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R. L. DREYFUS ET AL

3,050,402

METHOD OF PACKAGING A FOODSTUFF

Filed July 22, 1959

FIG. 1.

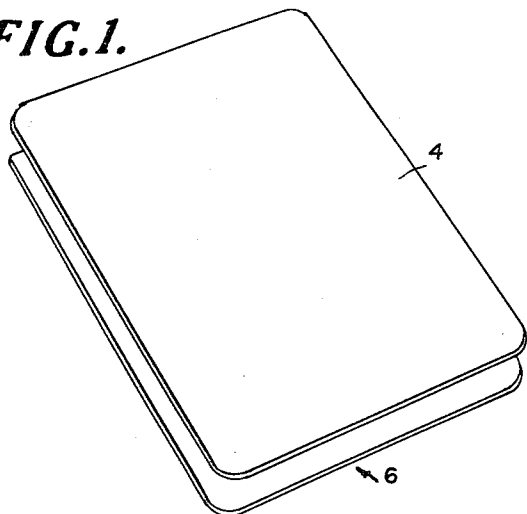


FIG. 2.

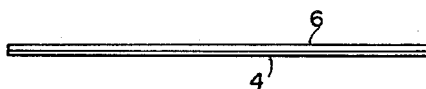


FIG. 3.

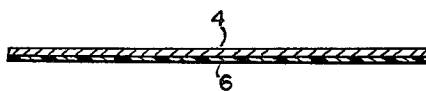


FIG. 4.

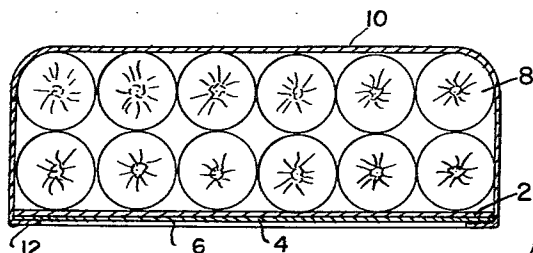
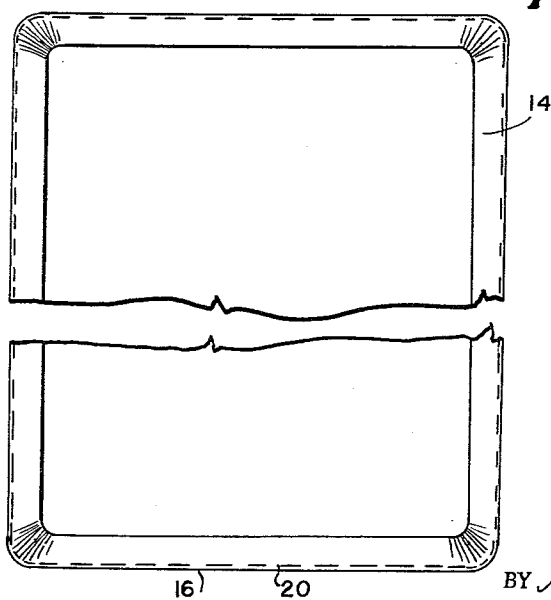


FIG. 5.



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METHOD OF PACKAGING A FOODSTUFF

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1 Claim. (Cl. 99—171)

This invention relates to open containers having a transparent protective film cover.

It has previously been proposed to use biaxially oriented, irradiated polyethylene film as a packaging material. Such irradiated polyethylene performs this function with eminent satisfaction. However, the irradiated polyethylene film is relatively expensive.

Accordingly, it is an object of the present invention to prepare packages utilizing the biaxially oriented, irradiated polyethylene in lesser amounts than has been utilized before.

An additional object is to form cardboard or other cellulosic containers having a biaxially oriented, irradiated polyethylene film cover sealed thereto.

Still further objects and the entire scope of applicability of the present invention will become apparent from the detailed description given hereinafter; it should be understood, however, that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

It has now been found that these objects can be obtained by coating a container of cardboard, paper or other cellulosic material with regular polyethylene and then applying a cover of biaxially oriented, irradiated polyethylene and sealing the cover to the polyethylene coated surface of the cellulosic material.

In the illustrative examples, cardboard was coated with a conventional polyethylene, e.g. Alathon 16 which has a molecular weight of about 20,000 and density of 0.923. The irradiated polyethylene was Alathon which had been irradiated to an extent of 12 megarad. and had then been stretched 350% longitudinally and 350% laterally and had a shrink energy of 250 p.s.i. at 96° C.

The invention will be best understood in connection with the accompanying drawings wherein:

FIGURE 1 is an exploded perspective view of a backing board and cover according to the invention;

FIGURE 2 is a side view of the backing board and cover of FIGURE 1;

FIGURE 3 is a vertical section of the backing board of FIGURE 1;

FIGURE 4 is a vertical section showing frankfurters packaged in the cover and backing board of FIGURE 1;

FIGURE 5 is a top plan view partially broken away of another type of container and cover according to the invention.

Referring more specifically to the drawings, there is provided a backing board 2. The backing board comprises a layer of cardboard 4 and an outer layer of regular polyethylene 6.

Frankfurters 8 are positioned on the backing board 2 and then a cover of the biaxially oriented polyethylene film 10 is placed over the frankfurters. The cover is bent around the backing board to provide an overlapping film area 12. The overlapping film 12 is sealed to the polyethylene 6 by the aid of a Teflon (polytetrafluoroethylene) belt covered hot plate (not shown). There was such a good bond between the biaxially oriented, irradiated polyethylene cover and the regular polyethylene that the paper board tore before it was possible to peel apart the seal. When the package was placed in water

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at 200° F. in order to heat shrink the cover 10 tightly around the frankfurters 8, it was observed that the package stood up well under this treatment.

As shown in FIGURE 5, there is provided a rectangular container 14 in the form of an inverted truncated pyramid. The container is made of cardboard having an outer coating of regular polyethylene. A cover 16 of biaxially oriented, irradiated polyethylene of slightly greater area than the top of the container is positioned over the container and is heat sealed to the regular polyethylene slightly below the top of the container as indicated by the dotted lines 20. Hot air was utilized to take the wrinkles out of the top surface of the cover film without damage to the seal.

It will be evident that by use of the instant invention there is a considerable saving in the amount of biaxially oriented, irradiated polyethylene which is required since regular polyethylene is employed to serve a portion of its sealing function where the outstanding clarity and heat shrinking properties of the biaxially oriented, irradiated polyethylene is not required.

The biaxially oriented, irradiated polyethylene cover can be made with pleated or mitred corners. In one example, the cover film having mitred corners was overlapped $\frac{3}{4}$ inch all around a backing board having the regular polyethylene as an outside coating. When sealed on the Teflon belt covered hot plate the irradiated polyethylene cover sealed to the regular polyethylene all around (and to itself at the pleated corners) with a considerable saving in cover film used over standard techniques, the plates made from the regular polyethylene coated cardboard not only are eminently waterproof and taste-free but by virtue of having the irradiated polyethylene film covers sealed to their top edges can be used as individual butter plates, sandwich plates, pie plates, etc. The seal can be made with a peelable bond if such is desired.

Bulky objects of irregular configuration, e.g. an egg beater, can be fastened to a display card coated with regular polyethylene by using a strap or band of the biaxially oriented, irradiated polyethylene and fastening it at the ends to the coated card. The strap or band can then be heat shrunk to tightly restrain the egg beater.

In general, as the irradiated polyethylene film, there can be employed polyethylene which has been irradiated to an extent of 2 to 100 megarad., preferably 6 to 20 megarad. The irradiation can be accomplished in conventional fashion, e.g. by the use of a high voltage resonant transformer, such as the 2,000,000 volt General Electric resonant transformer, or high energy particle generators of 50,000 to 50,000,000 volts or a Van de Graaff electron generator. In addition to the use of electrons, there can be employed any of the irradiation procedures disclosed in Baird application, Serial No. 713,848, filed February 7, 1958, now Patent 3,022,543, issued February 27, 1962, or in Rainer Patent 2,877,500.

The biaxial orientation is normally carried out to an extent of 100 to 700% longitudinally and 100 to 900% laterally. The biaxial stretching can be carried out by blowing irradiated polyethylene tubing as disclosed in the Baird application or can be accomplished as shown in the Rainer patent. The irradiated, biaxially oriented polyethylene prepared by such procedures has a high shrink energy, e.g. 100 to 1,000 p.s.i. at 96° C.

There can be employed as the starting polyethylene for the irradiation procedure high, low or medium density polyethylene prepared by low or high pressure technique. The starting polyethylene can have a molecular weight of 7,000 or 12,000 or 19,000 or 21,000 or 24,000 or 35,000 or even higher.

The regular polyethylene utilized to coat the cardboard, paper or other fibrous cellulosic material can be the same

or different than the polyethylene used to form the irradiated polyethylene.

In addition to frankfurters, other foodstuffs can be packaged according to the invention, e.g. meats, such as hamburger, luncheon and sliced Bologna, as well as fruits, berries, e.g. strawberries, blackberries and blueberries, etc.

The regular polyethylene can be utilized to coat one or both surfaces of the cellulosic backing material. It is critical, however, that the irradiated, biaxially oriented polyethylene be adhered to the regular polyethylene to insure complete protection of the packaged foodstuff.

What is claimed is:

A method of packaging a foodstuff comprising positioning the foodstuff on a fibrous cellulosic backing having an external coating of regular polyethylene, placing a cover of irradiated, biaxially oriented polyethylene, said irradiation being to an extent of 6 to 20 megarad., over said foodstuff and slightly overlapping said backing, heat sealing the overlapped portion of said cover to the ex-

ternal coating of polyethylene on said backing and then heat shrinking said cover tightly around said foodstuff.

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