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FORM 1

APPLICATION ACCEPTED AND AMENDMENTS

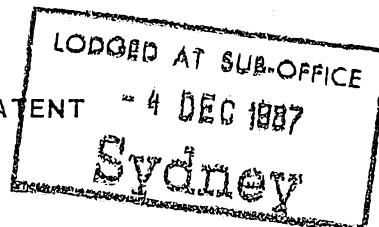
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SPRUSON & FERGUSON

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT



Etude Recherche Et Developpement - E.R.D. Sarl, of La Julienne, Le Gres, 84100 Orange, FRANCE, hereby apply for the grant of a standard patent for an invention entitled:

Reconstructed Food Product, Process and Mixer for Preparation

which is described in the accompanying complete specification.

Details of basic application(s):-

Basic Applic. No: Country:

86 17463

FRANCE

Application Date:

11 December 1986

The address for service is:-

Spruson & Ferguson
Patent Attorneys
Level 33 St Martins Tower
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Sydney New South Wales Australia

DATED this THIRD day of DECEMBER 1987

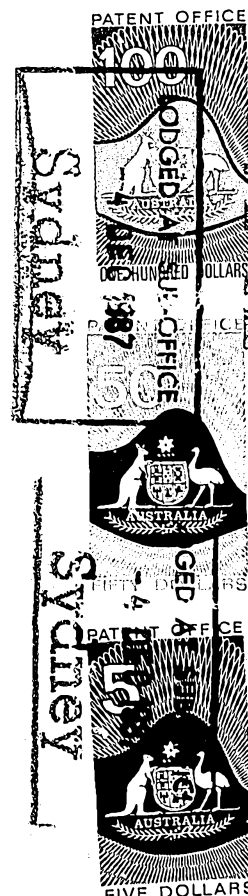
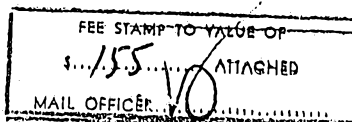
Etude Recherche Et Developpement - E.R.D. Sarl

By:

Registered Patent Attorney

TO: THE COMMISSIONER OF PATENTS
OUR REF: 45571
S&F CODE: 59820

5845/3



DECLARATION IN SUPPORT OF A
CONVENTION APPLICATION FOR A PATENT

In support of the Convention Application made for a
patent for an invention entitled:

Title of Invention

Reconstructed Food Product, Process and Mixer for
Preparation

Full name(s) and
address(es) of
Declarant(s)

I/We Thierry Bouillette, Manager
of Etude Recherche Et Developpement - E.R.D. Sarl
La Julienne, Le Grès, 84100 Orange, France

do solemnly and sincerely declare as follows:--

Full name(s) of
Applicant(s)

1. I am/~~We~~ are the applicant(s) for the patent
(or, in the case of an application by a body corporate)
1. I am/~~We~~ are authorised by
Etude Recherche Et Developpement - E.R.D. Sarl
the applicant(s) for the patent to make this declaration on
its/~~their~~ behalf.
2. The basic application(s) as defined by Section 141 of the
Act was/~~were~~ made

Basic Country(ies)

in France

Priority Date(s)

on 11 December 1986

Basic Applicant(s)

by ETUDE RECHERCHE ET DEVELOPPEMENT - E.R.D. SARL

Full name(s) and
address(es) of
inventor(s)

3. I am/~~We~~ are the actual inventor(s) of the invention referred
to in the basic application(s).
(or where a person other than the inventor is the applicant)
3. Denis Olivier, of Chemin des Mulets, 84300 Les Taillades;
Bernard Guigou, of Quartier Saint Michel, 84400 Apt;
Thierry Bouillette, of La Julienne, Le Grès, 84100 Orange
all in France

(respectively)

is/~~are~~ the actual inventor(s) of the invention and the facts upon
which the applicant(s) is/~~are~~ entitled to make the application are
as follows: Etude Recherche Et Developpement - E.R.D. Sarl
is entitled by Contract of Employment between the inventors
as employees and Etude Recherche Et Developpement - E.R.D.
Sarl as employer, as a person who would be entitled to have
the patent assigned to it if a patent were granted upon
an application made by the inventors.

4. The basic application(s) referred to in paragraph 2 of this
Declaration was/~~were~~ the first application(s) made in a Convention
country in respect of the invention(s) the subject of the application.

Declared at Orange this 25th day of November 1987

(12) PATENT ABRIDGMENT (11) Document No. AU-B-82110/87
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 606632

(54) Title
RECONSTRUCTED FOOD PRODUCT, PROCESS AND MIXER FOR PREPARATION

International Patent Classification(s)
(51)⁴ A23L 001/064 A23L 001/04 B01F 005/04

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(74) Attorney or Agent
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(57) Claim

1. Food product, more particularly in form of pieces or lumps of fruit, of the type that contains a fruit concentrate and a gelling substance, wherein its weight composition is:

from 1 to 30% fruit alcohol or denaturated natural alcohol

from 15 to 50% fruit concentrate.

from 5 to 30% sugar

from 0.5 to 3% alginate

5. A process for the preparation of a food product according to any claim 1, 3 or 4, characterized by the fact that it includes the following steps: the preparation of a denaturated alcohol with alcohol content from 45 to 55°, the preparation of a first blend with alcohol, fruit concentrate and a portion of the sugar, the preparation of a second blend with alginate and the remaining sugar, the deaeration and rest of the second blend during approximately 30 minutes and the mixing of the first and of the second blends in a mixing device.

10. A static mixer for the implementation of the process according to any claims 5 through 9 with the more particular purpose to ensure a

(11) AU-B-82110/87
(10) 606632

-2-

thorough mixing of said first blend from a first storage tank with said second blend from a second storage tank, said blends being fed to said mixer at a pre-determined pressure, characterized by the fact that it is composed of a cylindrical body, whose ends are closed by sockets or flanges, through which the input lines of said blends to be mixed pass, with, in the vicinity of one radial end, a radial discharge fitting, the input lines going through substantially the whole length of the cylindrical body and having at their free ends located in mutual opposition, injection nozzles, the input line for said second blend having in the vicinity of its free end a system of radial baffles the farthest baffle of which, opposite the free end of line communicates with said radial discharge fitting of the cylindrical body.

606632

S & F Ref: 45571

FORM 10

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

COMPLETE SPECIFICATION

This document contains the
amendments made under
Section 49 and is correct for
printing.

(ORIGINAL)

FOR OFFICE USE:

Class Int Class

Complete Specification Lodged:
Accepted:
Published:

Priority:

Related Art:

Name and Address
of Applicant:

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La Julienne
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Sydney, New South Wales, 2000, Australia

Complete Specification for the invention entitled:

Reconstructed Food Product, Process and Mixer for
Preparation

The following statement is a full description of this invention, including the
best method of performing it known to me/us

Reconstructed food product, process
and mixer for preparation

Owner : Société ETUDE RECHERCHE ET DEVELOPPEMENT

A B S T R A C T

This invention refers to a food product more particularly available as fruit pieces, of the kind containing a fruit concentrate and a gelation substance, characterized by the fact that its weight composition is approximately:

- * 1 - 30% denaturated fruit alcohol
- * 15 & 50% fruit concentrate
- * 5 - 30% sugar
- * 0.5 - 3% alginate

It also refers to a process for the manufacturing of the product and to a static mixer for the implementation of the process of the invention.

No figure

The invention is related to a food product and more particularly to pieces or lumps of reconstructed fruit and to a process for the production of the product.

Processes of producing reconstructed fruit have
 5 been known for a longtime, made from fruit extracts or concentrates to which a gelatinizing substance containing an alginate is added.

The French patent No 2,087,852, for instance, describes pieces of reconstructed fruit made of substantially
 10 spherical bodies of a fruit concentrate featuring a gelled skin externally. According to the patent, the skin is made from a gel of a calcium or aluminum alginate or pectate. The French patent No 2,087,852 also covers a process for the processing
 15 of such reconstructed food products. According to this process, the first stage is to blend a solution of calcium or aluminum ions to the food; next, drops are formed from this mixed fluid and said drops are brought into contact with a bed of alginate or pectate in order to build said said external jelled skin.

20 This process does not produce reconstructed fruit that are core gelled and with the same consistence of the natural product. Moreover this process does not permit to add an alcoholic component to the fruit concentrate as alcohol would prevent the formation of the gelled skin.

25 The French patent No 2,114,706, describes reconstructed fruit which seem to be core gelled in part at least. The production process of reconstructed fruit according to this process basically consists of three stages as follows:

- a) To prepare a Mixture No 1 of alginate or low
 30 methoxypectate with a calcium compound that does not contain enough free calcium ions to initiate a gemation,
- b) To Mixture No 1, to add the fruit by-product in the presence of a gelling substance, more particularly an acid (malic acid 0.51%, ascorbic acid 0.10%, citric acid:1.20%)
 35 The purpose of the acid is to cause the release of the calcium ions from the calcium compound of Mixture No 1 (dicalcic phosphate),

c) To allow the mixture a) + b) to gel.

Said patent discloses (on page 3, lines 23 thru 28) that, when mixtures a) and b) blend together, the gelation occurring between calcium and alginate ions is so fast that calcium cannot be distributed through the whole alginate mass before a substantial portion of gelation has taken place so that the resulting gel texture is very irregular. To remedy this, the patent proposes to complement the compound with an edible substance that inhibits calcium such as trisodic citrate. But this solution makes necessary to use special care in the preparation of the mixture of a° and b°.

Moreover, practical tests have shown that despite the inhibiting substance, calcium and care taken at the mixing stage, the French patent No 2,114,706 does not permit to obtain reconstructed fruit that is core-gelled uniformly as desired by the User.

The purpose of the invention is to design the composition and preparation of a food product that is perfectly reconstructed and uniformly core-gelled, permitting the addition of a denaturated fruit alcohol.

The product made according to the invention contains the following approximative proportions, by weight:

. Fruit alcohol or denaturated natural alcohol:	1 to 30%
. Fruit concentrate	15 - 50%
. Sugar	5 - 30%
. Alginate	0.5 - 3%

The product according to the invention preferably contains approximately 0.2 - 2% by weight of a calcium compound such as an anhydrous dicalcic phosphate, in addition.

The fruit concentrate is preferably a fruit pulp or purée. The denaturated fruit alcohol has preferably the same fruit basis as the fruit pulp or purée.

The process according to the invention provides the preparation of a denaturated alcohol with alcohol content from 45 to 55°, the preparation of a first blend containing alcohol, fruit concentrate and a portion of the sugar, the preparation of a second blend containing alginate and the balance of sugar; the latter blend is allowed to de-gas and

to rest for about thirty minutes followed by the mixing for both blends in a mixer. In such cases when a calcium compound is used, it is added to the second blend.

According to a preferred form of embodiment, the process of the invention provides for the production, starting from the final mixture, of bodies or uniform dimensions, said bodies being immersed in a solution composed as follows: from 2 to 15% by weight of calcium, 10 to 35% by weight of sugar.

Said bodies are formed by moulding or extrusion according to well-known methods.

The invention also covers a static mixer for the implementation of the process of the invention the major function of which is to ensure a thorough mixing of said first blend supplied from a first storage tank with said second blend supplied from a second storage tank, both blends being supplied to said mixer under a pre-set pressure.

The mixer of the invention includes a cylindrical body closed at both ends by fittings or flanges crossed by the feed ing lines of said blends to be mixed; in the vicinity of one of its axial ends, it features a radial discharge fitting, with the input lines going substantially along the full length of the cylindrical body and having injection nozzles at their free ends located in mutual opposition, and the input line for said second blend having in the vicinity of its free end a set of radial deflectors whose the farthest in opposition to the free end of the line is connected with said radial discharge fitting of the cylindrical body.

According to a preferred form of embodiment of the mixer, the free ends of the input lines each have a pair of axial deflectors in opposition, with the pairs of deflectors mutually apart by 90° in order to define a mixing chamber where said nozzles end. The free ends of the deflectors of any said pair of deflectors will be preferably bent toward the longitudinal axis of the corresponding input line.

According to a preferred form of embodiment, said set of baffles includes at least three discs fixed on said input line, with axial spacing; disc No 1 has a series of holes at regular intervals in the vicinity of its outer edge,

disc No 2 has a plurality of uniformly spaced radial slots on its outer edge while disc No 3 has a plurality of radial slots each in communication with a radial recess extending opposite the internal end of said discharge fitting.

- 5 The mixer according to the invention can be manufactured in a simple and inexpensive way. It provides a first mixing at the level of nozzles and deflectors. The overall homogeneity of this first blending is further improved by processing through said set of baffles. The special configuration of the baffles according to the ^{preferred embodiment} ~~invention~~ has shown a high efficiency in practice in quite an unexpected manner.

Several examples of preferred compositions of the product of the invention are listed below:

Exemple No 1

15	<u>Blend No 1 (fruit)</u>		
	. apple purée	by weight	18.00%
	. apricot purée	"	22.00%
	. crystal sugar	"	6.15%
	. densified apricot alcohol	"	3.50%
20	. trisodic citrate	"	0.35%
	<u>Blend No 2 (alginate)</u>		
	. sodium alginate	"	1.00%
	. anhydrous dicalcic phosphate	"	0.30%
	. crystal sugar	"	13.70%
25	. water	"	35.00%

Exemple No 2

	<u>Blend No 1 (fruit)</u>		
	. orange pulp juice	"	30.00%
	. apple purée	"	10.00%
30	. crystal sugar	"	6.60%
	. densified whisky	"	3.00%
	. trisodic citrate	"	0.40%
	<u>Blend No 2 (alginate)</u>		
	. sodium alginate	"	1.00%
35	. anhydrous dicalcic phosphate	"	0.35%
	. crystal sugar	"	13.65%
	. water	"	35.00%



Exemple No 3Blend No 1 (fruit)

	. Purée of William pears	by weight	42.00%
	. Crystal sugar	"	5.00%
5	. densified William pear alcohol	"	2.50%
	. trisodic citrate	"	0.30%
	. citric acid	"	0.20%

Blend No 2 (alginate)

	. sodium alginate	"	1.00%
10	. anhydrous dicalcic phosphate	"	0.30%
	. crystal sugar	"	13.70%
	. water	"	35.00%

The one enclosed illustration is an exploded view
diagramme of a unit including a static mixer according to the
invention for the implementation of the process of the inven-
tion.

The unit illustrated includes a first storage
tank (1) containing Blend No 1 of the invention, basically
composed of a fruit concentrate and a second storage tank (2)
containing Blend No 2 of the invention, basically composed of
the alginate.

The discharge line (3) of tank (1) is connected
through a valve (4) and a discharge pump (5) to one of the in-
lets of the static mixer of the invention generally identified
as (6).

The discharge line (7) of tank (2) is connected
to the other input of the mixer (6) through a valve (8) and a
discharge pump (9).

The mixer of the invention is shown here as an
exploded perspective view; it basically consists of a cylin-
drical body (10) with both ends open, that can be sealed by
two sockets (11,12) by means of threaded flanges (13,14).

The socket (11) located on tank (1) side is pro-
vided with a fitting (15) whose internal end ends in a nozz-
le (16) mounted between two longitudinal deflectors (17). The
socket (12) located on the side of tank (2) also contains a
socket or fitting (18) whose inner end is connected with a
tube that substantially crosses the whole length of the mixer
body (10) up the the immediate vicinity of the deflectors (17)

of the socket (11)

The free end of tube (19) is provided with a nozzle (20) located between two deflectors (21), said deflectors being 90° apart from deflectors (17), of round section.

5 In the immediate vicinity of nozzle (20), tube (19) is provided with a plurality of baffles having the general identification (22). The rear end of the system (22) is located opposite a radial discharge fitting (23) provided on the cylindrical body.

10 According to the preferred form of embodiment shown here, the system of baffles (22) contains a disc No 1 (24) fixed on tube (19), provided with a plurality of holes (25), a disc No 2 having a plurality of slots (27) arranged in uniform spacing on its periphery, and a disc No 3 with a
15 plurality of recesses. (29). A portion of the recesses open (30) on the radial disc face (28) and another portion with a substantially circular section (31) open to the outer periphery disc face.

In operation, the blends No 1 and 2 are discharged from tanks (1 2) by means of pumps (5,9) under a pressure into the mixer, they go through the sockets and are distributed through nozzles (16,20) respectively.

Owing to the deflectors (17, 21) installed around the nozzles, a first mixing of the products is achieved.

25 Next, this first blend flows through the baffle system (22) for discharge through the connection (23).

Owing to the special configuration of the baffle system (22) an excellent homogeneity is achieved for the basic two products, viz blend No 1 and blend No2 according to
30 the invention.

The mixer of the invention has a relatively simple configuration. Cleaning and maintenance are convenient.

Of course, the invention is not restricted to the forms of embodiment described and illustrated here, and
35 many modifications may be made without coming out of the scope of the invention.

The claims defining the invention are as follows:

1. Food product, more particularly in form of pieces or lumps of fruit, of the type that contains a fruit concentrate and a gelling substance, wherein its weight composition is:

from 1 to 30% fruit alcohol or denaturated natural alcohol

from 15 to 50% fruit concentrate

from 5 to 30% sugar

from 0.5 to 3% alginate

2. A product according to claim 1, wherein said product contains from 0.2 to 2% by weight approximately of a calcium compound such as an anhydrous dicalcic phosphate.

3. A product according to any claim 1 or 2, wherein the fruit concentrate is a fruit pulp.

4. A product according to any claim 1 or 2, wherein the fruit concentrate is a fruit puree.

5. A process for the preparation of a food product according to any claim 1, 3 or 4, characterized by the fact that it includes the following steps: the preparation of a denaturated alcohol with alcohol content from 45 to 55°, the preparation of a first blend with alcohol, fruit concentrate and a portion of the sugar, the preparation of a second blend with alginate and the remaining sugar, the deaeration and rest of the second blend during approximately 30 minutes and the mixing of the first and of the second blends in a mixing device.

6. A process according to claim 5, characterized by the fact that it consists in adding the calcium compound to said second blend, for the preparation of the product according to claim 2.

7. A process according to claim 5, characterized by the fact that it consists in the production of bodies of uniform dimensions from the final mixture and in the immersion of the resulting bodies in a bath containing from 2 to 15% by weight of calcium and from 10 to 35% by weight of sugar.

8. A process according to claim 7, wherein said bodies are extrusion-processed.

9. A process according to claim 7, wherein said bodies are mould-processed.

10. A static mixer for the implementation of the process according to any claims 5 through 9 with the more particular purpose to ensure a



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thorough mixing of said first blend from a first storage tank with said second blend from a second storage tank, said blends being fed to said mixer at a pre-determined pressure, characterized by the fact that it is composed of a cylindrical body, whose ends are closed by sockets or flanges, through which the input lines of said blends to be mixed pass, with, in the vicinity of one radial end, a radial discharge fitting, the input lines going through substantially the whole length of the cylindrical body and having at their free ends located in mutual opposition, injection nozzles, the input line for said second blend having in the vicinity of its free end a system of radial baffles the fartherst baffle of which, opposite the free end of line communicates with said radial discharge fitting of the cylindrical body.

11. A static mixer according to claim 10, wherein the free ends of the input lines each have a pair of opposite axial deflectors, with the pairs of deflectors mutually apart by 90°, in order to form a mixing chamber where said nozzles end.

12. A static mixer according to claim 11, wherein the free deflector ends of one of said pairs of deflectors are bent toward the longitudinal axis of the corresponding input line.

13. A static mixer according to any one of claims 10 to 12, wherein said system of baffles is composed of at least three discs, fixed on said input line, axially apart in respect of each other, the first disc features a plurality of uniformly spaced holes, the second disc having a plurality of uniformly spaced radial slots and the third disc having a plurality of radial slots each in communication with a radial recess extending opposite the inner end of said discharge fitting.

14. A food product substantially as hereinbefore described with reference to any one of the Examples.

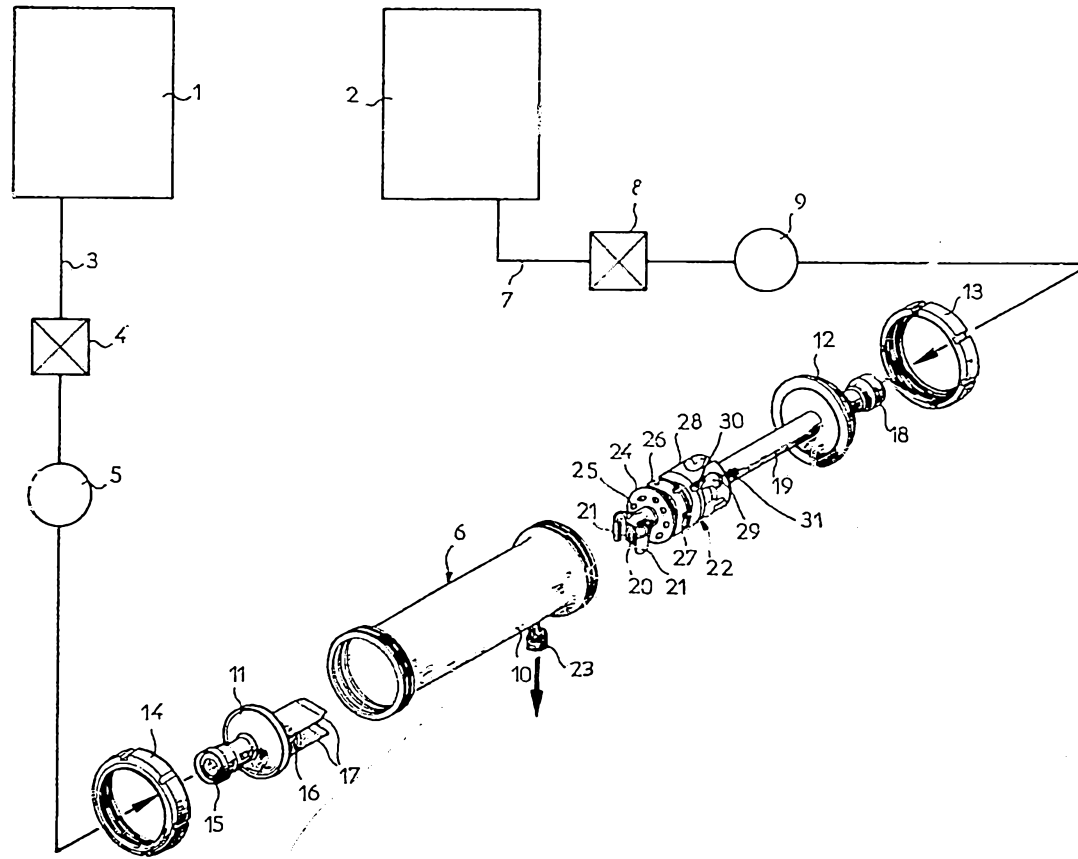
15. A process for the preparation of a food product substantially as hereinbefore described with reference to any one of the Examples.

16. A static mixer substantially as hereinbefore described with reference to any one of the Examples.

DATED this TWENTY-SECOND day of OCTOBER 1990
Etude Recherche Et Developpement - E.R.D. Sarl

Patent Attorneys for the Applicant
SPRUSON & FERGUSON





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