

Dec. 16, 1958

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2,864,710

DISPLAY PACKAGE AND METHOD OF PRODUCING SAME

Filed April 21, 1955

2 Sheets-Sheet 1

Fig. 1

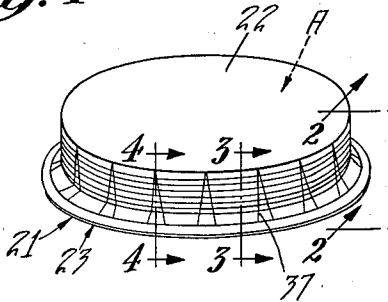


Fig. 2

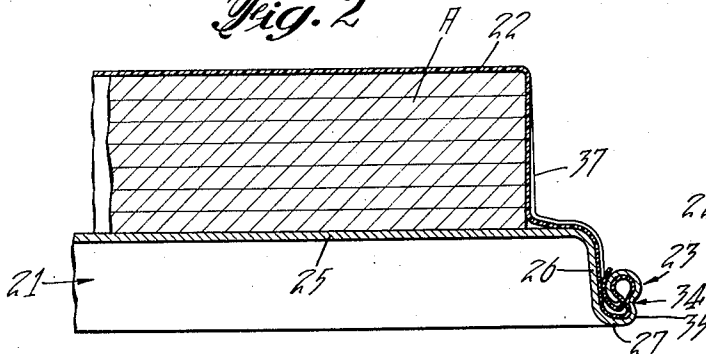


Fig. 5

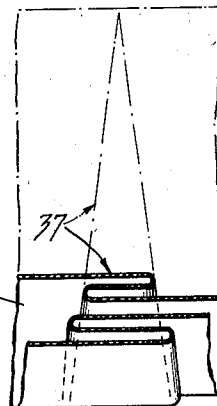


Fig. 4

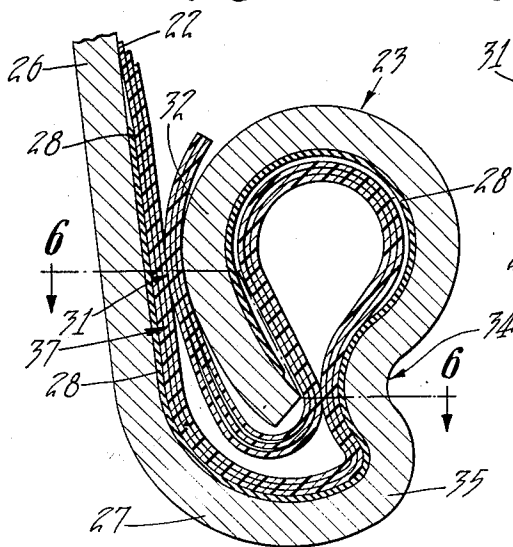
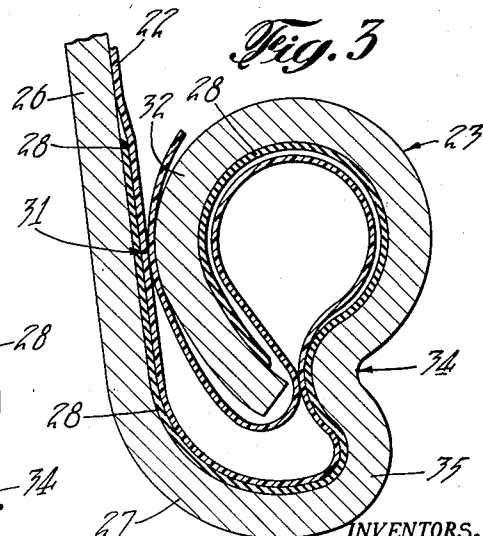


Fig. 3



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Fig. 7

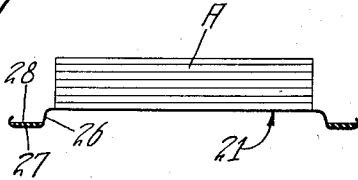


Fig. 8

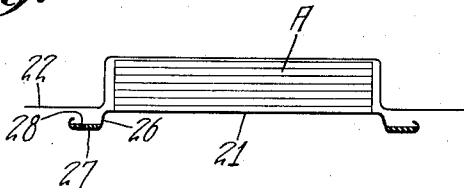


Fig. 9

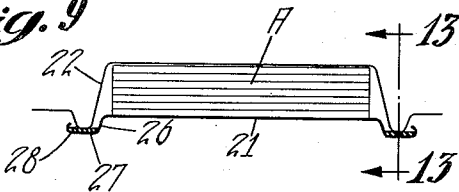


Fig. 10

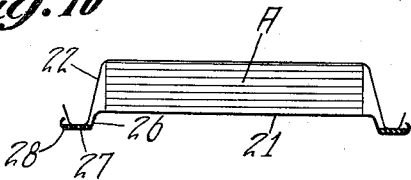


Fig. 11

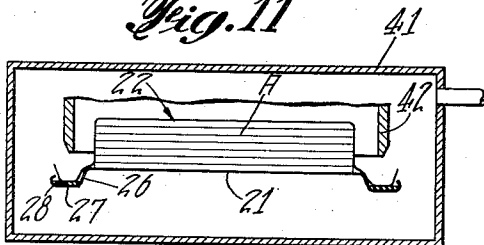


Fig. 6

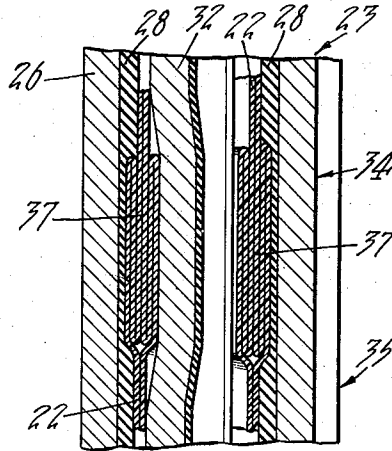


Fig. 12

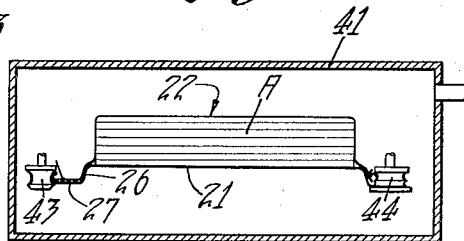
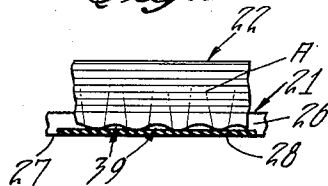


Fig. 13



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DISPLAY PACKAGE AND METHOD OF PRODUCING SAME

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4 Claims. (Cl. 99—171)

The present invention relates to packaging food products and the like and has particular reference to a food or other product containing display package having a thin, flexible, frangible, gasproof and transparent plastic wrapper hermetically joined to a rigid support member and to a method of producing the same.

Thin frangible plastic materials alone have been used to some extent to package food products and occasionally such packages have been interiorly vacuumized to preserve the product. However, considerable trouble has been experienced in holding a vacuum in such a package due to flexing and deformation of the package under normal commercial handling. To overcome this difficulty rigid members have been used to support the product. This however is only a partial remedy since the rigid member itself must be made leakproof and the plastic material must be hermetically and strongly attached to the member. This latter requirement of sealing the plastic material to the rigid member effectively has proved to be a difficult problem, especially where the rigid member is made of sheet metal and metal flanges are used to crimp the plastic material tautly in place, for the sharp edges of metal flanges have a tendency to cut the plastic material in the formation of closure joints. Attempts have heretofore been made to cushion the contact between metal and plastic material with the help of fibre rings or collars or gaskets. This adds considerably to the cost of the package and its assembly.

An object of the instant invention therefore is to provide a product containing display package having a thin, flexible, frangible and transparent plastic wrapper covering the product and hermetically sealed to a rigid hermetic support member so as to provide economical protection and support for the product and at the same time provide for maximum visibility of the product.

Another object is the provision of such a package and a method of producing it wherein a sheet metal can end is utilized to support the product and wherein the plastic material is locked or interfolded with a flange on the can end in an economical and simple manner to provide a secure tight seal for the protection of the plastic material and the product covered thereby.

Another object is the provision of a metallic can end seam for such a package and a method of producing the same wherein the plastic material alone without the use of additional cushioning members is effectively sealed in the seam.

Another object is the provision of such a package and a method of producing it wherein a thin, flexible, frangible, transparent and gasproof plastic wrapper and the rigid hermetic support member are brought together in a manner which permits of vacuumizing the interior of the package prior to sealing to produce a vacuumized unitary structure.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with

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the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a perspective view of a package embodying and produced in accordance with the method steps of, the instant invention;

Fig. 2 is an enlarged fragmentary sectional view as taken substantially along a plane indicated by the lines 2—2 in Fig. 1;

Figs. 3 and 4 are greatly enlarged fragmentary sectional views of the end seam of the package as taken substantially along planes indicated by the lines 3—3 and 4—4 in Fig. 1;

Fig. 5 is an enlarged schematic view of one of the folds at the end seam in the wrapper of the package;

Fig. 6 is a sectional plan view through the end seam at one of the folds, as taken substantially along the line 6—6 in Fig. 4; and

Figs. 7 to 13 inclusive are schematic sectional views showing the various steps of producing the package illustrated in Fig. 1, in accordance with the method portion of the invention, Fig. 13 being a sectional view taken substantially along the line 13—13 in Fig. 9.

As a preferred or exemplary embodiment of the instant invention Figs. 1 to 6 inclusive of the drawings illustrate a display package for food products and the like, comprising a rigid base or support member 21 (Figs. 1 and 2) for holding a product A and a thin, flexible, frangible, gasproof and transparent wrapper or cover 22 secured to the rigid support 21 in a suitable joint or seam 23 for protecting the product. The interior of the package may or may not be vacuumized, as desired.

The rigid base or support member 21 is slightly larger dimensionally than the overall dimensions of the product in order to insure full support for the product and to provide marginal portions for interengagement with a closure or wrapper. This member 21 preferably is made of sheet metal, such as tin plate or the like although other materials may be utilized if desired. The member 21 preferably is shaped in the form of a can end, many sizes of which are readily available, together with equipment for making them. It comprises a raised panel 25 (Fig. 2) on which the product rests and which is surrounded by a depending skirt wall 26 terminating at its lower edge in an outwardly projecting annular flange 27 incorporated in the joint or seam 23 and carrying a compound lining or gasket 28 (Figs. 3 and 4). The entire member 21 or any portion thereof may carry one or more protective coatings, such as lacquer, enamel or other substances.

The thin, flexible, frangible, gasproof and transparent wrapper or cover or closure 22 preferably is made of a plastic film material such as Saran (a vinylidene chloride polymer) and Mylar (an oriented linear polyester resin). However other thin, flexible, frangible and transparent film materials such as cellophane, Pliofilm and the like may be used if desired. The film of plastic material preferably is of double ply, approximately .0015 inch thick, to produce greater flexibility and resistance to abuse and soft enough to be substantially self-sealing when folded.

The wrapper or cover 22 lies over the top of the product on the support member 21 and extends down along the sides of the product and is interfolded in the seam 23 with the flange 27 of the support member 21, thereby with the support member entirely enclosing the product. In the seam 23 the wrapper 22 is embedded in the compound gasket 28 and follows the shape of the seam along the inner compound lined surface thereof (see Figs. 3 and 4), forming a loop within the seam, bending back on itself at a point 31 of sealing and ter-

minating just outside of the seam adjacent the skirt wall 26 of the support member 21.

The seam 23 preferably is produced by curling the support member flange 27 upwardly and inwardly against the skirt wall 26 of the member in such a manner as to tightly lock the bent-back-upon-itself marginal edge portion of the wrapper in the seam without cutting or otherwise injuring the wrapper. For this purpose the seam includes a smooth convexly curved annular wall section 32 having a relatively large cross-sectional radius (Figs. 3 and 4), which wall is disposed in tangential relation to the outer face of the support skirt wall 26, with the wrapper 22 interposed between the skirt wall and the curved wall section and with the curved wall section tightly pressing the wrapper against the compound 28 on the skirt wall thus providing a cushioned hermetic joint.

The curved wall section 32 is maintained in this wrapper sealing and locking position preferably by an inwardly projecting annular bead 34 which is formed in the outer vertical wall of the seam and which extends entirely around the seam. This bead 34 preferably is disposed at a position substantially one third of the height of the seam from the lower edge thereof. The inwardly projecting annular bead 34 in this position sets off a relatively sharp radius bend or outwardly projecting annular bead 35 at the bottom of the seam. The bend or bead 35 is of smaller radius than the portion of the seam above the inwardly projecting bead 34 and thus is stiffer (i. e. less flexible) and hence maintains sufficient pressure on the curved wall section 32 to keep the latter clamped against the bent-back-upon-itself wrapper 22 to lock the wrapper in place.

When the package is of cylindrical or circular formation, the covering of the product with the film of plastic material results in a series of peripheral folds or pleats 37 (Figs. 1, 2, 4 and 5) which are spaced at intervals around the vertical sides of the product. These folds create irregularities in the seam since at places between the folds only two thicknesses of the film are incorporated in the seam as shown in Figs. 3, 5 and 6 and in places where the folds occur six thicknesses are present as shown in Figs. 4 and 6. However the compound 28 in the seam, serving as a sealant and a cushion, is forced into the interstices of the folds and adjacent the edges of the folds and thus seals these interstices hermetically.

Thus, through the medium of the particular form of joint or seam 23, the marginal edge portions of the plastic film or wrapper 22 alone, without the aid of supplemental members such as ring or collar members and the like, are tightly and hermetically locked in the seam, thereby permanently uniting the wrapper 22 and the product support member 21 as a unit display package. Removal of the product from the package is effected through tearing away the wrapper 22. The product A may be one of many kinds. Sliced meat or cheese are only two of many examples.

In the method of producing such a display package, as illustrated in Figs. 7 to 12 inclusive, the product A, for example a stack of pressed meat, is first placed on a rigid support member 21 having a skirt wall 26 and a projecting flange 27 carrying a compound gasket 28 as shown in Fig. 7.

As the second step in the method, the top and sides of the product A are covered loosely by and thus enclosed in a thin, flexible, frangible, gasproof and transparent wrapper 22, preferably a plastic film material wrapper (see Fig. 8). This step may be effected in any suitable manner as by laying a film of a precut piece of wrapper material over the top of the product and pressing it down around the sides of the product or by preforming the film into a cup shape and placing the cup over the product or by a combination of these procedures. The wrapper may be an integral portion of a substantially continuous web

or strip or may be a severed portion, such as a predetermined size blank, if desired.

When the interior of the package is to be vacuumized, the wrapper 22 should fit loosely over the product so as to provide ample space around the product for adequate movement of the wrapper inwardly against the product without tension when a vacuum is drawn during the seaming operation.

With the wrapper 22 in place over the product A, the portions extending down along the sides of the product are tucked or seated into the compound gasket 28 in the flange 27 of the rigid support member 21 to imbed it in the compound as shown in Fig. 9. The imbedding of the wrapper into the compound preferably is effected at spaced intervals only, as shown in Fig. 13, around the flange so as to leave untucked or unimbedded portions between the imbedded portions to provide vents or channels 39 through which the interior of the package is subsequently vacuumized by drawing the air through the vents.

The excess surrounding portion of the tucked-in wrapper, i. e. that portion which extends beyond the flange 27 of the support member 21, is then trimmed or sheared off as shown in Fig. 10. This trimming step may be omitted if the wrapper is precut as a predetermined size blank to fit the package.

Following the tucking and trimming steps, the partially formed package is introduced into a vacuum chamber 41 (Fig. 11). In this chamber, a vacuum of from 25 to 29 inches of mercury (depending upon the degree of ultimate vacuumization desired) is drawn on the package to exhaust the air from its interior through the vents 39 formed by the untucked portions of the wrapper 22 (Fig. 13). While in this chamber and while held under vacuum, the marginal edge portion of the wrapper is fully seated in place entirely around the flange 27 to close and seal the vents and to imbed the wrapper in the compound 28 in a continuous annular seal. This is effected by a tubular shape seating tool 42 (Fig. 11).

As soon as this complete seating step is accomplished, the flange 27 is bent inwardly against the support member skirt wall 26 to produce the seam 23. This bending of the flange 27 preferably is effected by a conventional seaming head having first and second operation seaming rollers 43, 44 (Fig. 12) located within the chamber 41. The first operation roller 43 forms the curved wall section 32 of the seam 23 and bends this wall section inwardly against the wrapper 22 and skirt wall 26 of the support member 21. The second operation roller 44 finishes this bending operation and forms the inwardly extending bead 34 in the seam and the sharp radius curved wall section or outwardly extending annular bead 35 which clamps the wall section 32 against the skirt wall 26. This seaming operation hermetically seals the bent back upon itself marginal edge portion of the wrapper 22 alone, without the aid of a supplemental member, into the seam to permanently unite the wrapper and the rigid support member 21 into a unitary structure. This bending of the flange 27 is effected while the package is maintained under vacuum in the chamber 41 as shown in Fig. 12.

Upon breaking the vacuum in the chamber 41 to remove the package to atmospheric conditions, the pressure of the outside air against the wrapper 22 forces it inwardly toward the product on the rigid support member 21 and thus causes the wrapper to cling to the product and thereby bond or tie together the wrapper, the product and the support member as a firm unitary package which may be readily handled commercially without fear of failure.

In some cases the interior of the package may be protected by displacing the air therein with an inert gas, such as carbon dioxide or nitrogen, instead of vacuumization. This may be effected in the chamber 41, either with or without prevacuumizing and prior to the forming of the seam 23 as hereinbefore described.

If the interior of the package is to be left unvacuumized

or ungassed, the vacuumizing or gassing step in the chamber 41 is omitted. In such case the initial tucking-in of the wrapper 22 into the compound 28 on the flange 27 is effected in such a manner as to tuck in the wrapper entirely around the package so as to provide the continuous annular seal against the wrapper before trimming of the excess material of the wrapper and thereby omit the vents and the reseating step. This tucking step is immediately followed by the flange bending step to produce the seam 23 as explained above.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts and that changes may be made in the steps of the method described and their order of accomplishment without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

We claim:

1. A frangible shipping and display package, comprising a wrapper formed of thin, flexible, frangible and transparent plastic material, said wrapper being adapted to hold and display a product and having a marginal edge portion extending laterally from said product, and a rigid sheet metal end member supporting said product and sealing the marginal portion of said wrapper, said end member having a surrounding skirt wall carrying a sealing compound, said skirt wall merging into a curled peripheral flange including a convexly curved annular wall portion adjacent its peripheral edge and an adjacent inwardly projecting peripheral bead, said curved annular wall portion being held tightly by said bead against the marginal edge portion of said wrapper to clamp the same tightly against the sealing compound on said skirt wall to provide a tight end seam for permanently securing said wrapper to said end member.

2. The package of claim 1 wherein the marginal edge portion of said wrapper which is clamped against said sealing compound is doubled-back upon itself.

3. A frangible shipping and display package for comestibles, comprising a rigid sheet metal base member for supporting the packaged product and terminating in a peripheral depending skirt wall, and a thin flexible wrapper sheet formed of frangible transparent plastic material disposed over the comestible and covering the top and side walls thereof, said depending base member skirt wall merging into an outwardly and upwardly extending flange terminating in an inwardly and downwardly extending smoothly curved wall disposed tangentially to said depending skirt wall and cooperating with said out-

wardly and upwardly extending base member flange as an open curl enclosing the marginal portion of said wrapper sheet in a substantially hollow end seam joint, the terminal peripheral portion of said wrapper sheet extending beyond said curl and thence reversely upwardly into engagement with the exterior surface of said smoothly curved wall portion thereof and clamped thereby against the downwardly extending wrapper sheet and against said skirt wall to constitute a hermetically sealed union between said base member and said sheet.

4. A frangible shipping and display package for comestibles, comprising a rigid sheet metal base member for supporting the packaged product and terminating in an annular depending skirt wall carrying a sealing compound, and a thin flexible wrapper sheet formed of frangible transparent plastic material disposed over the comestible and covering the top and side walls thereof and thence extending downwardly into engagement with said sealing compound, said depending base member skirt wall merging into an outwardly and upwardly extending flange terminating in an inwardly and downwardly extending smoothly curved annular wall disposed tangentially to said depending skirt wall and cooperating with said outwardly and upwardly extending base member flange as an open curl enclosing the marginal portion of said wrapper sheet in a substantially hollow end seam joint, the terminal peripheral portion of said wrapper sheet extending beyond said curl and thence reversely upwardly into engagement with the exterior surface of said smoothly curved wall thereof and clamped thereby against the downwardly extending wrapper sheet portion embedded in said sealing compound and against said skirt wall to constitute a hermetically sealed union between said base member and said wrapper sheet.

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