Dec. 27, 1960 W. B. FOSTER 2,966,414

PLASTIC FILM BAG AND METHOD OF FILLING THE SAME

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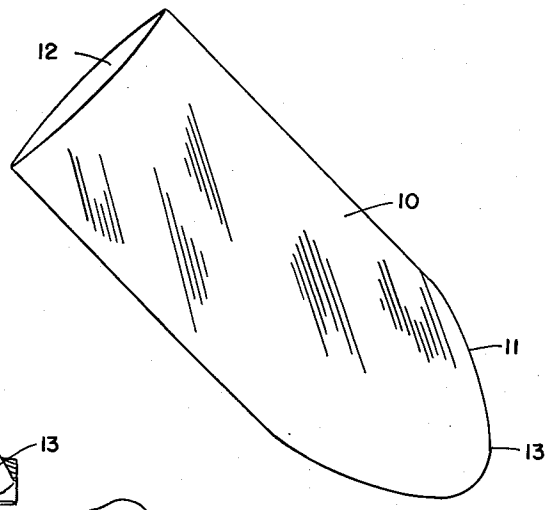


FIG. 1

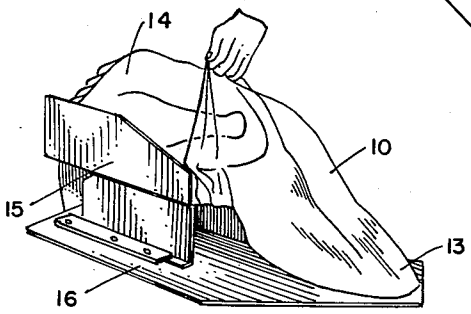


FIG. 2

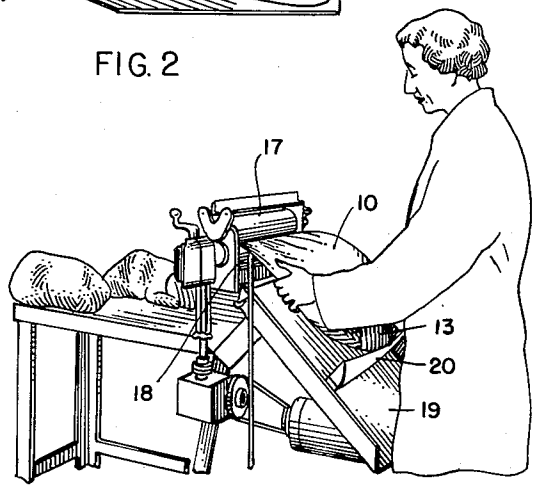


FIG. 3

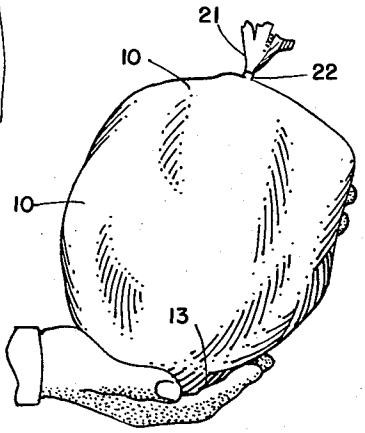


FIG. 4

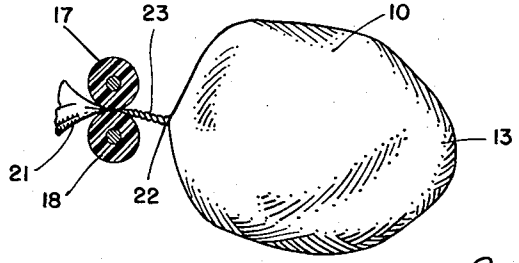


FIG. 5

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PLASTIC FILM BAG AND METHOD OF FILLING THE SAME

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This invention relates to improvements in plastic film bags and method of filling the same for use in the frozen food industry and the like, the bag being made preferably of flat tubular polyethylene material or other suitable plastic film with similar characteristics, and the bag being open on one end and closed on the other end, the closed end having a tapered or parabolic shape in the outline of the flat bag form.

The improved bag is preferably made out of flat tubular stock polyethylene material or the like and the end of the bag opposite the opening therein is tapered at the sides so that the cross section of the opened bag, adjacent the closed end, will be less in area than the corresponding sections of the articles to be packed into the bag.

A feature of my invention resides in providing such a bag made of plastic material which has the property of being able to stretch to a certain degree and yet have a constant tendency to return to its original shape.

It is also a further feature of my invention to provide an improved method of using a bag of plastic material and of the shape hereinbefore set forth which does not require the packed or filled bag to be immersed in a liquid heating bath or a heated chamber to cause the bag to shrink around the article which has been inserted therein for the purpose of causing the bag to fit tightly about the article.

My improved packing method is easily carried out in an economical manner, and it is a further feature of the invention to use the article being packed and the stretchability of the bag material to force the air trapped in the closed end of the bag during the insertion of the article and thus eliminate the need for vacuum packaging. This is accomplished by pulling the bag over the article whereby the film of the bag is stretched to accommodate the article and air in the bag is forced to the open end and out of the bag mechanically.

A further feature of my plastic film bag and method of filling the same resides in providing a simple means of loading the article into the open end of the bag and then pulling the bag over the article. The method includes gripping the open end of the bag between roller members which are formed with axially spaced annular grooves or channels, the roller members engaging the outer faces of the bag to pull the bag over the article and simultaneously forcing the air past the body of the article and through the annular grooves or channels of the gripping rollers. The film stretches during the pulling of the bag over the article and is drawn tightly against the contour of the article whereby it is held by the inherent tendency of the bag film to elastically return to its original state.

When the bag has been completely pulled over the article to tightly fit the article into the bag, the operator, manually or otherwise, forms the film of the bag around the exposed end of the article so as to close the bag tightly over the article and then the operator twists the excess film to seal the bag. This seal is then fixed with

a suitable metal clamp or clip, or other sealing means.

It is important in the process of packaging and storing frozen poultry and other edibles in plastic film bags to exhaust any excess air around the article and also to virtually hermetically seal the article within the bag. I have developed the shape of my bag to tightly receive the article and as the bag is stretched over the article in the packing process the article is thereafter elastically constrained within the bag to be tightly enveloped as by a second skin.

Air that is trapped by the article escapes around the article toward the normally open end of the bag, and then through the grooves in the rollers used in drawing the bag over the article. In my packaging method the article does not move into the bag, but rather the bag moves over the article. My method also causes the wing tips and hocks of a dressed fowl to be held against the bird's body without forming sharp protrusions or air pockets and without causing undue breakage of the bag.

A specific embodiment of this invention and a form of means for carrying out the improved method are shown in the accompanying drawings in which:

Figure 1 illustrates my improved bag within the closed end thereof is substantially parabolic in shape, similar to an intersection of a cone with a plane parallel to its side, to provide a tapered or restricted portion of less volume than the article to be packed.

Fig. 2 illustrates the first step of carrying out my method wherein a dressed fowl or bird is being loaded into my improved plastic bag.

Fig. 3 illustrates the next step of packaging the dressed fowl, the apparatus being illustrated diagrammatically to show the carrying out of my method of mechanically evacuating the bag and shaping the packaged article by pulling and stretching the bag over the article.

Fig. 4 illustrates a dressed turkey which has been completely inserted into the stretched or tensioned bag and the bag hermetically sealed, the bag fitting skin tight over the turkey and substantially all of the air having been exhausted out of the bag, and

Fig. 5 is a diagrammatic side view showing the bag pulling rollers and showing the bag with the bird therein rotated to form the excess material at the opening of the bag into a bag sealing rope-like twist for attachment of a holding clip closely adjacent the body of the bird.

The invention primarily includes the pulling of a bag of stretchable plastic material over the article to be packed so that the article fits tightly in the bag and the air around the article is virtually entirely exhausted during the bagging procedure, the bag itself being of less volumetric capacity, in its unstretched form, throughout the major portion that is to contain the packed article.

The drawings illustrate in Figure 1 the improved plastic film bag **10** which I use in carrying out my new packaging method. This bag **10** is preferably made of seamless tubular polyethylene material having a thickness of approximately two thousandths of an inch, and the sides of the tube at the closed end are integrally sealed along the cut side edges **11** which form the taper while the other end of the bag is left open at **12**. The closed end **13** of the bag opposite the open end **12** is shown as being substantially parabolic in shape to provide the taper or volume restriction of the closed end, the cut sides of the bag converging to meet at a rounded tip or point.

When the bag **10** is unfilled the opposite walls thereof lie flat against each other as shown in Figure 1. The over-all size of the bag, however, is of primary importance in that its width should be such that the opened bag, at least in the article containing portion thereof, will be of less volume that the article so that the material of the bag must stretch in substantially all directions to

accommodate the article. Further, insofar as packaging dressed fowl is concerned, the shape of the bag with the tapered or parabolic end **13** is important in that it permits the bag to fit tightly around the body of the bird, and automatically force the body into a compact "butterball" shape most suitable and attractive for shipping, handling and display purposes.

To assist in describing my method of filling the bag, I have illustrated in Figure 2, a chute number **15** supported on the base **16** showing the open end of the bag **10** wrapped over the end of the chute **15** and illustrating a turkey **14** being loaded into the bag. The surface of the chute is preferably wet or moist to facilitate the easy insertion of the turkey into the open end of the bag.

The bird is pushed manually into the bag until wholly enclosed and then the loose or open end of the bag **10** is inserted between the rollers **17** and **18** of the packaging machine, as shown in Figure 3, while the operator holds the bag in position adjacent the rollers on the inclined shelf **19** with the tapered end of the bag **13** resting in the saddle **20**. The operator helps "milk" the bag over the bird as the rollers push the bird into the bag and at the same time pull the film over the bird. A suitable power means operates the rollers **18** to draw the bag over the article, the article remaining vertically stationary while the bag is pulled over the same, whereupon, when the article becomes fully and tightly enveloped by the film of the bag, the open end of the bag is twisted to form the cord-like closure tuft **21** and a clamping band **22** of any suitable nature is applied. The clamping member **22** is located close to the body of the article in the bag **10** so that the body of the bag is drawn and held tightly over the upper end of the article and the article is virtually hermetically sealed in the bag as illustrated in Figure 5. The bag **10** is preferably transparent so that the article therein is clearly displayed through the sides of the bag. Also, any suitable text, trademark and the like, may be printed on the bag. The excess material above the clamp **22** is preferably cut away about an inch or so above the metal clamp leaving the short tuft end as shown at **21** in Figure 4.

The chute **15** for loading the bag **10** and the clamping of the twisted end of the bag **10** in themselves are not part of my method but drawing and stretching the bag to tightly envelope the bag article, as by a tight fitting skin, is a primary feature of my method. When the article is contained within the bag **10** it is ready for display, storage, or quick freezing as may be desired.

It will be apparent that my improved plastic film bag may be used to contain any article desired; however, it has been designed primarily to receive products which are to be quick frozen and which may be displayed through the sides of the bag and where it is desirable to store the frozen product for a period of time.

My plastic film bag is ideal for soft articles of irregular shape, such as turkeys and other fowl, hams, and substantially any other products wherein it is desirable to pull the plastic bag tightly over the article inserted within the same and where any excess air around the article contained therein is desired to be eliminated.

My improved bag may be fabricated from tubular stock of polyethylene or similar plastic material which has a low permeability for gas or vapor and which is elastically stretchable to permit the bag to be pulled tightly over the article being packed. By providing a stretchable bag that in transverse section is smaller than the article, the packing process causes a compressing of the air in the tapered end of the bag during insertion of the article, and in completing the packing of the article the compressed air in the tapered end of the bag is caused to automatically produce a slight expansion of the bag around the body of the article so that the article moves quickly to the closed end of the bag to expel all of the trapped air and become tightly enveloped by the bag.

The foregoing objects, description and drawings are only for the purpose of setting forth the steps of my method to clearly describe the same. It will be apparent that the bag used in carrying out my method may have any suitable shape of tapered end without departing from the spirit of my invention.

Furthermore, my method may be carried out by inserting the article into the opening of the bag and feeding the open end of the bag between a pair of gripping rollers which may remain in closed position and in contact with each other and wherein the body of the rollers are made of a soft texture of rubber or other suitable material so that when the rollers are operated in any suitable manner to cause them to rotate they will pull the free or open end of the bag between the rollers to draw the bag over the article. When the rollers have drawn the bag completely over the article they are stopped rotating and the bag with the article in it is pulled away from the rollers with a portion of the open end of the bag remaining clamped between the stopped rollers. While in this position the bag with the article therein is rotated to twist the open end of the bag into a rope-like formation **23** (see Fig. 5) whereupon the clamp **22** is applied thereto closely adjacent the article in the bag. The twisted free end **23** of the bag then can be cut off a short distance from the clamping means which seals the bag. Thus it will be apparent that the rollers employed in carrying out my method to pull the bag over the article do not have to be released or moved away from each other but can be fixed in contact with each other and any suitable means for rotating the same can be employed.

The main advantages of my improved method and means for packaging articles in plastic film bags, reside in the fact that the improved bag and method of filling the same completely obviates the need for the use of any vacuum apparatus to exhaust the air from the bag and completely obviates the need for any kind of shrinkage apparatus or operation in order to get a tight fit of the bag around the article package therein; and in the increased rate of packaging production together with the lower cost of the packaging process which may be obtained.

Further advantages reside in the fact that with the use of my improved plastic film bag of a stretchable elastic material a better shaping of the packed product can be obtained which enhances the appearance of the product for display purposes and at the same time provides better protection for the product during shipping and storage of the same. Furthermore, since the film of the bag is stretched skin tight over the article packed therein whereby the film is inherently tending to return to its original size, any scuffing or breakage of the film at some point or spot will result in the film pulling tightly against the article around the margins of the break or opening, so as to prevent the inward leakage of air or other deteriorating factors thereby preventing spoilage of the article except in the area of the breakage spot. Still further advantages are to be found in the use of polyethylene films for bag material, which films are chemically and physically inert and do not get brittle under freezer or storage conditions, and which films are of considerably lesser cost than other types of material which must have the characteristic of being able to shrink as in the case of ordinary materials now being used.

While I have illustrated a particular use and shape of my bag and the method of filling the same in the foregoing specification and drawings, I desire to have it understood that the invention is not confined to the same but should be interpreted within the scope of the following claims.

I claim:

1. The method of packaging dressed fowl which comprises providing an elastic plastic film bag with an opened end and tapered closed end of generally parabolic contour, then drawing the bag over the article and simultaneously mechanically forcing out the air in the tapered end of

the bag and from around the fowl by stretching the bag laterally and longitudinally over the fowl until the fowl is compressed to rotund form with the hocks and wings tightly against the body of the fowl and the bag is skin tight thereon, and then twisting the open end of the stretched bag tightly over the fowl and sealing the twisted end closed.

2. The method of packing a dressed fowl for deep freezing and subsequent sale which comprises inserting the fowl, hocks end first, into the open end of an elastic plastic tubular bag having its closed end of parabolically tapered contour and of less volume in the tapered portion than the hocks end of the fowl, then drawing the bag over the fowl to force the fowl into the tapered portion of the bag while simultaneously stretching the bag laterally and axially into skin tight envelopment of the fowl to exclude air from the bag and fold the hocks forwardly and inwardly against the body of the fowl while compressing the hocks end of the fowl into a rotund

shape, and then twisting the open end of the stretched bag tightly against the breast end of the fowl and sealing the twisted bag ends.

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