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PACKAGING OF COMESTIBLES

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The present invention relates in general to the preparation of packaged product and, more particularly, to a method of packaging comestibles and to the package so formed.

Present-day merchandising of comestibles is geared more and more toward convenient self-service purchasing. The advantages of this system are recognized by both the seller and the customer. Manufacturers are therefore constantly seeking means to prepare more attractive, stable and salable packages of food.

A particularly troublesome area of food packaging is in the preparation of fresh meat for self-service sale. In general, two basic procedures are currently employed in packaging shapable meat masses, namely vacuum and nonvacuum packaging. Both involve several unit operations; namely, forming, scoring, and packaging. Therefore operations are slow and relatively costly, particularly where hand labor is required.

Nonvacuum packages are usually less expensive and easier to use than vacuum packages, but the refrigerated (or frozen) packages are subject to frost and freezer burn, particularly in indentations created by scoring or marking, thus producing an unsightly package. Attempts have been made to draw the packaging material closely against the meat product to be packaged to avoid the above problem, but undesirable air pockets persist due to the shape (or preshaping) of the meat mass, inability to draw the packaging material tightly enough against the meat, etc.

Vacuum packages, which are more expensive and require more labor than nonvacuum packages, substantially eliminate the frost and freezer burn problem as long as the vacuum holds. However, vacuum packaging does not lend itself to direct processing. A shaped plastic meat mass must be hard frozen before vacuum packaging or it will become misshapen, lose any embossed configuration present, and lose juices, all due to the pressure exerted in the package. In addition, a fresh-frozen meat product packed in an oxygen-impermeable vacuum package has a tendency to darken.

One of the objects of my invention is to form, package and score, mark, or emboss a comestible in a single operation.

Another object is to provide a nonvacuum package having the advantages of a vacuum package but without its cost.

A further object is to provide a novel package and packaging technique which can readily be adapted to mechanized in-line operations.

An additional object of my invention is to provide a method of obtaining substantially complete surface contact of packaging material to a plastic comestible without vacuumizing, heat shrinking, and similar costly procedures.

Further objects and advantages will become apparent to one skilled in the art from the following description of my invention.

I have discovered that by placing a mass of a comestible between two sheets of a packaging material, sealing the packaging material in some predetermined perimetric configuration, and then compressing the mass of comestible to conform to the configuration of the sealed packaging material, I produce an attractive nonvacuum package of the comestible which will be substantially free from frost or freezer burn upon subsequent freezing. My results are not obtained when the mass of comestible is

first compressed to the desired shape and then the packaging material is drawn around the shaped mass as tightly as possible and sealed. Simultaneous shaping and sealing of the package likewise does not yield a package which will be free from frost and/or freezer burn.

By forming the package in the step sequence I have discovered the surface area of the mass of comestible automatically becomes substantially equal to the area of the wrapper. This eliminates the presence of air pockets which cause the frost and burn problems.

While a much improved package is prepared by following the above stated steps, an even further improvement in the package is obtained when there is at least one minute air escape hole, or orifice, located on the periphery of the sealed package. A plurality of such air escape holes can advantageously be employed. When the envelope of packaging material containing the mass of shapable comestible contains such an air escape orifice, the final compression of the mass to conform to the shape of the envelope achieves substantially intimate contact of packaging material with comestible. This contact insures a minimum amount of frost development during freezing. The air hole, or holes, can readily be provided as, for example, by piercing the seal between the two sheets of packaging material with a sharp object such as a needle or by sealing the packaging sheets in such a manner as to leave minute areas of the periphery unsealed, etc.

An additional feature of my invention is in the ability to mark, score, or otherwise alter the surface of the comestible for identification purposes, for example, the marks of cubed beef steaks. If, in conventional packaging, such markings are provided before the mass is shaped, the shaping or compressing destroys the markings. If the markings are made after shaping but before the packaging material is applied, and no further compression is applied, the markings will permit air pockets in which frost will develop during freezing. I have found that it is possible to emboss the mass of comestible after it has been completely packaged. This procedure serves further to insure packaging film to mass contact even in the identations of the embossed pattern. A product so packaged is not only frost-free but retains the identifying marks. I prefer to achieve this embossing feature by further compressing (after the compression to conform the mass to the configuration of the sealed packaging material) only certain portions of a surface of the mass of comestible in a signle further compression step with the embossing device being in a plane parallel to the surface to be embossed and traveling substantially normal to the surface of the mass rather than by means of a device whose travel is in a horizontal direction, such as a roller, etc. In this fashion the desirable predetermined configuration of the shaped package is maintained. The die, or stamp, or other indicia-producing device should, of course, be blunted so as not to pierce the packaging material. Pressure must be exerted to make the mass and film conform to the embossed pattern. The pressure used will be dependent on the film, the consistency of the product, and the shape of the die used. The minimum pressure is the lowest amount required to produce an embossed pattern while the maximum pressure is that just short of the amount that would rupture the packaging material or break the seal between the two sheets of packaging material. For a product such as a comminuted meat patty, the pressure range for the embossing step would be about 5 to 20 p.s.i. It is possible to carry out the embossing feature of my invention at the same time the compression is made to conform the mass to the packaged area. However, where the embossing step is carried out after the mass has been conformed to the shape of the package,

a more intimate contact of packaging material to meat or other comestible mass will be insured.

While substantially any packaging material can be used, for obvious reasons, a relatively transparent material is desirable for at least one side covering if the product is to be viewed by the customer. Substantially any means of sealing the two sheets of packaging material can be employed; however, I prefer to use a heat-sealable film and to use a sealing ring which conforms to the predetermined desired perimetric configuration of the finished package. As is known in the art, heat can then be applied in any suitable fashion to seal the two films in that configuration and the sealing ring then removed. The preferred packaging material for a package such as I have described is one sheet of a vegetable parchment paper, laminated with about 0.6 mil polyethylene, and one sheet of a 1 mil polyethylene film. This film is especially desirable because of its sealability, flexibility (particularly at freezer temperatures), its strength (which is sufficient to withstand the embossing step), its moderate oxygen transmission rate, and its cost. Other heat-sealable films can be used including, but not limited to, supported films such as Mylar, Saran, or cellophane, which have been laminated with a heat-sealable film such as polyethylene, vinyl, or Pliofilm; non-supported films such as Pliofilm or vinyl; or any mixture of supported and non-supported films (e.g. one sheet of non-supported film and one sheet of supported film).

The following examples serve to illustrate my novel procedure. They are not to be considered in any way limiting on the scope of my invention.

Example I

Chopped turkey meat was formed into 2 ounce balls. The balls were placed on a 4 mil thick sheet of polyethylene and covered with a 2 mil polyethylene sheet. The top sheet was heat-sealed to the bottom sheet in a circular pattern around each ball of turkey meat. The meat was compressed with a tamping means that contained a die so fashioned as to create a raised "S" on the finished package. This tamping means was applied to the sealed envelope of film containing the turkey meat and the meat was thereby conformed to the shape of the envelope. The patties were marked with the "S" of the embossing die. The finished package was subsequently frozen and examined after prolonged storage. No evidence of frost was found and the embossed pattern remained.

Example II

A mass of shapeable lamb chunks was placed between a sheet of vegetable parchment laminated with 0.6 mil polyethylene and a sheet of 1 mil polyethylene. An oval-shaped sealing ring was placed over the meat mass and the two films heat-sealed into an oval configuration. The meat mass was then compressed until the meat conformed substantially exactly with the oval configuration. No air pockets were visible. The product so packaged was then frozen and examined at various intervals up to about 60 days. No frost or freezer burn developed and the product maintained a good color.

Example III

A batch of fresh ground beef was divided into two lots. Three ounce patties were formed from the first lot in a commonly used, commercially available, machine. The patties of that lot were scored by a conventional procedure of running them through a Sir Steak machine, wrapped in cellophane, and placed in a waxed board display carton. The second lot was divided into 3 oz. masses, and the meat masses placed between two polyethylene films. The films were heat sealed in a circular configuration. Four small air holes were made at substantially equal intervals around the periphery of the circular envelope of film. Each mass of meat was then compressed so as to substantially conform the surface area of the mass of meat to the surface area of the envelope. A die suitable for making cubed steak markings was pressed down in a perpendicular motion on each packaged patty so formed. This action assured that any excess film which might allow an air pocket to form was taken up, insuring substantially complete film to meat contact. The patties of both lots were frozen and examined at various time intervals for about three months. The second lot, prepared by my method, was free of frost and freezer burn during the entire storage time. The lot packaged in the inner wrapper and placed in a waxed board container developed frost during initial freezing and developed definite freezer burn after one month.

Example IV

A 3½ oz. portion of grated American cheese was placed on a 2 mil sheet of Pliofilm and covered with a ¾ mil sheet of Pliofilm. A rectangular shaped (2 x 4 inch) sealing ring was placed over and around the cheese, and the two films were sealed together. The cheese mass was then pressed out so as to conform to the rectangular envelope. This package was embossed with an indented star, and frozen. No frost formed during freezing.

Example V

A 3 oz. portion of pre-cooked mashed potatoes was placed on the polyethylene side of a Mylar-polyethylene laminated film and covered with a sheet of the same film with polyethylene-side down. A triangular shaped sealing ring was placed around the potato mass, and the two films sealed together. The potato patty was then pressed to fill out the triangular envelope. The product was frozen and subsequently grilled as a potato cake. No frost development was noted during freezing.

While the illustrative examples show primarily packaging of a plastic meat mass, it is clear that many comestibles can be advantageously packaged in accordance with my method. Some comestibles are not as subject to frost or freezer burn as are meat and poultry products, but most are improved organoleptically in direct proportion to the tightness of the packaging material and the freedom from air pockets whether or not the product is subsequently frozen. Some examples of comestibles that can advantageously be packaged in accordance with my invention include but are not limited to, chopped vegetables, mashed vegetables, prepared meat and poultry stuffings, cheese, meat-cheese mixtures, etc.

Obviously many modifications and variations of the invention as hereinbefore set forth may be made without departing from the spirit and scope thereof, and therefore only such limitations should be imposed as are indicated in the appended claims.

I claim:

1. A method of packaging comestibles which comprises: placing a mass of shapable comestible between two layers of transparent film packaging material, sealing said two layers about said mass and spaced from said mass to form a substantially sealed envelope containing said mass, said envelope having at least one minute orifice on the periphery thereof, and compressing said mass to substantially conform the surface area of said mass to the surface area of said envelope.

2. A method of packaging comestibles which comprises: placing a mass of shapable comestible between two layers of heat-sealable film, applying heat to portions of said film spaced from said mass to form a substantially sealed envelope containing said mass, said envelope having at least one minute orifice on the periphery thereof, compressing said mass to substantially conform the surface area of said mass to the surface area of said envelope and to obtain substantial contact of said mass with said film, and further compressing only certain portions of a surface of said mass to increase the surface area of said mass to ensure substantially complete contact of said mass with said film.

3. A method of preparing packages of comminuted meat which packages are adapted to continuous preparation and can be subsequently frozen without the formation of frost and freezer burn, which comprises: placing a mass of a plastic comminuted meat between two sheets of heat-sealable film, applying sufficient heat to portions of said film spaced from said mass to seal said sheets and form a substantially closed envelope containing said mass, said envelope containing at least one minute orifice at the periphery thereof, and compressing said mass to substantially conform the surface area of said mass to the surface area of said envelope.

4. A method of preparing packages of comminuted meat which are adapted to continuous preparation and can be subsequently frozen without the formation of frost and freezer burn, which comprises: placing a mass of meat between two sheets of heat-sealable film, applying heat to portions of said film spaced from said mass to form a substantially sealed envelope containing said mass, said envelope containing at least one minute orifice at the periphery thereof, applying a first pressure to said mass contained within said envelope to substantially conform the surface area of said mass to the surface area of said envelope, and applying a second pressure to certain areas only of a surface of said mass enclosed in said envelope to increase the surface area of said mass whereby substantially complete contact of said mass with said film is effected, said second pressure being applied in a direction generally normal to the surface of said mass.

5. A method of preparing packages of comminuted meat which comprises: placing a mass of meat between two sheets of heat-sealable film, applying heat to portions of said film spaced from said mass to form a substantially sealed envelope containing said mass, said envelope containing at least one minute orifice at the periphery thereof, applying a first pressure to said mass contained within said envelope to substantially conform the surface area of said mass to the surface area of said envelope, applying a second pressure to certain areas only of a surface of said mass enclosed in said envelope to increase the surface area of said mass whereby substantially complete contact of said mass with said film is effected, said second pressure being applied in a direction generally normal to the surface of said mass, and freezing said mass of meat.

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