June 23, 1959 M. S. SELBY ET AL 2,891,870

METHOD OF PACKAGING

Filed July 7, 1958

FIG.1.

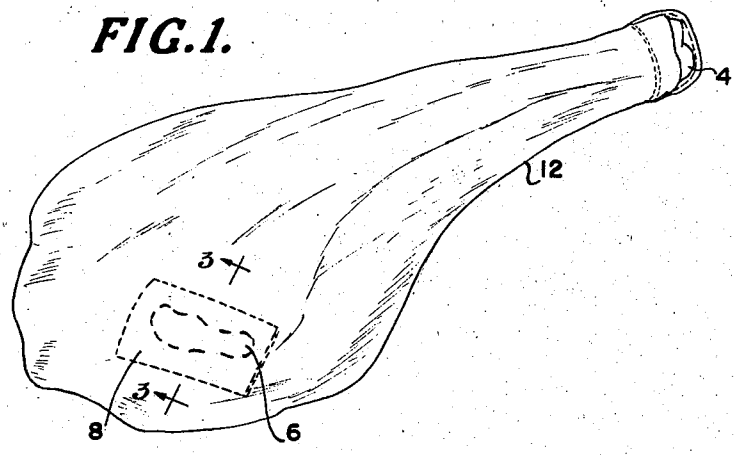


FIG.2.

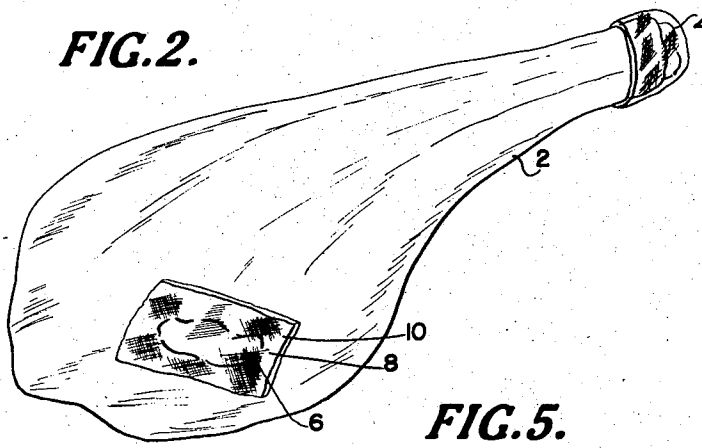


FIG.3.

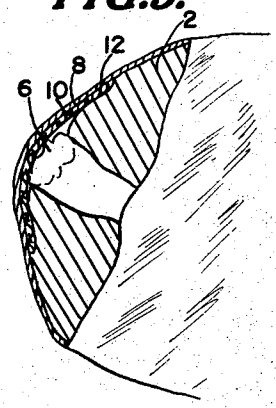


FIG.5.

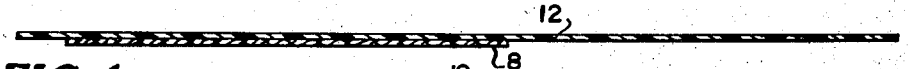
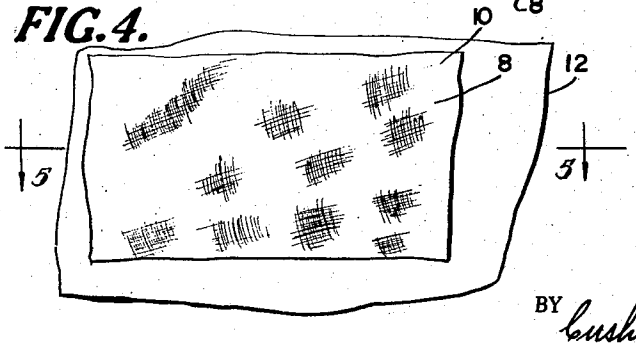


FIG.4.



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METHOD OF PACKAGING

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6 Claims. (Cl. 99—174)

The present invention relates to the packaging of bone-in cuts of meat.

The use of heat shrinkable plastic as flexible packaging materials for various foodstuffs including meats is a large and growing industry. Such plastic materials, however, have not been satisfactory as flexible packing materials for sharp or bony products. For example, attempts to package bone-in primal cuts of meat have resulted in over 85% bag failures due to bone punctures. The use of cushioning materials such as paper, paper laminates, cloth and various types of plastic have proved unsatisfactory in solving the problem.

The preparation of special cuts or close bone trim with removal of offending bones has also been attempted. However, this is at best only a limited solution to the problem since it does not offer the positive protection necessary for all commercial bone-in types of meat. Furthermore, removal of the bones is a relatively expensive and time-consuming procedure.

Accordingly, it is an object of the present invention to develop a rapid, low-cost method for minimizing or eliminating the puncturing of flexible heat-shrinkable bags by sharp bones.

Another object is to develop a relatively puncture-proof flexible package for bone-in cuts of meat.

A further object is to reduce or eliminate entirely bag failures caused by sharp bones.

An additional object is to develop a self-sealing package comprising a heat-shrinkable plastic.

Still another object is to develop a flexible packaging material having improved sealing on soft or moist products.

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 attained by applying to the sharp or bony or soft product a wax impregnated cloth prior to packaging the same in the heat-shrinkable plastic.

More specifically cheesecloth is coated with a food grade petroleum wax. This wax impregnated cloth is laid over the object, e.g., a bone, to be protected and the cloth is molded to the surface of the object. The protected object, e. g., a bone-in cut of meat is then placed in the shrinking bag and the bag evacuated and heat shrunk in conventional fashion.

The invention will best be understood if the description is read in connection with the drawings, wherein:

Figure 1 is a perspective view of meat enclosed in the heat shrunk bag with the cloth in position.

Figure 2 is a view similar to Figure 1 but showing the meat with the cloth in position prior to bagging.

Figure 3 is a sectional view taken along the line 3—3 of Figure 1.

Figure 4 is a fragmentary view of the wax impregnated cloth and heat shrinkable plastic covering.

Figure 5 is a sectional view taken along the line 5—5 of Figure 4.

Referring more specifically to the drawing, there is provided a bone-in cut of meat 2, e.g., a leg of lamb, having exposed bone portions 4 and 6. There is also provided cheesecloth 8, e.g., unbleached muslin with a 32 x 28 count, which has been impregnated and coated with a low melting food grade petroleum wax 10. The wax coated cloth is then laid over the bones 4 and 6 and the cloth molded to the shape of the bone. Unlike plastic sheeting or similar material, it maintains its shape to a good degree without springing back. This facilitates the subsequent step of loading the product into the bag 12. After the bones are suitably protected by the wax coated cloth, the meat is placed in a heat shrinkable plastic bag of a size slightly larger than the meat. The air is then expressed or evacuated from the package in conventional fashion and the open end is sealed, e.g., with a hot bar sealer or by twisting and tying the end portion. The sealed package is heated to a temperature between 85 and 100° C., for example, to shrink the bag around the enclosed bone-in cut of meat. The shrinking operation can be accomplished in conventional fashion by immersing the sealed package in water heated to the stated temperature range.

During the shrink process the heat softens the low melting point, tacky wax and creates a tight cling between the package film and the coated cloth. Any puncture that might occur due to a bone, for example, at this point has a tendency to seal off because of the self-sealing feature of the coated cloth. In the event a leaker does occur, the tight cling or adhesion of the plastic film to the wax surface prevents complete relaxation of the film. In other words, the ingress of air into the package is thus stopped by the adhesion of the wax to the splinter of the bone and the bag in the area of the puncture.

The wax coated cloth can be used on soft and moist products, e.g., hams, quartered turkeys and meat cuts so that flexible packaging materials in roll, pouch, bag or other forms may be readily packaged and sealed. The coated cloth acts as a backing board providing rigidity to the product. Seals, especially with roll film materials can be readily made because of the coating of wax even on soft or moist products. The heat of sealing provides a tight adhesion between the film and wax.

The present invention is particularly applicable to bone-in cuts of meat including primal cuts of beef, legs of lamp, hams, lamb chops, pork chops, veal chops, etc.

As the heat shrinkable plastic, there can be used materials such as heat shrinkable saran (vinylidene chloride resins), heat shrinkable rubber hydrochloride, heat shrinkable polyolefins, such as polyethylene and polypropylene, heat shrinkable polyethylene terephthalate (Mylar), etc. Polyethylene and polypropylene which are suitable packaging materials are polymers of an olefin having 2 to 3 carbon atoms.

As the wax, there should be employed a wax which has the following characteristics:

(1) It is of food grade.
(2) It has a low melting point, e.g. between 152° F. and 158° F.
(3) It has a good degree of tackiness.
(4) It is approved by the Meat Inspection Bureau of the United States Department of Agriculture.
(5) It is flexible at cold room temperatures, e.g. 33° F. to 55° F.
(6) It is readily available.

There are numerous petroleum waxes which meet these requirements. A typical wax is Petroleum Wax #4582 which has the following specifications:

Melting point	152.5° F.
Color (NPA)	1½ maximum.
Viscosity at 210° F.	97.
Penetration at 77° F.	38.
Odor	Nil.
Taste	Nil.
Flash	500° F. minimum.
Fire	600° F.
Saponification No.	0.1 maximum.
Acid No.	0.1 maximum.

In place of petroleum waxes, there can be used other non-toxic waxes of appropriate melting point.

As the porous cloth, there can be used any cloth-like material, with cheesecloth being preferred.

The use of cheesecloth has the following advantages: it increases the tensile strength of the product, permits the use of lesser predetermined amounts of wax, has a good degree of resiliency, is readily available at low cost, presents a less brittle backing than paper, and presents a less opaque backing than paper.

In normal operation, the wax impregnated cloth is provided in the form of a roll and the necessary amount is cut off to protect the bone. To prevent sticking after impregnation of the cloth with the wax, the wax is thoroughly chilled, e.g., to below 75° F., on the rewind cycle.

The wax impregnated cloth is preferably stored at cool temperatures. Storage temperatures below 75° F. are best and cool room temperatures are preferred. Prolonged holding at temperatures above this can result in excessive softening of the wax which can lead to adhesion of the layers making unrolling difficult. The preferred petroleum wax described supra, can be handled well at freezing temperatures up to 75° F. It begins to soften above 75° F. and at approximately 100–115° F. serious adhesion can occur. By changing the proportions of the ingredients in the wax, the wax can be hardened if desired, e.g., to insure against softening at temperatures encountered in transportation and storage during the summer months.

We claim:

1. A package comprising a heat shrinkable plastic packaging material containing a bone-in cut of meat having the exposed bone covered with a low melting non-toxic wax impregnated cloth.

2. A package according to claim 1, wherein the packaging material is a vinylidine chloride resin, the wax is a low melting non-toxic petroleum wax, and the cloth is cheesecloth.

3. A package according to claim 1, wherein the packaging material is a polymer of an olefin having 2 to 3 carbon atoms, the wax is a low melting, non-toxic petroleum wax, and the cloth is cheesecloth.

4. A method of preventing punctures and leakers in packaging bone-in cuts of meat in heat shrinkable plastic films comprising covering the exposed bone with a non-toxic wax impregnated cloth, placing the thus protected meat in a heat shrinkable plastic packaging material and then applying heat to the product to shrink the packaging material around the cloth protected bone-in cut of meat.

5. A method according to claim 4, wherein the wax is a low melting petroleum wax.

6. A method according to claim 5, wherein any leakers are sealed by the adhesion of the low melting wax to the plastic during and subsequent to the shrinking step.

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Disclaimer and Dedication

2,891,870.—*Meyer S. Selby*, Revere, and *Edward R. Baush*, Bedford, Mass. METHOD OF PACKAGING. Patent dated June 23, 1959. Disclaimer and dedication filed Jan. 20, 1972, by the assignee, *W. R. Grace & Co.*

Hereby disclaims the remaining term of said patent and dedicates said patent to the Public.

[*Official Gazette November 6, 1973.*]