealing the inner spiral seam, a metal foil laminated paper inner strip is spirally wound with the edges of adjacent convolutions in abutting relationship forming a spiral seam over which is adhesively bonded in sealing relationship by means of a thermoplastic adhesive, a spirally wound metal foil strip.

In order to prevent leaking of oil from the container, many constructions and materials have been proposed for the inner wall of such spirally wound containers. For instance, paper coated with a suitable impervious material such as plastic has been proposed but the problem of leaking at the inner spiral seam has been extremely difficult to overcome. The use of an inner strip of a liquid impervious material such as a plastic strip or a metal foil strip has been proposed but in addition to the problem of proper adhesion, such plastic and foil strips have either been too fragile to handle easily or if thick enough for handling, excessively expensive. Even the laminating of metal foil to paper so as to reduce the cost of the metal foil has added materially to the cost of such containers and much effort has been expended in an attempt to secure a suitable container lining material and construction which is low in cost and which will contain oil without leaking or wicking.

Accordingly, a primary object of this invention is to provide a new and novel leakproof container body for the packaging of oil and similar materials.

Another object of this invention is to provide a new and novel leakproof wound multi-ply container body for

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the packaging of oil which utilizes glassine as an inner lining material.

Still another object of this invention is to provide a new and novel leakproof, spirally wound, multi-ply container body composed substantially of fibre for the packaging of oil and which is provided with an oil impervious inner ply of glassine having a spiral butt seam sealed by glassine.

Other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings.

The objects stated above and other related objects in this invention are accomplished by spirally winding a plurality of strips adhesively secured together on an elongated mandrel having a heated section to form a spiral tube severable into uniform lengths to form container bodies. The spirally wound strip forming the inner ply for the tube is of glassine and the glassine strip is wound with its adjacent convolutions forming a spiral butt seam. A relatively narrow sealing strip of glassine coated on one surface with a thermoplastic adhesive is spirally wound together with the inner glassine strip and the glassine sealing strip is positioned across the spiral butt seam with its coated surface in contact with the glassine inner strip. The heated mandrel section activates the thermoplastic adhesive on the glassine sealing strip and upon cooling, the glassine sealing strip is bonded by the adhesive to the glassine inner ply to seal the spiral butt seam and form an oil impervious inner barrier on the spiral tube.

The novel features which are believed to be characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation may be best understood by reference to the following description taken in conjunction with the accompanying drawings in which:

FIGURE 1 is an isometric view of an oil container formed in accordance with the invention;

FIGURE 2 is an enlarged axially extending sectional view of a partially wound container taken during the manufacturing operation; and

FIGURE 3 is an enlarged sectional view taken substantially along line 3—3 of FIGURE 1 in the direction of the arrows.

As referred to in the aforementioned patent, the container of the type forming the subject matter of this invention is designated generally in FIGURE 1 by the numeral 10. Although other liquid or semi-liquid materials may be packaged in the container 10, it is particularly suitable for the packaging of oil and similar products. Liquid or semi-liquid materials containing water would not be generally suitable for packaging in the container 10 due to the tendency of its inner lining to deteriorate in the presence of water and it is with reference to the packaging of oil and similar materials that the container 10 is adapted. It should be understood that the container 10 is a container of the type which, as shown, is sealed at both ends and it is the purpose of the invention to provide a tubular body which, when suitably closed at each end with metal ends or the like, forms the container 10.

The container 10 comprises a spirally wound, multi-ply body 11 having an exterior spiral seam 12 which body is formed from a plurality of strips including fibre or paper strips which, as will be described hereinafter, are adhesively secured together in overlapping relationship. Prior to filling, the body 11 is first sealed at one end with a suitable circular disc or end 13 formed from metal or the like and after filling with oil is sealed at its other end with an end 14 similarly formed of metal to provide a completely closed container.

As described in the aforementioned patent, spiral tube winding apparatus is provided for forming the container body of the invention which includes a winding mandrel 21 on which is wound a spiral tube which tube is subsequently severed into uniform lengths to form container bodies 11.

As specifically illustrative of the invention, the body 11 of the container 10 is wound from a plurality of strips of material which include an inner strip 33 of glassine unwound from a supply roll. Glassine, as is well known, is a thin transparent paper made usually from sulfite pulp by prolonged beating and super calendering. Commercially available glassine is substantially oil impervious but after incorporation in the container body of the invention and processed in accordance with the novel method of the invention is virtually completely impervious to oil.

The glassine strip 33 is spirally wound on a heated section of a winding mandrel 21 with the adjacent convolutions of the glassine strip forming a spiral butt seam 36. At the same time, a relatively narrow sealing strip 37 of glassine having a thermoplastic adhesive coating 38 on one surface is unwound from a supply roll and wound on the mandrel 21 under the inner ply formed by the glassine strip 33. The glassine sealing strip 37 is arranged with its thermoplastic adhesive coating 38 in contact with the inner surface of the glassine inner strip 33 and the sealing strip 37 is positioned across the spiral butt seam 36. The intimate contact between the glassine sealing strip 37 and the heated mandrel section softens its thermoplastic coating 38 which, upon cooling, bonds the glassine sealing strip 37 permanently to the glassine inner ply 33 to completely seat the butt seam 36.

The strips forming the container body 11 also preferably includes intermediate paper strips 41, 42 which are spirally wound on the mandrel 21 over the glassine inner ply 33. Paper strip 41 is advanced through an adhesive applicator of conventional construction so that the strip 41 is immersed in adhesive for coating the strip on both sides. Thus when the strip 41 is wound on the mandrel 21, the glassine strip 33 and paper strips 41, 42 are securely adhered together.

A top ply 47, which is preferably a paper strip having a printed foil label secured thereto is spirally wound together with strips 33, 37, 41, 42 to form an outer weather-resistant ply for the spiral tube. Adhesive is applied to the underside of the strip 47 by means of a glue applicator of conventional construction. The resulting tube is therefore a multi-ply, spirally wound, tubular structure which, when severed into uniform lengths, provides the bodies 11 for the oil containers 10. After filling, the container 10 is sealed with the metal ends 13, 14 to form a leak-proof container with oil packaged therein.

With the novel arrangement of the invention, there has been provided a body for a tubular container in which products such as oil may be packaged without leaking or wicking of the packaged oil. With the use of glassine for the inner ply of the container body, the entire body can be formed of inexpensive, readily available fibrous material although, in the preferred embodiment, a printed foil laminated to paper is preferably employed for the outer ply so as to enhance the external appearance of the container and to provide a leakproof, weather-resistant outer layer. Furthermore, the sealing of the inner ply including the spiral butt seam is accomplished without the need for coated paper or for expensive metal foil such as aluminum foil.

While there has been described what at present is considered to be the preferred embodiment of the invention,

it will be understood by those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is the aim of the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

Having thus described the invention, what is claimed is:

1. A container body for the packaging of oil and the like comprising, in combination, a plurality of spirally wound strips adhesively secured together in overlapping relationship to form a container body, said plurality of strips including an inner strip of oil impervious glassine spirally wound to form an inner ply for said container body with adjacent convolutions forming an inner spiral seam, a relatively narrow, spirally wound strip of oil impervious glassine extending across said inner spiral seam and secured to said glassine inner ply with a thermoplastic adhesive, said narrow glassine strip thereby sealing said inner spiral seam and forming with said glassine inner ply and oil impervious barrier for said container body.

2. A container body for the packaging of oil and the like comprising, in combination, a plurality of spirally wound strips adhesively secured together in overlapping relationship to form a container body, said plurality of strips including an inner strip of oil impervious glassine spirally wound to form an inner ply for said container body and with adjacent convolutions arranged substantially in abutting relationship to form an inner spiral butt seam, a relatively narrow, spirally wound strip of oil impervious glassine extending across said inner spiral butt seam and secured to said glassine inner ply with a thermoplastic adhesive, said narrow glassine strip thereby sealing said inner spiral butt seam and forming with said glassine inner ply an oil impervious barrier for said container body.

3. A container body for the packaging of oil and the like comprising, in combination, a plurality of spirally wound strips adhesively secured together in overlapping relationship to form a container body, said plurality of strips including at least one paper strip and an inner strip of oil impervious glassine spirally wound to form an inner ply for said container body and with adjacent convolutions arranged substantially in abutting relationship to form an inner spiral butt seam, a relatively narrow, spirally wound strip of oil impervious glassine extending across said inner spiral butt seam and secured to said glassine inner ply with a thermoplastic adhesive, said narrow glassine strip thereby sealing said inner spiral butt seam and forming with said glassine inner ply an oil impervious barrier for said container body.

4. A container body in accordance with claim 3 including a metal disc positioned in closing relationship on each end of said body to form a container.

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