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3,407,078

METHOD OF PACKAGING YEAST-RAISED DOUGHNUTS

Filed Nov. 13, 1964

2 Sheets-Sheet 1

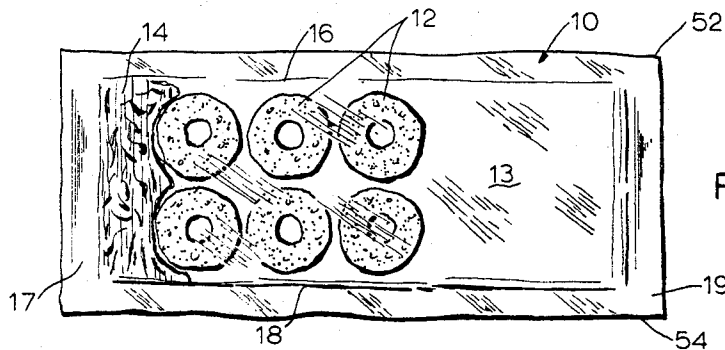


FIG. 1

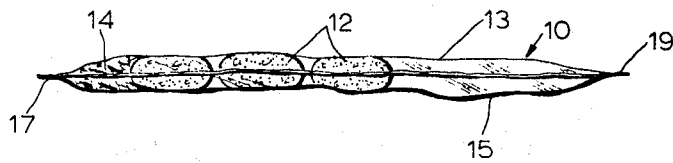


FIG. 2

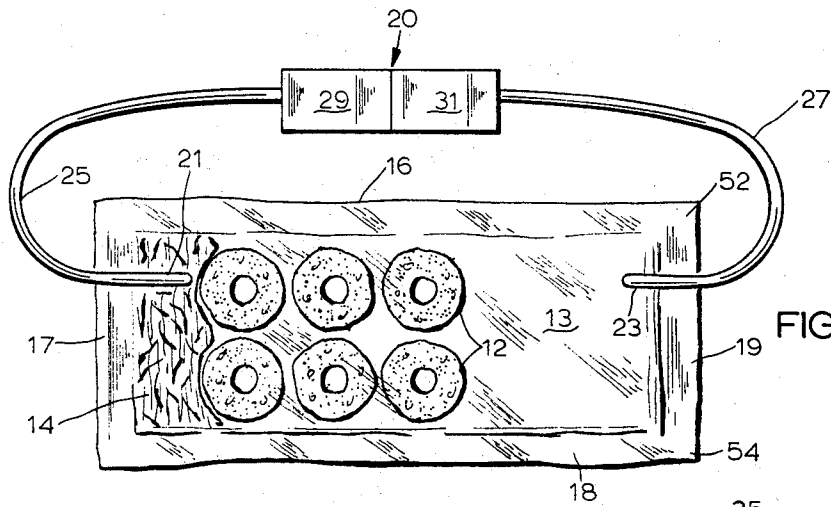


FIG. 3

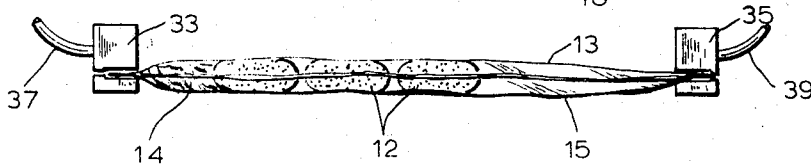


FIG. 4

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2 Sheets-Sheet 2

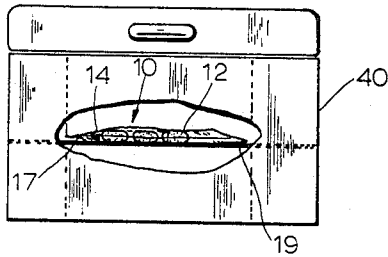


FIG. 5

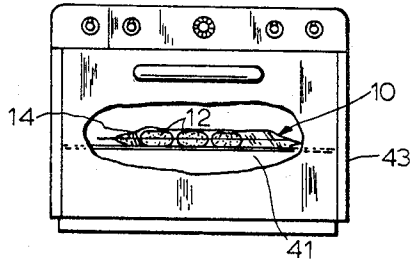


FIG. 6

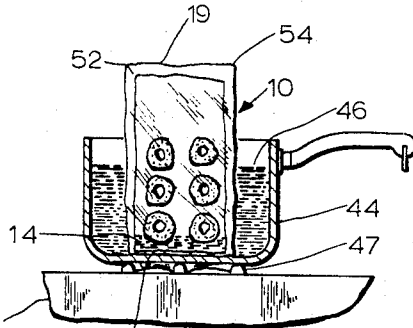


FIG. 7

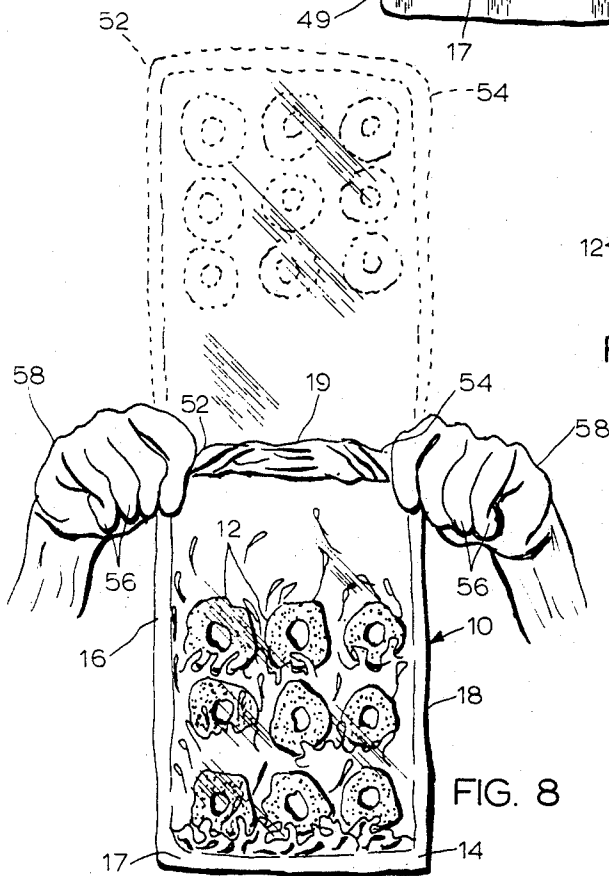


FIG. 8

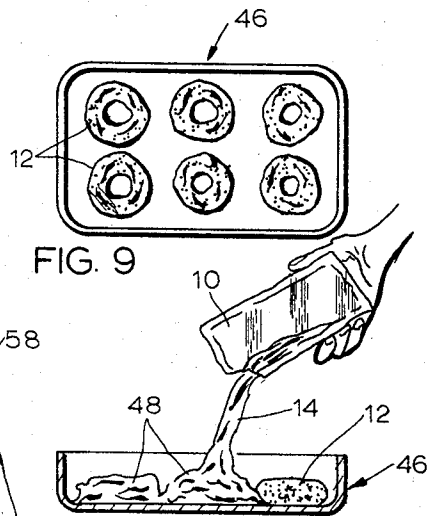


FIG. 9

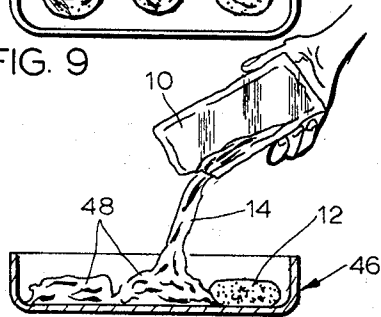


FIG. 10

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3,407,078

METHOD OF PACKAGING YEAST-RAISED DOUGHNUTS

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2 Claims. (Cl. 99-172)

ABSTRACT OF THE DISCLOSURE

Packaging yeast-raised doughnuts and a quantity of non-flowable glaze sufficient when melted to cover the surfaces of said doughnuts, by partially filling and sealing a pouch with a quantity of said ingredients, removing the entrapped air from said pouch while simultaneously replacing the same with an inert gas and re-sealing said pouch.

The present invention relates generally to a yeast-raised glazed doughnut package, and it has particular relation to a flexible heat-sealable envelope or pouch type of package in which a plurality of yeast-raised doughnuts and a sufficient quantity of glaze to cover the same may be sealed for sale to the trade.

The handling of yeast-raised glazed doughnuts has always presented a very difficult problem to the wholesale bakeries, who must rely on remote retail outlets for the sales of their products. There are two very difficult problems involved in the distribution and sale of yeast-raised glazed doughnuts to the trade through remote retail outlets, to-wit: (1) the short shelf-life of the packaged doughnuts and (2) the short shelf-life of the glaze, per se.

At the present time yeast-raised glazed doughnuts are packaged in two different ways, namely, (1) the fried and glazed doughnuts are packed in a non-moisture-proof box and (2) the fried and glazed doughnuts are packed in a moisture-proof box. In either type of package, the yeast-raised glazed doughnuts have a relatively short shelf-life, approximately 48 hours. Each type of package has a very serious disadvantage, to-wit: When the yeast-raised glazed doughnuts are packaged in a non-moisture proof box, the glaze quickly becomes hard and unpalatable, having a tendency to flake off the surface of the doughnuts, and the baked dough, per se, also becomes dry and hard. When the doughnuts are packaged in a moisture-proof box, the glaze has a tendency to break down or disintegrate into a wet and syrupy consistency, whereby it runs off the surface of the doughnuts, leaving a wet unsightly and unappetizing appearance.

It is the consensus of opinion of most wholesale bakers and doughnut consumers that the yeast-raised glazed doughnut is preferable to all other kinds. However, notwithstanding this generally favorable opinion, the sales of yeast-raised glazed doughnuts have lagged considerably in view of the problems presented by the glaze, which have been described hereinabove.

With the present invention, there has been provided a sealed, flexible, package and method of merchandising yeast-raised glazed doughnuts that has eliminated the aforementioned disadvantages, and has provided a novel package containing yeast-raised doughnuts and sufficient glaze, which the housewife may use to glaze the doughnuts, and then serve with all the pride, appearance, taste and texture of bakery or frier fresh yeast-raised glazed doughnuts, notwithstanding the fact that said doughnuts and glaze might have been made and packaged days or weeks before.

An object of the present invention is to provide a package in the form of a flexible, heat-sealable, visible pouch

into which a plurality of yeast-raised doughnuts, freshly fried and cooled may be efficiently packed along with a sufficient quantity of glaze to cover the same, which package will require only heating and flexing to furnish yeast-raised glazed doughnuts, notwithstanding the fact that they might have been made and packaged days or weeks ago.

Another object of the invention is the provision of a flexible, heat-sealable, pouch containing a plurality of yeast-raised doughnuts, freshly fried and cooled, and a sufficient quantity of glaze to cover the same, in which the air that would normally be entrapped in said pouch has been removed and replaced with an inert gas.

A further object of the invention is to provide a heat sealed flexible package of a plurality of yeast-raised doughnuts, freshly fried and cooled, including a quantity of glaze sufficient to cover the same, in which the entrapped air has been replaced with an inert gas, and the same is then frozen and maintained under such frozen conditions until ready to be served.

Another object of the invention is the provision of a heat sealed flexible pouch containing a plurality of yeast-raised doughnuts, freshly fried and cooled, including a quantity of glaze sufficient to coat the same, wherein the air that is normally entrapped in said sealed package has been replaced with an inert gas, which package is made of a material, such as a heat-sealing thermoplastic of the kind that may be placed in a freezer, boiling water or subjected to heat in an oven of a conventional kitchen stove, to be reheated until the glaze has been reduced to a flowable syrupy liquid, whereupon the container may be flexed to cause the glaze to cascade over and enrobe the contained doughnuts.

Other and further objects and advantages of the invention, which result in simplicity, economy and efficiency, will be apparent from the following detailed description, reference being had to the accompanying drawings, forming a part hereof, wherein like numerals indicate like parts, in which:

FIGURE 1 is a top plan view of a flexible, heat-sealable, clear, thermosetting plastic envelope or pouch embodying the principles of the invention;

FIGURE 2 is a side elevational view of the envelope or pouch shown in FIGURE 1;

FIGURE 3 is a top plan view of the pouch shown in FIGURE 1, showing diagrammatically the steps of removing the entrapped air from the sealed pouch and replacing the same with an inert gas;

FIGURE 4 is a side elevational view of the pouch shown in FIGURE 3, illustrating the step of resealing the pouch at the places it had been punctured by the insertion of the air and gas tubes;

FIGURE 5 is a front elevational view of a conventional chest type freezer, with a part broken away to show the sealed pouch being frozen and being maintained under refrigerated conditions;

FIGURE 6 is a front elevational view of a conventional kitchen stove, with a part broken away to show the pouch and its contents being reheated in its oven;

FIGURE 7 is a cross-sectional view, partly in elevation, of a conventional heating pan containing boiling water, being heated on a conventional gas or electric burner, and illustrating the positioning of the sealed pouch in said boiling water for reheating the doughnuts and remelting the glaze contained therein;

FIGURE 8 shows the step of flexing by twisting and/or twirling the pouch by its corners to cascade the remelted glaze over the surfaces of the doughnuts contained therein;

FIGURE 9 shows a conventional pan or dish with the reheated doughnuts spread-out thereon after their removal from the pouch; and

FIGURE 10 shows a modified method of coating the

doughnuts shown in FIGURE 8 with the melted glaze being poured directly from said pouch over the surfaces of the spread-out doughnuts shown in the pan of FIGURE 9.

Referring now to the drawings and particularly to FIGURE 1 thereof, there is shown a clear, flexible, heat-sealed, thermoplastic material in the form of an envelope or pouch 10, which is made of any suitable plastic material that is impervious to the passage of air and moisture and is capable of being placed under refrigeration, heated in boiling water and/or in an oven of a conventional kitchen stove.

The flexible, heat-sealed, thermoplastic envelope or pouch 10 shown in FIGURE 1 contains one-half dozen yeast-raised doughnuts 12 and a quantity of non-flowable glaze 14 sufficient to coat the same. It requires approximately one-half ounce of glaze to cover an average size yeast-raised doughnut. Obviously, the number of doughnuts and the amount of glaze shown is for illustrative purposes only, and it is within the scope of the invention to make such flexible, heat-sealed, pouches of any desired size and/or shape suitable for holding any desired number of doughnuts and a sufficient quantity of glaze to coat the same.

The freshly made yeast-raised doughnuts 12 should not be placed in the pouch 10 immediately upon removal from the fryer, but should be allowed to cool at least to the normal temperature of the room in which the packaging is being carried out. The conventional glaze 14 used in enrobing yeast-raised doughnuts 12 should also not be placed in the pouch 10 in its liquid state, but should be cooled to the normal temperature of the room in which the packaging is being carried out. At such normal room temperatures, the glaze will have the consistency of a deformable substance, which is readily spoonable but not free-flowing.

One simple method for packaging the doughnuts 12 and glaze 14 is to use a conventional bag 10 made of flexible, heat-sealable thermosetting material, manually inserting the doughnuts 12 and glaze 14 therein, and then heat seal its open end.

Another simple method for packaging the doughnuts 12 and glaze 14 is to use a sleeve made of flexible, heat-sealable, thermosetting material, which is open at both ends. The doughnuts 12 and glaze 14 are manually inserted in said sleeve, and then said open ends are heat-sealed to form a sealed pouch.

There are also numerous high speed automatic packaging machines available on the market capable of packaging food products in sealed containers at rates of upwards of one hundred packages per minute. With such machines, the flexible, heat-sealable, clear plastic pouch 10 is formed generally by using two layers or films of plastic 13 and 15, as indicated in FIGURE 2. The bottom layer of film 15 is spread-out on the base of these machines (not shown) and the products to be packaged are properly positioned thereon, to-wit: The six doughnuts 12 and the glaze 14. The doughnuts 12 should be cooled down from their frying temperature to at least the temperature of the packaging room before being placed on the layer or film 15. The glaze 14, at normal room temperature, will be found to be soft and spoonable, being a formable substance having no noticeable flowability. When the contents of the package is positioned on the lower layer 15, a top layer 13 is superposed thereover in substantially vertical alignment with said bottom layer 15. The longitudinally extending side edges 16 and 18 and the transversely extending end edges 17 and 19 are now heat-sealed under pressure in a conventional manner, forming a clear, flexible, heat-sealed thermoplastic envelope or pouch 10.

Obviously, the heat-sealed, clear, flexible thermosetting envelopes or pouches 10, being only partially filled, will contain a certain amount of entrapped air. This air must be removed or the contents of the pouch 10 will have a relatively short shelf-life of but several days duration, notwithstanding the fact that the material from which the

envelope or pouch was made is impervious to the passage of air and moisture. Furthermore, with the removal of the entrapped air and its replacement with an inert gas, mold growth is inhibited, weight loss is prevented, shelf-life is extended and the enclosed doughnuts 12 and glaze 14 retain their fresh flavor, taste and color.

Referring now to FIGURE 3, there is shown diagrammatically the step of removal of the normally entrapped air and its replacement with an inert gas, such as nitrogen, carbon-dioxide, etc. The machine 20 has two hollow piercing rods 21 and 23, which are suitably connected by flexible tubing 25 and 27, respectively. The rod 21 is connected by its flexible tube 25 to the inert gas filling side 29 of the machine 20, and the rod 23 is connected by its flexible tube 27 to the air removal side 31 of said machine 20.

In carrying out this operation, the inert gas must be delivered into the envelope or pouch 10 as the entrapped air is withdrawn. This replacement of air with an inert gas must be accomplished simultaneously and under equal pressures, generally in the neighborhood of one atmosphere. If the air was to be withdrawn first, thereby creating a vacuum in the sealed pouch 10, it will be found that the doughnuts 12 therein will be collapsed in a flat pancake-like product, and that no subsequent refilling of said pouch 10 with an inert gas, regardless of the pressure, will cause said flattened or deflated doughnuts to return to their original shape.

When the air has been removed from the sealed envelope or pouch 10 and is replaced with an inert gas, the piercing rods 21 and 23 may be withdrawn, and the holes formed by the insertion of such rods 21 and 23 in the sealed ends of the envelope or pouch 10 must be resealed or closed. This can be done by merely pressing said ends 17 and 19 together between suitable conventional heating platens 33 and 35, whose temperatures are suitably controlled electrically through the wires 37 and 39, respectively.

The sealed, flexible, thermoplastic envelopes or pouches 10, after filling with freshly made yeast-raised doughnuts and sufficient glaze 14 to cover the same, may be placed in a conventional chest type freezer 40, as shown in FIGURE 5, under the same freezing conditions normally used to freeze and merchandise other kinds of frozen foods. Such doughnuts 12 and glaze 14 have been found, when maintained under refrigerated conditions, to have an indefinite shelf-life. For example, the average shelf-life of a conventional package of yeast-raised glazed doughnuts, in either moisture-proof or non-moisture-proof boxes is approximately forty-eight hours. With the flexible sealed thermosetting plastic pouch of this invention, leaving in the normally entrapped air and not replacing it with an inert gas, the shelf-life of the doughnuts and glaze is about the same length of time, namely, forty-eight hours. However, when the normally entrapped air of the sealed package is replaced with an inert gas, the shelf-life will be extended to about ten to fourteen days. When the same package is placed under refrigeration and maintained under refrigeration until ready for serving, the shelf-life may be extended to a period of several months without affecting the taste, texture and appearance of the product.

It will be noted that the envelope or pouch 10 shown in the drawings is approximately twice as long as is necessary to enclose the contents. The reason for this will be obvious from the following description of the methods of reheating and glazing.

With the flexible sealed inert gas contained thermoplastic envelope or pouch 10, it is possible to reheat the doughnuts and melt the glaze to form a free flowing syrup 41 in an oven of a conventional stove 43. In this manner of reheating, the oven should be preheated to a temperature of approximately 350 degrees F., and then the sealed envelope or pouch 10 placed therein for a period of about ten minutes.

Another satisfactory way to preheat the frozen or flexi-

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ble sealed thermoplastic envelope or pouch 10 with its contents of doughnuts and glaze is to place the pouch 10 in a pan 44 of vigorously boiling water 46, which is shown in FIGURE 4, sitting on the burner 47 of a stove 49, for a period of approximately ten minutes, being sure that the doughnuts and glaze are submerged in the water.

The upwardly extending free end of the pouch 10 will serve in these pre-heating operations not only as a suitable tab for inserting and removing said pouch 10 from heating medium, but will allow for expansion of the inert gas under the rise in temperature without danger of the package bursting.

When the sealed, flexible, thermosetting plastic pouch 10 with its contents is removed from the oven 41 of the stove 43 or from the boiling water 46 of the pan 44, the free end corners 52 and 54 may be used to twist or twirl the envelope or pouch 10 by the fingers 56 of the hands 58 of the server (not shown). In this way, the melted glaze 14, which now has the consistency of a readily free flowing syrup, will be cascaded over the surfaces of the doughnuts 12 in said pouch 10. When the covering has been completed, the pouch 10 may be opened and its contents served.

Another way of glazing said reheated doughnuts 12 with the melted glaze 14 is to open the pouch 10, remove the doughnuts 12 therefrom and spread them on a pan 46. Then the pouch 10 may be used like a pitcher to pour the melted glaze 14 over the surfaces of the doughnuts 12, as best shown in FIGURE 10.

It will be found that, as the preheated doughnuts cool, within a minute or two, the glaze 14 will become clear, non-tacky and non-sticky. These freshly glazed doughnuts 48 are now ready to be served and eaten. It will be found that they have the taste, appearance and texture of a freshly fried and glazed doughnut, notwithstanding the fact that they may have been made days, weeks or months before.

Although I have described in detail and illustrated in the drawings but two forms which the invention may assume, it will be readily apparent to those skilled in the art that the same need not be so limited, but that various other modifications may be made therein without departing from the spirit thereof.

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What I claim is:

1. The method of packaging yeast-raised doughnuts and a quantity of a glaze non-flowable at normal room temperature sufficient when melted to cover the surfaces of said doughnuts which comprises the steps of partially filling a flexible pouch with completely cooked yeast-raised doughnuts and said glaze, sealing said pouch, piercing said pouch with piercing elements at two spaced points at opposite ends of the pouch, removing the entrapped air therefrom through one of said pierced spaced points while simultaneously replacing the same through the other of said pierced spaced points with an inert gas at a pressure of substantially one atmosphere to prevent the formation of a vacuum therein and a collapse of the doughnuts in said pouch, resealing said pouch at the two spaced points upon removal of the piercing elements, whereby said doughnuts may be prepared for consumption by heating the same in said pouch.

2. The invention defined in claim 1 wherein the sealed pouch and contents are frozen.

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