

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

DECLARATION IN SUPPORT OF CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT

Insert title of invention.

Insert full name(s) and address(es)
of declarant(s) being the appli-
cant(s) or person(s) authorized to
sign on behalf of an applicant
company.

Cross out whichever of paragraphs
1(a) or 1(b) does not apply

1(a) relates to application made
by individual(s)
1(b) relates to application made
by company; insert name of
applicant company.

Cross out whichever of paragraphs
2(a) or 2(b) does not apply

2(a) relates to application made
by inventor(s)

2(b) relates to application made
by company(s) or person(s) who
are not inventor(s); insert full
name(s) and address(es) of inven-
tor(s).

State manner in which applicant(s)
derive title from inventor(s)

Cross out paragraphs 3 and 4
for non-convention applications.
For convention applications,
insert basic country(s) followed
by date(s) and basic applicant(s).

Insert place and date of signature.

Signature of declarant(s) (no
attestation required)

Note Initial all alterations

In support of the Application made for a patent for an invention
entitled: "METHOD AND DEVICE FOR THE EXTRUSION OF
FOOD PRODUCTS"

I HEINZ-JOSEF SCHAAF, of
We HEINZ SCHAAF, NAHRUNGSMITTEL-
EXTRUSIONSTECHNIK, of
Quellenweg 14 + 19a,
6277 Bad Camberg-Oberselters,
FEDERAL REPUBLIC OF GERMANY

do solemnly and sincerely declare as follows :-

1. (a) ~~XXXXXX~~ the applicant ~~XXXXXX~~ for the patent
We are

or (b) I am authorized by
HEINZ SCHAAF, NAHRUNGSMITTEL
EXTRUSIONSTECHNIK

the applicant..... for the patent to make this declaration on its behalf.

2. (a) I am ~~XXXXXX~~ the actual inventor ~~XXXXXX~~ of the invention
We are

or (b) Heinz SCHAAF, of Quellenweg 14 + 19a,
6277 Bad Camberg-Oberselters,
FEDERAL REPUBLIC OF GERMANY

is the actual inventor..... of the invention and the facts upon which the applicant.....

is entitled to make the application are as follows :-

by virtue of an agreement dated 16 September 1976,
the applicant would, if a patent were
granted on application by the aforesaid inventor
in respect to the invention, be entitled to have
the patent assigned to it.

3. The basic application..... as defined by Section 141 of the Act ^{was} made ~~XXXX~~
in FEDERAL REPUBLIC OF GERMANY..... 30th April 1985.....
by HEINZ SCHAAF, NAHRUNGSMITTEL-EXTRUSIONSTECHNIK.....
in on the
by
in on the
by

4 The basic application..... referred to in paragraph 3 of this Declaration ^{was} were
the first application..... made in a Convention country in respect of the invention the subject
of the application.

Declared at Bad Camberg this 23rd day of November 1987



HEINZ SCHAAF
OHG

Nahrungsmittel - Extrusionstechnik
Quellenweg 19a Tel. 06483/7861

DAVIES & COLLISON MELBOURNE and CANBERRA,
D 6277 Bad Camberg-Oberselters

Telex 482287

Heinz-Josef SchAAF
(Gesellschafter)

(12) PATENT ABRIDGMENT (11) Document No. AU-B-58651/86
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 536359

- (54) Title
METHOD AND DEVICE FOR THE EXTRUSION OF FOOD PRODUCTS
- International Patent Classification(s)
(51)⁴ **A23P 001/14**
- (21) Application No. : **58651/86** (22) Application Date : **17.04.86**
- (87) WIPO Number : **WO86/06256**
- (30) Priority Data
- (31) Number (32) Date (33) Country
3515617 30.04.85 DE FEDERAL REPUBLIC OF GERMANY
- (43) Publication Date : **18.11.86**
- (44) Publication Date of Accepted Application : **03.05.90**
- (71) Applicant(s)
HEINZ SCHAAF OHG
- (72) Inventor(s)
HEINZ SCHAAF
- (74) Attorney or Agent
DAVIES & COLLISON, MELBOURNE
- (56) Prior Art Documents
US 4154864
US 3684521
US 3480442
- (57) Claim

1. Method for extrusion of foodstuffs comprising the steps of :

i) preparing a mixture from carbohydrates, protein, fats, aromatic substances, water and the like,

ii) processing said mixture by the use of an extruder screw to a dough which emerges with expansion from a nozzle, the emergence of the extrudate from the extruder nozzle taking place into a space of sub-atmospheric pressure,

iii) condensing vapours liberated on expansion, comprising aromatic substances, and

iv) either returning the aromatic substances to the extruder or collecting the aromatic substances for use in further processing of said mixture.

3. Apparatus for extrusion of foodstuffs comprising an extruder and a cutting means disposed in front of a nozzle head of the extruder, in particular for carrying out the method according to either of claims 1 or 2, characterized in that the nozzle head and the cutting means are disposed in a vacuum chamber provided with a reduced pressure means, that at the vacuum chamber a lock is provided for the discharge of extruded and cut-off foodstuff from the chamber and that the vacuum chamber is connected to a condensor arranged for condensing said vapours in step iii).

COMMONWEALTH OF AUSTRALIA

PATENT ACT 1952

COMPLETE SPECIFICATION
(Original)

596359

FOR OFFICE USE

Class Int. Class

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

Priority:

Related Art:

Name of Applicant: OHG,
HEINZ SCHAAF / ~~NAHRUNGSMITTEL-EXTRUSIONSTECHNIK~~

Address of Applicant: Quellweg 14 + 19a,
6277 Bad Camberg-Oberselters,
FEDERAL REPUBLIC OF GERMANY

Actual Inventor(s): Heinz SCHAAF

Address for Service: DAVIES & COLLISON, Patent Attorneys,
1 Little Collins Street, Melbourne, 3000.

Complete Specification for the invention entitled:
"METHOD AND APPARATUS FOR THE EXTRUSION OF FOODSTUFFS"

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



AU-AI 5 8 6 5 1 / 8 6

PCT

WELTORGANISATION FÜR GEISTIGES EIGENTUM
Internationales Büro



INTERNATIONALE ANMELDUNG VON ERFINDUNGEN NACH DEM VERTRAG ÜBER DIE
INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT)

596350

(51) Internationale Patentklassifikation ⁴ : A23P 1/14		(11) Internationale Veröffentlichungsnummer: WO 86/ 06256
A1		(43) Internationales Veröffentlichungsdatum: 6. November 1986 (06.11.86)
(21) Internationales Aktenzeichen: PCT/EP86/00227 (22) Internationales Anmeldedatum: 17. April 1986 (17.04.86) (31) Prioritätsaktenzeichen: P 35 15 617.1 (32) Prioritätsdatum: 30. April 1985 (30.04.85) (33) Prioritätsland: DE OHG, (71) Anmelder (für alle Bestimmungsstaaten ausser US): HEINZ SCHAAF, NAHRUNGSMITTEL-EXTRUSIONSTECHNIK [DE/DE]; Quellenweg 14 + 19a, D-6277 Bad Camberg/Oberselters (DE). (72) Erfinder; und (75) Erfinder/Anmelder (nur für US) SCHAAF, Heinz [DE/ DE]; Quellenweg 14 + 19a, D-6277 Bad Camberg- Oberselters (DE). (74) Anwalt: MÜLLER-BORÉ, DEUFEL, SCHÖN, HER- TEL, LEWALD, OTTO ; Postfach 260247, D-8000 München 26 (DE).		(81) Bestimmungsstaaten: AT (europäisches Patent), AU, BE (europäisches Patent), CH (europäisches Patent), DE (europäisches Patent), FR (europäisches Patent), GB (europäisches Patent), IT (europäisches Patent), JP, LU (europäisches Patent), NL (europäisches Pa- tent), SE (europäisches Patent), US. Veröffentlicht Mit internationalem Recherchenbericht. Mit geänderten Ansprüchen.

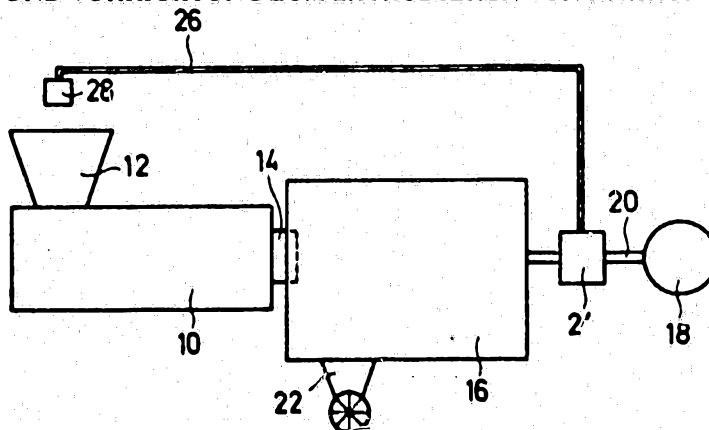
This document contains the
amendments made under
Section 49 and is correct for
printing.

A.O.J.P. 18 DEC 1986

AUSTRALIAN
18 NOV 1986
PATENT OFFICE

(54) Title: METHOD AND DEVICE FOR THE EXTRUSION OF FOOD PRODUCTS

(54) Bezeichnung: VERFAHREN UND VORRICHTUNG ZUM EXTRUDIEREN VON NAHRUNGSMITTELN



(57) Abstract

The extrusion of food products is carried out at a pressure lower than the atmospheric pressure, thereby enabling to reduce the temperature of the dough to be extruded. It becomes thus possible to extrude materials and let them expand, materials which could not otherwise be used, either because of their heat sensitivity or because of their thermoplastic properties. Simultaneously, vapors coming out of the extruder may be condensated, thereby enabling to recover volatile aromas, and to thus increase the productivity of the process while preventing unpleasant smells from spreading throughout the production locals.

(57) Zusammenfassung

Das Extrudieren der Nahrungsmittel erfolgt bei einem Druck, der geringer ist als der atmosphärische Druck. Dadurch kann die Temperatur des zu extrudierenden Teiges niedriger gehalten werden, so dass Stoffe extrudiert und expandiert werden können, die entweder aufgrund ihrer Temperaturempfindlichkeit oder ihrer thermoplastischen Eigenschaften ansonsten nicht verwendbar sind. Gleichzeitig können die aus dem Extruder austretenden Dämpfe kondensiert werden, so dass flüchtige Aromastoffe rückgewonnen werden können. Damit wird die Wirtschaftlichkeit des Verfahrens erhöht und eine Geruchsbelästigung der Produktionsstätte verhindert.



The invention relates to a method for extrusion of foodstuffs wherein in an extruder a mixture is prepared from carbohydrates, protein, fats, aromatic substances and water and said mixture is processed by an extruder screw to a dough which emerges with expansion from a nozzle, and an apparatus for carrying out said method.

In the extrusion of foodstuffs which is carried out at a temperature of 100°C and more vapours are formed on emergence from the nozzle head. These vapours are either sucked off or blown off to avoid condensate formation in the expansion space or chamber and to prevent the production area being impaired by moisture and odours.

On emergence of the extrudate from the nozzle head an expansion occurs when the extrudate, which normally contains a vapourizable liquid, moves from a zone of high pressure at a temperature which is higher than the vapourization temperature of the respective liquid to a zone of low pressure. A foodstuff dough containing water is extruded at a temperature of over 100°C and because of the pressure drop on passage through the extruder nozzle this dough expands due to the water vapour forming.

Present-day conventional methods for extrusion of foodstuffs have the disadvantage that due to the necessary high temperature for example fats of low melting point are not suitable. In addition, due to the evaporation of the liquid contained in the dough a major part of the natural or added flavouring substances contained in the raw material is lost because these substances also evaporate on emergence from the nozzle. In the production of snacks, flat bread and the like a loss occurs of the flavouring substances used (for example onions, caraway, celery, peppermint, herbs of all kinds, etc.) of the order of magnitude of 40 to 80%. Losses of aromatic



substances also occur when using concentrated aroma compositions of natural or natural-identical type as have been offered by the essence industry for a long time, in spite of optimization as regards their volatility. To compensate these losses aromatic substances must be added to an increased amount so as to obtain the desired flavouring in the final product. Such an admixture of aromatic and flavouring substances in large amounts can easily come up against limits from the process technology point of view or the manufacture can be forced to obtain the aromatization of the extruded foodstuffs with specially prepared aromas by subsequent coating. This necessarily restricts the range of products which can be made or makes economic production impossible.

The invention is based on the problem of providing a method and an apparatus with which foodstuffs can be extruded without significant detrimental effects thereon and the amount of aromatic or flavouring substances added can be significantly reduced.

According to a first aspect of the present invention, there is provided a method for extrusion of foodstuffs comprising the steps of :

- i) preparing a mixture from carbohydrates, protein, fats, aromatic substances, water and the like,
- ii) processing said mixture by the use of an extruder screw to a dough which emerges with expansion from a nozzle, the emergence of the



extrudate from the extruder nozzle taking place into a space of sub-atmospheric pressure.

iii) condensing vapours liberated on expansion, comprising aromatic substances, and

iv) either returning the aromatic substances to the extruder or collecting the aromatic substances for use in further processing of said mixture.

According to a second aspect of the present invention, there is provided apparatus for extrusion of foodstuffs comprising an extruder and a cutting means disposed in front of a nozzle head of the extruder, in particular for carrying out the method according to either of claims 1 or 2, characterized in that the nozzle head and the cutting means are disposed in a vacuum chamber provided with a reduced pressure means, that at the vacuum chamber a lock or sluice is provided for the discharge of extruded and cut-off foodstuff from the chamber and that the vacuum chamber is connected to a condensor arranged for condensing said vapours in step iii).

Since the boiling point of liquid depends of course on the ambient pressure it is possible when an appropriately large vacuum is employed to keep the temperature of the extruded mixture lower so that for the extrudate components can be used which would undergo undesirable changes at the otherwise usual temperature of more than 100°C. If the pressure in the space in front of the nozzle head is about 0.1



bar the material to be extruded has a temperature of at the most 90°C.

If in preferred manner the vapours liberated in the expansion are condensed the volatile aromatic substances can be returned to the extruder so that no loss of expensive aromatic and flavouring substances occurs. Furthermore, there is no annoying production of odours in the place of manufacture because the evaporated aromatic substances are not discharged into the surroundings.

The lock or sluice may for example be constructed as a cellular wheel sluice.

For recovery of the aromatic substances, according to a preferred embodiment the condensor is preferably disposed between the vacuum chamber and reduced pressure means. The return of the condensed aromatic substances for recycling can take place via a conduit which is connected either to a container for the aromatic substances or to charging means of the extruder.

An example of an embodiment of the invention will be explained hereinafter in detail, by way of example only, with the aid of the drawing.

The drawing shows in schematic illustration an extruder 10 having a charging funnel 12. In the extruder 10 an extruder screw is disposed via which a mixture and feed of the material to be extruded is effected. At the discharge end of the extruder a



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1 nozzle head 14 is disposed.

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3 In front of the nozzle head 14 a vacuum chamber 16 is
4 disposed. The reduced pressure in the vacuum chamber 16 is
5 brought.

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about by a vacuum pump 18 which is connected via a conduit 20 to the vacuum chamber 16. In the vacuum chamber 16, which adjoins the sealing head 14 in sealed manner a cutting means (not shown) suitable for the foodstuff to be extruded is disposed. The emergence of the extrudate from the vacuum chamber 16 is via a product discharge lock 22 which in the example of embodiment illustrated is in the form of a cellular wheel sluice.

If in the vacuum chamber 16 an absolute pressure of 0.1 bar obtains the vapourization temperature of the water emerging with the extrudate from the nozzle head is reduced to about 50°C. The dough emerging from the nozzle head 14 has for example a temperature of 90°C. With these values in the extrudate the same expansion occurs as can be achieved in conventional methods with a starting temperature of 140°C. Thus, substances can be extruded and expanded which because of their temperature sensitivity or their thermoplastic properties hitherto could not be used.

Between the vacuum chamber 16 and the pump 18 in the conduit 20 a condenser 24 is disposed in which the sucked-off vapours are condensed. After appropriate preparation of the vapours precipitated aromatic or flavouring substances can be returned to the raw material or said aromatic substances can be used to make a coating solution. The objective of the preparation of the vapours is preferably to obtain the resulting aromatic substances as concentrated as possible. Apparatuses for condensing and separating the desired substances, either in the vapour phase or in the liquid phase, are adequately known.

For returning the precipitated aromatic substances ^{from} to the condenser a conduit 26 is provided which leads to a container 28 in which the aromatic substances to be added to the material to be extruded are contained.

~~The reference numerals in the following claims do not in any way limit the scope of the respective claims.~~



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Method for extrusion of foodstuffs comprising the steps of :
 - i) preparing a mixture from carbohydrates, protein, fats, aromatic substances, water and the like,
 - ii) processing said mixture by the use of an extruder screw to a dough which emerges with expansion from a nozzle, the emergence of the extrudate from the extruder nozzle taking place into a space of sub-atmospheric pressure,
 - iii) condensing vapours liberated on expansion, comprising aromatic substances, and
 - iv) either returning the aromatic substances to the extruder or collecting the aromatic substances for use in further processing of said mixture.
2. Method according to claim 1, characterized in that the dough has a temperature of about 90°C and the pressure in front of the nozzle, in the space of sub-atmospheric pressure, is about 0.1 bar.
3. Apparatus for extrusion of foodstuffs comprising an extruder and a cutting means disposed in front of a nozzle head of the extruder, in particular for carrying out the method according to either of claims 1 or 2, characterized in that the nozzle head and the cutting means are disposed in a vacuum chamber provided with a reduced pressure means, that at the vacuum chamber a lock is provided for the discharge of extruded and cut-off foodstuff from the chamber and that the vacuum chamber is



connected to a condensor arranged for condensing said vapours in step iii).

4. Apparatus according to claim 3, characterized in that the condenser is disposed between the vacuum chamber and reduced pressure means.

5. Apparatus according to claim 3 or 4, characterized in that the condensor is connected via a conduit to a container for aromatic substances.

6. Apparatus according to any one of claims 3 to 5, characterized in that the lock is constructed as a cellular wheel sluice.

7. A method substantially as described hereinbefore with reference to the accompanying drawing.

8. Apparatus substantially as described hereinbefore with reference to the accompanying drawing.

DATED this 31st day of May, 1989.

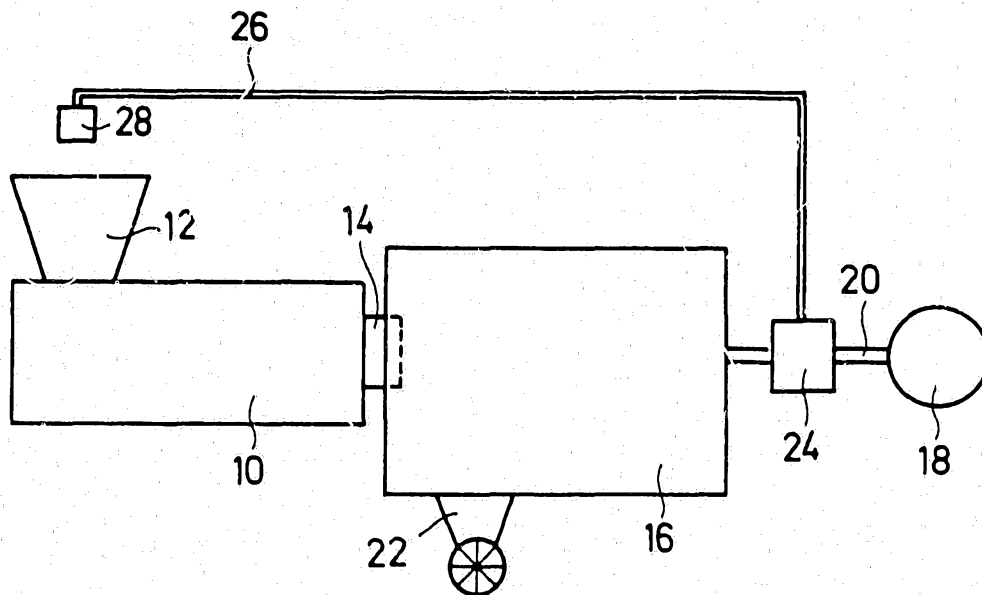
HEINZ SCHAAF OHG

By their Patent Attorneys

Davies & Collison



- 1/1 -



INTERNATIONAL SEARCH REPORT

International Application No PCT/EP 86/00227

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. Cl. ⁴ A 23 P 1/14		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int. Cl. ⁴	A 23 P; A 23 L	
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched ⁶		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹		
Category ⁸	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US, A, 3480442 (W. ATKINSON) 25 November 1969, see claim 1; column 2, lines 46-69; column 3, lines 26-28 --	1, 2
X	US, A, 3684521 (M. GLICKSMAN) 15 August 1972, see claim 1; column 3, lines 55-58 --	1, 2
X	FR, A, 2294652 (SOC. DES PRODUITS NESTLE) 16 July 1976, see claims 1, 11, 18-21; page 7, lines 4-7; page 5, lines 4-35 --	1, 2, 4, 5
A	FR, A, 2387681 (KANESA MISO K.K.) 17 November 1978 -----	
* Special categories of cited documents: ¹⁰ "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "Δ" document member of the same patent family		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
6 August 1986 (06.08.86)	9 September 1986 (09.09.86)	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE		

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/EP 86/00227 (SA 13113)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 25/08/86

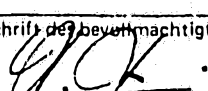
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3480442	25/11/69	None	
US-A- 3684521	15/08/72	None	
FR-A- 2294652	16/07/76	BE-A- 835557	13/05/76
		NL-A- 7514088	21/06/76
		DE-A, B, C 2549440	24/06/76
		AU-A- 8701175	23/06/77
		GB-A- 1498119	18/01/78
		CH-A- 604551	15/09/78
		CA-A- 1025273	31/01/78
		AT-B- 347765	10/01/79
		US-A- 4154864	15/05/79
		JP-A- 51086169	28/07/76
		AU-B- 500433	24/05/79
		OA-A- 5174	31/01/81
FR-A- 2387681	17/11/78	DE-A- 2817086	02/11/78
		JP-A- 53130499	14/11/78
		GB-A- 1579992	26/11/80
		CA-A- 1087912	21/10/80
		CH-A- 641327	29/02/84

For more details about this annex :
see Official Journal of the European Patent Office, No. 12/82

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen PCT/EP 86/00227

I. KLASSEFIZKATION DES ANMELDUNGSGEGENSTANDS (bei mehreren Klassifikationssymbolen sind alle anzugeben) ⁶		
Nach der Internationalen Patentklassifikation (IPC) oder nach der nationalen Klassifikation und der IPC		
Int. Cl. 4. A 23 P 1/14		
II. RECHERCHIERTE SACHGEBIETE		
Recherchierter Mindestprüfstoff ⁷		
Klassifikationssystem	Klassifikationssymbole	
Int. Cl. 4.	A 23 P; A 23 L	
Recherchierte nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Sachgebiete fallen ⁸		
III. EINSCHLÄGIGE VERÖFFENTLICHUNGEN⁹		
Art*	Kennzeichnung der Veröffentlichung ¹¹ , soweit erforderlich unter Angabe der maßgeblichen Teile ¹²	Betr. Anspruch Nr. ¹³
X	US, A, 3480442 (W. ATKINSON) 25. November 1969, siehe Anspruch 1; Spalte 2, Zeilen 46-69; Spalte 3, Zeilen 26-28 --	1,2
X	US, A, 3684521 (M. GLICKSMAN) 15. August 1972, siehe Anspruch 1; Spalte 3, Zeilen 55-58 --	1,2
X	FR, A, 2294652 (SOC. DES PRODUITS NESTLE) 16. Juli 1976, siehe Ansprüche 1,11,18-21; Seite 7, Zeilen 4-7; Seite 5, Zeilen 4-35 --	1,2,4,5
A	FR, A, 2387681 (KANESA MISO K.K.) 17. November 1978 -----	
* Besondere Kategorien von angegebenen Veröffentlichungen¹⁰: "A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist "E" älteres Dokument, das jedoch erst am oder nach dem internationalen Anmeldedatum veröffentlicht worden ist "L" Veröffentlichung, die geeignet ist, einen Prioritätsanspruch zweifelhaft erscheinen zu lassen, oder durch die das Veröffentlichungsdatum einer anderen im Recherchenbericht genannten Veröffentlichung belegt werden soll oder die aus einem anderen besonderen Grund angegeben ist (wie ausgeführt) "O" Veröffentlichung, die sich auf eine mündliche Offenbarung, eine Benutzung, eine Ausstellung oder andere Maßnahmen bezieht "P" Veröffentlichung, die vor dem internationalen Anmeldedatum, aber nach dem beanspruchten Prioritätsdatum veröffentlicht worden ist "T" Spätere Veröffentlichung, die nach dem internationalen Anmeldedatum oder dem Prioritätsdatum veröffentlicht worden ist und mit der Anmeldung nicht kollidiert, sondern nur zum Verständnis des der Erfindung zugrundeliegenden Prinzips oder der ihr zugrundeliegenden Theorie angegeben ist "X" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als neu oder auf erfinderischer Tätigkeit beruhend betrachtet werden "Y" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als auf erfinderischer Tätigkeit beruhend betrachtet werden, wenn die Veröffentlichung mit einer oder mehreren anderen Veröffentlichungen dieser Kategorie in Verbindung gebracht wird und diese Verbindung für einen Fachmann naheliegend ist "&" Veröffentlichung, die Mitglied derselben Parentfamilie ist		
IV. BESCHEINIGUNG		
Datum des Abschlusses der internationalen Recherche	Absendedatum des internationalen Recherchenberichts	
6. August 1986	09 SEP 1986	
Internationale Recherchenbehörde	Unterschrift des bevollmächtigten Gadiensteten	
Europäisches Patentamt	 L. ROSSI	

ANHANG ZUM INTERNATIONALEN RECHERCHENBERICHT ÜBER DIE

INTERNATIONALE PATENTANMELDUNG NR. PCT/EP 86/00227 (SA 13113)

In diesem Anhang sind die Mitglieder der Patentfamilien der im obengenannten internationalen Recherchenbericht angeführten Patentdokumente angegeben. Die Angaben über die Familienmitglieder entsprechen dem Stand der Datei des Europäischen Patentamts am 25/08/86

Diese Angaben dienen nur zur Unterrichtung und erfolgen ohne Gewähr.

Im Recherchenbericht angeführtes Patentdokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie	Datum der Veröffentlichung
US-A- 3480442	25/11/69	Keine	
US-A- 3684521	15/08/72	Keine	
FR-A- 2294652	16/07/76	BE-A- 835557	13/05/76
		NL-A- 7514088	21/06/76
		DE-A, B, C 2549440	24/06/76
		AU-A- 8701175	23/06/77
		GB-A- 1498119	18/01/78
		CH-A- 604551	15/09/78
		CA-A- 1025273	31/01/78
		AT-B- 347765	10/01/79
		US-A- 4154864	15/05/79
		JP-A- 51086169	28/07/76
		AU-B- 500433	24/05/79
		OA-A- 5174	31/01/81
FR-A- 2387681	17/11/78	DE-A- 2817086	02/11/78
		JP-A- 53130499	14/11/78
		GB-A- 1579992	26/11/80
		CA-A- 1087912	21/10/80
		CH-A- 641327	29/02/84

Für nähere Einzelheiten zu diesem Anhang :
siehe Amtsblatt des Europäischen Patentamts, Nr. 12/82