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3,528,212

WRAPPING OF DISCOIDAL-SHAPED PRODUCTS

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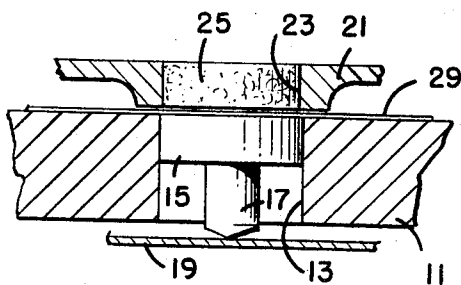


Fig. 1

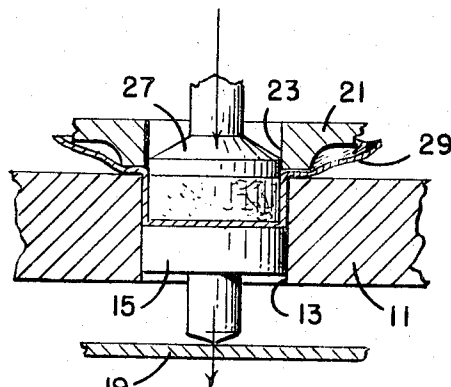


Fig. 2

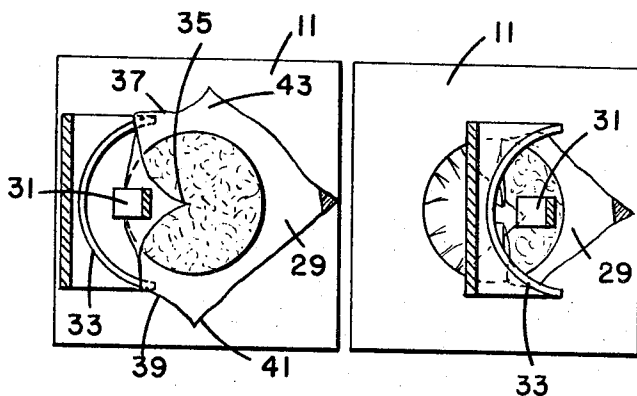


Fig. 3

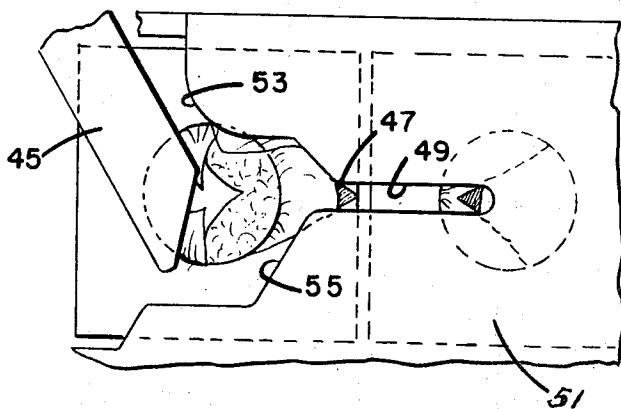


Fig. 4

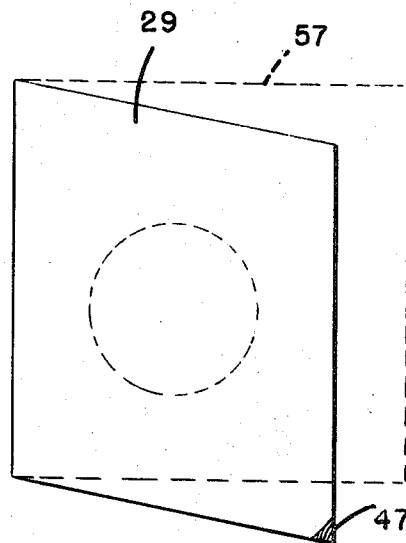


Fig. 5

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WRAPPING OF DISCOIDAL-SHAPED PRODUCTS
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1 Claim

ABSTRACT OF THE DISCLOSURE

A method for wrapping products having a discoidal shape in a wrapper blank of diamond-shape configuration.

The present invention relates to a method of wrapping products having a discoidal shape.

In contour wrapping of discoidal-shaped products, whether rigid, flexible or semi-solid, a method which is economical and provides an attractive and easily opened package has been an objective of long standing. Generally, it is preferred that each package of such products be made using a single sheet or wrapper blank.

In accordance with known methods for accomplishing such contour wrapping, as disclosed for example in U.S. Pat. 3,323,273, a wrapper blank is placed against one face of the discoidal-shaped product, enveloped about its edge, after which its edges are folded into overlapping relationship and sealed in place. Since it would be difficult to apply adhesive to the many folds of such wrapper without contaminating the package contents, heat sealable wrapper blanks formed, for example from regenerated cellulose have a coating of thermoplastic material, are generally employed.

In above-described and other similar known wrapping methods, the folding of the edges of the wrapper blank upon themselves does detract somewhat from the appearance of the resulting package and when properly sealed, makes package opening a difficult operation. Moreover, proper sealing requires that the applied heat penetrate through the many overlapping folds of the wrapper blank, and often results in physical damage and/or discoloration of the wrapper blank which may further detract from the appearance of the resulting package. Accordingly, a primary object of this invention is to provide a new or generally improved and more satisfactory method for packaging products having a discoidal shape.

A further object is the provision of a packaging method for discoidal-shaped products which is adapted for use with hand wrapping operations as well as with known wrapping apparatus.

Another object is a method for completely enveloping a discoidal-shaped product with a wrapper blank of smaller dimensions than heretofore employed for wrapping products of similar size.

Still another object is a wrapping method for discoidal-shaped products which provides for a reliable, integral and attractive package and one which can be easily opened by the user.

A further object is the provision of a wrapping method for discoidal-shaped products in a wrapper blank of heat-sealable material which require less drastic heating conditions than those employed in conventional contour wrapping procedures.

These objects are accomplished in accordance with the present invention by a method in which discoidal-shaped products are completely enclosed in a flat wrapper blank having a diamond or rhomboidal configuration. More particularly, in the packaging method of the present invention one face of the discoidal-shaped product is initially placed

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against a flat, heat-sealable wrapper blank formed, for example, of regenerated cellulose having a thermoplastic coating thereon, and having a diamond-like configuration. The wrapper blank is then urged up along the annular edge of the product, after which its edge portions are folded onto the product and into overlapping relationship with each other to thus completely enwrap the product. Heat is applied to the overlapping folds of the wrapper blank to seal the same in place.

To insure good sealing of the overlapping folds, preferably a corner of the wrapper blank having an acute angle is first folded onto the product and is overlapped by the shorter edge portions thereof. Finally, the remaining corner of the wrapper blank having an acute angle is folded in place. With initial placement of a product substantially centrally of a wrapper blank, the corners of such blank having acute angles will be located furthest away from the product itself. Thus, when such corners are overlapped onto the product in a manner as described above, they will be in contact with at least one side or surface of the shorter edge and corner portions of the wrapper blank and thus facilitate the formation of a continuous and tight package seal. Moreover, the corner last folded onto the product is more readily accessible to the user of the packaged product and enables the package to be easily opened.

The diamond or rhomboidal configuration of the wrapper blank minimizes the amount of such wrapper which is folded upon itself yet insures that the portions of the wrapper blank which do overlap will provide for a tight, reliable seal when bonded to themselves. Minimizing the amount of the wrapper blank which is overlapped or bunched upon itself provides for a neater and more attractive package. Further, the fewer layers of the wrapper blank through which heat must penetrate during sealing, the less drastic are the heating conditions required and thus there is less tendency of damaging and/or discoloring the wrapper blank or packaged contents.

Accompanying the above-described improvements is a substantial saving in wrapping materials. The diamond configuration of the wrapper blank employed in the method of the present invention makes available a large portion of its surface areas for use in actually covering the discoidal-shaped product, leaving only a minimum of such blank for use in making the overlapping edge folds. Stated differently, discoidal-shaped products which are presently packaged in rectangular wrapper blanks by known procedures can be more attractively and economically packaged in a wrapper blank of smaller size in accordance with the method of the present invention.

When compared with the rectangular wrapper blanks which are conventionally employed in contour wrapping of discoidal-shaped products, the advantages of reduced size and a minimum of edge folds provided by the use of a wrapper blank of diamond configuration may suggest that perhaps similar advantages could be achieved by merely reducing the size of the rectangular wrapper blanks. This suggestion, however, is without merit for reducing the surface area of a rectangular wrapper blank which is to be used in packaging a discoidal-shaped product of a given size results in a sacrifice in its ability to cover the product and be properly sealed. In the method of the present invention, a wrapper blank of diamond configuration involves a better utilization of the wrapper blank surface area than can be achieved with a rectangular wrapper blank and the result being the improvements discussed above.

The packaging method of the present invention may be performed by hand or with known packaging apparatus, such as disclosed in U.S. Pat. 3,323,273. Conventional packaging apparatus, in which cooperating cutter and

anvil rollers are used for severing rectangular wrapper blanks from a continuous web of wrapping material, can be easily modified by employing a cutter roller having a blade which is skewed relative to the roller axis to produce wrapper blanks of diamond configuration.

The method of the present invention is in no way limited by the particular consistency of the discoidal-shaped product being packaged. Thus, rigid products, such as stacks of paper plates; flexible products, such as soft baked goods; and semi-solid or moldable products, such as ground meats can be equally well packaged by the method of the present invention.

Heat-sealable materials are employed in fabricating the wrapper blanks employed in the practice of the method of the present invention, and while regenerated cellulose having a coating of thermoplastic material has been mentioned, other similar materials may be used.

In the drawing,

FIG. 1 is a vertical section through a portion of a packaging apparatus and illustrates an initial step in packaging a moldable product by the method of the present invention;

FIG. 2 is a view similar to FIG. 1 illustrating a wrapper blank of diamond or rhomboidal configuration being enveloped about a molded discoidal-shaped product;

FIG. 3 is a plan view of a portion of a packaging apparatus showing the product of FIGS. 1 and 2 during subsequent stages of the packaging method;

FIG. 4 is a view similar to FIG. 3 showing the final stages of the packaging method; and

FIG. 5 is an illustration comparing a conventional rectangular wrapper blank with that employed in the practice of the present invention as illustrated in FIGS. 1-4.

The apparatus illustrated in the drawing for carrying out the method of the present invention is generally the same as that disclosed in U.S. Pat. 3,323,273 and includes a series of molds 11 which are, for example, interconnected in the form of an endless chain. Each mold 11 is formed with an annular cavity 13 within which is disposed a piston 15 having a shaft 17. Suitable means, not shown, are provided for advancing the series of molds 11 and, during such movement, the pistons 15 are reciprocated within their respective cavities 13 in a manner as determined by a cam plate 19 along which ride the free ends of the piston shafts 17.

A plate 21, disposed over the path of the molds 11, is formed with an open cup 23 which is generally of the same internal diameter as the mold cavities 13 and serves to mold a semi-solid product 25 into a discoidal shape. Once molded, the product 25 is urged from the open cup 23 by a plunger 27.

In the operation of the apparatus thus far described, a flat wrapper blank 29 of diamond or rhomboidal configuration, as shown in FIG. 5, is first laid over the top of a mold cavity 13. The piston 15 in this cavity is held in its uppermost position by the cam track 19 and the mold containing such cavity is moved into a position as shown in FIG. 1.

A product 25, molded into a discoidal shape in the open cup 23, is urged by the plunger 27 downwardly and outwardly from the cup 23 and toward the mold cavity 13. Concomitantly with this movement of the plunger 27, the cam track 19 permits the piston shaft 17 to also move in a downward direction to thus retract the piston 15 into the mold cavity. By these combined movements, the discoidal-shaped product 25 is urged into the underlying mold cavity 13, carrying with it a portion of the wrapper blank 29. As the plunger 27 reaches the end of its downward movement, as illustrated in FIG. 2, the shaped product 25 is completely within the mold cavity 13, with the wrapper blank 29 being enveloped along one face and the annular edge of such product.

The illustrated apparatus further includes a fold down

finger 31 and a yoke shaped shoe 33 which function in a manner as shown in FIG. 3. More particularly, relative movement between the finger 31 and the mold carrying the partially wrapped product, as shown in FIG. 2, causes such finger to urge a corner 35 of the wrapper blank 29 onto the top face of the shaped product. This wrapper blank corner 35 is one having an acute angle and thus care should be exercised during initial placement of the wrapper blank 29 on the surface of the mold 11.

Concomitantly, with such movement, relative movement also occurs between this mold 11 and the shoe 33, the latter of which gathers wrapper blank edge portions 37 and 39 and the obtuse angle corners 41 and 43 and folds the same onto the product in overlapping relationship.

A blade 45 serves to hold the folded portions of the wrapper blank in place as the mold 11 is moved from its position shown at the right side of FIG. 3 to that shown at the left side of FIG. 4. In this latter position, the remaining acute angle corner 47 of the wrapper blank 29 rides along an elongated slot 49 of an overlying plow 51, while inwardly stepped edges 53 and 55 of such plow continue folding of the wrapper blank edge portions onto the product and hold the same in place.

As this relative movement carries the mold-contained product toward and beyond the end of the plow slot 49, the corner 47 of the wrapper blank 29 is folded onto the product, as shown at the right side of FIG. 3 to completely enwrap the same. The overlapping folds of the wrapper blank may be then heated in any suitable manner, as by heating the trailing end of plow 51, to seal the same in place. Preferably, the wrapper blank corner 47 is left free or unbonded and has some identifying characteristic, as for example a color which is different from the remainder of the blank, so as to serve as a pull tab for gaining easy access to the packaged contents.

FIG. 5 illustrates, on a reduced scale, a wrapper blank 29 of diamond or rhomboidal configuration and a conventional rectangular wrapper blank 57 which would be necessary for packaging a discoidal-shaped product of the same size. The saving in the wrapping material which is achieved by the use of the wrapper blank 29 is readily apparent and, on an area basis, involves a reduction of more than about 16% over a conventional rectangular wrapper blank.

I claim:

1. A method for packaging a discoidal-shaped product including the steps of placing one face of the discoidal-shaped product substantially centrally onto a wrapper blank of rhomboidal configuration, enveloping the wrapper blank about the annular edge of the product, folding first onto the opposite face of the product one of the corners of the wrapper blank having an acute angle, overlapping onto such first folded corner the corners of the wrapper blank having obtuse angles, overlapping onto the folded corners of the remaining corner of the wrapper blank having an acute angle whereby the wrapper blank is completely enwrapped about the discoidal-shaped product, and sealing the overlapping blank folds.

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