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Seæores
SUPERINTENDENCIA DE JNDUSTR1A V COMERCIO DIVISION DE NUEVAS CREACIONES
E. S. D.

REF: EXPEDIENTE No. 00-074675
PATENTE: "BARRAS DE CEREAL
FABRICACIÔN" -

CON CAPAS Y SUS METODOS DE

Estimados seæores; - - - -

Con fundamentó juridico on to dispuesto par el ArticUlo (44) de Ia DecisiOn (486) de la. ComisiOn de la Comünidad Andina do Naciones (CAN) ruego a ustedes disponer lo pertinente para proceder al Examen del Patentabilidad de la Solicitud citada on la referenda, para lo cual estamos adjuntando el recibo de pago correspondiente ala tasa vigente para este caso. -

En consØcuencia, esperamos se surta este trÆmite-paraque el expediente siga su curso normal, hasta su concesiOn.

CHEZ
C.C. No. 52.359.794- Bogota
T.P. No. 117.279 C.S.J.

Carrera 7a No. 17- 51 Of. 710
TelØfonos (571) 400 91 80 (571) 341 9841 CeIular (315) 317 1181 E-mail: trademarks’! 'tutopia.com. Bogota, Colombia, S.A. Trademarksl@hotmail.com

TM

CARLOS TAMAYO & ASOCIADOS
INTERNATIONAL PATENTS AND TRADEMARKS OFFICE

Seæores
DIVISION DE NUEVAS CREACIONES SUPERINTENDENCIA DE INDUSTR1A Y COMERCIO E. S. D.

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Carlos E. Tamayo S.
Carlos 0. Maya
Gustavo CalderOn
Clara CortØs de R.
Carmen Graciela Flôrez

-- - - - CARL-0S--0RLANOO CARLMAYARODRIGUEZ, ahogadoenejerciclo, identificado como aparece al pi-6--de mi firma, atentarnente marriffesto-
que sustituyo en la doctora MAYERLING ROCIO CASTELBLANCO
SANCHEZ, identificada con la CØdula de Ciudadania No.52.359.794
expedida en Bogota y Tarjeta Profesional No. 117.279 del C.S.J., el poder que me fue conferido por el doctor DANIEL GOYTIA,

ciudadano Argentino, quien a su vez se sustituyO en la empresa. ’1 GENERAL MILLS, INC., con domiciiio en Minneapolis, Minesota,

EE.UU.

Este poder se otorga con las mismas facultades que me fue conferido. -

Del se or jef

CARLOS ORLANDO MA
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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO DIVISION DE NUEVAS CREACIONES

2020

Bogota, D.C.

Doctora

Mayerling Roclo Castelblanco Sanchez
Apoderada Oflcio No,
 ;2312

REFERENCIA: Radicaciôn No. 00- 74675
Tràmite 002
Evento 001
Actuaciôn 430
Folios 016

Como resultado del examen de fondo, realizado con fundamento en el articulo 45 de la Decision 486 de la ComisiOn de la Cornunidad Andina, se le comunica:

1. DOCUMENTOS ESTUDIADOS.

Capitulo descriptivo: folios 3 al 84 Capitulo reMndicatono: folios 85 al 91

Se acepta reMndicaciOn de prioridad US 60/156.729 del 30 de Septiembre de 1999.

2. OBJETO DE LA INVENCION.

Titulo: uBaffas de cereal con capas y sus mŁtodos defabricaciôn"

La invenciôn se refiere a:

Una barra de cereal que comprende por o menos dos capas de cereal que tienen trozos identilicables de cereal RTE; y por lo menos una capa de relleno visible entre las dos. La barra es de cereal no conocido que tiene un nivel de nutrientes igual o superior al nivel total de nutrientes de una sola porciOn de un cereal listo para corner y leche, adernàs donde la barra de cereal tiene un contenido de protelnas de aproximadamente 6 g. La capa visible de relleno es un centro de confitura que comprende aproxirnadamente 20% en peso de la barra de cereal, donde ademàs el centro de confitura es una capa de relleno de leche formada por leche en polvo, endulzantes y grasa y el centro de confitura tiene una actMdad de agua de aproximadarnente 0.25 hasta 0.351os enduizantes de la barra son seleccionados del grupo que consiste en lactosa, sacarosa, dextrosa, fructosa, jarabe de maIz, sôlidos de jarabe de maIz y rnaltodextrinas; ademàs donde la grasa es aceite vegetal hidrogenado. Las dos capas del cereal estÆn fomiadas por cereal RTE, arroz, una fuente de proteina y un ligante a base de carbohidrato-gelatina, el ligante comprende

- proteina de soya, grasa, jarabes, glicerinas, azücares, gelatina y agua estÆn
combinadas en una relación 4:1 para formar gelatina hidratada, la gelatina hidratada ademÆstiene un aspecto sustancialmente traslicido en la barra de cereates. El arroz contenido en I abarra se encuentra a manera de trozos con alto contenido de proteina por to menos aproximadamente 50%; ademÆs donde la fuente de proteina es una proteina vegetal texturizada que tiene un contenido de proteina de por Ia menos aproximadamente 50%. El cereal, arroz y la fuente de proteina estÆn combinados en una relación de aproximadamente 2:1:1, ademÆs donde el ligante yla composicion de cereal estàn combinados en una relaciôn 1:1. El ligante ademàs comprende ingredientes seleccionados del grupo que comprenden vitamina y macronutrientes minerates, saborizantes y colorantes; el ligante y las capas de cereal estàn unidos en una relaciôn de aproximadamente 1:1. El cereal RTE està formado por trozos de cereal inflado seleccionado del grupo que consiste en copos, trocitos, biscochos, anillos, esferas, cuadrados, cIrculos, triangulos, hexagonos, tubos y oblongos. La barra de cereal tiene una actMdad de agua de entre aproximadamente 0.35 hasta 0.55.
- Un producto alimenticio que comprende un carton de una sola porciOn que
tiene una o màs barras de cereal con capas dentro, las barras de cereal tienen trozos identificables de cereal RTE, arroz y una fuente de proteina combinados con un ligante de carbohidrato e información nutricional en el cartOn. Cada barra de cereal pesa aproximadamente 40 hasta 50 g y esta envuelta en forma individual, ademàs donde la informaciôn nutricional aclara que cada barra de cereal tiene por lo menos la nutnción de un plato de cereal y leche.
- Un producto alimenticio que comprende; por Ia menos dos capas de cereal
RTE, donde cada capa tiene cereal RTE identificable; arroz y una fuente de proteina combinados can un ligante de carbohidrato y una capa de relleno visible donde la barra de cereal tiene un contenido de protelnas de aproximadamente 69 y una actMdad de agua de menos de aproximadamente 0.45.

- Un mOtodo para fabricar ban-as de cereal que comprende los pasos de: la
mezcla de un ligante con composición de cereal que tiene trozos identificables de cereal para formar una masa amorfa; la compresión de la masa amorfa para formar una primana capa y una segunda capa, cada capa tiene trozos identificables de cereal; la aplicaciôn de una capa de relleno en la primera capa; la cornbinaciOn de la primera capa y la capa de relleno con la segunda capa; y la presiOn de la primera capa, la capa de relleno y la segunda capa juntas para formar capas presionadas; donde las capas presionadas se cortan en ban-as de cereal indMduales que tienen trozos de cereal identificables, cada barra de cereal tiene un nivel total de nutrientes igual o mayor que el nivel de nutrientes de una sola porciOn de un allmento listo para corner y leche. El mŁtodo tambiŁn comprende la colocaciOn dela composiciOn del cereal en dos mezcladoras separadas antes de incorporar el ligante para producir una primera masa amorfa y una segunda masa amorfa; donde la primera masa amorfa se dispersa en una capa y la segunda masa amorfa se dispersa en una segunda capa antes del paso de compresión, ademàs donde cada masa amorfa tiene una densidad volumŁtnca deaproximadamente 0.3 g/cc antes de

la compresión y de aprox. 0.5 g/cc luego de la compresiôn. La capa de relleno es una capa visible que tiene actividad de agua de entre 0.35 hasta 0.55; la capa de relleno està hecha por la combinaciôn de teche en polvo, enduizantes y grasas. El mŁtodo comprende la union de la capa de relleno y la primera capa antes del paso de presiOn hasta que la capa de relleno quede laminada. Otros pasos adicionales del mŁtodoson: enfriar las capas presionadas, cortar las capas presionadas en sentido axial y longitudinal para formar barras indMduales de cereal; enfriar las barras de cereal individuales y envasar las barras de cereal indMduales. El ligante es un ligante de carbohidrato-gelatina producido por un proceso de IlgaciOn en late; el caul comprende los pasos de: combinar la protelna de soya y la grasa para formar una suspension de sOlido en lIquido y mezclar la suspensiOn de sOlido en liquido con una soluciOn de azUcar caliente y con una gelatina hidratada sustancialmente translUcida, la soluciôn de azUcar caliente contiene jarabes, glicerina y azUcar.
Un producto producido por el mŁtodoanterior.

ClasificaciOn Intemacional de Patentes: A23L 1/164

3. CLARIDAD DE LA SOLICITUD.

De acuerdo a la DecisiOn 486 de la Comisiôn de la Comunidad Andina en su Articulo 30.- "Las reivindicaciones definirÆn Ia matoria quo se desea proteger mediante la patente. Deben ser claras y concisas y estar enteramente sustentadas por la descripción"; se hacen las siguientes observaciones al capitulo reivindicatono:

En la reMndicaciOn I se presenta una barra de cereal la cual puede tener "al menos" dos capas de cereal; la expresión que se encuentra entre comillas es ambigua ya que da a entender que la barra do cereal puede estar constituida por màs de dos capas, par Ia tanto se debe establecer especIficamente la cantidad de capas que posee dicha barra; tanto de cereal coma de relleno visible. En esta misma reMndicaciOn se indica que uno de los componentes de las capas de cereal es el cereal RTE el cual no es definido a Ia largo del capitulo reMndicatorio; esta falta de definiciOn le resta claridad a la solicitud.

En la reivindicaciOn I tambiŁn se observa que se encuentra presentada de una forma general ya que se deberia presentar las composiciones de las capas de cereal y de relleno visible, especificando los ingredientes que las constituyen asi coma las proporciones.

La reMndicaciOn 2 se encuentra presentando algunas ventajas que ofrece el producto final pero se deberia indicar la composiciOn de la barra de cereal en tŁrminosde los ingredientes que la componen asl coma sus proporciones.
En la reivindicaciOn 3 se describe la capa visible de relleno de la barra de cereal indicando los ingredientes de la misma y reportando los valores de actMdad de agua quo posee dicha capa, estas valores son condiciones propias de la capa visible y no deberian presentarse en la reivindicaciôn.

En la reivindicaciOn dependiente 4 se hace alusiOn a la barra de cereal caractenzada porque los enduizantes son endulzantes a base de carbohidrato
seleccionados....". En las anteriores reMndicaciones no se habla seæalado quo la

barra de cereal contenla enduizantes; por lo tanto se deberia incluir este ingrediente prefenbtemente en la reMndicaciôn 1. De igual forma, las reivindicaciones 5 a 9 presentan los ingredientes y algunas proporciones de los mismos que conforman la barra de cereal; por to tanto la materia contenida en dichas reMndicaciones deberla ser presentada en la reMndicaciôn 1.

La reMndicaciôn 10 indica los valores de actividad de agua que presenta la barra de cereal, estos valores son propiedades del producto terminado pero no lo caracterizan ya que los productos, en tŁrminos de patentes, deben ser caractenzados por sus composiciones.

Las reMndicaciones 11 y 12 no tienen lugar en la solicitud ya que se refieren a una forma de presentaciôn del producto al consumidor final lo cual no es objeto de la presente solicitud y

La materia contenida en la reMndicaciôn 13 esta definiendo un producto alimenticio de la misma forma que la barra de cereal, por lo tanto se esta contemplando la misma materia que se presenta en las reMndicaciones 2 a 5.

La reivindicaciôn 14 presenta un mŁtodo para la fabricación de las barras de cereal, la cual presenta en forma muy general las etapas que la constituyen, por lo tanto se deberia hacer precision en los siguientes aspectos: definir la composiciôn de cereal e indicar las condiciones en las cuales se realiza la compresión de la masa amorfa. Se les recuerda a los solicitantes que los procedimientos se caracterizan por sus etapas y no por las caracteristicas del producto como se presenta al final de la reMndicaciOn 14 y en la reMndicaciOn 16. De otra parte, las etapas del mŁtodocontempladas en la reMndicaciôn 18 deberIan incluirse en la reMndicaciôn independiente 14 ya que dicha reMndicaciOn debe comprender todas las etapas que constituyen el mŁtodo.

La reMndicaciôn 20 no tiene lugar en la solicitud ya que el producto que se obtiene al realizar el mŁtodo presentado en la reMndicaciOn 14; es la barra de cereal que se presenta en la reivindicaciOn independiente I y en sus correspondientes reivindicaciones dependientes. Ademàs se le recuerda a los solicitantes que un producto no se define por el proceso ya que es definido en tŁrminosde composiciôn.

SegUn las observaciones antenormente realizadas, la solicitud no cumple con el articulo 30 de la DecisiOn 486 y se deben realizar los ajustes necesarios para continuar con el tràmite correspondiente de la solicitud. SegUn los ajustes que se realicen a la solicitud, se debe tener en cuenta los cambios correspondientes en el titulo de la misma.

4. DETERMINACIÔN DEL ESTADO DE LA TECNICA

SegUn la definiciôn dada en el art. 16.- "Una invenciOn se considerarÆ nueva cuando no estÆcomprendida en el estado de la tØcnica.
El estado de la tØcnica comprenderÆtodo lo que haya sido accesible al pUblico por una descnpciOn escrita u oral, utilizaciOn, comercializaciOn o cualquier otro medio antes de la fecha de presentaciOn de la solicitud de patente o, en su caso, de la pnondad reconocida.

para el efecto de la determinaciOn de la novedad, tambiØn se considerarÆ dentro del estado de la tØcnica, el contenido de una solicitud de patente en trÆmite ante la oficina nacional competente, cuya fecha de presentaciOn a de prioridad fuese anterior a la fecha de presentación o de prioridad de la solicitud de patente que se estuviese examinando, siempre que dicho contenido estØ incluido en la solicitud de fecha anterior cuando ella se publique o hubiese transcumdo el plazo previsto en el artIculo 40.", se realizO Ia bÆsqueda de anterioridades en los archivos con que cuenta esta Oflcina y se encontraron los siguientes documentos relacionados con la materia de Ia presente solicitud:

N° DOCUMENTO TITULO FECHA DE
PUBLICACION

Dl US 3,821,443 Nutritious filling composition and 1974-06-28
product.
D2 EP 0325479 A2 Shaped granular cereal foods and 1989-07-26
production thereof
Los documentos mencionados se anexan al expediente.

6. EVALUACIÔN DE LOS REQUISITOS DE PATENTABILIDAD

El articulo 14 de la Decision 486 de la ComisiOn de la Comunidad Andina establece que: "Los PaIses Miembros otorgarÆn patentes para las invenciones, sean de producto a de procedimiento, en todos los campos de la tecnologia siempre que sean nuevas, tengan nivel inventivo y sean susceptibles de aplicaciOn industrial."

En cumplimiento del artIculo 14 de la Decision 486, se procediO a evaluar los requisitos de novedad, nivel inventivo y aplicaciOn industrial con el fin de establecer la patentabilidad de la invención reMndicada en la solicitud en estudio.

6.1. EvaluaciOn de NIVEL INVENTIVO

De acuerdo al art. 18.- "Se considerarà que una invención tiene nivel inventivo Si para una persona del oficio normalmente versada en Ia materia tŁcnica correspondiente, esa invenciôn no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de Ia tŁcnica", seconceptua:

El documento Dl presenta una invenciOn que consiste en una barra de cereal que contiene al menos una capa compuesta de ingredientes farinaceos y una capa compuesta de un relleno nutntivo. Este relleno es una mezcla de aceite, azücar y una combinación sinergica de proteina de soya y huevos; tambiŁn contiene vitaminas, colorantes y estabilizantes. La contextura del relleno es una dispersion cremosa de los ingredientes en el aceite. Los cereales que componen la barra se

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encuentran en forma de hojuelas los cuales se unen utilizando preferiblemente
una matriz compuesta por grasa y azUcar Esta matriz puede contener otros ingredientes tales como jarabe de maIz, saborizantes, minerales y cotorantes. Los aceites que se emplea en la elaboración del product aceites vegetales tales como aceite de coco, aceite de girasol y aceit giras I La proteina del relleno proviene de una mezcla de albUmina de huevo de soya.

Los materiales son mezclados por combinación del cereal y el lIquido que une las hojuelas del cereal y lentamente se agita en un mezclador hasta que las hojuelas del cereal se encuentren completamente dispersas. Esta mezcla se coloca en un molde que tiene las dimensiones deseadas y se aplica lenta y uniformemente presiôn sobre la superficie para compactar el material sin causar fractura de las particulas que componen el cereal. La capa de relleno se coloca sobre la capa de cereal compactado y una segunda capa de cereal compactado se coloca sabre la capa de relleno y se aplica presion.

En el documento D2 se encuentra una invenciôn que consiste en un alimento moldeado producido a partir de cereal en granos los cuales estan unidos por medio de un ligante. El mŁtodo para producir los alimentos moldeados que consiste en mezclar cereal en granos con el ligante, moldear la mezcla y calentar el material moldeado. El ligante es generalmente Ilamado un termo-gel y esta compuesto por b-I,3-glucan polisacarido. Los cereales considerados son cebada, trigo, millo, maIz, las semillas son cacahuates, soya. Los granos a grÆnulos conservan su forma granular original. La medida prefenda de los granos es alrededor de I a 15 mm. La mezcla de cereal y ligante moldeada puede estar cocinada o cruda, en el segundo caso el cereal es cocinado despuØs de formar la mezcla de cereal con ligante. Los granos de cereal o granulos pueden ser cocinados de una manera convencional ya sea con agua en ebullición, vapor, homeado o con calentamiento e homo microondas.

La mezcla es moldeada proporcionando cualquier forma apropiada para que el producto final sirva de snack. Estas formas pueden ser de barra, lÆminas, triangular o esfØrica. Para lograr la forma deseada es preferible tener un molde la otra altemativa es a partir e la mezcla moldear un producto intermedio y luego realizar el corte de las piezas deseadas. Par Ia general este mŁtodocomprende u calentamiento de la mezcla para que se realice la union de los granos y luego cortar la mezcla para obtener las formas deseadas

En los documentos anteriores se puede observar que en la fabricaciOn de barras de cereales, se parte de una mezcla de los cereales bien sea previamente cocidos o no asi como de sus formas originales a que han tenido un proceso. Estos cereales o granos estan unidos por media de un ligante el cual esta constituido bien sea por polisacandos, grasa, azUcar. La masa conformada por los cereales y el ligante es moldeadad en capas; la barra esta constituida al menos por dos capas y en el centro se encuentra una mezcla de relleno la cual esta constituida por una fuente de protelna, aceite y azUcar, las capas que contiene los cereales se fabrican par medio de moldeado y presiôn. Los aspectos seæaladosantenormente se encuentran en la solicitud de la invenciôn par Ia tanto la forma de disposiciOn de las capas de cereal, la composiciôn de dichas capas y el relleno que conforman la barra ya se conoce en el arte previo; par Ia tanto el producto y su fabricaciôn son denvables del estado de la tŁcnica.

Segün Ia expuesto anteriormente la solicitud no cumple con el articulo 18 de la
DecisiOn 486.

En conclusion los requisitos de patentabilidad de la presente solicitud se encuentran afectados as!:

No DOCUMENTO REIVINDICACIONES REQUISITO QUE
AFECTADAS AFECTA
DI US 3,821,443 1 a 10 13 a 20 NIVEL
I NVENTIVO
D2 EP 0325479 A2 I a 10 13 a 20 NIVEL

______________ _________ I NVENTIVO

En cumplimiento del artIculo 45 de la DecisiOn 486 de la ComisiOn de la Comunidad Andina, se le indica que debe dar respuesta dentro del tØrmino de sesenta dias contados a partir de la fecha de la notifucaciOn de la presente comunicaciOn. En caso de no dar respuesta al presente requerlmiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegarÆla patente.

NotifIquese el presente 9flcio confprf1 a lo dispuesto en el numeral 5.2,literal e), del capitulo quinto del t(üIo prim,eIo de/la circular ünica No. 10 de 2001.

ALIX CARMENZA,CESFEDES DE VERGEL
Jefe de la DMsióvjde Nuevas Creaciones.

El anterior/ requerimiento fue notificado por fijaciOn en lista, de

CONCEPTO TECNICO EXAMINADOR TECNICO
No CÔDIGO

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3,821,443

NUTIUTIOIJS FELLING COMPOSITION AND Ming may also be: used in combination, with a cake
PRODUCT: component, preferably one which has been formulated
so as to be shelf stable over a period of at least six
BACKGROUND OF THE INVENTION months.
filling may be used as a frosting on either the cc

There are many convenient foods:on the market real or cake component, or it may be used as afllling today designed particularly for the conàumerwho’is in- In between several layers.of a cake or cereal.compo-.terested in nutrition but does have the time to pre- neat.:.....

pare conventional balanced meals.. Typical of such
foods arc:the so-culled instanthreakfasts designedto be io DETAILED DESCRIPTION OF THE INVEWFI9N

combined with milk and consumed at the beginning of Th oils used in preparuig the confection ofthis in the day This type offood, however, does not suit the vention&genŁiiillRoAeoilElhhixhibit liquid needs of the consumer who finds himself away from properties at or below body temperature, that is, about home in the morning orthroughout the day. The needs i000i EaMles ofsuitable are vegetable oil sch of this.conswner are more satisfied by a quick snack 15 _________________ type item. which can be carried on the person antI’Jike.

whIch can: be. consumed quickly and inCOnSPiCUOUSlY Any vegetable or animal oil. exhibiting liquid.prop-.
iies and which is.,organoleptically acceptable to the con-

sunier

at or below about 1000F and having a’ suitably bland flavor ma3r’ employed. The oils may be par-

It is known rn the prior art to prepare nutritious bars tinIly or totally hydrogenated. 20 The protein uSed in the filling of this inven- based on a.mixture of cereal, sugar, fat and protein

sources. For example, U.S. Pat. No. 2,738,277 do- thin are a mixture 6f
’.maylie closes prçparaticm cereal barfroma mixture of sayi,mtejn. An form ofso ti used stØh

as soyflour, whichcontains about 30 to 70 percentpro- flour, sugar, egg albumin, shortening,:W4 flavoring and the like. The miredients are all uniformly mixed 25 tein, soy protein concentrates containing 70 to 90 per- ’proteul imd-IM bar is-formed by wippressing the mixture

high. Similarly, No.

cent protein or SOY contaij least

90 percentprotein; fj’ preferred proWn source. t’ er.. presser. U;S.-.
2,824,806, discloses the preparation of a cereal.bar ri the so containirig90to lOopercentOro-

wbichcornpnsesmixmgnonfatmilksolidsandmelted:i.’ mo.1 I I sugar coated cereal e

tein Thesi materials may be used in the relative nrô-

30 whiteweight) "................r. of the egg.. corresponding
subinC tion..-.-- to least

eacf -. nts, the disclosed ,*,y high- Protein ciencyRatio-fipsLlling
-intended iab y’asasurvivarr n. The products are compOOfl h hi r 0 expected
severely compressed for storage reasons and.are not 35 calculation, as will beheremafterdiscussed.’
npjcnJarlu omnoianhicanvanractive.  The amount.of.tlie protein source combination em-
ployed by the confectionary composition may. vary. de-
SUMMARY pending on ’the nutritional value desired. Generally
The. present Invention is concerned with a unique peaking, these materials may be used at a level of
cmbbinôn -of ingredients which yields a highly paint- 40 about 10-40 percent by weight ofthe confection. Aside
.. able, protein nutritious, easy to handle shelfstable from the nutritional aspects,, the egg white solids also
food product The prime components ofthe fwdbar mipar’twlUppwg properties to the filling composition.
of this Invention are a -property creamy nutritious frostmgJike wWwhipping ploperty is -.-... to combination o the vegetable oil and the solids. The protein hold§ the aer-
neat comvrisillgcnkor. cereal bound in a matrix 45 tion and makes possible the beating ofThe filling.with-
_&L_an_dAuw_The Min i5 out excessive loss ofaeration and the runtiingotthe fl11
mtthrenfsny l&

protein MjjWw_ _Mtlid .... -. ThJllmg-.ÆIsocontauasweetener such as........ TIiº)jling may also.contain sugar, vitamins, flavor- pesnjto tJsste. The sugar should be very, finely

1 ings,-stabillaers--and-theJike. fhAflhIg granulated (6X) or in ’liquid form. Coarsly.granulated
prong addinosouic material, Sugar-’ sugar would severely detract from the palatability and
and other ingredtci uidfat, an k mouth feel Of the filling. Sugar may be present So suit
.. Ingtàytoformacrea-the taste and generally in the range of about 10%40% by
. iufljjhefat. Under vigorous agitation such as weight of the filling composition.
Hobart mixer, the confection exhibits a w$ped..cbar- Vjtamins such as A, Bi, B. B11. flu, C,D,.Eand Nia-
acterThis whipping propejs.4ue1o4he-cembInatien---- cinave’addjjiappropriaie ainoumblv.any

and petei The deslredparcentage.LtkmuumuxhIdaily=.requiremelit. proteins hold the aeration and make possible the heat- Minaral!uchJas_CalcIum(CdlaiuiPbosphate*
lng.ofthe fillingwithout excessive loss of aeration and Tribasic). FhmmSe4Sodiwphosphare4kbasic), 60 rinning of the filling.’. Iodine (Pöisium Iodide), Iron (Ferrous Funjaiat) or

lathe preferred embodiments of the present inven- ’Magnesium(Mªi iiöÆdded.
thai the: filling is used in combination with a cereal Where vitamins and minerals are both used.in the for..
component or a cake component 71ieOeSeal.00mm- mulation of a cereal bar containing a filling layer,’.it is nentis-In-the-formakeer.puffedereal-which is 65 desirable to include the vitamins in one phase, say the bound-filling,and minerals in the other phase, i.e. the cereal

buidºFæiäV. also contain otheringredientssuch as corn binder. This segregation of these ingredients prevents ’coIoringaanthtliE like. The the possibility their’ degradation caused by the reac-:

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tion ofthe vitamin compounds with the mineral source materials.

The filling may also contain additives which impart improved heat stability to the filling. For example, the incorporation of a mixture of silicon dioxide and a 5 polyhydric alcohol or polyhydric alcohol ester bridging agent into a low melting point oil increases the high temperature stability, of the oil and prevents the oil from running or weeping out ofthe filling composition after prolonged periods ofstorage at room temperature 10 or temperatures within the range of 70°-LI 10°F. The fat present in the filling may be so stabilized by incorporat-

ing in the fat from about 0.1 to about 11 percent by weight of the silicon dioxide and from about 0.1 to 7
percent by weight of the bridging agent. This technol- 15 ogy is disclosed in commonly assigned co-pending ap-plication Ser. No. 96,649, filed on Dec. 9, 1970, now U.S..Pat. No. 3,669,681.
No water, milk or other aqueous ingredient is used in preparing the filling composition. The only moisture 20 present in the filling is that which is present in the in-C==gredients used in its preparation. Because of the very the filling exhibits shelfstability,
over a period Of six months or more. In general, the moisture content ofthe filling is less than 5 percent by 25

weight, preferably 2-3 percent by weight. The filling composition is best prepared by mixing the dry components, Le., the sugar, egg white solids,

soy protein, and any other additives with the oil. The oil is preferably heated above about 110°F at. the time 30 ofmixing, as this facilitates the aeration ofthe oil. The mixture is then aerated by subjecting it to vigorous agi-tation using a high speed mixer such as a laboratory Mumiaster or an impdllor mixer until a filling having the desired light, fluffy consistency is obtained.
In some instances, it has been found that the filling may have a tendency to become crumbly or mealy after being subjected to elevated temperatures for an ex-tended period oftime. The condition is believed to be
the result of the absorption of the lower melting point 4° fractions ofthe oil by the protein sources which causes the filling to lose its plasticity or creaminess. This con-dition may be Overcome by thoroughly mixing the pro-tein sources at ambient or elevated temperatures with a sufficient amount of oil to saturate the protein and ’ form a paste; and then incorporating the oil saturated

protein with the remaining oil and other ingredients and mixing as described above. Asmdi ted, the filling may use&in,conibinati 50 th-a cereal bar duct cake type product or
us corn nent. Ace ar may gener-
ally be prepared by corn inmg commercially available cereal flakes such as Post Toasties, with a liquid binder

composition, thoroughly mixing the cereal with the 55 binder and forming a sheet ofthe bound cereal. After
permitting the cereal sheet to harden, the sheet may be

coated with the filling, more of the bound cereal may be added on tojofthe filler to form a laminate of ce-real, filling, and cereal. - real binders Useful for the - of this inven60
tionmay bem-Rie-o-f bema of sugar, polyhydriccohol,pjr pretbrred binder comprises

oil. It is-not necessary that the fat or oil used in the 65 Tinder be liquid at body temperature; fats having a Wiley melting point of up to 120°F may be used. The- b may-also coitaiialtccsrziupsolids

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aiullilfalf’and other ingredients to liquid oil and mixing thoroughly at a temperature above the melting point of the oils. The binder is then combined with cereal flakes

ba ratio of about 20to80 parts of binder per corre-spondingly 80 to 20 parts of cereal. Prefbrably, the binder and cereal are combined in approximately’ 50/50 ratios. Materials are mixed by combining the ce real and liquid 5and iFinair and Oro
dis med ith th . g may be miiIoüt using a n Mixer, Paterson Kelley V blender, a ro-tating drum or other device which provides gentle mix-ing to prevent excessive breakage of the.cereal flake. Where the binder contains an oil, it is preferred to mix the cereal and binder at temperatures above about 110°F or the melting point ofthe oil.
The fted

ntoftheemcWft&r mixture into a mold having the desimd_dimcmons-arul_aAA3i??

fouracepsesre-sufflcieat-teeompacuhe-mixture- without causing,etcessive fracturing,oftlie cereal,partj.. Where the binder contains a fat or oil, the temper-ature of the mixture prior to the molding operation should be such that the fat or oil is liquid. The4llling7-7 layJpshenpplied-eveaiyverthe..1oweJayer-of

compLessedcerea1and-thetop4ayer.og4ere/binder pJnrc app and cprassedjn..tj saute &aaiheJowerjay. Best results in terms ofbar appear-ance are obtained if the lower layer of bound cereal is quick cooled in order to solidify the fat present in the binder prior to the application ofthe filling, as.thls pre-vents substantial commingling of the filling and cereal

layers. The filling may be applied at a temperature above the melting point of the fat or oil contained
therein or it may be applied cold in the form of a solid sheet which has been pre-cut to the appropriate dimen-
sions.

The following examples are illustrative ofthe inven. tion.

EXAMPLE!

A nutritious aerated filling composition was prepared from the following ingredients.

. Parts

Hydrogenated Vegetable Oil (Durkee Kzola "D’) 12.00
Soy Protein Isolate (Supro 610 95% Protein) 4.50
Egg White Solid, (Henninglen’s Type P-20) ’4.50
Sugar(6X) 6.40
Glycerine . 0.13
Silicon Dioxide (Cab-0411) 0.31

Flaygr, :

Total 28.07

The filling was prepared by adding the glycerine, sili-con dioxide and preservatives to the oil at about 140’F-180"F and mixing for about 2 minutes In a Ho-bert Mixer. The sugar,soy protein, egg white solids and flavoring were then added and the composition was

mixed at high speedsforseveral minutes until a viscous, aerated frosting-like filling was obtained.
The filling composition was then poured onto a cool cookie sheet and cooled to about 40°F, Well below the melting point ofthe oil. Rectangularsections ofthe fill-ing having the approximate dimensions of 1% inches by

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3-9116 inches by three-sixteenths inchwere cut for use EXAMPLE 11 in combination With the cereal layers ofthe bar.
The cereal.portion ofthe bar was prepared by mixing A nutritiousaórated filling composition was prepared
corn flakes sized through a U.S. No.5 screen and re- from the following ingredients:
 tainedon a U.S. No 10 screen with an equal amount
of binder. The binder,was prepared by mixing the fol-

lowing ingredients at about 140°F:Medsm on Protein (Supro 610 95% Protein) 14.0

Egg White Solids 14.0
p

ated Vegutabic OH i4 10

6X Suer (Vitamin fortified-35 MDR) 254)
Flaw
P0. 39 Total. IOU

DIoxIds.(CabO-Sa). .57 9.52
6.12

. . . .

The filling was prepared -by comhlning’the ingredi- . COrn Syrup.so ents, mixing and whipping as in Example L
Total 3504 15 0 A cereal binderwas prepared byniixing the following
ingredients: .

Abàut O.grains of the-cereal/binder mixture at a .
temperature of 140°F was placed in a wooden mold .
having al inner dimension of 1% inches by 3 9/16 H3ogCnatd Vegetable Oillil 59.5
inches, leveled, and’genily compressed using a plunger °° 1.2
to a thickness of about one-fourth jp.A’ 16 gram Sager (6X) 29.6
sheet. of’ the ’pre-cut filling as prepared above was Minerah 7.2
Flavorings 1.5. placed in the mold on top ofthe compressed layer of . Total.. IQO.0
cereaLand.subsequeütly a second layer of the cereal!-. .
binder mixture applied on top of it and compressed as Samples of three cereal bare based on corn flakes,.
above. The assembly was quick cooled to about 40°F puffed rice and wheat flakes were prepared by mixing

and rOifloved’fràm the mold. ’ . . the above binder and appropriate cereal and fabjicat-.The-finishedbar has a cereal content of about 35.7 ing bars, by the method employed in Example I such
percent, a’binder content of about 35.7 percent and a 30 that the finished three layered barswere ofthe follow-

filling content of about 28.6 percent by weight The ing composition:....
overall moisture content of the bar is about 2.5 .. ..

. . .

cent.’’ .. ..

:.The barWas packaged in a moisture impermeable Coin FIak.Putted Rice. . Wheak Flakei
wrappingmaterial and exhibited shelf.stability. for a ggggj 307%. 20.3% 31.3%
minimum period of at least 6 months. The oil compo- 38.642.4 .38.6
. Dent.of-the.barwas-found not to run, even after i- ’1
longed.ixposure to temperaturesin excess of the melt- .
ofthe oil. .... ..



 ing001æt ..
As indicated above, the actual Protein Efficiency 40. The bars were packaged in ’moisture impermeable
Ratio (PER) for the filling.cqmposition of this inven- wrapping material and exhibited no deteriora6o in
tion is unexpectedly higher than the PER as theoreti- texture or flavor afterstorage for a period of 6 months.
cally. calculated. PER may be calculatód according to :

’the following mtaticalformuls: ’ Although the present invention has been illustrated. - . ’
PER = 5.264(0.065 percent X percent Deficit limiting.’’

by embodiments wherein the nutritious confectionery

filling is used in combination with a bound Oereal, it, is ’’-’. amrno ad) ’ to be emphasized that the filling may be used in ombi
The.pecent.Deficit limiting amino acid is determined nation with any -faiinaceous material with which it Is
by analysing. each protein -source to determine the desirable to use a filling or frosting. The term farina-

amount of. each of the essential amino, acids present ceous material is intended to include cereals,.whether 50 These values are also available in the literature. Using in flaked or puffed form, and bakery products such as
whole egg as astandard, the percent Deficit oflimiting.. cakes, pastries, cookies and the like... amino acids Is obtained by comparing the combined Bakery products which are’ not inherently shelfstable
amounts of amino nods In ’the given product with the for periods ofup to 6 months ormore should be specifi- . ’. ’combined amounts in whole egg. cally formulated in order to impart thereto extended

The actual PER is determined by rat feeding studies. stability under room temperature storage conditions.
conducted over a28 day period. Inthis test the amount For example, the shelf like of conventional cake and
of protein eaten (fed at 10 percent in the test diet) is pastry items having moisture contents of 151030 per-
related to the amount ofweight gain by the rats during, cent may be greatly extended by inclusion in the formu-

the 28 day period. Thus,a PER of 4.00 means that for latlonoffrom about Ito lQ percent bywejghtofaned-. every gram of protein consumed during the 28 days, ibis polyhydric alcohol such as glycerol, lower alkylene

4.00 grams of weight were gained per day. glycols, sorbitol and the like. These additives serve to
The calculated PER for the filling prepared accord- retard staling as well as to prevent.bacteriological deg-

-ing to this example is 3.8l..The actual PER as deter- redation It is also-desirable to include up to.2 percent.’. mined by 28 day rat feeding studies was 4.36. The fill- 6j by weight of an antimycotic such as potassium sorbate

log is thus specifically formulated using the combina- benzoic acid, propionic acid, alkali or alkaline catch’.
tion ofsoy protein and-egg white solids to give rise to metal salsof these acids and like anthnycotics known
PER’sin excess of 4.00. to those skilled in the art. After conventional baking of

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the cake, the protein nutritious confection of this in- S. A food bar comprising a laminate of at least one
vention may. be applied to the cake as afrosting, filling layer of farinaceous material selected from the class
or frosting and filling. The cake may then be packaged consisting of cereal and bakery products; and at least

in a moisture impermeable wrapping material and, op-one layer ofthe confectionary composition of claim 1. tionally, gas Bushed asis known in the art to further en- 5
hance shelf stability.
Whet we in 6 The food bar of claim 5 wherein said farinaceous claim
1. A nutritious, shelf stable confectionary camped-

material bound in a matrix selected from the class

consisting ofsugar, polyhydric alcohol, oils and coinbi- tion comprising a whipped intimate mixture in the form
of an areated frosting or filling containing 1040 per- 10

nations thereof, the matrix being employed with the

farinaceous cent sugar, 30-70-percent of an oil normally liquid at material in a ratio of 20-80 parts matrix
d 80-20 parts farinaceous material. 100°F, or below, and 1040 percent ofa protein source
material comprising a mixture of 30-70 percent by 7. A three layered food bar comprising two outer lay-
weight soy protein source material and 70-30 percent ens of cereal flakes bound in a matrix material compris-
egg white solids,said confectionary composition havinging 15 a mixture of an oil having a Wiley Melting Point-of
a moisture content of less than about 5 percent by less than 120°F, sugar and corn syrup solids, and an
weight inner layer comprising the confectionary composition
2. The confectionery composition of claim 1 wherein of claim 1, said Inner layer constituting less than 50
the soy Protein source material has a protein contentof percent by weight of the food bar.
at least 70 percent by weight. 20 The confectionery composition of claim 6 wherein
3. The confectionery composition ofclaim 1 further the level ofsilicon dioxide is 0. 1-11.0 percent and the
characterized as having an actual Protein Efficiency edible polyhydric alcohol or edible polyhydric alcohol

Ratio of at least 4.00. ester is between 0.1-0 percent by weight ofthe filling. 4. The confectionary composition of claim 1 which

further contains an effective amount of a heat stiibliiz- 25 9. The food bar of claim S wherein said farinaceous
ing agent comprising a mixture of silicon dioxide and material comprises cereal particles and said matrix

an edible polyhydric: alcohol or edible polyhydric alco- comprises a mixture of oil and sugar. hol ester.

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Description

Shaped Granular Cereal Foods and Production Thereof

This Invention relates to shaped foods prepared Instance, are usable. When cultivated In the conven-
by mixing a curdlan to a granular cereal food, tional manner, generally under aerobic conditions,
shaping the mixture and heating the shaped ma- 5 usIng, as nutrient sources, carbon sources, nitrogen
terlal. sources, Inorganics and so forth, such microorgan-
Recently, the number of people who have meals In Isms produce a curdlan usable In the practice of the
the so-called one dinner and four snacks manner Invention. The thus-produced curdlan can be re-
Is Increasing. Thus, people who take meals In that covered from the cultures generally by appropriately
manner have a dinner only once a day and, for the 10 utilizIng such means as dissolution, filtration, neii-
rest, have four snacks or light meals at pleasure trelizatlon, washing with water, dehydration and
depending on the extent to which they feel hungry, drying. For Instance, a culture broth containing a
without sticking to any particular time and/or place curdlan usable in the practice of the Invention Is
as far as circumstances permit Hand In hand with supplemented with an alkali, such as an aqueous
such tendency, various snack foods have come Into 15 sodium hydroxide solution, the mixture Is stirred to

the market Some of them, called sheet foods orfilm an extent sufficient for dissolution and then sub- foods, for Instance, are very different In shape from jected to such treatment as centrifugation or filter

the conventional snack foods. press filtration using a filter aid, the thus-obtained
Generally, snack foods should be characterized In clear and transparent filtrate Is neutralized with an
that they are fashionable and can be eaten smartly at 20 acid, such as hydrochloric acid, sulfuric acid or
any time and at any place. Snack foods currently on acetic acid, and the resulting gel-like precipitate Is
the market are anyhow reflecting the endeavors collected by centrifugation. washed with water and
made to make them have such characteristic spray-dried to give the desired curdlan as a white or
features. As yet; however, few are satisfactory from off-white powder.
the quality viewpoint. Thus, In the case of the 25 The cereal food as so calledhemiflInolüdeafoodS
conventional sheet foOds, for instance, some are prepared from cereals, seedsorstones, orpulsr(as

readily broken on the occasion of eating while others peas and bans)with-the granular fraction account- are too hard, hence difficult to eat. Moreover, such
snack foods may be readily broken during carrying

- Ing for majority. T car are, for example.
rice, wheat, niilet?pxtalIftijIIgIand corn. Th8 I
and this Is unfavorable from the product appearance 30sedor stones are, for example. esameand
viewpoint. eähuts, and the pjseafe.ilotexampLsoybean,
Underthese circumstances, the present inventors adzukl beans, peas and -broad beanLThegmiæs or
made Intensive Investigations In an attempt to make granules Includ&ihuOiigIhàI jranular iorms-of
Improvements In quality features, such as texture cereale, roughly ground forms thereof, and artificially
and appearance, of certain snack foods, namely 35 processed grains or granules, such as artificial rice.
snack foods produced by using granular cereal The preferred size of granules Is about 1-15 mm.
products as raw materials and, as a result, found that The cereal food to be shaped and bound wftha
shaped foods obtained by adding a curdlan to a curdlan by the method of the Invention may be a
granular cereal food for binding cereal grains or cooked one or raw one. In the latter case,-the raw

granules have good quality features as snack foods. 40 cereal food Is cooked after binding and shaping, as- Further Investigations based on this finding have necessary. Generally, the use of a:cookedoneis
now led to completion of the present Invention. advantageous from the operational vlewpointànd
Thus, the Invention provides 1) a shaped food tends to give good quality pfQdUCtS. Cstetgi2lflS6i
produced from a granular cereal food by shaping granules may be cooked Inthe OOient1UnaImanneL
and binding -witha- curdlan and 2) a method of 45 for example by boiling, atŁan1ng. bakingormicro-
producing shaped foods which comprises adding a. wave oven heating. In the case of rice, for instance,
curdlan to a granular cereal food, shaping the there may be mentioned boiled rice, steamed rice,
mixture and heating the shaped material for binding expanded or popped rice, fried rice and, further, rice
cereal crains or granules. species seasoned and processed as desired, such
The-curdlan’ Isgeneral name ofthermo-gelabl 50 as sushi rice, chaofan (fried rice with such Ingre-
134.3-giün type polysaccharides, which are pro- dients as eggs, shrimps, etc.), chicken and rice fried
duced by microorganisms such as strains of the and seasoned with tomato catsup, gomokumeshi
genus Alcailgenes or Agrobacterlum. Thus, more (boiled rice mixed with such ingredients as chicken,
specifically, the curdlÆn produced by Alcaligenes fish, vegetables, etc.). They are usable when the
faecalle var. myxogenes 1OC3K [Agricultural and 55 majority of grains of rice remain unbroken.
Biological Chemistry, vol. 30, page 196 (1966)], the In accordance with the Invention, the cereal food
curdlan produced by the mutant NTK-u (IFO 13140) Is bound and shaped by mixing said food with a
of Alcailgenes faecalls var. myxogenes IOC3K curdlan In the presence of water, shaping the
(Japanese Patent Publication No. 32673/1973, U.S. mixture as desired, and heating. Curdlan Is added
Patent 3,8,250) and the curdlan produced by 60 generally In the form of a dispersion In water, a liquid
Agrobacterlum radlobacter sp. (IFO 13127) and Its seasoning or the like. When water is present on the
mutant U-19 (IFO 13126)(Japanese Patent Publica- cereal grain surface In an aniount sufficient to wet
tion No. 32674/1973, U.S. Patent 3,8,250), for and moisten ourdlan, the it be added In the form of a

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Powder. In that case, the curdlan should preferably
be present In the form of an about 2-14, preferably 2-10010 aqueous dispersion. Curdlan Is used In an amount suitably Ælecteddepending on the food to
which It Is added, generally In an amount of 0.1-25010 5
by weight, preferably in an amount of 02-1001a by weight, more preferably In an amount of 0.3 -6% by weight, based on the final product. For this purpose, usuallyabout 10-100 parts by weight of said aqueous
dispersion of curdlan Is mixed with 100 parts by 10
weight of granules of cereal food. When the addition
level Is lowerthan the above range, the product food
has poor Integrity and can be readily broken. When
the addition level Is higher than said range, the
processability is poor In most cases. By adjusting 15
this addition level, it Is possible to adjust, as desired,
the hardness or consistency of the desired product
as well as the ease with which the cereal grains or granules get unbound.
After admixture such that curdlan Is distributed 20
over the cereal grain surface as uniformly as posslbte the mixture Is shaped. In this case, any shape which seem appropriate for the final product toserve as a snack food may be selected The shape
Is preferable In a thickness of about 2- 60mm. Thus, 25
for Instance, the shape may be sheet- or plate-like,
bar- or rod-like, triangular or spherical, but Is not limited to thereto: For this shaping, It Is advant-ageous, from the operation viewpoint, to prepare a
mold having the desired shape and size and fill the 30
above mixture Into said mold. Alternatively, It Is also possible to shape the mixture Into an Intermediate product and, after the heat treatment to be men-tionediater.hel!In, cut the intermediate product to a
For instance, the method 35
comprising shaping the mixture once into broadtko. plates,-heating the plates for binding cereal grains or granules and then cutting the plates to a desired size
and shape may be employed.
The shapings are then heated for binding cereal 40
grains or granules. This heating may be made by an appropriate method, such as direct heating, water bath heating, oil bath heating or heating under pressure, In a manner such that the shapings can be
heated to a temperature above about 55°C, prefer- 45
ably above 70°C, more preferably above 80°C, whereby the binding of cereal grains or granules proceeds by the Intermediary of curdlan. The use of microwave oven heating Is also preferable. The
heating time should suitably be selected depending so
on the size of the shapings. Usually, the preferable heating time is about 05-30 minutes. In this way;
the cereal grains or granules are bound together by
the binding action of a curdlan to give the shaped
food according to the Invention with a certain given 55
shape and size.
The shaped food according to the invention may
serve as a snack food either as such or In combination with one or more other food materials.
For Instance, the shapings obtained by binding and 60
shaping fried rice into plates may serve as a kind of
rice ball for easy eating or may be used In preparing "rice burger" by sandwiching meat patty, vegetables and/or the like between two pieces of the plate-like
shaping. 65

The following examples illustrate the Invention In further detail. A spray-dried powder of curdian produced by the mutant NTK-u (iFO 13140) of Alcaligenes faecalls var. myxogenes 10103K In each Example.

Example 1
In 13 ml of water was dispersed 0.5 g of the curdlan powder, and the aqueous dispersion was mixed uniformly with 100 g of cooked polished rice (boiled In an electric rice cooker In the conventional manner). Then the mixture was shaped by filling it uniformly In a heat-resistant plastic mold having a diameter of 9 cm and a thickness 011.5 cm. The mixture n the mold was heated In a microwave oven (Matsushita Electric industrial model NE4330, 600 W) for 2 minutes, whereby grains of rice were bound togetherto give a Ace-based shaped food having the above shape and size.
Then, two pieces of the same shaped rice food as above were prepared and meat patty and vegetables were sandwiched between the pieces to give a "rice burger". Since grains of rice had been bound together to a proper extent, this product showed a sufficient consistency when taken up by the hand for eating and, when bitten, grains of rice were unbound to the desirable degree and that texture of rice proper was felt.
On the other hand, the corresponding rim burger made by using cooked rice without addition of the curdlan was readily broken into pieces and was difficult to eat.

Example 2
A uniform dispersion of 1 g of the curdlan In 15 ml of water was added to 100 g of chaofan rice (containing green peas) cooked In the conventional manner. After uniform admixture, the mixture was shaped In the same manner as In Example I and then heated In the microwave oven. A plate-shaped chaofan rice shaping was obtained without destruc-tion of grians of rice but with grains of rice bound firmly to one another. Example 3
The procedure of Example 2 was followed except that the chaofan rice mixture was shaped Into a bar having a dimaeter of 2 cm. Grains of rice were not destroyed but bound together firmly to give a chaofan rice shaping.

Example 4
Sushi rice (100 g) was supplemented with an adequate amount each of green peas (5 g) and orange juice sacs (5 g) and further with a unlfrom dispersion of I g of the curdlan in 13 ml of water, followed by mingling uniformly. The thus-obtained mixture was shaped and heated In the microwave oven In the same manner as in Example 1. Grains of rice, green peas and orange were not destroyed by the procedure but bound togetherfirmly but softly to give a colorful sushi rice plate.

Example 6
The procedure of Example 2 was followed except that barley-rice cooked In the conventional manner was used, to give a barley-rice plate In which

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barley-rice grains had been bound together firmly but softly.

Example 6
Sushi rice (200 g) was added to a uniform dispersion of 1.5 g of the curdlan in 25 ml of water, followed by mingling uniformly. The thus-obtained mixture was shaped into a square plate having a thickness of 5 mm. The plate was heated in the microwave oven for 2 mInutes to give a sushi rice plate in which graln$ of rice had been bound togetherfirmly but softly. This sushi rice plate can be used as a material In making hand-rolled sushi by rolling it around tuna and shiitake mushroom slices,
etc.

Example 7
A uniform dispersion,of 5 g of the curdlan in 40 ml of water was added to lOC) g of boiled peas. After mingling, the uniform mixture obtained was shaped Into a plate having a thickness of 5 m and heated in the microwave oven for 2 minutes. A peas plate was obtained with peas bound together firmly.
The shaped cereal food according to the invention is characterized in that it has a certain desired shape and size with cereal grains or granules being bound together by means of OL curdlan. Since the binding among cereal grains or granules is proper and adequate, the shapes food is not deformed or broken when conveyed or when taken up by the hand for eating. Furthermore, It retains the cereal food-like texture and can be sued as a snack food or a material therefor. Such particular effects can be produced by the use of a curdlan: such effects can never be produced by: the use of other polysac-charides, for example Starch.

Example 8
In 19 ml of water was dispersed 1 of curdlan, and the aqueous dispersion was mixed uniformly with bOg of cooked pofished rice (boiled in an electric rice cooker In the conventional manner). Then bog of the mixture was filled in a plastic vessel having a diameter of 130 mm and shaped by pressing to 7 m in a thickness. The shaped mixture was heated In a microwave oven (Hitachi Heat, Hitachi Toaster Range MR-7500, 500W) for 4 minutes, and further heated on the hot plate at 1800C for 4 minutes, whereby grains of rice were bound togetherto give a rice-based shaped food having the above shape and size.

Example 9
Grains of cooked coin were cut in a size of 2 to 3 mm. The curdlan (4g) was mixed uniformly with 20g of water, 4g of potato starch and 2.5g of seasoning. The obtained mixture (80g) was shaped by tilling Into a heat-resistant plastic mold (130mm x 110mm x 5mm). The shaped material was heated in a steamer
at 85C for 10 minutes and after cooling took out from the mold to give shaped corn product. This
had a good texture with corn granules bound together properly.

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Claims

1. A shaped food, which comprises shaping
and binding granules of cereal food with a curdlan.

2. The shaped food according to claim 1. wherein, the granules are foods prepared from cereals, seeds or stones, or pulse.
3. The shaped food according to claim 1, wherein the cereals are rice, barley, wheat, millet, foxtail millet and corn.
4. The shaped food according to claim 2, wherein the pulse are soybeans, aduki beans, peas and broad beans.
5. The shaped food according to claim 1, wherein the curdlan is contained in an amount of 0.2 to 100/a by weight based on the final product.
6. A method of producing shaped foods, which comprises mbdng a curdlan with granules of a cereal food, shaping the mixture and heating the shaped material for binding cereal grains or granules.
7. The method according to claim 6, wherein the curdlan is mixing in the form of an about 2 to 14°M by weight aqueous dispersion.
B. The method according to claim 6, wherein the curdlan is mixed in an amount of 02 to 1001b byweight based on thefinal product.
9. The method according to claim 6, wherein the mixture is shaped Into a size having a thickness of about2 to 60 mm.
10. The method according to claim 6, wherein the shaped material is heated above about 55°C.

11. The method according to claim 6, wherein the heating Is carried out by the use of mixrowave oven.

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