

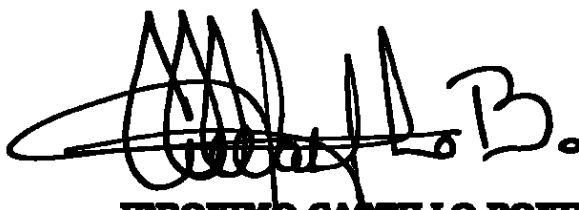
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
División de Nuevas Creaciones
E. S. D.

Ref: EXPEDIENTE No 01-025180
Solicitud de patente a nombre de THE QUAKER OATS
COMPANY

Como el extracto de la solicitud de patente indicada en la referencia se publicó en la Gaceta de Propiedad Industrial N° 523 del 27 de Diciembre de 2002, pido que de conformidad con el artículo 44 de la Decisión 486, pido se rinda el examen sobre patentabilidad de la invención.

Adjunto el recibo N°3/31740 por concepto de las tasas oficiales.

Atentamente,



JERONIMO CASTILLO BONILLA
C.C. 79.462.057 Bogotá
T.P. 104167 C.S. Judicatura

82

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FECHA : MAYO 7 DE 2003

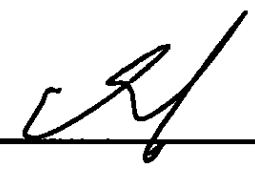
***** CONSIGNACION *****

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***** C O N C E P T O *****

CANT. RESISTICO	CONCEPTO	TOTAL CONCEPTO
1 50005-01-01 SOLICITUDES	03 EXAMEN DE PATENTABILIDAD DE INVEN	335,000.00
	TOTAL :	\$ 335,000.00

SON: TRESCIENTOS TREINTA Y CINCO MIL PESOS

RESPONSABLE : 

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISION DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No 01-025180

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION**

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **523** DE

FECHA **27 DE DICIEMBRE DE 2002** EL TERMINO HABIL EÑALADO POR LA

LEY EXPIRA EL **26 DE MARZO DEL 2003**

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI ☐ _ _ _ _ _

NO ☒ _ _ _ _ _

United States Patent [19]

Gobble et al.

[11] 4,178,392
[45] Dec. 11, 1979

- [54] **METHOD OF MAKING A READY-TO-EAT BREAKFAST CEREAL**
- [75] Inventors: **Harold G. Gobble**, Johnstown Township, Barry County; **Richard M. Vondell**, Battle Creek; **Raymond Mooi**, Wyoming, all of Mich.
- [73] Assignee: **Kellogg Company**, Battle Creek, Mich.
- [21] Appl. No.: **812,341**
- [22] Filed: **Jul. 1, 1977**
- [51] Int. Cl.² **A23L 1/164**
- [52] U.S. Cl. **426/96; 426/93; 426/103; 426/285; 426/302; 426/512; 426/620**
- [58] Field of Search **426/89, 93, 96, 99, 426/103, 285, 302, 305, 620, 454, 459, 462, 463, 512**

[56] **References Cited**

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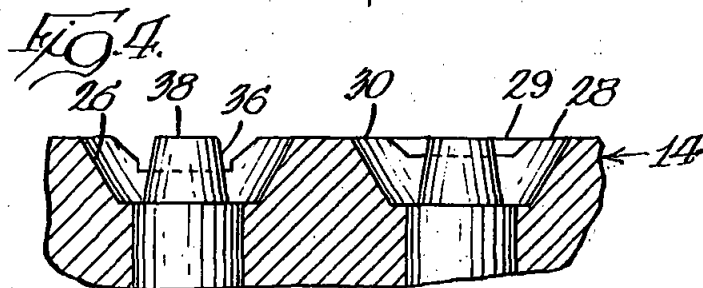
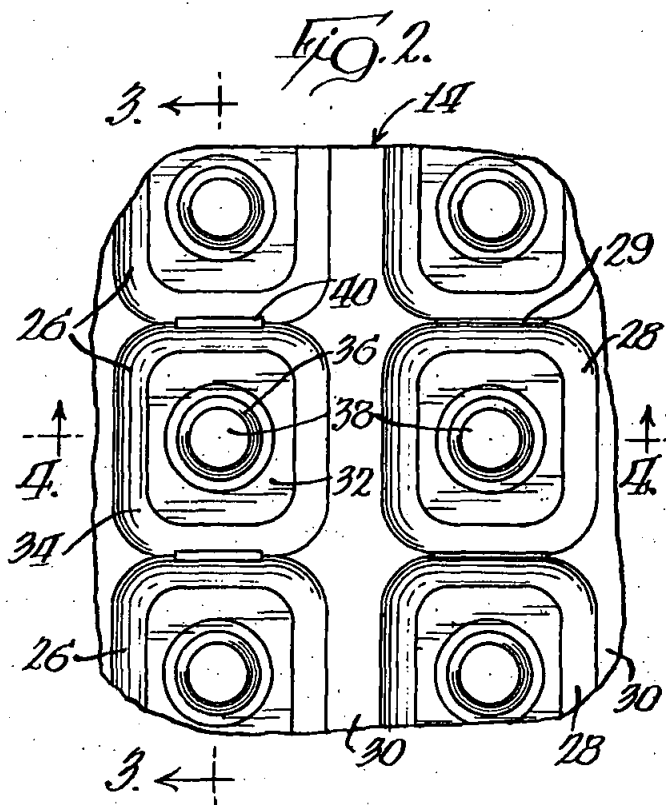
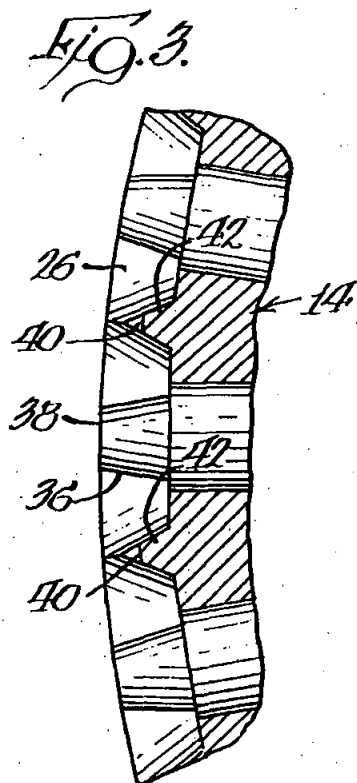
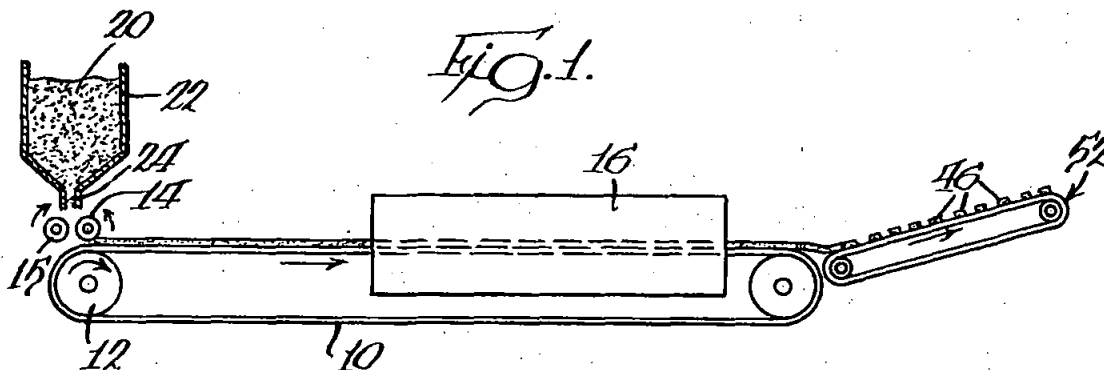
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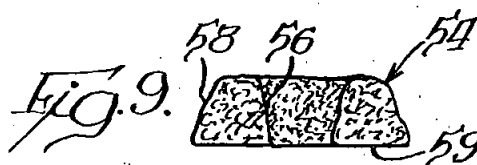
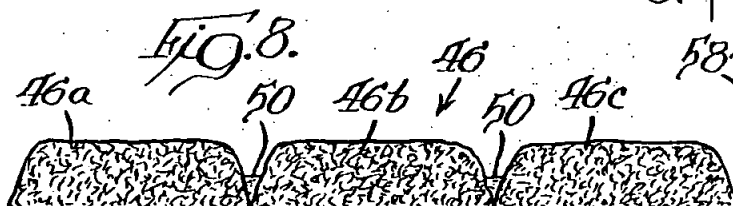
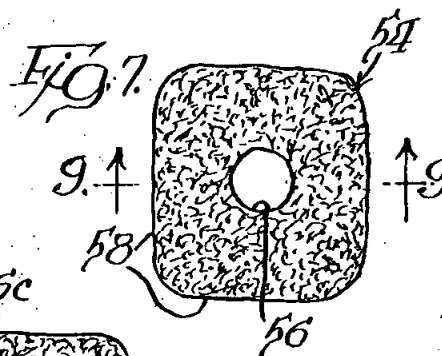
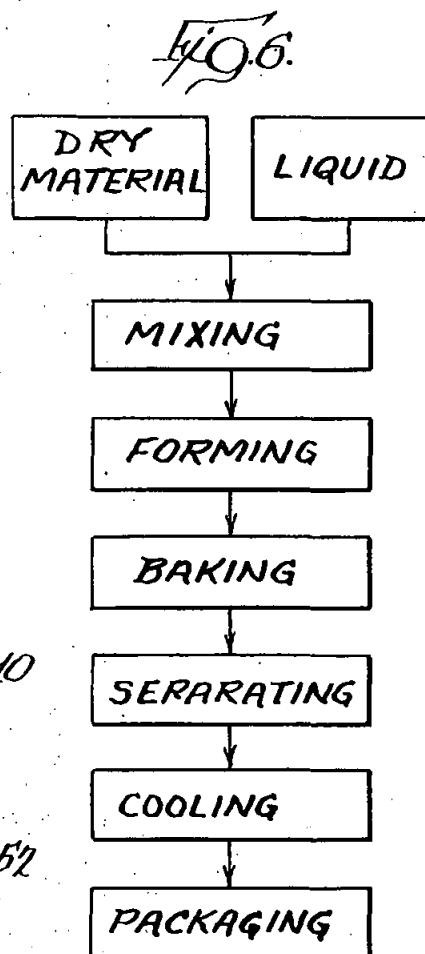
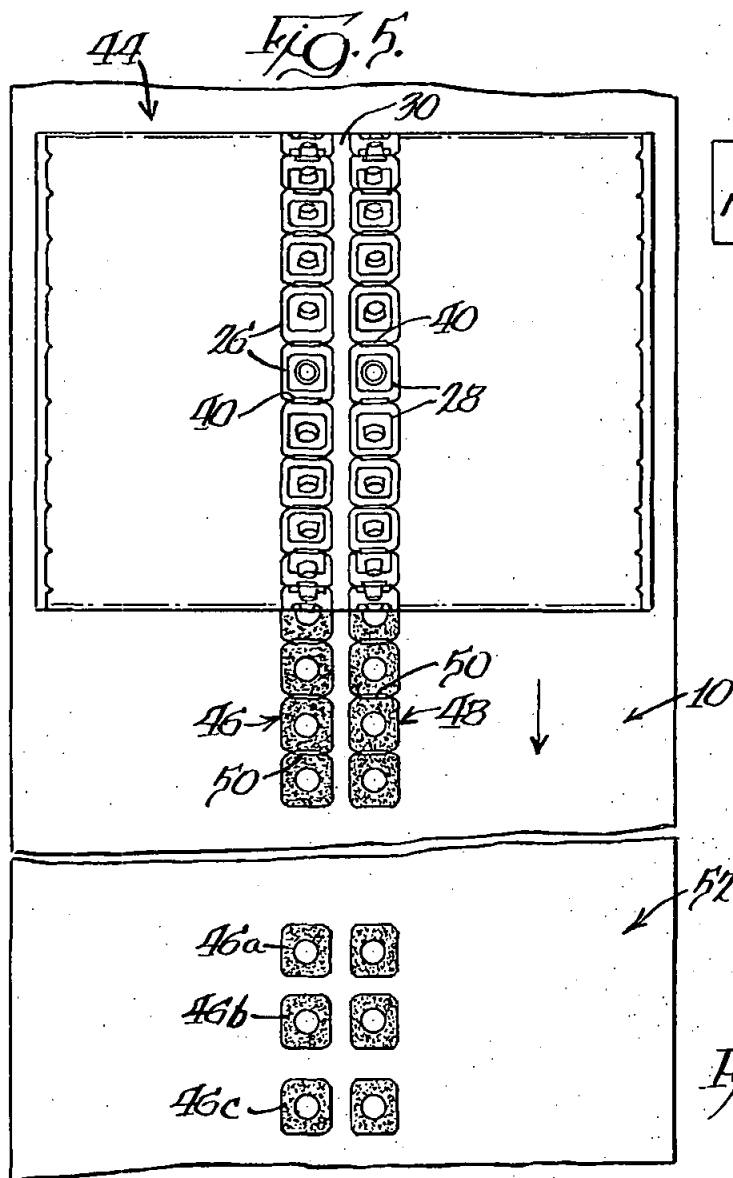
Primary Examiner—Raymond N. Jones
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[57] **ABSTRACT**

A ready-to-eat breakfast cereal product contains coarse particulate vegetable components, sugar components, and shortening, with or without other ingredients, and is substantially free of flour. The ingredients are mixed into a heterogeneous moldable mass, and the mass is die molded to form a plurality of bite sized pieces which are dried to form a crisp structure characterized by a matrix of particulate components coated and adhered together by the sugar and shortening components.

12 Claims, 9 Drawing Figures





METHOD OF MAKING A READY-TO-EAT BREAKFAST CEREAL

BACKGROUND OF THE INVENTION

This invention relates to a ready-to-eat breakfast cereal product and to a method for making such product.

The art of preparing breakfast cereals has evolved into a number of well established, specialized practices over the past seventy years. Generally, so-called "cold" ready-to-eat breakfast cereal products are prepared by modifying cereal grains into an edible form that is substantially crisp and can be eaten as such or with milk without becoming soggy within a short period of time.

Virtually all methods for making ready-to-eat cereals have remained substantially unchanged since the development of the original processes. The basic processes include puffing, flaking, shredding and extrusion of cereal grains or cereal dough, each of which results in products having well established shapes, sizes and compositions. Although numerous improvements have been made to these basic processes, it would be desirable to provide a new process for manufacturing ready-to-eat breakfast cereals, especially one from which a variety of unique and distinctive products and product shapes can be obtained. Ideally, such a new process should be capable of being undertaken without substantial capital expenditures and should offer significant operational efficiencies.

SUMMARY OF THE INVENTION

In accordance with the present invention, a unique ready-to-eat breakfast cereal is prepared from a combination of heterogeneous ingredients. A primary ingredient is a coarse particulate vegetable component, preferably a fiber-containing component such as bran, which is mixed with moist edible binders other than flour to form a heterogeneous moldable mass. The mass is then shaped into a plurality of pieces by die molding, which is a shaping method unique to the breakfast cereal industry. The shaped pieces are then dried, whereby the particulate or fibrous vegetable component forms a crisp, void-containing matrix that is substantially coated with and held together by the binder.

The moist mixture is preferably formed into pieces on a rotary die molding apparatus of the general type employed for making homogeneous, flour-containing, heavily-shortened cookies, comprising a cavity-bearing roll in engagement with the surface of a conveyor. The moist mixture is directed between the roll and conveyor, and the product pieces are formed in the cavities and are deposited upon or adhere to a conveyor, whereby they are easily transported through a drier, then cooled, and subsequently collected and packaged.

A typical preferred product formulation will comprise precooked bran particles within a certain size range, and a binder system composed of sugar components and shortening. A particular combination of product ingredients and moisture is required to successfully form the mixture by die molding, as will be hereinafter explained.

Any ingredients used in the molding process that require cooking are precooked, in order to avoid high temperature or long duration baking, and to facilitate die molding. As a result, the pieces are merely dried to product a crisp delicate structure wherein the bran particles form a void-containing matrix that is substantially coated with, or encapsulated by, and held to-

gether by the binder system. The resulting product has a crisp texture, low liquid absorption rate, and other unique eating qualities associated with breakfast cereals, and the pieces have a uniform appearance and are of a size convenient to be eaten with a spoon. Furthermore, the product can be processed into a variety of sizes and shapes and is not limited to sizes and shapes associated with traditional processes.

The cereal components used in the product of the present invention are in the form of coarse particles rather than powdered in order to form a heterogeneous, interconnected, porous matrix upon drying. The product is therefore substantially free of any flour such as wheat flour, the presence of which would adversely affect the desired properties of the product.

THE DRAWINGS

FIG. 1 is a schematic side view of apparatus suitable for carrying out the process of the present invention.

FIG. 2 is a fragmentary circumferential view of a die forming roll suitable for carrying out the process of the present invention.

FIG. 3 is a fragmentary sectional view of the roll of FIG. 2, taken along section line 3—3 thereof.

FIG. 4 is a fragmentary axial sectional view of the die forming roll, taken along line 4—4 of FIG. 2.

FIG. 5 is a fragmentary plan view of a portion of the die forming roll and conveyor, illustrating the formation of the product on the conveyor.

FIG. 6 is a flow diagram illustrating the overall process utilized in the present invention.

FIG. 7 is a plan view of a representative product of the present invention.

FIG. 8 is a side view of the product of FIG. 7, and further illustrating several pieces of the product linked together.

FIG. 9 is a sectional view taken along line 9—9 of FIG. 7.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In accordance with the present invention, a unique ready-to-eat cereal product is provided and is uniquely suitable for being formed into pieces by a die molding apparatus, preferably a rotary die molding apparatus.

Although rotary die molding apparatus is known per se, there is no suggestion in the prior art to use such apparatus for the manufacture of products having the distinct properties and characteristics of ready-to-eat cereal products, particularly a product that does not contain substantial quantities of wheat flour to provide a homogeneous cohesive dough. Die molded food products such as cookies are formed primarily of heavily shortened wheat flour dough and are typically soft, homogeneous and highly absorbent. The ready-to-eat breakfast cereal described herein, on the other hand, is a heterogeneous mixture of edible components, including relatively coarse vegetable particles held together by a sugar binder or binder system, and having a crisp, delicate structure. The product is furthermore free of flour but is nevertheless capable of being formed continuously into a plurality of pieces by a rotary die molding process.

The vegetable particles within the product preferably contain a substantial quantity of fiber. One excellent source of fiber and the preferred fiber component of this invention is bran, including wheat bran, corn bran, soya

bran, rice bran and oat hulls. In order to form the suitable crisp matrix herein described, the vegetable particles should not be ground or powdered, but rather should comprise particles falling within a size range, as determined by standard screen analysis, of from about 0.015 to about 0.15 inches. If precooked bran is used, the average particle size should fall within the range of from about 0.015 to about 0.075 inches. It will be understood that any edible vegetable component having a significant amount of fiber, such as nut skins, also may be used.

The product contains from about 20 to about 65 percent coarse particulate vegetable components. If the product contains bran, the preferred range of vegetable components is from about 30 to about 65 percent, with a minimum of at least about 15 percent of the total composition consisting of bran. Other particulate cereal components may be used in combination with the bran to further modify taste and texture, such as cereal flakes, including flaked wheat, rolled oats and flaked corn.

The bran and other cereal components are preferably precooked so as to avoid the necessity of subjecting the final product to high temperature or heating for prolonged periods of time. Precooking of the bran has also been found to significantly improve the taste and texture of the product. The bran may be precooked, with flavoring components such as sugar and malt, with steam at a positive pressure and at a temperature of below 250° F. for a period of from about 15 to about 45 minutes, followed by drying.

The particulate vegetable materials used in the product are mixed with water, a binder system, and optional flavoring ingredients to produce a mixture that may be molded into shape-retaining bodies, as herein described. The preferred binder is sugar, defined herein to include mono- and disaccharides, including compound sugars such as sucrose and maltose, as well as simple sugars, such as dextrose, levulose and mixtures thereof, and further including particular types such as invert and corn syrups, molasses, brown sugar, maple sugar, honey and the like.

In order to provide sufficient binder to allow the product to be die molded, the final, dry product contains at least about 15 percent sugar components by weight and may contain up to about 40 percent sugar components.

The product contains from about 5 to about 25 percent shortening and preferably from about 8 to about 18 percent shortening. The term "shortening" as used herein includes solid and liquid fatty substances derived from vegetable and animal sources. Particularly suitable is coconut oil, although other vegetable oils may be used, such as oils derived from sources including corn, peanut, cotton, soy, palm, and the like. The presence of the shortening in the binder system serves to somewhat soften the sugar components upon being dried therewith. The shortening also facilitates release of the product from the die during shaping.

As optional ingredients, the product may contain additives that contribute primarily to flavor. Particularly suitable additives are up to about 5 percent each of coconut and malt syrup.

In order to improve the nutritional qualities, vitamins and minerals may be incorporated into the product mixture. The product may also contain stabilizers and may contain up to about 3 percent of a gas evolving leavening agent such as sodium bicarbonate, which

assists in the formation of pores in the product upon heating during drying.

Referring first to FIG. 6 of the drawings, the aforesaid ingredients are first mixed with sufficient water to form a moist mass that may be processed on a rotary die molding apparatus. The proportion of moisture in the mixture to be formed is very important, since too much or too little moisture will not allow the mixture to be shaped or to be shape-retaining and excess moisture also will cause the mixture to become too sticky to be processed. The amount of moisture should be within the range of from about 10 to about 35 percent by weight, based on the total weight of the ingredients.

The ingredients and water are thoroughly mixed to assure coating of the sugar and shortening binder onto the vegetable particles, the mixture is then ready to be formed into individual bodies or pieces by a die molding process. At this stage, the combination of ingredients is a moist, heterogeneous mixture which has little if any corollary in the production of foods for human consumption. In any event, the mixture cannot be characterized as a dough, nor is it even dough-like. Nevertheless, when prepared as described above, the mixture is capable of being shaped by a die molding process.

For the purposes of the present invention, a die molding process is one wherein the moist mixture is loosely compacted into a cavity and is then deposited or removed from the cavity, whereby a major area of the product conforms to the shape of the cavity. In a rotary die molding process as described herein the mixture is compacted between a moving conveyor bed and a rotating cavity-bearing roll, and the formed product is released from the cavity onto the conveyor in a continuous fashion. The product will thus have a shaped upper surface as defined by the contour of the cavity and a flat bottom surface defined by the conveyor bed.

As shown in FIG. 1, the process of the present invention may utilize moving flat bed conveyor means, such as an endless horizontal canvas conveyor belt 10 wrapped around horizontally spaced rolls 12 and driven by suitable motor or driving means (not shown) in the direction indicated by the arrow. The upper horizontal surface of the conveyor belt 10 is utilized in the movement of the product away from a die forming roll 14 and in the conveyance of the formed product through a conventional oven 16 spaced downstream from the die forming roll.

The product mixture, in the form of a moist, moldable or shape-retaining mass 20 is supplied from the outlet 24 of a hopper 22 feeding downwardly between the nip of the die forming roll 14 and a parallel compacting roll 15. The rolls 14 and 15 are rotated in the directions indicated by the respective arrows such that the product mixture entirely fills and is loosely compacted into the dies or cavities of the roll 14.

The die forming roll 14 is shown in detail in FIGS. 2, 3 and 4. The roll 14 is cylindrical and is driven about its axis in conjunction with roll 15 in the formation of the product. The roll 14 includes a plurality of axially spaced lines of dies or cavities extending beneath the cylindrical surface, such as 26 and 28, said lines extending around the circumference of the roll, the center points of each line 26 and 28 defining a line or circle around the roll axis. The cavities may be formed in the outer cylindrical metal surface 30 of the roll by machining. It will be noted the lines of the cavities 26 and 28 are preferably parallel. Also the cavities in respective rows are shown arranged in parallel for the sake of

5

convenience, as shown along line 4—4 in FIG. 3, but such arrangement may be varied if desired.

Although only a pair of cavity lines 26 and 28 are shown in the drawings, it will be appreciated that the roll 14 may carry a large number of lines of cavities, for example, in excess of forty, depending upon desired product size and roll width.

In the embodiment shown, the shape of the cavity 26 or 28 is square or rectangular, although other regular and irregular shapes, such as triangular and other multiple-sided forms, as well as round and oval, and variations thereof, may be employed. If the shape comprises corners, it is preferred that the corners are rounded as shown to minimize product sticking.

Each cavity 26 or 28 comprises a flat base portion 32 surrounded by an outwardly sloping or diverging side wall or walls 34. A pin 36 may be provided in each cavity, said pin being spaced from the side wall 34 and having a curved or cylindrical end surface 38 flush or level with the outer cylindrical surface 30 of the roll. The purpose of the pin 36 is to provide a hole in each of the formed pieces, and the pin is preferably tapered from the cavity base 32 to facilitate release of the formed product.

It will be appreciated that although the die or cavity shape described above is preferred, any concave cavity may be used that employs outwardly sloping surfaces to insure product release. As an example, the cavity could employ curved base and side portions, depending upon the desired shape of the product formed thereby.

As shown in FIGS. 2 and 4, the line of cavities, such as 28, may comprise individual cavities which are spaced circumferentially from each other in each line, such cavities being separated by transverse webs 29 therebetween, whereby individual and separate product pieces are formed by the die forming roll.

In the alternative, in order to facilitate release of the formed product from the dies, the cavities in a line, such as 26, may have interconnecting recessed channels 40 between adjacent cavities in each line. In this embodiment, the adjacent cavities are separated by a tapered axial web 42 (FIG. 3), and a terminal portion of the web is recessed from the surface of the roll to provide an interconnection channel between the adjacent cavities. The height of the recessed portion of the web is less than the height of the cavity and is advantageously in the order of about 20 to 65 percent of the cavity height. The interconnecting channels 40 cause a linking segment to be formed between the opposing sides of adjacent product pieces as they are being formed, such that the pieces are formed together in a continuous chain as they exit from the cavities.

FIG. 5 further illustrates the combination of the forming roll 14 and conveyor belt 10 in operation, and both lines 26 and 28 have been shown with interconnecting channels 40 to facilitate the following description. The mixture to be formed is introduced to the rear side of the roll 14, as indicated by the arrow at 44, whereupon the mixture is compressed between the cavity bearing roll 14 and a secondary roll 15 and fills the cavities 26, 28 and channels 40. Adjacent lines 26 and 28 are separated by a band of the outer cylindrical surface 30 of the roll, which surface fully engages the belt 10 and substantially excludes deposit of material or bridging between said lines. In this manner, continuous individual strings or chains such as 46 and 48, of die molded material are deposited and travel on the conveyor bed

6

10, said strings being deposited in parallel with the direction of movement of the conveyor.

The product chain 46 is further illustrated in FIG. 8. It will be noted that the chain comprises individually formed pieces 46a, 46b, and 46c, adjacent ones of which are linked together by a web 50 that is relatively thin in comparison to the thickness of the product pieces 46.

It will be appreciated that the formation of the product as continuous chains, such as 46 and 48 shown in FIG. 5 facilitates the release of the shaped product from the die roll, due to the continuity of the chain, and this feature may advantageously be used if product sticking is encountered. Otherwise, however, it is preferred to use a roll having individual cavities so that the pieces will be formed and released separately, thus avoiding the extra step of separating the chain into individual pieces.

Whether the product is formed as individual bodies or as chains, it may be seen that rotary die molding of a ready-to-eat cereal product offers several distinct advantages. The process is continuous and allows the rapid formation of a large number of uniformly shaped, bite-sized pieces on a single conveyor belt. The pieces tend to adhere to the belt until baked, thus allowing the pieces to be formed in a compact uniform arrangement.

Referring to FIGS. 1, 5 and 6, after the pieces or chains have been formed, they are immediately transferred via the conveyor 10 through an oven 16 where they are gently dried to a moisture content of less than 7 percent by weight.

If the product is in the form of continuous chains such as shown in FIG. 8, such chains may be separated at the webs 50 between the individual pieces such as 46a, 46b and 46c. This separation is preferably carried out after drying and before the product has cooled to ambient temperature. A convenient method of separation is to convey the strings from the first conveyor 10 to a second conveyor 52 traveling at a somewhat higher speed than the first. The second conveyor 52 may also be tilted upward relative to the main conveyor 10 to bend and assist in breaking the thin webs 50 between adjacent pieces. The retained heat in the food also facilitates product separation.

The product pieces are then allowed to cool and may be packaged by conventional methods. The final product, illustrated generally at 54 in FIGS. 7 and 9, is square or rectangular in shape, has a central tapered opening 56, and outwardly sloping side walls 58, all of which correspond to the shape of the cavities in the forming roll. The central opening 56 in the product is functional in that it facilitates baking and uniform drying of the product in the oven. Due to the nature of the process, the bottom surface 59 of the product is flat. Desirably, the size of the product does not exceed one inch in any dimension.

The final product 54, upon drying to a moisture content of less than 7 percent, comprises the particulate vegetable or cereal components that are coated and adhered together by the binder comprising the sugar components and shortening. Due to the nature of the forming process and the nature and particulate size of cereal components, the cereal is not densely packed together but is in the form of a porous, void-containing matrix that is crisp and tender. The presence of the binder coating on the individual cereal particles also apparently decreases the tendency of the cereal to easily absorb liquid, such that the product tends to remain crisp when eaten with milk.

As an example of a particular product of the present invention, the product, for example, could be formulated to contain the following on a dry basis: precooked bran, from 30 to 38 percent; oat flakes, from 14 to 22 percent; brown sugar, from 12 to 20 percent; coconut oil, from 9 to 14 percent; sucrose, from 3 to 17 percent; malt syrup, from 1 to 5 percent; corn syrup, from 0.5 to 5 percent; coconut, from 0.5 to 5 percent; and sodium bicarbonate, from 0.25 to 1.5 percent.

The following example is given as being illustrative of, without being limited to, various formulations of die molded ready-to-eat breakfast cereal products of the present invention.

EXAMPLE

Ingredients	SAMPLES											
	1	2	3	4	5	6	7	8	9	10	11	12
Dry Weight Percentage												
Precooked Vegetable Fiber												
Wheat	65			20				15	30	20		20
Corn		65		40		15	15				30	
Nut Skins			65			15		15				
Cereal Flakes												
Oat				40							10	
Wheat					15		35			30	10	
Corn						40					10	
Shortening												
Coconut Oil	10			15		5		25	25		25	25
Peanut Oil		10			12			25		20		
Corn Oil			10			20						
Sugar Components												
Sucrose	15		10		35			20	10	5	10	
Honey				10						15	5	
Corn Syrup				10	5							
Brown Sugar		15			3		40	30	20		5	25
Molasses			5		10							5
Other												
Coconut	4	5										5
Nuts	2	5	5	3			2		5	3		5
Malt Syrup	3		5		5					2		4
Sodium Bicarbonate	1			2			3					1

We claim:

1. A method for making a ready-to-eat breakfast cereal product comprising the steps of first preparing a moldable, shape-retaining heterogeneous mixture comprising from about 20% to about 65% coarse particulate cereal components, sugar components in an amount sufficient to permit die molding of said mixture and from about 10% to about 35% moisture based on the total weight of the mixture, loosely compacting said mixture into a plurality of moist pieces on a cavity bearing roll, and then drying said pieces to a moisture content below 7% to produce a crisp, structure containing the particulate components adhered together by said sugar components.

2. Method for making a ready-to-eat breakfast cereal product comprising the steps of preparing a mixture comprising, on a dry basis, from about 20% to about 65% particulate vegetable components selected from the group consisting of precooked bran, cereal flakes and mixtures thereof, from about 5% to about 25% vegetable oil and at least 15% and up to about 40% sugar components, said mixture being substantially free of flour, admixing said mixture with from about 10% to about 35% moisture based on the total weight of said mixture until the vegetable components are coated by said sugar components and shortening, forming said mixture into a plurality of bite-sized pieces on a cavity-bearing roll, and then drying said pieces to a moisture

content of less than 7% to produce a crisp matrix of said vegetable components coated and adhered together by said sugar components and shortening.

3. The method of claim 2 wherein said pieces are formed as individual, separate bodies.

4. The method of claim 2 wherein said pieces are formed as an interconnected chain of bodies connected together by relatively thin webs to facilitate release of the bodies from the cavity-bearing roll.

5. Process for preparing a ready-to-eat breakfast cereal product comprising the steps of preparing a moist mixture containing coarse particulate cereal components, from about 10 to about 35% water, and sugar in

an amount sufficient to permit die molding of said mixture, loosely compacting and forming said mixture on a rotating cavity-bearing die forming roll to produce a continuous string of the formed moist mixture having a plurality of bodies connected together by relatively thin webs, and thereafter drying and separating the bodies at the webs to produce individual crisp pieces.

6. The process of claim 5 wherein said continuous string is passed through a drying oven and heated prior to separation.

7. The process of claim 6 wherein said continuous string is removed from said oven and separated before said product has cooled to ambient.

8. The process of claim 5 wherein a plurality of closely spaced continuous strings are produced simultaneously on said conveyor.

9. The process of claim 5 wherein an opening is formed through said bodies during the formation thereof.

10. The process of claim 5 wherein the bodies are rectangular shape, with facing sides thereof being connected by said web.

11. The process of claim 7 wherein said mixture comprises from about 20 to about 65 percent particulate cereal components.

12. The product obtained by the process of claim 2.

* * * * *



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⑤④ **Low or no fat granola cereal mix and process.**

⑤⑦ Ready-to-eat, low or no fat granola cereal is prepared from a 60% to 85% cereal base by coating the cereal base with 10% to 30% sugars and drying. The granola cereal product contains little or no added fat and from 30% to 50% cereal flakes, 10% to 40% other cereal ingredients including 5% to 20% crisp rice, 5% to 20% rolled grains and up to 20% cereal flour. Optionally from 1% to 5% maltodextrin is added to tackify the product.

EP 0 586 138 A2

Technical Field

This invention relates to ready-to-eat low or no fat added granola cereal and the process for preparing same.

Background Art

Granola cereals are typically high in fat due to the addition of 10% or more oil, which is an important attribute of such cereals causing the cereal to cluster and have a pleasing appearance and texture.

Granola cereals and food bars have been known and available for some time. Granola's generally contain a grain or grains, nuts, possibly dried fruit, sweeteners and other ingredients. The ingredients can be mixed with a binder such as a sugar syrup and/or fat or shortening and agglomerated or compressed into bars or slabs which may be later cut to a desired size. Depending on the granola's composition, it may be mixed, formed and/or baked prior to packaging and sale.

Martin, U.S. Patent No. 4,038,427, teaches a natural granola product known as C.W. Post brand granola cereal. An assortment of amylaceous and proteinaceous particles are aggregated around puffed, cupped, toasted cereal (such as crisp rice as it is referred to in the trade) which serve as focal points for the particles. The aggregates are preserved and agglomerated in a fat and sugar syrup coating.

A large number of people are desirous of having a granola product which is natural and yet contains low fat or no added fat while retaining the distinctive clustered appearance and the taste and crispy texture of such cereals or food bars.

DISCLOSURE OF THE INVENTION

Ready-to eat, low or no fat added granola cereals are prepared from a major amount of cereal base agglomerated and formed into clusters using a coating syrup. The cereal base contains a major amount of cereal flakes with the remainder rolled cereal, cereal flour and crisp rice.

Maltodextrin may be used to improve tackiness of the cereal mixture providing for better clusters typical of high fat products.

The product is prepared by mixing the cereal base and other granola type materials such as dried fruit and edible nuts and coating the mixture with a coating syrup followed by liquid sucrose. Fat, where added, is sprayed on the mix prior to the coating syrup. The mixture is baked or heated in an oven or drier to cook, brown and dry the product into a dry sheet of granola cereal which may be gently broken into bars or clusters and packaged.

BEST MODE FOR CARRYING OUT THE INVENTION

According to this invention, a cereal mixture is disclosed that meets the shortcomings of the prior art in providing a no or low fat added granola cereal with clusters similar to granola cereals prepared with high levels of added fat.

The granola cereal comprises 60% to 85% cereal base and 10% to 30% added sugar (not contained within the cereal-based ingredients). The cereal base portion contains a major amount of cereal flakes with the remainder being other cereal solids such as rolled grains, grain flours and crisp rice. The base also, preferably, contains a small amount of maltodextrin.

The base is agglomerated using a low amount of fat, if desired, but preferably no fat followed by a coating syrup and finally a liquid sucrose. The mix is heated in an appropriate oven or drier to cook, brown and dry the product which is then gently broken into clusters. Granola bars or other forms may be prepared in a similar fashion.

In a preferred embodiment, maltodextrin is used to increase the tackiness of the mixture which helps give appropriately sized granola clusters.

In a further preferred embodiment, a major amount of the cereal base is cereal flakes where a major amount of the flakes after passing through a 1/4 inch (6.35 mm) screen are retained on a 12 mesh (1.70 mm) screen while the remainder of the flakes pass the 12 mesh (1.70 mm) screen.

The cereal flakes can be prepared from grain flakes such as wheat, corn, barley and oats with or without added bran or the like. We prefer to employ wheat, corn, barley or oat flakes which are ground to a particle size such that from 0 to 10% are retained on a 1/4 inch (6.35 mm) screen, of the remainder from 50% to 90% pass through a 1/4 inch (6.35 mm) screen and rest on #12 (1.70 mm), preferably from 60% to 80%, and 10% to 50% pass through a #12 (1.70 mm) and rest on the pan, preferably 20% to 40%. This particle size is preferred

since it appears to agglomerate best with the other granola ingredients and form good size clusters after coating with sugar, drying and gentle breakage on a sizing screen. The preferred particle size is about 5% retained on a 1/4 inch (6.35 mm) screen, about 70% through a 1/4 inch (6.35 mm) screen and rest on #12 (1.70 mm) screen and about 25% through the #12 (1.70 mm) screen and rest on the pan.

5 The amount of cereal flakes based on the entire product varies from about 30% to about 50% with 35% to 45% preferred. The amount of other cereal ingredients other than cereal flakes comprise from about 10-40%, preferably 15 to 35% based upon the finished food product.

The non-flaked cereal portion of the food is prepared from rolled grains such as 5% to 20% rolled oats, wheat, barley and the like, preferably 5% to 15%, from 0% to 20% cereal flour such as wheat, rice, oat, corn 10 or the like, preferably 5% to 15% and from 5% to 20% crisp rice, preferably 5% to 15% crisp rice, all percentages based upon the final granola cereal product.

The admixture of cereal grain components can include rolled oat groats, bumped rolled wheat or bumped rolled barley. The level of oats, wheat and barley used will be dictated by nutritional requirements as well as palatability and other organoleptic considerations. Other cereal grains, such as cereal flour, may be employed 15 in lieu of or in addition to oats, wheat and barley for ration balancing while still practicing the distinct aggregating advantages accruing from use of flaked cereal grains.

The agglomerate may also contain a number of alternative ration-balancing cereal protein or protein sources in the above preferred ration; e.g., soy bean curd, wheat germ, rye, corn, milo, sorghum, buckwheat meals and/or flours and mixtures of these ingredients, the range of such ratio balancing cereal proteins being between 20 0 and 10 percent of the total ration. Usually these cereal grains or protein sources as in the case of wheat germ or high protein classified wheat flours fractions recovered by sieving or air classification will be selected in accordance with intended nutritional benefits and organoleptic values that are compatible therewith.

Bumped oat, wheat, barley or equivalents are obtained by soaking in cold or warm water to soften the grain; steaming or partial cooking by other means; and subsequent tempering of the cereal grains; whereupon they 25 are flattened and thus opened in structure so that they are more digestible and more readily rehydratable. The act of bumping produces a flattened shape which permits the aggregate to nest or bridge by virtue of the exposed dextrinous character of the surfaces thereof as they undergo tumbling in intimate association with the cereal flakes and crisp rice. Bumping coupled with soaking as in the case of grains such as oats renders the cereal grain more tender or pliable when consumed either dry or wetted and more organoleptically acceptable.

30 The use of crisp rice provides excellent texture and agglomeration properties. The process used to produce the crisp rice is not a critical aspect of the invention. Typically, parboiled, milled white rice will be pressure cooked with a flavoring syrup whereupon the rice will be dried to a moisture content, say, in the order of 15% to 20% and then tempered for a prolonged period (e.g., 16 hours), whence it will be charged to a pre-heated oven to plasticize and warm the rice to a relatively high temperature to condition the rice for bumping. The rice 35 will be bumped, but not flaked, to the point of producing a flattened, non-resilient rice mass; the rice will be flattened to less than that condition wherein it loses its integrity as a grain per se; the bumped rice will thus assume a thickness dimension generally 50% to 75% of the cooked tempered rice dimension just prior to bumping. After bumping, the rice will be charged to a puffing oven where it will be blasted with heated air (450°F to 500°F [232.2°C to 260.0°C]) at atmospheric conditions for a period of, say, 12 to 15 seconds to produce the 40 characteristic puffed crisp rice.

The cereal flakes and other cereal ingredients are supplemented with conventionally employed dry fruits and edible nuts and milk derivatives. For example, dried fruit such as coconut, raisins and apricots may be employed. Edible nuts such as almonds, walnuts and other consumer preferred nuts may be used. Milk derivatives such as non fat milk, whole dried milk, sweet whey and the like can be employed.

45 The clusters of cereal are prepared by mixing the cereal flakes and other cereal components and optionally the maltodextrin with a coating syrup and optionally a small amount of oil which together render the cereal tacky and effect agglomeration on mixing. Sucrose syrup is then added. The coating syrup, sucrose syrup and cereal mixture may be mixed in a bowl or tumbled in rotating drums or in screw conveyors. Once the cereal is coated with syrup, the mixture is placed on trays or belts or other solid, perforated or screen surfaces and 50 baked in an oven or hot air dried to evaporate water, cook and brown the cereal and adhere the cereal particles to each other.

We employ from 10% to 30% coating and sugar syrup, preferably from 10% to 25% based on the total final product weight.

55 The majority of the sugar employed, at least 70%, preferably 80% or more is sucrose with the balance made up of honey, molasses, corn syrup, both high fructose and conventional, and other sweet ingredients. The sugars may be applied as a single syrup or the corn syrup, molasses and other non-sucrose sweeteners may first be applied as by spray in a coating drum followed by sucrose syrup.

In this connection, the employment of 1% to 15%, preferably 1% to 5%, by weight of final cereal of amor-

phous monosaccharides, predominantly corn syrup made up of a majority of glucose or honey made up of a majority of fructose, is instrumental in achieving a semi-glossy, non-crystallizing coating which provides a substantially continuous barrier to oxidation.

In effecting agglomeration, syrup must be sprayed or poured into a mixing vessel containing the dry cereal ingredients. Suitable equipment for achieving agglomeration includes a batch system such as a coating reel, ribbon blender or a continuous system such as a single or multiple mixing auger. When utilizing a coating reel the pre-mixing of the dry blend ingredients to be agglomerated, the rate of rotation of the reel, the diameter thereof and the number of flights or baffles employed to promote a tumbling action are matters within the skill of art workers and form no part of the present invention. However, it is preferred in effecting a tumbling action to avoid excessive heating of the coating reel. Such low temperature processing promotes a good syrup distribution without premature moisture loss; a preferred embodiment is that the coating operation proceed at an ambient agglomerating temperature in the zone of aggregation below 120°F (48.9°C); the syrup will be at a more elevated temperature -- say, about 120°F to 150°F (about 48.9°C to about 65.6°C) -- whereat it will be fluid and evenly distributable and possess requisite stickiness.

The tacky nature of the syrup, when warm, should promote sufficient initial aggregation to assure that clustering of particles occurs around the cereal flake and the crisp rice. Generally speaking, it will be a preferred embodiment of the invention that maltodextrin be added to the dry cereal ingredients which improves agglomeration of cereal flakes, flour, crisp rice, fruit and nut solids.

A major amount of sucrose solution is added after the initial coating of monosaccharide which on evaporation of the water forms a hard coating which adds strength and oxidative protection to the agglomerated cereal matrix and resists stickiness at high humidity and temperature during storage.

Should a low fat variety of product be desired, up to 10% fat, preferably about 5% to 9% fat can be added by spray prior to any sugar coating. Substantially less fat is used in this embodiment than prior art granolas. If desired, fat and sugar may be applied in a single step although we prefer to employ multiple coating steps. When no fat is added to the cereal, the fat content of the total cereal is usually less than 2%.

The sugar syrup will be applied at around 70° Brix and will be fluid enough to be delivered by suitable spray or other coating application equipment known in the arts; generally the degrees Brix is below 75 in order to assure good distribution of syrup providing a complete continuous coating over the particles in the final agglomerate. Commonly, the syrup will be elevated to a temperature where all of the solids are in solution and the syrup may thereafter be applied after the particles are oil coated.

Fat and sugar may be applied by alternative coating means or simultaneously as an emulsion wherein the sugar is dissolved in water and the fat is emulsified therewith. Methods whereby the cereal components are aggregated and thereafter agglomerated will be varied depending upon ultimate intended texture. Thus, in one, the cereal particles may be co-mixed with a dry powdery saccharide mixture and the dextrinized cereal and wetted by a water spray, water addition to the mix or admission to a humid atmosphere. The saccharides, exposed to moisture, will be partially or totally dissolved and cause the cereal mixture particles to agglomerate on mixing or tumbling.

Another alternative may be the "creaming" of the aforesaid powdery saccharides with or without oil in a plastic state to produce a sugar-cream type of homogeneous mixture. This material will desirably have only minimal amount of water added to it and will be whipped or otherwise mixed to produce a moderate degree of overrun; having produced this low density matrix-forming saccharide mixture, the cereal mixture ingredients will be folded in uniformly to produce an agglomerate. The agglomerates mix can be ultimately subjected to a dehydration or baking operation with an optional forming operation, typically a 1 inch (25.4 mm) bed being compacted to, say, a 3/4 inch (19.05 mm) bed and subdivided or broken after drying for sizing to the desired agglomerate or cut into granola bars.

In the preferred embodiment, part of the basis for agglomeration of the cereal components is the use of from 1% to 5%, preferably 1% to 3% of a maltodextrin which is added dry with the cereal ingredients prior to sugar addition. On wetting, the maltodextrin causes the cereal surfaces to be tackier than would be the case without the dry maltodextrin. The maltodextrin can be derived from a cereal grain or a tuber (i.e., tapioca, potato, etc.) wherein the starch is converted to maltodextrin with a DE of from 3 to 20 such as Rice-Trin brand rice maltodextrin available from Zumbro, Inc., Hayfield, Minnesota, 55940.

The invention is further described but not limited by the following examples.

EXAMPLE 1

A no fat-added granola is prepared as follows. The following dry fraction ingredients are weighed and added to a coating reel (multiflighted). For the purpose of this Example, a coating reel is utilized.

EP 0 586 138 A2

		%
5	Ground Cereal Flakes	59.5
	Quick Cooking Rolled Oats	15.1
	Crisp Rice	20.8
	Maltodextrin	3.2
10	Sweet Whey	1.4

The dry fraction ingredients are mixed in a coating reel operating at 30-60 RPM for 5 minutes. Optionally almonds or coconut could be added to the dried ingredients above. Where oil addition is desired, oil is poured or sprayed onto the preblended dry ingredients in the mixing vessel and mixed for an additional 5 minutes at the same speed to insure distribution of the oil on the surfaces of the ingredients and impregnation thereof. This particular example did not incorporate oil addition.

Separately, a coating syrup is prepared having the following ingredients.

		%
20	Molasses	7.0
	Corn Syrup - 42 DE	9.0
	Honey	26.0
25	Water	58.0

The foregoing coating ingredients are dissolved at 170°F (76.7°C) to produce a syrup solution which is poured or sprayed at 170°F (76.7°C) onto the dry ingredients (optionally oil coated) fraction, in the rotating reel, and mixed for an additional 5 minutes of tumbling so as to promote uniform coating of the material and particle aggregation.

Liquid sucrose at 67% solids is then poured or sprayed on the cereal mix, and agitated to thoroughly coat the cereal mass.

Blend percentages of the following fractions is as follows:

		%
35	Dry Ingredient Fraction	66.0
	Coating Syrup	8.0
40	Liquid Sucrose	26.0

The coated aggregates are then removed from the coating reel and loaded into tray-type dryer screens at a moisture content of approximately 15% and a bed depth of at least 1/2 inch (12.7 mm) and usually 3/4 inch to 1 inch (19.05 mm to 25.4 mm) or more. The material is levelled prior to drying with a spatula to induce slight compression and consequent compaction. The loaded screens are then subjected to an air circulation dryer wherein the material is dried using an air temperature of at least 180°F (82.2°C), preferably 240-250°F (115.6-121.1°C) for 15 minutes, with a maximum updraft air flow to produce a dried sheet of cereal having a moisture content under 5%. The dry cereal sheet is broken apart while still in a warm plastic state, cooled and sized by passing through a wire screen having 3/4 inch (19.05 mm) openings. The sized, cooled agglomerate is then collected for packaging. The dried agglomerates have a final moisture of 1-3.0%.

EXAMPLES 2 & 3

Two granola cereals were prepared designed to provide 3 grams of fat and 3 grams of fiber (3,3 formula) and 0 grams of fat and 3 grams of fiber (0,3 formula) for each 28.35 gram serving of cereal.

EP 0 586 138 A2

Ingredient	3.3 formula	0.3 formula
	% as is	% as is
5 Wheat Bran Flake	37.5	38.9
Rolled Oats	4.8	----
Crisp Rice	5.7	13.6
10 A dry blend of other	17.0	12.8
cereal ingredients		
Rolled Oats		Rolled oats
Oat Flour		Rice*Trin 10
15 Rice*Trin 10		Sweet Whey
Sweet Whey		
Sunflower Oil	7.6	no oil added
20 Coating Syrup I	8.4	8.5
Water		
Honey		
42 DE Corn Syrup		
25 Molasses		
Sugar Syrup II	19.0	19.0
Liquid Sucrose		
30 TOTAL	100.0	100.0

35 The bran flakes are sized in a rotary mill at a rate of 1220 lbs./hr (553.38 kg/hr). Average screen fraction was:

	%
On 1/4" (>6.35 mm)	5.4
40 On #12 screen (>1.70 mm)	70.0
On pan	24.6

45 The flakes were conveyed to a feed bin which caused further breakage and gave a final screen fraction of:

	%
On 1/4" (>6.35 mm)	1.7
50 On #12 screen (>1.70 mm)	59.3
On pan	39.0

55 Rolled oats and crisp rise were prepared as is known in the art and described herein. The dry ingredients were combined as well as mixed. Sunflower oil was applied in formula 3,3 in a mixing conveyor. The coating syrup was mixed and heated to 170°F (76.7°C). The mixture at 38% solids and about 150°F to 170°F (about 65.6°C to 76.7°C) was sprayed onto the cereal as it is mixed. The sucrose syrup (70% solids) was heated to 170°F (76.7°C) and sprayed on the cereal mix as it was being mixed.

EP 0 586 138 A2

The brix of the liquid ingredients was as follows:

	Bx
Sucrose	67.5
Honey	81.8
42 DE Corn syrup	83.5
Molasses	79.2

The mixture was conveyed to a Proctor and Swartz Drier operating under the following conditions.

	3,3 formula	0,3 formula
Belt speed (volts)	32-35	40
Bed depth (inches) [mm]	1.5-1.75 [38.1-44.45]	1.75-2.0 [44.45-50.8]
Air temperature (°F) [°C]		
Zone #1	205 [96.1]	215 [101.7]
Zone #2	210 [98.9]	220 [104.4]
Zone #3	210 [98.9]	220 [104.4]

The dried product, in sheets, exiting the drier was forced through a 3/4 inch (19.05 mm) top table screen, cooled and then packaged.

A screen fraction of the product after cooling is:

	Weight % After Cooling	
Screen	3,3	0,3
On 1/2" (>12.7 mm)	6.9	6.3
On 1/4" (>6.35 mm)	42.2	37.5
On # 6 (>3.35 mm)	36.7	37.4
On pan	14.2	18.2
Moisture-%	3.1	2.8

The final product characteristics (%) are as follows:

EP 0 586 138 A2

	3 Fat,3 Fiber Product	0 Fat,3 Fiber Product
Wheat Bran Flakes	41.2	43.8
5 Rolled Oats	10.4	11.1
Oat Flour	10.0	-
Maltodextrin (Rice*Trin 10)	2.3	2.3
10 Crisp Rice	6.2	15.3
Sweet Whey	1.0	1.0
Sugar	14.0	19.8
15 Honey	2.0	2.0
Corn Syrup	.7	.7
Molasses	.5	.5
20 Sunflower oil	8.3	none
Water	3.5	3.5
	100.00	100.00

EXAMPLE 4

In a similar fashion as described in Examples 2 and 3, a granola cereal was prepared which provided 2 grams of fat and 3 grams of fiber for each 28.35 gram serving of cereal. The identical process was utilized to produce this granola cereal. The compositional makeup of the blend of ingredients and the finished final food product is given in the table below.

	Blend	Finished Food
	%	%
Wheat Bran Flakes	38.2	41.9
Crisp Rice	5.8	6.4
40 Oat Flour	9.5	10.4
Rolled Grains (Combination of oats and barley)	9.8	10.6
Sweet Whey	1.0	1.1
45 Maltodextrin (Rice*Trin 10)	1.9	2.1
Sunflower Oil	5.8	6.4
Honey	2.3	2.1
50 Corn Syrup 42 DE	.8	.7
Molasses	.6	.5
Water	4.9	3.5
55 Liquid Sugar	19.4	14.3
	100.0	100.0

Claims

1. A granola cereal containing up to 10% fat which comprises 60% to 85% cereal base a majority of said cereal base being cereal flakes and 10% to 30% added sugar.
2. A product according to claim 1, additionally comprising from about 1% to about 5% maltodextrin.
3. A product according to claim 2, wherein the maltodextrin has a DE of from 3 to 20 and wherein the maltodextrin is derived from a cereal grain or tuber.
4. A product according to any one of claims 1 to 3, wherein the cereal flakes comprise from 30% to 50% of the granola cereal.
5. A product according to any one of claims 1 to 4, wherein the cereal flakes are ground to a particle size such that from 0 to 10% are retained on a 1/4 (6.35 mm) screen, of the remainder of the cereal flakes from 50% to 90% pass through a 1/4 inch (6.35 mm) screen and rest on a #12 (1.70 mm) sieve screen and 10% to 50% pass through a #12 (1.70 mm) sieve screen and rest on the pan.
6. A product according to claim 5, wherein the cereal flakes are ground to a particle size such that from 60% to 80% pass through a 1/4 inch (6.35 mm) screen and rest on a #12 sieve (1.70 mm) screen and 20% to 40% pass through a #12 sieve (1.70 mm) screen and rest on the pan.
7. A product according to any one of claims 1 to 6, wherein the cereal base comprises from 30% to 50% cereal flakes based upon the weight of the granola cereal product, 5% to 20% rolled grains selected from the group consisting of rolled oats, wheat, barley and combinations thereof, from 0 to 20% cereal flour and from 5% to 20% crisp rice.
8. A product according to claim 7, wherein the cereal base comprises from 35% to 45% cereal flakes, from 5% to 15% rolled grains and from 5% to 15% crisp rice.
9. A product according to any one of claims 1 to 8, wherein the cereal base contains from 5% to 15% cereal flour.
10. A product according to any one of claims 1 to 9, wherein the granola cereal contains no added fat.
11. A product according to any one of claims 1 to 10, additionally comprising from 1% to 15% of amorphous monosaccharides based upon the weight of the granola cereal said amorphous monosaccharides being effective to achieve a semi-glossy, noncrystallizing coating.

**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES**

202085
Bogotá, D.C., 19 de Octubre de 2007

Abogado
JERÓNIMO CASTILLO BONILLA
Solicitante
The Quaker Oats Company

ASUNTO	Radicación	01025180
	Trámite	002
	Evento	001
	Actuación	430
	Oficio	13765
	Folios	23

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

- 1.1. Capitulo descriptivo: Folios 3 a 19 como se radicó inicialmente.
- 1.2. Capitulo reivindicatorio: Folios 20 a 24 como se radicó inicialmente.
- 1.3. Dibujos: Folio 25 como se radicó inicialmente.
- 1.4. Prioridad: Folios 36 a 63, US 09/539829, 31 de Marzo de 2000

2. Objeto de la invención

Título de la solicitud: Productos de cereal tipo granola y métodos para fabricar dichos productos. Folio 1.

Objeto de la invención: El objeto de la presente solicitud de patente de invención consiste en un producto de cereal que comprende cereal en hojuelas estabilizado en una matriz de espuma sólida, que no tiene adición de grasa y que cohesiona las hojuelas del cereal. Adicionalmente presenta un método para fabricar la espuma y el producto y un método para fabricar un producto tipo granola.

Reivindicaciones 1–6
Un producto de cereal.

Reivindicaciones 7–13
Un producto de cereal en hojuelas.

Reivindicaciones 14–16
Un método para producir un producto de cereal.

Reivindicaciones 17–19
Un método para producir un producto de cereal.

Reivindicaciones 20–24
Un producto intermedio.

El problema técnico planteado en esta solicitud radica en la necesidad de un producto tipo granola que contenga cereal en hojuelas y tenga una textura agradable y suave, pero masticable y un densidad reducida en comparación con los productos de granola tradicionales. Además la necesidad de un producto tipo granola que tenga un recubrimiento que se adhiera a la hojuela de cereal sin quebrarse ni caerse. Y un método para fabricar la matriz aglomerante y el producto tipo granola. Para solucionar este problema técnico la solicitud plantea un producto de cereal que comprende: cereal en hojuelas estabilizado en una matriz de espuma sólida, que no tiene adición de grasa y que cohesiona las hojuelas del cereal. Adicionalmente presenta un método para fabricar la espuma y el producto y un método para fabricar un producto tipo granola.

El objeto de la solicitud definido anteriormente se clasificó en la IPC A23L1/00, A23L1/168.

3. De la solicitud de Patente (artículo 28 y 30 D. 486).

Durante todo el capítulo reivindicatorio se utilizaron los términos "aproximadamente" y "por lo menos" que son imprecisos y no definen la materia ni alcance de la invención. Sírvase definir los componentes específicos del producto.

En consecuencia la reivindicación 1 es muy amplia, pues presenta un producto de cereal que no se encuentra específicamente definido. Se le recuerda al solicitante que un producto es caracterizado por sus componentes y las proporciones de estos y no por los componentes que no posee. De este modo la expresión "no contiene adición de grasa" no define y es irrelevante. Lo mismo sucede en la reivindicación 9.

La reivindicación 7 repite la materia de la invención que se protege en la reivindicación 1. Lo mismo sucede con la reivindicación 8 que es igual a la reivindicación 2, la reivindicación 11 que es igual a la reivindicación 5 y la reivindicación 13 que es igual a la reivindicación 6. No se entiende porqué se presenta la misma materia dos veces. Sírvase especificar cuál es el objeto de la invención.

De otro lado se le recuerda al solicitante que una propiedad inherente a la materia, como la densidad, no caracteriza el invento (producto ó método), solo corresponde a un parámetro y por lo tanto la densidad no se tendrá en cuenta como característica fundamental de la materia protegida en las reivindicaciones 3, 7, 14 y 17.

La reivindicación 14 presenta un método para producir un producto de cereal en hojuelas tipo granola. Sin embargo los pasos se presentan de forma muy amplia e imprecisa. Por ejemplo la expresión "formar un mezcla fluida" no describe claramente el proceso, solo relaciona de manera ambigua la mezcla de dos componentes. Asimismo el numeral c. resulta ser igual al numeral a. pues la frase "formar un aglomerante..." corresponde a la misma etapa "formar un aglomerante de espuma fluida a partir de materiales aglomerantes de espuma" que corresponden a la mezcla de los mismos componentes. Sírvase aclarar si existe alguna diferencia entre estas etapas.

Por otra parte el numeral d. menciona "...para formar un aglomerante de espuma sólida en el cual estén cohesionadas la hojuelas del cereal en una masa unitaria." Sin embargo dicha expresión no caracteriza al método ni a la etapa del método; solo corresponde al objetivo a alcanzar con la etapa de curado.

Por su parte la reivindicación 17 también presenta un método para producir un producto de cereal en hojuelas tipo granola. Que al igual que la reivindicación 14,

presenta problemas de claridad y ambigüedad. Por ejemplo, la frase del numeral c. "para formar un espuma fluida" y la frase del numeral e. "para formar el producto de cereal en hojuelas compuesto por hojuelas de cereal..." no muestran una característica del método. Solo representan el objetivo a alcanzar. Además para el caso del numeral d. se caracteriza al proceso por su producto. Se le recuerda al solicitante que un método es caracterizado por sus etapas y condiciones de ejecución.

Sin embargo no es claro porqué se presenta la reivindicación 14, como una reivindicación independiente, si tal como esta presentada, la reivindicación 14 está contenida dentro de la reivindicación 16. Sus etapas son las mismas y llevan al mismo tipo de producto. Solo se menciona la adición del compuesto liberador de gas y su reacción presentada en los numerales b. y c. el resto de etapas son las mismas presentadas en la reivindicación 14. Sírvese aclarar si se trata de dos métodos diferentes e independientes. Y de ser así sírvese aclarar si el método de la reivindicación 14, no tiene adición del compuesto liberador de gas y porqué no se encuentra sustentado en la descripción. Pues los ejemplos mostrados allí tienen adición de bicarbonato de sodio y durante la descripción detallada del invento se hizo énfasis en la producción de gas *in situ*.

De otro lado en la reivindicación 15, se enuncia la frase "...en una forma deseada, del grosor y el tamaño deseados..." la cual no caracteriza al método y además el término "deseado" es subjetivo. Lo mismo sucede en la reivindicación 18.

La reivindicación 20 utiliza la frase "...que es adecuado para formar..." que no caracteriza el producto y solo genera ambigüedad. Sírvese definir si dicho producto intermedio esta dentro del objeto de la invención y cuales son los componentes que lo caracterizan. Además el término "adecuada también es subjetivo"

La reivindicación 21, por su parte presenta un producto que es caracterizado por su proceso, tal como lo muestra la frase "se forma por la evolución de un gas..." nuevamente, un producto es caracterizado por sus componentes y las proporciones de ellos.

Las reivindicaciones 22 y 23 enumeran una amplia de lista de reactivos, sin embargo esta reivindicaciones son especulativas y solo tratan de generalizar ejemplos puntuales presentados en el capítulo descriptivo. Además no se entiende porque se protege un ácido propiamente dicho como el ácido cítrico, si en los ejemplos presentados no se menciona la adición de estos. Sírvese aclarar.

Por último la reivindicación 24 presenta "...ese compuesto librador de gas se usa en una cantidad efectiva para introducir celdas en el aglomerante de espuma sólida..." Frase que no caracteriza al producto, por el contrario generan confusión, es subjetiva, explicativa de la ventaja técnica y solo representa el objetivo a alcanzar.

En resumen, el capítulo reivindicatorio no es repetitivo, impreciso y poco claro y no define el alcance ni la materia de la invención.

En conclusión, estas reivindicaciones no cumplen con el requisito de claridad y concisión y sustento en la descripción de acuerdo al art. 30 de la Decisión 486.

4. Determinación del Estado de la Técnica

Considerando que la fecha de prioridad de la solicitud internacional PCT es 2000-06-26, se encontraron los documentos relacionados a continuación, que pueden afectar la patentabilidad del objeto de la presente solicitud:

N°	DOCUMENTO	TÍTULO	FECHA DE PUBLICACIÓN
D1	US4178392	Method of making a ready-to-eat breakfast cereal	1979-12-11
D2	EP0586138	Low or no fat granola cereal mix and process	1993-08-18

Los documentos citados se anexan al expediente.

5. Evaluación de los requisitos de patentabilidad (artículo 14 D486)

5.1. Novedad (artículo 16 D486)

La presente Solicitud de Patente Colombiana No. 01025180 en su reivindicación 1 presenta un producto de cereal que comprende cereal en hojuelas cohesionadas en una matriz de espuma sólida, y dicha matriz de espuma sólida comprende:

- Por lo menos un azúcar
- Por lo menos un material seleccionado entre el grupo de constituyentes proteicos, malta, acidulantes y sabores.

La anterioridad D1 (columna 3 renglón 12 a columna 4 renglón 14, columna 7 renglones 1-9) presenta un producto que contiene entre el 20 y el 65% de componentes vegetales, que puede ser salvado de trigo, avena, cereal, maíz entre otros. Y otros ingredientes como saborizantes. La mezcla se somete a un precalentamiento ó cocción inicial que mejora el sabor y la textura del producto. Los materiales vegetales se mezclan con agua y un sistema aglutinante (aglutinante ó que une ó aglomera), y otros componentes saborizantes. El aglutinador preferido es azúcar, incluyendo azúcares como sacarosa y maltosa, así como azúcares sencillos, tales como dextrosa y otros como jarabe de maíz, melaza, miel entre otros. El producto contiene entre el 5 al 25% de grasa de repostería. Esta grasa de repostería se entiende como sustancias grasas sólidas ó líquidas derivadas de fuentes vegetales ó animales.

Como ingredientes opcionales, el producto puede contener saborizantes tales como jarabe del coco y malta. También se puede incluir las vitaminas y minerales, estabilizadores y puede contener un gas producido por un agente tal como bicarbonato de sodio, que ayuda en la formación de poros en el producto.

Entonces la anterioridad D1 ya había divulgado los mismos elementos representativos del invento de la solicitud en estudio. Pues un cereal en hojuelas cohesionadas en una matriz de espuma sólida es igual a un producto que incluya por ejemplo, avena y un sistema aglutinante que comprende a su vez: azúcar, malta saborizantes, bicarbonato de sodio y grasa de repostería. Dicha grasa de repostería, puede incluir grasas líquidas de origen vegetal, como derivados de la leche el cual es entendido como los constituyentes proteicos. La anterioridad no hace referencia a la densidad del producto. En consecuencia la reivindicación 1 y la reivindicación 7, que tiene los mismos elementos característicos de la reivindicación 1, (pues la densidad no se considera una característica fundamental del producto) no son nuevas y las dependientes de ellas tampoco lo son porque no aportan ninguna otra característica esencial que pudiera hacer nuevo el producto.

Asimismo el documento D2 se relaciona con cereal tipo granola bajo en grasa y el procedimiento para prepararlo. Los cereales de granola son preparados con una

cantidad de cereal aglomerado y un material aglutinante. La maltodextrina es utilizada para mejorar la adherencia de la mezcla del cereal.

Específicamente presenta una barra de granola baja en grasa, que comprende el cereal, una mezcla de azúcares, maltodextrina, derivados de leche tales como leche sin grasa, leche en polvo, suero de leche dulce y saborizantes. Obteniendo un aglomerado de baja densidad. También se introducen otros aditivos como miel, melaza, jarabe de maíz, fructosa y distintos edulcorantes. Y en consecuencia le quita la novedad de las reivindicaciones 1 y 7 pues presenta los mismos elementos característicos.

La reivindicación 20 por su parte presenta un producto que contiene un aglomerante de espuma líquida y una pluralidad de hojuelas de cereal. Estos dos elementos ya habían sido formulados en las anterioridades presentadas por lo tanto cualquiera de ellas le quita la novedad a esta reivindicación.

5.2. Nivel Inventivo (artículo 16 D486)

El documento D2 se relaciona con cereal tipo granola bajo en grasa y el procedimiento para prepararlo. Los cereales de granola son preparados con una cantidad de cereal aglomerado y un material aglutinante. La maltodextrina es utilizada para mejorar la adherencia de la mezcla del cereal.

Específicamente presenta una barra de granola baja en grasa, que comprende el cereal, una mezcla de azúcares, maltodextrina, derivados de leche tales como leche sin grasa, leche en polvo, suero de leche dulce y saborizantes. Obteniendo un aglomerado de baja densidad. También se introducen otros aditivos como miel, melaza, jarabe de maíz, fructosa y distintos edulcorantes.

La presente Solicitud de Patente No. 01025180, presenta un producto de cereal que comprende: cereal en hojuelas cohesionadas en una matriz de espuma sólida, y dicha matriz de espuma sólida comprende: por lo menos un azúcar y por lo menos un material seleccionado entre el grupo de constituyentes proteicos, malta, acidulantes y sabores.

La única diferencia de D2 con la solicitud en estudio radica en la presencia de bicarbonato de sodio y compuestos ácidos como ácido cítrico, ácido tartárico entre otros. Presentados en la reivindicaciones 5, 6, 11, 12, 13, 22 y 23. Sin embargo la anterioridad también divulga que la presencia de saborizantes, derivados de leche entre otros; que implícitamente contienen compuestos ácidos que pueden reaccionar con el bicarbonato. De otro lado la anterioridad D1 divulga que el bicarbonato de sodio puede ser utilizado como agente liberador de gas.

En consecuencia, una persona versada en la materia, en vista del estado de la técnica en su totalidad, hubiera sugerido sin mucho esfuerzo de su parte, formular un producto tipo granola con los componentes presentados en la anterioridad D2 y agregar bicarbonato de sodio para la formación de gas *in situ* y así disminuir la densidad y cambiar la textura del producto (propiedad que ya había sido descrita en la anterioridad D1). Por lo tanto el producto presentado es obvio para el experto en la materia y surge como una alternativa de un producto ya existente. En consecuencia el producto carece de nivel inventivo.

Es importante tener en cuenta que si el bicarbonato de sodio reacciona y dio lugar a la formación de CO_2 , este componente no haría parte fundamental del producto final.

La anterioridad D2 (ejemplo 1) divulga un procedimiento para producir una barra de granola libre de grasa que consiste entre otras las etapas de:

- Secar y pesar los cereales
- Mezclar los ingredientes aglutinantes, tales como azúcares, saborizantes, derivados de leche y demás.
- Verter la mezcla de aglutinantes sobre la mezcla de cereales.
- Mezclar para la homogenización de los componentes.
- Secado por calentamiento para la aglomeración y la formación de la barra.

Por su parte la presente solicitud presenta un método para producir un producto de cereal en hojuelas tipo granola que comprende las etapas de:

- Formar una mezcla fluida de materiales aglomerantes.
- Introducir por lo menos un compuesto liberador de gas.
- Permitir que el compuesto liberador de gas reacciones
- Mezclar la espuma fluida con el cereal en hojuelas
- Curar la masa.

La diferencia radica en la presencia del compuesto liberador de gas que reacciona para la formación de dicho gas.

Sin embargo la anterioridad D1 presenta un método que comprende las etapas de: Mezclar el componente de origen vegetal con una mezcla de los demás componentes, calentar la mezcla para la formación de una sola unidad, pero además la inclusión de bicarbonato de sodio el cual libera un gas.

En consecuencia, una persona versada en la materia, en vista del estado de la técnica en su totalidad, hubiera sugerido sin mucho esfuerzo de su parte, introducir al procedimiento presentado en la anterioridad D2 la adición de bicarbonato de sodio que puede dar lugar a un gas y a su vez a la formación de espuma que tiene efectos directos sobre la textura y densidad del producto. Por lo tanto los métodos presentados son obvios para el experto en la materia y en consecuencia carecen de nivel inventivo.

Conclusión:

La solicitud presenta problemas de claridad (*artículos 28 y 30*). Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

N°	TÍTULO	REIVINDICACIONES AFECTADAS	REQUISITO QUE AFECTA
D1	US4178392	1-24	Novedad y Nivel Inventivo
D2	EP0586138	1-24	Novedad y Nivel Inventivo

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de la notificación de la presente comunicación. **En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.**

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.



ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de División de Nuevas Creaciones
El anterior requerimiento fue notificado por fijación en lista, de fecha

01 NOV. 2007

CONCEPTO TECNICO No. 1983	EXAMINADOR TECNICO Código No.202085
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