

Feb. 20, 1951

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ART OF PACKAGING NUTS

2,542,206

Filed Jan. 30, 1948

2 Sheets-Sheet 1

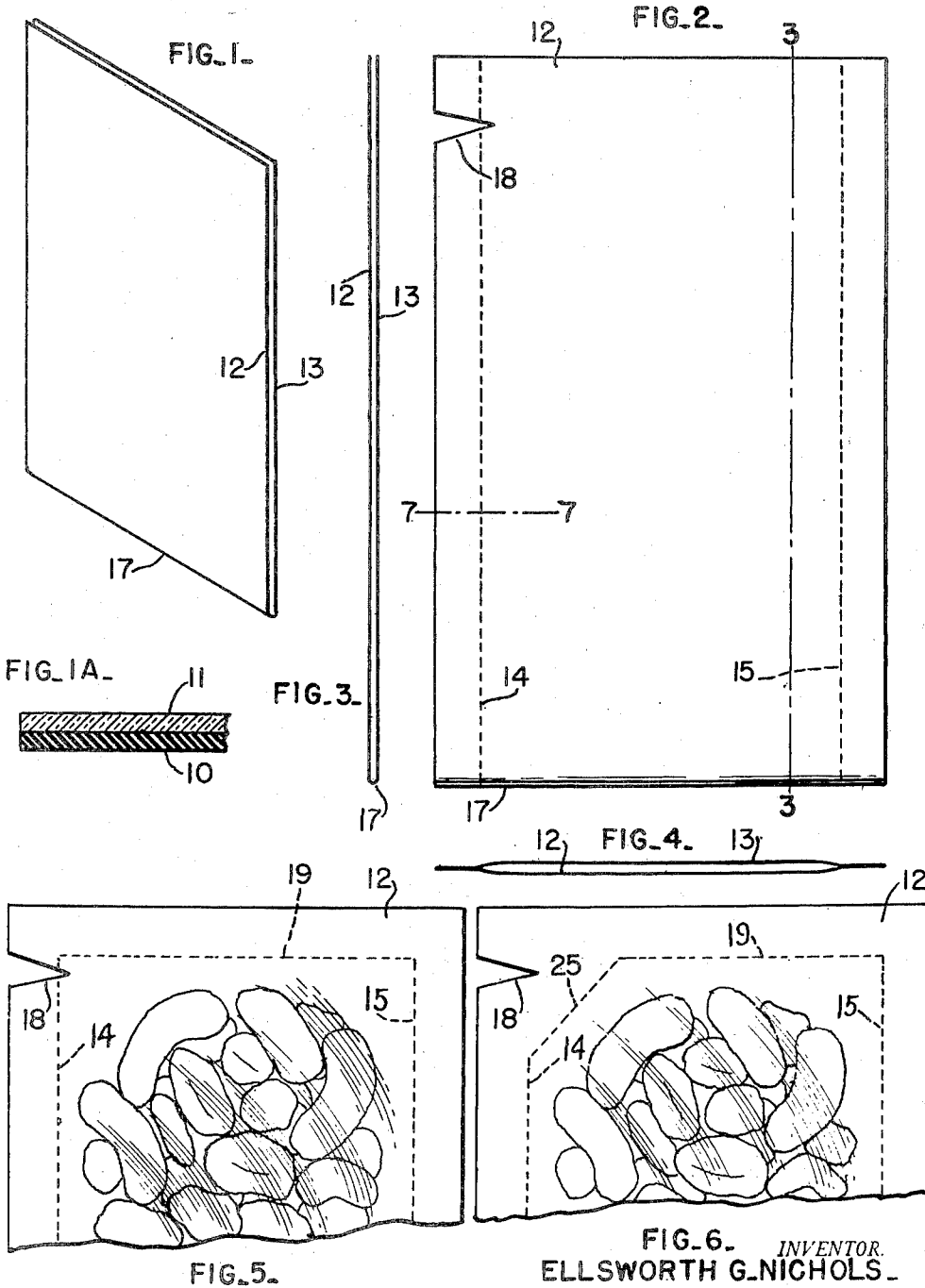


FIG. 6. INVENTOR.
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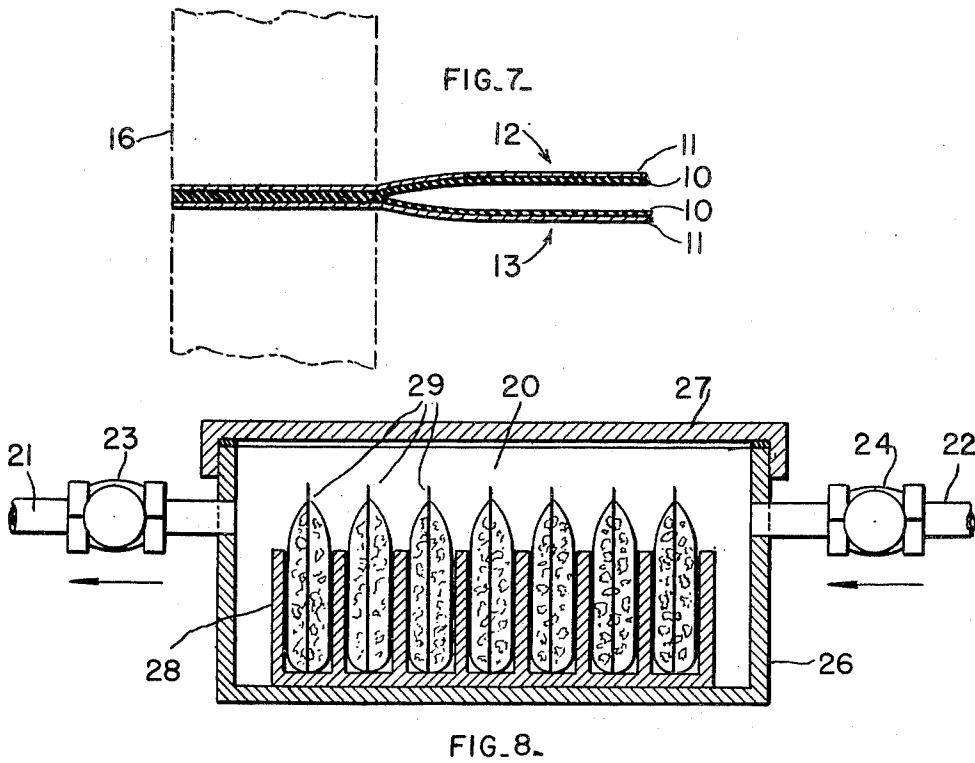
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UNITED STATES PATENT OFFICE

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ART OF PACKAGING NUTS

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1 Claim. (Cl. 99—189)

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This invention relates to the art of packaging merchandise, particularly nuts, and it has for its object to provide an improved package of merchandise and method of making the same.

It has been customary heretofore to package nuts within an air tight container which had the disadvantage that the oxygen occupying the container with the nuts caused the latter to become rancid in a comparatively short length of time particularly nuts cooked in oil or the like.

It has also been proposed heretofore to package nuts within an air tight sheet metal container from which the oxygen had been evacuated and an inert gas substituted, the latter serving to prevent, or substantially retard, rancidity, but so far as I know this has not been possible heretofore when the air tight container was made from thin flexible and pliant impervious sheet material.

The present invention contemplates a package of merchandise comprising a bag of thin flexible and pliant sheet material that is impervious to oxygen, moisture and grease, said bag having an initially open end or mouth through which it is loaded with the merchandise, and the opposite sides of said mouth being thereafter sealed against each other to close said mouth after which oxygen is evacuated from the bag and the latter rendered air tight.

When the contents of the bag consists of nuts, I preferably substitute an inert gas such as nitrogen for the removed oxygen, said gas serving to prevent or minimize rancidity of the contents.

To effect the substitution of the inert gas for the oxygen I may provide a small vent or port in a wall of the bag through which the oxygen is evacuated from the latter and the gas substituted therefor by first placing the filled bag within a closed chamber after sealing the mouth of the bag; then evacuating the air from said chamber as completely as possible; then supplying the nitrogen gas to said chamber until atmospheric pressure or thereabouts is restored therein, and then permanently closing said vent either before or after removal of the bag from said chamber.

The bag is made from tearable sheet material and I preferably provide said bag with a marginal tear-directing notch or fissure whose inner end portion provides the small vent just referred to. This notch is utilized to open the bag or container for removal of its contents and said opening is effected by manually pulling in opposite directions upon the opposite side marginal portions bordering said notch, the strain imposed upon the material of the bag at the inner end of the notch initiating the tear at that point which

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may continue across the bag to the desired extent.

In producing the bag I preferably employ two-ply sheet material comprising a sheet of transparent solidified viscose, such as the product known commercially as "cellophane," to constitute the exterior of the bag and to which is bonded a transparent film or layer of a rubber composition to serve as a lining for the bag, said lining being capable of being welded to a similar film or layer through the employment of heat and pressure. A sheet material product answering this description is known commercially as "Plio-film." The main requirements for the lining composition are that it be impervious to oxygen, moisture and grease and that it shall be a heat-sealing material, or coated with a heat-sealing material, which is impervious to oxygen, moisture and grease.

Other features of my invention are hereinafter pointed out.

In the accompanying drawings:

Figure 1 shows, in perspective, an oblong blank of sheet material folded transversely at its middle as the first step in fabricating the bag to be described.

Figure 1A is a sectional view of the two-ply sheet material hereinafter described.

Figure 2 shows in side elevation the folded blank of Figure 1 with the addition thereto of the tear-directing vent notch hereinafter described.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a top plan view of the structure shown in Figure 2.

Figure 5 shows the upper end portion of the partially completed and loaded bag before the vent holes, hereinafter described, are closed.

Figure 6 is an elevation of the upper end of the completed and loaded bag after closing the vent holes hereinafter described.

Figure 7 is a magnified sectional view taken on line 7—7 of Figure 2.

Figure 8 illustrates an apparatus used in evacuating the oxygen from filled bags and substituting an inert gas therefor.

The bag illustrated in the accompanying drawings is produced from an oblong or elongated rectangular blank of sheet material preferably consisting of two plies including a thin non-tacky transparent lining ply 10, Fig. 1A, of a rubber composition and an outer ply 11 preferably consisting of a transparent non-elastic sheet of solidified viscose commonly known as "cellophane," said two plies being bonded together throughout their extent by cement or otherwise and the

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thickness of the composite blank may measure in the neighborhood of five one-thousandths of an inch.

The elongated rectangular blank is folded transversely upon itself at its middle, Figs. 1 and 2, to close the bottom of the bag when finished as shown in Figs. 1 and 2, as well as to provide opposite side panels 12 and 13 either or both of which may bear suitable printed inscriptions (not shown).

The opposite side marginal portions of the two panels 12 and 13 are then permanently united throughout limited areas at each side thereof, each area extending a substantial distance inwardly from the proximate side edges of the panels as shown in Fig. 4 and is indicated by dotted lines 14 and 15 in Fig. 2, and said union extending from the bottom to the top of the bag. This union of the two opposed side marginal portions of the lining ply 10 may be effected in any suitable manner, but preferably by the application thereto of heat and pressure through the medium of a heated metal bar or die that is indicated by dotted lines at 16 in Fig. 7, which serves to weld together the opposed and contacting portions of the lining ply 10 thus avoiding the use of cement although the latter is an alternative method of effecting such union.

The two dotted lines 14 and 15, Fig. 2, together with the bottom closure-bend or fold 17 define a chamber into which the merchandise, herein shown as nuts, is introduced through the mouth of the bag which at this stage is open to admit the same.

Adjacent to the mouth end of the bag the composite side marginal portion, at one side at least of the chamber just referred to, is formed with a fissure 18 in the form of a V-shaped notch which extends from the outer edge of said marginal portion to a point where it provides small vent holes in the two panels which open into the interior of the bag. This fissure or V-shaped notch, communicating as it does at its inner end with the interior of the bag, serves the dual function of tear-directing means when the bag is opened as hereinafter described, and as vents through which oxygen is exhausted from the interior of the bag and an inert gas substituted therefor as is also hereinafter described.

After loading the bag with nuts as above described the top marginal portions of the two panels bordering the mouth are permanently united throughout limited areas extending a substantial distance inwardly from the top of the bag as indicated by the dotted line 19 in Fig. 5, said union extending from side to side of the bag and being disposed between the apexes of the duplex notch 18 and the top of the bag. This union of the two opposed top marginal portions bordering the mouth of the bag may be effected in any suitable manner, but preferably by the application thereto of heat and pressure through the medium of a heated metal bar or die such as is indicated by dotted lines at 16 in Fig. 7, which serves to weld together or integrate the opposed and contacting marginal portions of the lining ply 10 thus avoiding the use of cement although the latter is an alternative method of effecting such union.

After forming, loading and closing the bag with the exception of the vents provided by the apexes of the duplex notch 18, said bag is placed within an air tight chamber 20, Fig. 8, with which the ends of two conduits 21 and 22 are connected, said conduits being provided, respectively, with

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normally closed shut-off valves 23 and 24. The conduit 21 connects the chamber 20 with air-exhausting mechanism (not shown) which maintains as high degree of vacuum within said conduit as possible, while the conduit 22 connects the chamber 20 with a supply of nitrogen or other suitable inert rancidity-retarding gas.

While valve 24 is closed the valve 23 is opened with the result that a high degree of vacuum is established within air tight chamber 20, and by reason of the vents referred to above, within the bag also thus withdrawing approximately all of the oxygen from the latter. Valve 23 is now closed and valve 24 opened with the result that inert nitrogen gas is supplied to chamber 20 and, by reason of the vents referred to above, to the interior of the bag also.

The bag occupied by the nuts and an atmosphere of nitrogen gas is now removed from the chamber 20 and the heretofore ununited corner portions of the two panels that are immediately adjacent the apexes of the duplex notch 18 and between the same and the contents of the bag, are united to the extent indicated by the dotted line 25 in Fig. 6. This union of said portions may be effected in any suitable manner, but preferably by the application thereto of heat and pressure through the medium of a heated metal bar or die thereby welding together the opposed portions of lining ply 10 and thus avoiding the use of cement although the latter is another method of effecting such union.

The chamber 20, Fig. 8, is the interior of a vessel 26 provided with a removable cover or closure 27 and for use within this vessel I may provide a rack 28 for supporting in upright positions a plurality of loaded packages 29 so that a plurality of the same may be treated at one time.

The above described method involving exhausting the oxygen-laden air from the filled bag and substituting an inert gas therefor while the bag is inclosed within an air tight chamber avoids collapse of the thin and comparatively weak material of the bag against the nuts under atmospheric pressure to the injury of the bag as would be the case were this substitution effected in the open.

The lining 10 of the bag is preferably a transparent waterproof film of rubber hydrochloride bonded throughout its extent to the outer cellophane film 11 by means of a suitable cement.

What I claim is:

The method of packaging nuts comprising producing a bag from pliable and tearable impervious heat-sealing sheet material, said bag having an open mouth and being formed with a marginal re-entrant tear-directing fissure whose inner end initially provides a vent communicating with the interior of said bag; loading the bag with nuts through said open mouth; sealing said mouth in closed condition; placing said closed bag in an air tight chamber; exhausting oxygen-laden air from within said chamber so as to evacuate oxygen-laden air from within said bag through said vent; admitting an inert gas into said chamber so as to cause said gas to enter the bag through said vent, and lastly, permanently closing said vent by sealing together opposite side walls of the bag in proximity to said vent and between the latter and the contents of the bag through the application thereof of heat and pressure.

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