March 3, 1959 A. A. VAIL 2,876,112

METHOD OF PACKAGING FOOD AND CASING THEREFOR

Filed Dec. 16, 1954

Fig. 1.

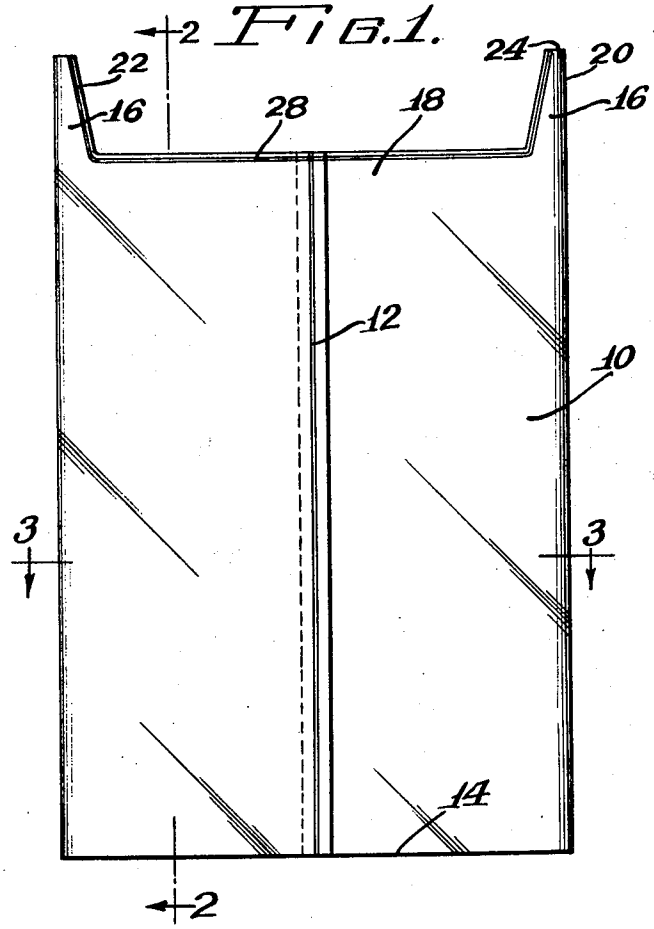


Fig. 2.

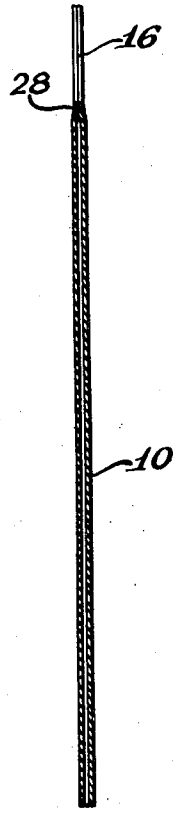


Fig. 3.



Fig. 5.

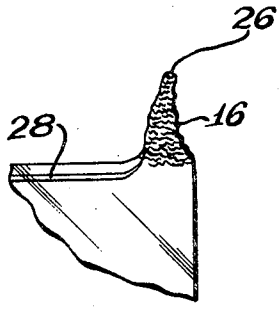
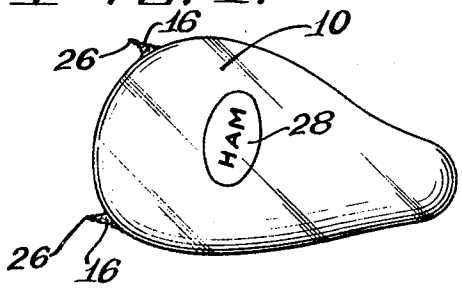


Fig. 4.



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METHOD OF PACKAGING FOOD AND CASING THEREFOR

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8 Claims. (Cl. 99—171)

My invention relates to the packaging of perishable products, particularly food products, and is directed to both the method of packaging such products and the package to be used therefor.

It has long been known that transparent flexible material which is tasteless, odorless, and non-toxic, and which is impervious to air, moisture, and other contaminants, provides a highly desirable material for packaging food products. The desirability of such packages both from the standpoint of attractive appearance and preservation of the contents has been previously well recognized and long sought. A number of materials and processes for the purpose have been suggested. Examples to be found in the prior art approaching some at least of the qualities sought are such as the Gammeter Patent No. 2,071,300, the McCoy Patent No. 2,168,651, and the De Poix Patent No. 2,376,583. Another more recently issued patent relating generally to such subject matter is Metzger Patent No. 2,682,902. While the packages and packaging methods disclosed in these and other patents are generally meritorious advances, each has some drawbacks which fail to meet the requirements achieved by the present invention.

Pliofilm, rubber hydrochloride, and generally similar plastic materials, are quite satisfactory in meeting many of these requirements, particularly when such sheet material has been stretched so as to be thin, inexpensive, and shrinkable to a high degree when heat is applied thereto.

It will be readily appreciated that it is highly desirable in a package of this type that it be reasonably loose around the packaged material initially, for ease in packing, but that permanent creases and wrinkles in such packages are unsightly and undesirable. It therefore is a highly desirable quality that such material may be readily and quickly shrunk around the contents to present a tight attractive covering without creases or wrinkles.

However, it is a characteristic of such material that if in its preparation it has been given a stretch predominantly in one direction and allowed to set, it will, when exposed to heat, shrink to the greater degree in a direction opposite to that in which it was last stretched. Thus, if such material has last been stretched longitudinally, it will subsequently shrink, upon being exposed to heat, to a greater extent and more rapidly in a longitudinal direction than it will laterally. Likewise, such material is much more likely to rip or split in the granular direction of its last direction of stretch than in a direction opposite thereto. It is a fact therefore than such stretched sheet material as has been previously suggested for packaging purposes has had these inherent defects.

It is one of the objects of the present invention to provide a food preserving and packaging envelope made of stretched material, such as rubber hydrochloride, in which the material has been given a simultaneous multidirectional stretch before setting, so that it has no directionally

predominant granular arrangement and which will shrink on subsequent application of heat not predominantly in either a lateral or longitudinal direction, but biaxially or multidirectionally. Such material having such characteristics is commercially available under the trade name Cross Tensilite. Such material is multidirectionally stretched sheet material, such as rubber hydrochloride, which is of light weight, uniform gauge, transparent, flexible, substantially impervious to air, moisture, and other contaminants, unaffected by low temperatures, and shrinkable multidirectionally almost instantaneously upon subjection to heat of a relatively low degree.

Another desirable characteristic of such a package is that the air within the envelope be removed therefrom before sealing so that the food product which may be contained therein will not be subjected to oxidation within the package. Withdrawal of air from such packages by evacuating mechanism is both uncertain and expensive and the machinery required for such an operation is expensive to build, maintain, and operate, and is also space-consuming. It is therefore a further object of my invention to provide an envelope or package which is self-exhausting of contained air, quickly and economically.

In packages of the type to which the present invention generally relates, it is very desirable that the final sealing of the package after the contents have been enclosed be accomplished quickly and inexpensively. Indeed it is most desirable that such final sealing occur in the packaging process substantially automatically to avoid the occurrence of unsealed packages into which air or other contaminants may readily enter. It therefore is a further object of this invention to provide a package inherently possessing such certain final sealing characteristics.

Further and additional objects and advantages of the present invention will become apparent from the following description of the invention, taken in connection with the accompanying drawings of a suitable embodiment of an article of my invention.

In the drawings:

Fig. 1 is a front perspective view of a packaging envelope of my invention;

Fig. 2 is a sectional view taken along the lines 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a perspective view of a finished package in which the envelope has been shrunk around a food product such as a ham;

Fig. 5 is a perspective view of an air outlet valve after the same has been shrunk into closed position.

The envelope or package shown in the drawings may be described as follows:

The envelope **10** may be of various sizes and shapes but is made of transparent, water and air impervious, sheet material, such as rubber hydrochloride, which has been stretched multidirectionally at the same time so that it has no predominant line of grain or stretch in any single direction. It should of course be of uniform gauge and free of holes in its body. A suitable material of this character is Cross Tensilite, previously mentioned, which, when briefly subjected to heat of approximately 160° F. and upwards, will shrink almost instantaneously multidirectionally to a substantial extent.

In making the envelope it is desirable to avoid seams as much as possible, preferably by folding the material so that its edges are continuous and seamless. However, because of the nature of the material, the edges or ends, or intermediate seams, such as **12**, may be readily sealed by a sealing iron, electric impulse, electonically or in

other manners well known in the art. The material therefore may be folded upon itself to present a central seam 12 and an end opening 14.

When the sheet 10 is formed, it may be substantially rectangular in shape, except for two projecting portions 16 at one end of the sheet which will be preferably at both sides of the edge 18 of the envelope when the folding operation has been made. These portions 16 preferably having unseamed edges 20, when folded, are air vents as will be later described. Under some circumstances, only one such vent will be necessary.

The vents 16 are shown as each having one side 22 angularly disposed relative to the edge 20. It may be parallel thereto, however, if desired.

When the envelope has been folded and the seam 12 nd end 18 and vent sides 22 have been sealed, it will be een that an envelope or bag having three closed sides nd one open side or top has been provided.

The contents are then inserted into the envelope and the opening 14 is then sealed as with a sealing iron, or otherwise, leaving as the only openings in the package he tips 24 of each vent 16.

The package is then immersed into a heating medium such as a hot water bath, the water being at a temperature near but preferably lower than boiling, the opening 14 preferably being the first to be so immersed and the air vents 16 last.

As soon as the package enters the hot water, the envelope will commence to shrink tightly about the enclosed object, and air contained in the envelope will be expelled through the vents 16. When the hot water or other heating medium reaches the vents 16, they too will rapidly shrink and buckle in all directions, except as they are prevented from shrinkage by escaping air. The vents 16 will become closed as at 26 in Fig. 5 after the air has been expelled, and the package will be completed and can be removed from the heat bath. This will all take place in a very short time period, such as in the nature of three seconds. While it is preferable to subject the vents to heat as a latter step in packaging, that is not essential since they will not shrink to closed position while air is escaping therethrough.

In order that the vents 16 close properly, it is desirable that the tubes which they define be small in diameter and be relatively long as compared with the diameter. I prefer that the length of the tube be on the order of four times the least diameter of the tube. I also find it desirable that the tube taper toward its outer end to a smaller diameter to assure a smooth air release, and therefore the base of the valve, or that region thereof which joins the envelope, is preferably on the order of twice as large or larger than the outer end of the tube.

It should be noted that in the package and packaging process which I have described, there will be little if any vacuum within the package because while air has been expelled, the envelope has at the same time become very much smaller and will be shrunk tightly and smoothly about the contents, leaving no wrinkles or folds of material, and no openings for ingress of air or moisture under ordinary conditions of handling.

If desired, a label or trademark 28 of any desired color, on paper or other material, may be placed on the package contents when packaging, as shown in Fig. 4, and will be easily visible through the transparent covering. Printing in various colors can be made on the outside of the envelope itself without obliteration thereof by immersion, and of course labels may be applied to the exterior of the package.

It will be seen from the foregoing description that I have invented a package, and method of packaging food and other products, which is economical, attractive, and meets all the objectives above set forth.

I have described the package and method of packaging in connection with a desirable embodiment as to size and shape, which may of course be widely varied. I desire therefore to be limited in the scope of the invention only by the following claims.

I claim:

1. A casing for food products comprising a transparent flexible covering made of a tasteless, odorless, and non-toxic thermoplastic sheet which has been subjected to multidirectional simultaneous pre-stretching and which has a characteristic of multidirectional shrinkage upon exposure to heat at and above 160° F., said covering having an opening for the insertion of material to be packaged, the edges of said opening being adapted to be sealed, and an air outlet valve formed in said covering and integral therewith, said valve being self-closing upon the application thereto of heat in the shrinkage range.

2. A casing for food products comprising an envelope having one open side for the insertion of the product to be packaged, said envelope being made of thermoplastic material which has been subjected to simultaneous multidirectional pre-stretching, air outlet valve formed in at least one side of said envelope, said envelope and said valve having a characteristic of substantially multidirectional shrinkage upon subjection to heat of at least about 160° F., said air outlet valve being of a size and shape to be self-closing when shrunk.

3. A casing for food products comprising a wrapper of simultaneously multidirectionally pre-stretched thermoplastic film having an air outlet valve formed therein of the same material, said valve comprising an open ended tube substantially greater in length than in diameter, the material forming said wrapper and said valve having a characteristic of shrinking multidirectionally and substantially instantaneously when subjected to heat in the order of 160° F. and over, said valve being self-closing upon the application thereto of heat in the shrinking range.

4. A casing as claimed in claim 3 wherein said air valve tube has a base diameter at least twice as great as the diameter at its open end.

5. A casing for food products comprising a wrapping of thermoplastic material which shrinks about the contents of said casing upon subjection to heat in the order of 160° F. and upwards and an air outlet valve for said casing comprising a tube of simultaneously multidirectionally pre-stretched rubber hydrochloride film having a length at least four times greater than its narrowest inside diameter and being of smaller diameter at its tip than at its juncture with said wrapping, said tip having a characteristic of multidirectional shrinkage to closed condition when subjected momentarily to heat in the order of 160° F. and more.

6. A method of packaging food products including the steps of enclosing an article to be packaged in a wrapper of simultaneously multidirectionally pre-stretched thermoplastic film, sealing the sides of said wrapper except for an air valve outlet formed therein, subjecting said package to heat in the range of 160° F. and upwards, thereby shrinking said wrapper about said article, expelling the air from said valve outlet and shrinking said air valve outlet to closed condition, and finally removing said package from said heat.

7. A method of packaging food products in a transparent flexible air and water impervious envelope made of a thin film of simultaneously and multidirectionally pre-stretched thermoplastic material and comprising the steps of sealing the article within said envelope, leaving unsealed a narrow elongated tip projecting from said envelope and forming an air exhaust valve therein, shrinking the envelope about said article, expelling air from the envelope through said valve by immersing the envelope in a hot bath of approximately 160° F. and more, immersing said valve in said hot bath and shrinking said valve to a closed position after said air has been expelled therethrough, and removing the sealed package from said bath.

8. A package comprising multi-directionally stretched

rubber hydrochloride having an opening for the insertion of material to be packaged, the edges of said opening being adapted to be sealed, and an elongated air outlet formed in said covering and integral therewith.

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