

March 2, 1965

R. L. DREYFUS ET AL

3,171,749

METHOD OF PACKAGING FOOD

Filed Aug. 30, 1961

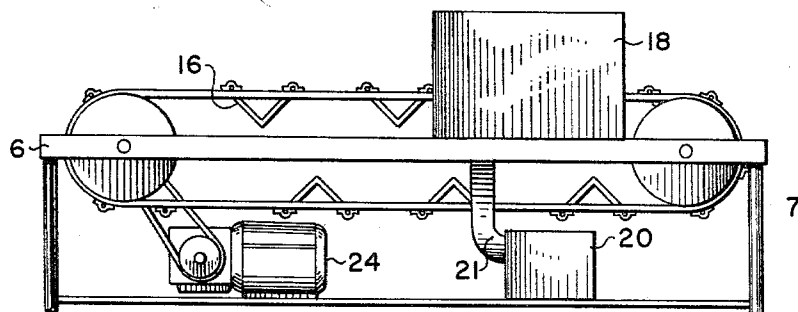


Fig. 1

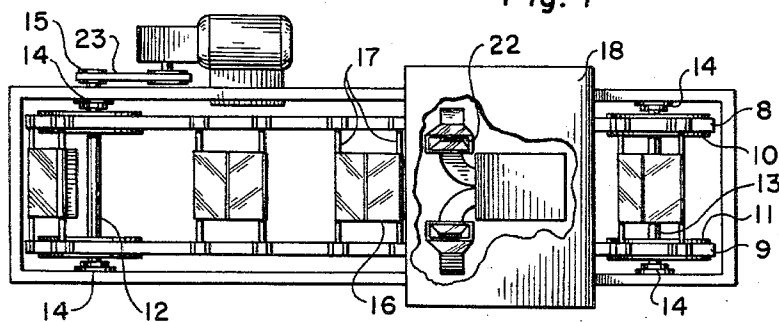


Fig. 2

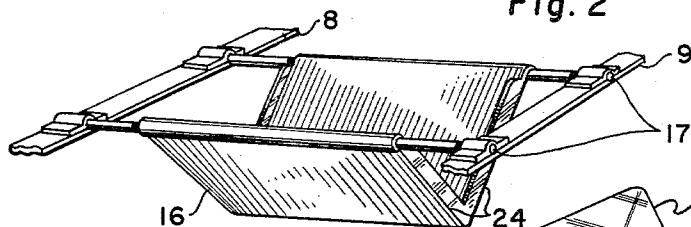


Fig. 3

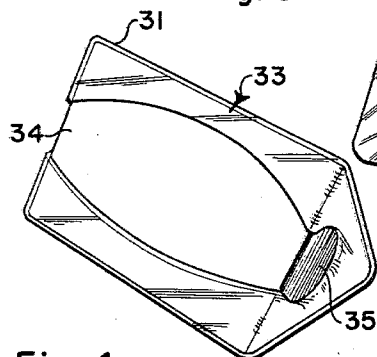


Fig. 4

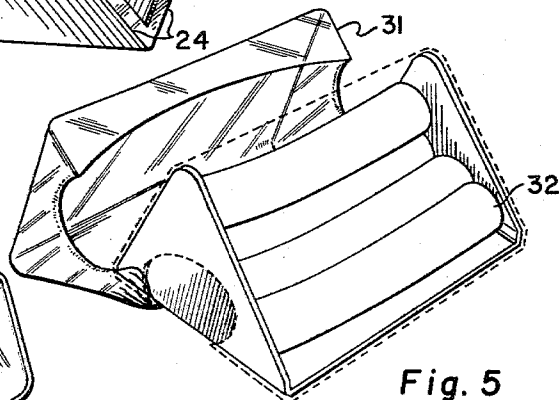


Fig. 5

1

3,171,749

METHOD OF PACKAGING FOOD

Robert L. Dreyfus, Arlington, and John W. Harrison, Winchester, Mass., assignors to W. R. Grace & Co., Cambridge, Mass., a corporation of Connecticut
Filed Aug. 30, 1961, Ser. No. 135,050
1 Claim. (Cl. 99-171)

This invention relates to packaging and packaging apparatus and has particular reference to the packaging of frankfurters and similarly shaped products and to the package resulting therefrom.

In the wrapping of frankfurters, sausages, and other similarly shaped products, for instance, it has been common practice to place the products on a flat section of backing board, to wrap a sheet of transparent plastic film material around the product, and to subsequently close and seal the package. The wrapped product may then be subjected to a shrinking operation which eliminates wrinkles in the sheet material while tightly encasing the product, thus presenting an attractive package. Another practice is the use of an approximately rectangular cardboard tray in place of the flat backing board of the aforementioned package. The frankfurters are placed in the tray and a sheet of plastic film material is wrapped around the encased product, the film is sealed, usually on the underside of the tray, and then preferably, but not necessarily, shrunk over the entire surface of the package. The plastic film material not only functions to protect the encased product from contamination but aids in prolonging its shelf-life.

However, in many circumstances it is desirable to remove only a portion of the contents of the package and to be able to reclose the package for use at a later date. In the packages as described above, the procedure would necessitate removing the remaining contents of the package and rewrapping in a suitable material, a procedure which is time-consuming and costly.

It is therefore an object of the present invention to provide a package which is reclosable, easy to store, and possesses all of the above-described characteristics.

Another object of the present invention is to provide a novel means and method of producing a package which is relatively simple and inexpensive to assemble and which uses a minimum of plastic film material to cover the exposed product.

It is a further object of the invention to provide an improved apparatus for packaging a number of frankfurters or similar articles with a minimum of handling.

These and other objects of the present invention will appear more fully in the following detailed specification and claims taken in conjunction with the accompanying drawings in which:

FIGURE 1 is a side elevational view of the apparatus of the present invention;

FIGURE 2 is a top plan view of the apparatus of the present invention;

FIGURE 3 is a detailed perspective view of the carrier mechanism of FIGURES 1 and 2;

FIGURE 4 is a perspective view of the completed package; and

FIGURE 5 is a view showing the reclosable features of the package.

FIGURES 1 and 2 of the drawings illustrate a preferred form of the apparatus of this invention which comprises a rectangular support frame 6 mounted on four support frame legs 7. Two separate conveyor belts, 8 and 9, are each respectively trained around a separate pair of pulleys, 10 and 11, supported by shafts, 12 and 13, located at each end of the frame and journaled in bearings 14, said bearing being mounted in frame 6. The

2

carrier mechanisms for the cylindrical-shaped objects being packaged comprise a plurality of V-shaped troughs 16 rigidly suspended from pairs of support rods 17, which are secured to and carried along by the endless conveyor belts 8 and 9 to a hot air shrink tunnel 18. Hot air from any suitable hot air source 20, such as are well-known to those skilled in the art, flows through two hot air ducts 21 which lead into the tunnel and terminate in openings 22 spaced laterally at opposite sides of the hot air tunnel and positioned so that as the V-shaped trough enters the tunnel, the hot air is directed at the triangular or V-shaped ends of the package held in the trough. Shaft 12 carries a wheel 15 which is fixedly mounted on said shaft and through which rotation may be imparted to the entire shaft by means of a belt drive 23 which is driven by a variable speed motor 24.

In FIGURE 3 which is a detailed view of the carrier mechanism shown in FIGURES 1 and 2, the V-shaped trough 16 may be constructed of any suitable sheet material such as stainless steel. An important feature of this mechanism is the presence of the flange sections 24 which are bent inwardly along the V-shaped ends of the trough and serve to hold the film material and backing board sides against the ends of the stacked product for the subsequent shrinking operation. The trough is suspended from the rods 17 between the conveyor belts.

In the operation of the machine and the method of making the package of this invention, a rectangular sheet of heat-shrinkable film 31 is first positioned across the top of and then pushed down into the trough 16. The trough is slightly longer than the length of the objects being packaged and is of sufficient depth to accommodate the desired number of objects being packaged. The object or objects being packaged, e.g., frankfurters 32, are placed on top of the film in the trough. It will be observed that the loaded trough now has a margin of film extending past the flange edges at either end of the trough and up above the top of the trough. A backing member 33, having a base 34 and side walls 35 which backing member is shaped to cover the top layer and ends of the stacked objects being packaged is now placed in the trough. The side walls are held against the ends of the objects by the flanges which also bend the marginal edges of the film over and against the outside surface of the side walls. The assembled package is then conveyed to the hot air shrink tunnel where the film extending beyond the ends of the backing board and above the backing board is shrunk against the backing board and becomes locked about the sides and base of the backing member. The completed package leaves the shrink tunnel ready for further handling, shipping, etc. In those instances where frankfurters and similarly shaped food products are being packaged, it may be advantageous to further shrink the exposed film-covered faces of the package in order to remove any wrinkles from these areas, thus presenting an attractive, tightly encased product. Since products of this nature are generally kept refrigerated prior to and while being packaged for retail distribution, the process of hot air shrinking as described in this invention may, in some cases, be insufficient to overcome the low temperature influence of the product adjacent to the exposed surfaces of film for the light shrinking and smoothing out process to occur at these surfaces. The final tightening and smoothing process is best accomplished by running a hot water soaked sponge roller over the exposed film surface areas of the package after the completed package has left the hot air shrink tunnel.

In connection with the improvement of appearance of the final packaged product, as just described for food products such as frankfurters, sausages and the like, in

those instances where non-food products such as carbon paper rolls, cylindrical curlers and similarly shaped articles are being packaged, the V-shaped trough of the carrier mechanism is preferably constructed of wire mesh, e.g., perforated stainless steel or some similar foraminous material to permit the passage of hot air therethrough. Such a construction would adequately permit the tightening of the exposed film surfaces over the product to give the desired package appearance where the lowered temperature of food products such as frankfurters is not a consideration in the packaging operation.

It is preferred to shrink the film at each end of the trough first as this serves to lock the film to the ends and also to pull the film extending above the base of the backing board down over the base. This end shrink, prior to overall shrink, is easily accomplished by directing the hot air from the ducts against the ends of the trough.

Referring now to FIGURES 4 and 5 of the drawings which are views of the completed package and in which the illustrated embodiments are shown as packages of frankfurters, the backing member of the package is generally designated as numeral 33. The backing board has an approximately rectangular or square-shaped base 34 and triangular shaped ends, or side walls 35 to accommodate a triangular stack of objects 32. Various modifications of the shape of the backing member may be employed, however, without departing from the scope of this invention. For example, the end walls may be semi-circular or if it is desired to package stacked cylindrical objects in truncated pyramid packs, i.e., layers of 5, 4 frankfurters or in rectangular packs, i.e., layers of 4, 4 frankfurters, the shape of the backing board and, consequently, the shape of the trough in the carrier mechanism of the apparatus are easily modified to achieve the intended purpose.

The backing member, which may consist of any material strong enough to resist deformation under the tension exerted by the shrinking film, is preferably but not necessarily waxed on both sides when packaging food products; unwaxed or waxed on one side when packaging non-food products. Suitable backing board materials include cardboard, plastic, etc.

The plastic film covering 31 encasing the product 32 and locked around the ends 35 and base 34 of the backing member 33 may be of any suitable heat-shrinkable plastic film material. We have found that film material such as irradiated, biaxially oriented polyethylene prepared as disclosed in United States Patent 2,877,500 to Rainer et al. is particularly suitable, although any heat-shrinking film may be used. The edges of the film are shrunk over the ends 35 and over the base 34 thereby becoming locked to the backing board.

In FIGURE 5, the package of FIGURE 4 has been opened and a portion of the contents of the package has been removed. It is possible to open the package without tearing the film because the shrunken film edge is elastic and may be stretched sufficiently to lift over the edge of the backing member. The package may be reclosed,

thereby retaining the identity of the original package with all its desirable features and characteristics.

Among the many advantages of the package of this invention for the packaging of articles such as have been described herein, are the features of ready reclosability, ease of loading or stacking, the provision of a support structure for the film covering which prevents the collapse of the film after the package has been opened and reclosed, and the obvious reduction in the amount of materials necessary for the assembly of such a package, thereby reducing the cost of the package substantially.

The invention described in detail in the foregoing specification is subject to changes and modifications without departing from the principle and spirit thereof. The terminology used is for the purpose of description and not of limitation, the scope of the invention being defined in the claim.

We claim:

A method of packaging a solid food product comprising:

- (a) placing a heat shrinkable wrapping material on a V-shaped support,
- (b) positioning a solid food product on said film thereby depressing said film so that said film extends beyond the peripheral edges of the support,
- (c) inserting a backing member over said product and within said support, said backing member having a flat base integral with two opposing triangular shaped side walls, said end walls being inserted downwardly into said support at either end of said product,
- (d) bending the film extending beyond the peripheral edges of the support over and against the outside surface of the side walls,
- (e) subjecting the resultant composite to heat shrinking temperatures so as to shrink the exposed film edges about the edges of the backing member to form an elastic edge which permits removal of the film from the object and backing member,
- (f) and removing the resultant package from said support.

References Cited by the Examiner

UNITED STATES PATENTS

2,668,403	2/54	Rumsey	99—174	X
2,789,407	4/57	Smallegan	53—184	
2,815,624	12/57	Forry et al.	53—184	
2,877,500	3/59	Rainer et al.	99—174	
2,908,576	10/59	Rumsey	99—174	
2,911,305	11/59	Rumsey	99—171	
2,987,402	6/61	Dold	99—171	
3,006,527	10/61	Lofquist	99—171	X
3,092,246	6/63	Harrison et al.	99—171	X
3,099,567	7/63	Wallace et al.	99—174	X
3,106,050	10/63	Westphal et al.	99—174	X

A. LOUIS MONACELL, *Primary Examiner*.

HYMAN LORD, *Examiner*.