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SPOUT ASSEMBLY AND SEALING CAP WITH SPRING-LOADED HINGE

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(56) Prior Art Documents
AU 573304 38157/85 B65D 47/08
AU 561959 34579/84 B65D 47/08
AU 568856 29204/84 B65D 47/08

(57) Claim

1. A spout and sealing cap assembly comprising a spout part (1,31,51) adapted to be fixed to a container (6,58), and a sealing cap (2,33,52) adapted to close off the spout part and connected to the spout part by a spring hinge (3,34,53), characterized in that the spout part (1,31,51), the sealing cap (2,33,52) and the spring hinge (3,34,53) are formed as one single part, the spout part being made from a flexible plastic material by moulding, and the cap with the hinge being made as one single part from a hard rigid plastic material by over-moulding the spout part.

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(54) Title: SPOUT ASSEMBLY AND SEALING CAP WITH SPRING-LOADED HINGE

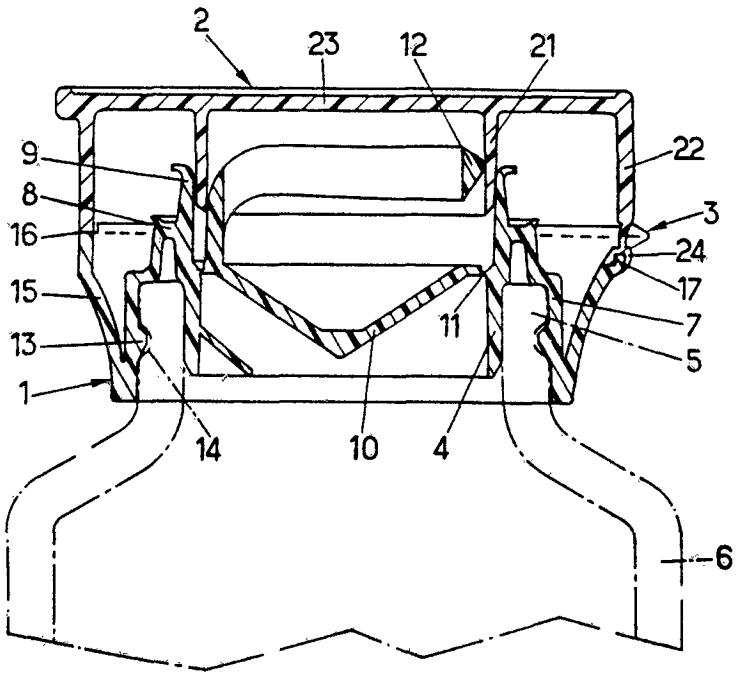
(54) Titre: ENSEMBLE VERSEUR ET CAPSULE DE BOUCHAGE AVEC CHARNIERE A RESSORT

(57) Abstract

A spout assembly and sealing cap consisting of a spout element for fixing to a receptacle and a sealing cap for obturating the spout element and linked to the spout element by a spring-loaded hinge, characterized in that the spout element (1) is made, by moulding, of flexible plastic material, and that the cap (2) is made of hard plastic material and as a single piece with the hinge (3) by moulding the spout element from a casting.

(57) Abrégé

Ensemble verseur et capsule de bouchage comprenant un corps verseur destiné à être fixé à un récipient et une capsule de bouchage destinée à obturer le corps verseur et reliée au corps verseur par une charnière à ressort, caractérisé par le fait que le corps verseur (1) est réalisé en matière plastique souple, par moulage, et que la capsule (2) est réalisée d'une seule pièce avec la charnière (3) par surmoulage du corps verseur, en matière plastique dure.



* Voir au verso

SPOUT ASSEMBLY AND SEALING CAP WITH SPRING-LOADED HINGE

The present invention relates to a dispenser and sealing cap assembly of a plastic material comprising a spout part adapted to be fixed to a container and a sealing cap adapted to close off the spout part and connected to the spout part by a spring hinge.

Until now such dispenser and sealing cap assemblies were made as one single part by moulding of a rigid plastic material such as polypropylene. In fact, the spring hinges provided on such assemblies between the spout part and the sealing cap only correctly fulfil their function, which is to ensure two stable positions of the cap in relation to the dispensing part, when they are made of a rigid plastic material.

Such spring hinges are known, for example, from the French patents n° 1 402 900 and 78 03 713.

On the known spout and sealing cap assemblies made as one single part with the spring hinge from a rigid plastic material, the tightness between the spout part and the neck of the container must be ensured by means moulded onto the dispensing part, in particular by lips and/or skirts co-operating with the neck of the container. Because of the rigidity of the material of which they are made, these sealing means are unable to compensate possible defects of the neck, which adversely affects the tightness. The use of separate flexible seals on the spout part which would permit a compensating of such defects is not always possible and would increase the cost price of the spout and cap assembly.

Another problem is experienced with the dispenser and sealing cap assemblies provided for flexible tubes containing pasty materials, e.g. toothpaste tubes.Nowadays, these tubes are made more and more from a flexible plastic material,in particular polyethylene or from a complex comprising an outside polyethylene film. Under these conditions, a spout and sealing cap assembly made as one single part from a rigid plastic material such as polypropylene so as to enable the spring hinge provided between the two parts to fulfil its function, cannot be welded directly onto the flexible tube, but must be screwed onto a threaded neck end of a flexible plastic material , in particular polyethylene, welded onto the actual body of the flexible tube. It would be desirable to be able

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to make spout and sealing cap assemblies with spring hinge which can be fixed directly by welding onto the body of flexible tubes.

The present invention seeks to provide a spout and sealing cap assembly with spring hinge which, while being easy to make, permitsa tight fixing onto a container neck even if the neck has manufacturing defects. A further object of the invention is a spout and sealing cap assembly with spring hinge which, while being easy to make, permits a fixing by welding it directly onto the body of a flexible tube.

The spout and sealing cap assembly according to the invention comprises a spout part adapted to be fixed to a container and a sealing cap adapted to seal off the spout part and connected to the spout part by a spring hinge.According to the invention the spout part is made from a flexible plastic material, by moulding, and the cap with the hinge is made as one single part from a rigid plastic material by over-moulding the dispensing part.

Making the spout part from a flexible plastic material permits either the forming onto the spout part of sealing means (lips, skirts, etc.) which are sufficiently flexible so that they can compensate possible manufacturing defects of the container neck when the spout part is screwed or clicked onto the neck, or a direct fixing by welding the spout part onto the body of a flexible tube.

The over-moulding of the spout part by the cap can be localized in the zone of the hinge, in which case the spout part has advantageously, in the zone of the hinge, an edge with a male or female undercut profile ensuring a perfect bonding with the material of the cap and the hinge during the over-moulding.

According to another embodiment the over-moulding of the spout part by the cap can take place all around the periphery by over-moulding the spout part with a circumferential band to which the actual cap is connected by the spring hinge.

Other features and advantages of the invention will become apparent when reading the following description of several exemplified and non-limitative embodiments of the invention illustrated on the attached drawings, wherein :

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Figure 1 is a side view of a spout and sealing cap assembly according to the invention, the cap being shown in the open position;

Figure 2 is a vertical cross-section on a larger scale of the assembly of Figure 1, the cap being closed;

Figure 3 is a side view similar to Figure 1 of another embodiment of an assembly according to the invention;

Figure 4 is a vertical cross-section on a larger scale of the assembly of Figure 3;

Figure 5 is a vertical cross-section of a spout and sealing cap assembly for direct fixing by welding onto the body of a flexible tube.

The plastic spout and sealing cap assembly according to Figures 1 and 2 comprises a spout part 1 and sealing cap 2 connected to the spout part 1 by a spring hinge 3.

As can be noted from Figure 2, the spout part 1 comprises essentially an inside skirt 4 adapted to co-operate in a tight manner with the inner surface of the neck 5 of a bottle 6, and an outside skirt 7 adapted to co-operate with the outer surface of the neck 5, both skirts 4 and 7 being connected to one another at the top by an annular connecting zone 8. The inside skirt 4 extends upwards from the connecting zone 8 in the form of a dispensing spout 9. A lid 10 connected by a thin skin 11 to the inside skirt 4 closes this skirt off. The cover 10 can be pulled out with the aid of a pulling ring 12 when using the container for the first time.

The outside skirt 7, which has an inside rib 13 for fixing the spout part 1 onto the container by clicking it onto the neck 5 provided with an outside groove 14, is connected at its bottom end to an outer flange 15 which extends upwards in the form of a diverging annular wall up to the contact plane 16 between the spout part 1 and the cap 2, except in the zone of the spring hinge 3.In this zone the flange 15 ends below the hinge 3 in an edge 17 shaped like an undercut, e.g. a dovetailed tenon.

The complete spout part as described above is made as one single part by injection moulding from a flexible plastic material, e.g. polyethylene.

The sealing cap 2 comprises an inside skirt 21 and an outside

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skirt 22 extending downwards from a cap top 23, the inside skirt 21 being adapted to fit into the dispensing spout 9 and the outside skirt 22 forming an extension of the flange 15 of the spout part 1. The cap 2 is injection moulded from a rigid plastic material such as polypropylene, as one part together with the spring hinge 3 and, between the latter and the edge 17 of the spout part 1, with a connecting part 24 which has a female profile in the shape of an undercut, e.g. dovetailed mortice. The cap 2 is made by over-moulding the spout part 1, i.e. first the spout part 1 is made by injection moulding in a first mould; it is then taken out of this first mould and placed as an insert in a second mould in which the cap 2, together with the hinge 3 and the connecting part 4, is made by over-moulding the spout part 1 with the cap 2 in the open position as shown in Figure 1. The over-moulding is localized in the zone of the hinge, i.e. limited to over-moulding the edge 17 of the spout part 1 by the connecting part 24 situated underneath the hinge 3.

According to Figures 3 and 4, a spout and sealing cap assembly comprises a spout part 31, an annular wall 32, a sealing cap 33 and a hinge spring 34.

The spout part 31 has an inside skirt 35 adapted to co-operate with the inner surface of a not illustrated bottle neck, an outside skirt 36 adapted to co-operate with the outer surface of the neck and provided with an inside rib 37 adapted to co-operate by clicking with an outside groove of the neck, a cover 38 with pulling ring 39, and a dispensing spout 40 extending upwards from the connecting part 41 of the two skirts 35 and 36. It must be noted that the connecting part 41 has an outer rim 42 which projects radially around the entire periphery.

The sealing cap 33 with a hemispherical shape, provided with an inside skirt 43 adapted to co-operate with the dispensing spout 40, is connected by the spring hinge 34 to annular wall 32 which ensures its connection to the spout part 31. The annular wall 32 comprises an outer part 44 in the form of a spherical crown, which extends the hemispherical cap 33 to below the contact plane 45 between the band 32 and the cap 33, and an inside truncated cone shaped part 46 extending from the inside end of the part 44 upwards and

inwards to end in an annular part 47 which encircles on the outside, over the entire periphery, the rim 42 of the spout part 31 and has a female profile complementary to the profile of the rim 4.

To make the assembly illustrated in Figures 3 and 4, first of all the spout part 31 is injection moulded in a first mould from a flexible plastic material such as polyethylene. Then the spout part 31 is placed in a second mould in which the spout part 31 is over-moulded with the aid of the annular wall 32 and the cap 33, the latter is in the open position as shown in Figure 3, by injecting a rigid plastic material such as polypropylene.

In the embodiment illustrated in Figure 5, a spout and sealing cap assembly comprises a spout part 51, a sealing cap 52 and a spring hinge 53.

The spout part 51 is formed by a collar 54 which extends upwards into a dispensing spout 55 and downwards into a diverging collar 56 which ends in a rim 57 for connecting the spout part 51 to a flexible tube 58.

The cap 52 which has a shape similar to that of the cap of Figures 1 and 2 has an inside skirt 59 co-operating with the dispensing spout 55 and an outside skirt 60. Below the hinge 53 the outside skirt 60 of the cap 52 is extended downwards by a connecting part 61 which has a male undercut profile, e.g. in the form of a dovetailed tenon, and the spout part 51 has an edge 62 with a complementary profile, e.g. in the form of an undercut dovetail shaped mortice.

Also in this embodiment the spout part 51 as a whole is first made by injection moulding from a flexible plastic material in a first mould, and then is transferred to a second injection moulding mould in which the spout part 51 is over-moulded by the cap by injecting a rigid plastic material.

The spout and sealing cap assembly made in this manner can then be welded directly by way of the rim 57 onto a flexible tube 58 of a flexible plastic material because of the compatibility of the materials of the spout part 51 and the tube 58.

It must be noted that the embodiments described above and illustrated in the attached drawings have been given only by way of non-limitative examples and that numerous modifications and variations are possible with the scope of the invention.

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Thus, the spring hinge between the cap and the spout part may be made according to all the known embodiments of such spring hinges.

Inviolability means other than lid (10,38) may be provided, e.g. tear away means covering the provided hollow opposite the spring hinge in the outside skirt of the cap to facilitate the opening of the cap. These are known means which have not been illustrated so as not to complicate the drawings.

Instead of fixing the spout part onto the neck of the bottle by clicking it on as shown in Figures 1 to 4, it would be also possible to provide a screw type fixing.

Furthermore, sealing means between the spout part and the bottle neck may be formed by one of several lips or other known means which form an integral part of the spout part, in addition to or in place of the inside skirt (4,35) co-operating with the inner surface of the neck.

Another point of interest of the construction according to the invention of a spout and sealing cap assembly consists in the possibility of making a two-colour assembly, as the different materials used in the manufacture of the assembly according to the invention may have different colours.

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CLAIMS

1. A spout and sealing cap assembly comprising a spout part (1,31,51) adapted to be fixed to a container (6,58), and a sealing cap (2,33,52) adapted to close off the spout part and connected to the spout part by a spring hinge (3,34,53), characterized in that the spout part (1,31,51), the sealing cap (2,33,52) and the spring hinge (3,34,53) are formed as one single part, the spout part being made from a flexible plastic material by moulding, and the cap with the hinge being made as one single part from a hard rigid plastic material by over-moulding the spout part.

2. An assembly according to Claim 1, charactarized in that the over-moulding is localized in the zone of the hinge.

3. An assembly according to Claim 2, characterized in that the spout part (1,51) and the cap (2,52) have, in the over-moulding zone, complementary undercut profile parts (17,24; 61,62).

4. An assembly according to Claim 1, characterized in that the spout part is over-moulded over the entire periphery.

5. An assembly according to Claim 4, characterized in that the spout part is over-moulded by an annular wall (32) moulded as one single part with the cap (33) and the hinge (34) arranged between the annular wall and the cap.

6. An assembly according to any one of Claim 1 to 5, characterized in that the spout part is made as one single part with a rim (56,57) which enables it to be fixed directly by welding to a flexible tube (58).

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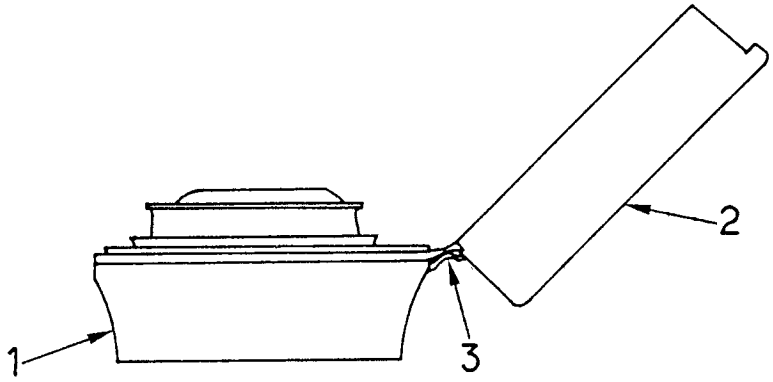


FIG. 1

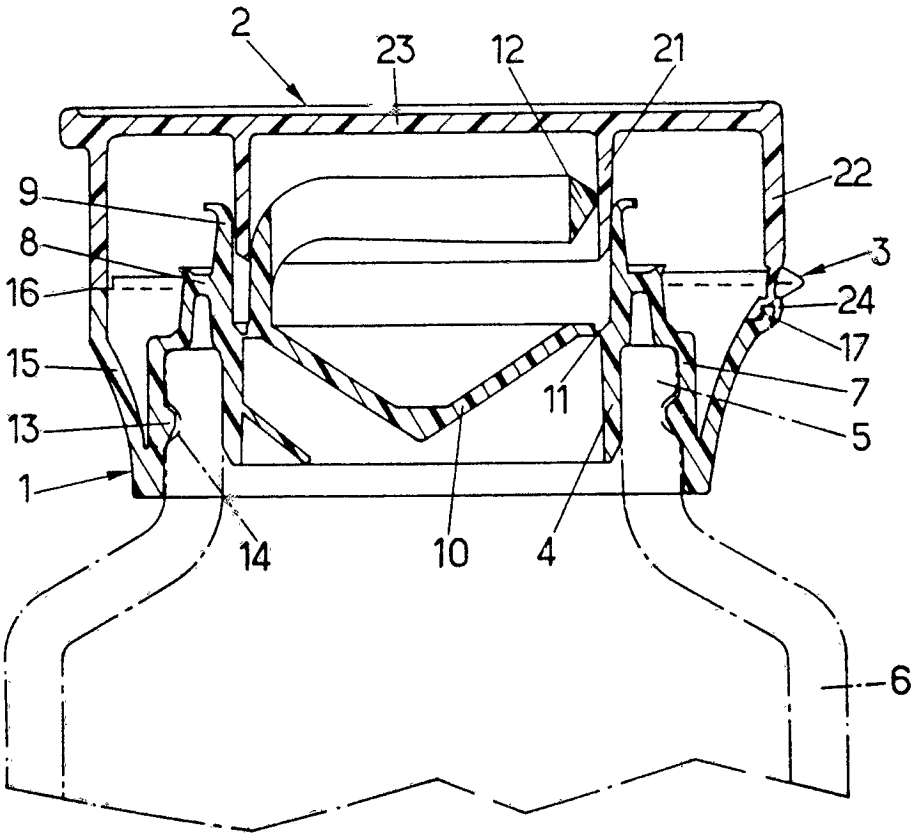


FIG. 2

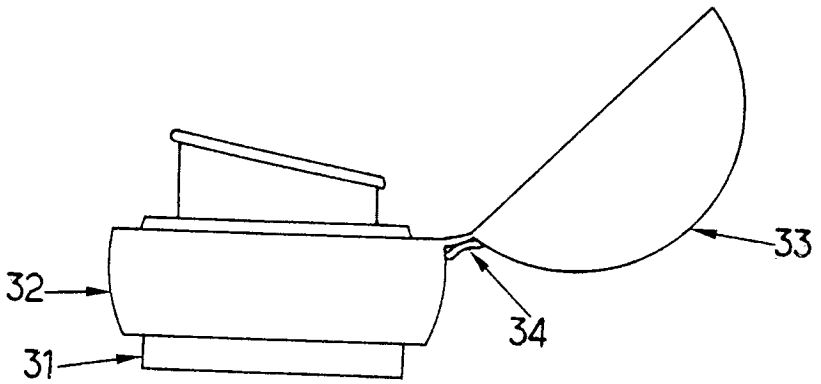


FIG. 3

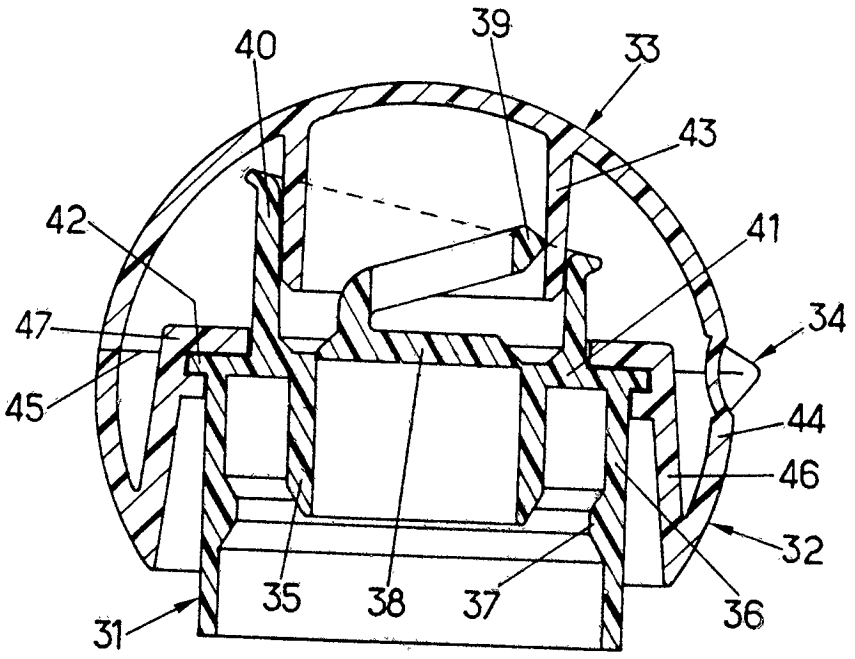


FIG. 4

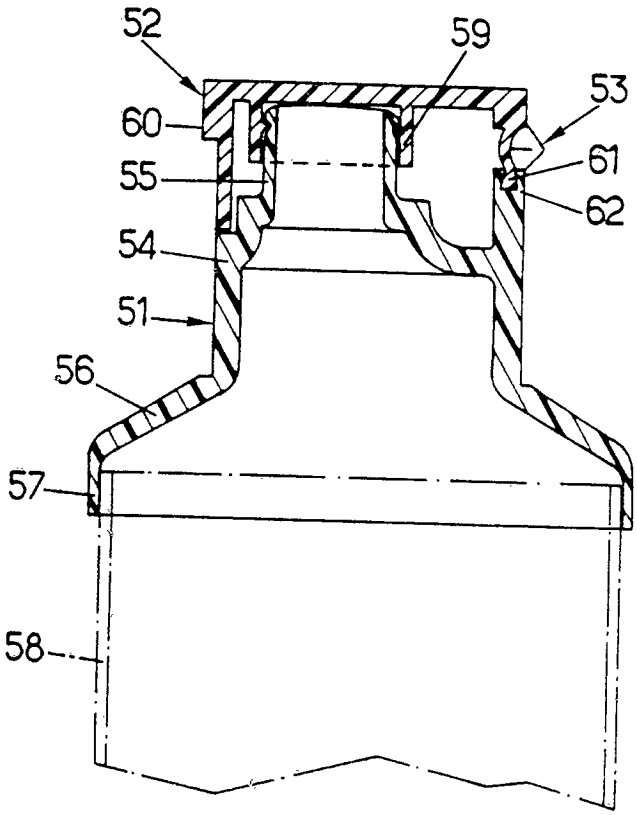


FIG. 5

INTERNATIONAL SEARCH REPORT

International Application No PCT/FR90/00346

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC[5]: B65D 47/08

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC[5]	B65D, B29C, E05D

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
Y	GB, A, 2193193 (GRAND IND.CO.) 3 February 1988 see page 1, lines 36-80; figure 2	1-6
Y	EP, A, 0306381 (GENUS INTERNATIONAL) 8 March 1989 see column 5, lines 21-33, 53-62; figures 1-3	1-6
Y	GB, A, 1074073 (GENERAL FOODS) 28 June 1967 see page 2, lines 58-84; figures 2,3	2,3
Y	EP, A, 0172711 (THE BOOTS CO.) 26 February 1986 see page 7, lines 16-22; page 9, lines 11-15; page 10, lines 9-16; figures 1-9	6
A		1

* 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

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"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.

"&" 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
21 August 1990 (21.08.90)	21 Septembre 1990 (21.09.90)
International Searching Authority	**Signature of Authorized Officer**
European Patent Office	

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. FR 9000346 SA 37602

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 10/09/90
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A- 2193193	03-02-88	None	
EP-A- 0306381	08-03-89	FR-A,B 2619361	17-02-89
		FR-A- 2623167	19-05-89
		JP-A- 1288609	20-11-89
		US-A- 4896787	30-01-90
GB-A- 1074073		None	
EP-A- 0172722	26-02-86	US-A- 4635107	06-01-87
		JP-A- 61054784	19-03-86

RAPPORT DE RECHERCHE INTERNATIONALE

Demande internationale N° PCT/FR 90/00346

I. CLASSEMENT DE L'INVENTION (si plusieurs symboles de classification sont applicables, les indiquer tous) [7]

Selon la classification internationale des brevets (CIB) ou à la fois selon la classification nationale et la CIB

CIB[5]: B 65 D 47/08

II. DOMAINES SUR LESQUELS LA RECHERCHE A PORTÉ

Documentation minimale consultée [8]

Système de classification	Symboles de classification
CIB[5]	B 65 D, B 29 C, E 05 D

Documentation consultée autre que la documentation minimale dans la mesure où de tels documents font partie des domaines sur lesquels la recherche a porté [9]

III. DOCUMENTS CONSIDÉRÉS COMME PERTINENTS [10]

Catégorie *	Identification des documents cités, [11] avec indication, si nécessaire, des passages pertinents [12]	N° des revendications visées [13]
Y	GB, A, 2193193 (GRAND IND. CO.) 3 février 1988 voir page 1, lignes 36-80; figure 2 --	1-6
Y	EP, A, 0306381 (GENUS INTERNATIONAL) 8 mars 1989 voir colonne 5, lignes 21-33,53-62; figures 1-3 --	1-6
Y	GB, A, 1074073 (GENERAL FOODS) 28 juin 1967 voir page 2, lignes 58-84; figures 2,3 --	2,3
Y	EP, A, 0172711 (THE BOOTS CO.) 26 février 1986 voir page 7, lignes 16-22; page 9, lignes 11-15; page 10, lignes 9-16; figures 1-9	6
A	----------	1

* Catégories spéciales de documents cités: [11]

« A » document définissant l'état général de la technique, non considéré comme particulièrement pertinent

« E » document antérieur, mais publié à la date de dépôt international ou après cette date

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« T » document ultérieur publié postérieurement à la date de dépôt international ou à la date de priorité et n'appartenant pas à l'état de la technique pertinent, mais cité pour comprendre le principe ou la théorie constituant la base de l'invention

« X » document particulièrement pertinent: l'invention revendiquée ne peut être considérée comme nouvelle ou comme impliquant une activité inventive

« Y » document particulièrement pertinent: l'invention revendiquée ne peut être considérée comme impliquant une activité inventive lorsque le document est associé à un ou plusieurs autres documents de même nature, cette combinaison étant évidente pour une personne du métier.

« & » document qui fait partie de la même famille de brevets

IV. CERTIFICATION

Date à laquelle la recherche internationale a été effectivement achevée	Date d'expédition du présent rapport de recherche internationale
21 août 1990	21 SEP 1990
Administration chargée de la recherche internationale	**Signature du fonctionnaire autorisé**
OFFICE EUROPEEN DES BREVETS	Mme N. KUIPER

ANNEXE AU RAPPORT DE RECHERCHE INTERNATIONALE RELATIF A LA DEMANDE INTERNATIONALE NO.

FR 9000346
SA 37602

La présente annexe indique les membres de la famille de brevets relatifs aux documents brevets cités dans le rapport de recherche internationale visé ci-dessus.
Lesdits membres sont contenus au fichier informatique de l'Office européen des brevets à la date du 10/09/90
Les renseignements fournis sont donnés à titre indicatif et n'engagent pas la responsabilité de l'Office européen des brevets.

Document brevet cité au rapport de recherche	Date de publication	Membre(s) de la famille de brevet(s)		Date de publication
GB-A- 2193193	03-02-88	Aucun		
EP-A- 0306381	08-03-89	FR-A,B	2619361	17-02-89
		FR-A-	2623167	19-05-89
		JP-A-	1288609	20-11-89
		US-A-	4896787	30-01-90
GB-A- 1074073		Aucun		
EP-A- 0172722	26-02-86	US-A-	4635107	06-01-87
		JP-A-	61054784	19-03-86

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