



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.06.2010 Bulletin 2010/22

(51) Int Cl.:
B65D 41/34 (2006.01)

(21) Application number: **09177461.2**

(22) Date of filing: **30.11.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

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(30) Priority: **01.12.2008 IT PD20080354**

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(54) **Bottle with tamper-evident closure**

(57) A bottle (1) comprises a containing body (2) provided with an aperture (3) through which its contents can be poured, a stopper (8) engaged removably with the containing body at the position of the aperture for opening and, alternatively, closing the latter, a protective element

(10) for the stopper which is fixed to said stopper and is directly joined to the containing body by means of a connecting portion (15) of this element, having a reduced cross section, in such a way that the connecting portion is broken by the action of the first removal of the stopper from the aperture.

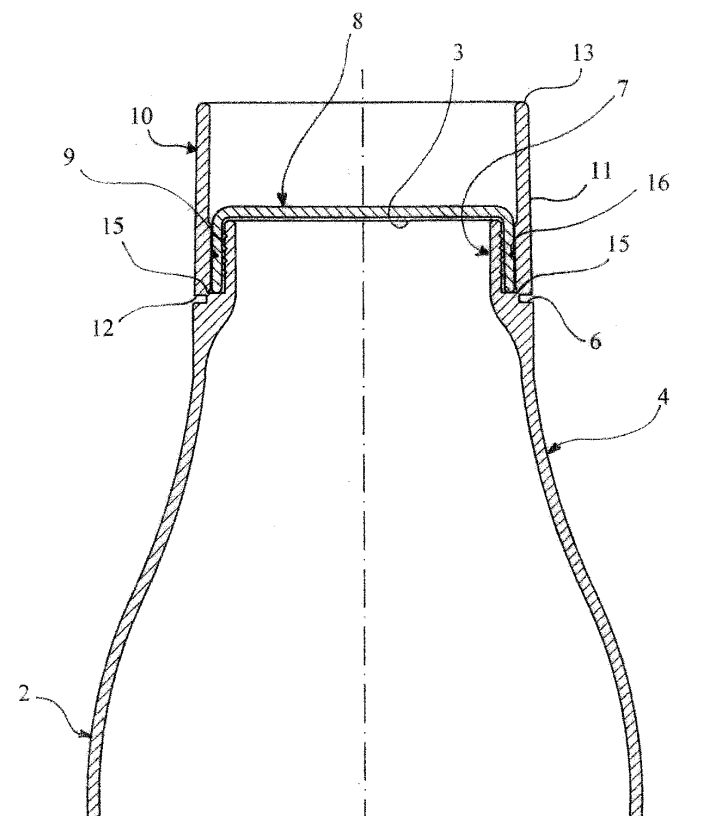


Fig. 5

Description

Technical field

[0001] The present invention relates to a beverage bottle with an improved closure, having the characteristics disclosed in the preamble of the main claim.

Prior art

[0002] In the technical field of beverage bottles, it is known to use a closing stopper which is engaged by screwing on to a neck portion of the bottle.

[0003] To ensure the integrity of the beverage contained in the bottle, the bottle is generally provided with tamper-proofing means which detect whether the stopper has been opened before the product is put on sale. In a common type of tamper-proofing means, the stopper, when closed by screwing on to the bottle neck, is joined by a plurality of links to a collar retained between a pair of flanges extending radially from the bottle neck.

[0004] Thus, the initial opening of the stopper irreversibly breaks the links connecting it to the collar, because of the restraint provided by the pair of flanges, so that the fact that the bottle has been opened is indicated in an unmistakable way.

[0005] This technical solution has a number of drawbacks, including the fact that the need to provide both the pair of flanges and the collar compromises the overall appearance of the bottle, to some extent at least, and forms an intrinsic constraint on the possibility of modifying the neck area of the bottle.

[0006] Furthermore, a closure of this type does not guarantee a high level of safety in terms of health and hygiene.

[0007] In the specific field of medicine bottles, therefore, it is known to use a protective element as a covering of the actual stopper, in order to isolate the stopper and the area in which it is screwed on to the bottle neck from the external environment, with the aim of preventing the accumulation of dirt in the screwing area between the stopper and the bottle neck, or, even worse, the entry of microorganisms and/or dangerous substances through this area.

[0008] An example of a closure of this type is known from US Patent 4 111 324 in the name of Winchell, which discloses a stopper which is screwed on to the neck of a container for pharmaceutical solutions and which is covered by a protective element whose edges are joined directly to the bottle neck by means of a connecting portion of reduced cross section. In the solution described in the Winchell patent, the protective element is separated from the container by a lateral push which causes the rupture of the connecting portion.

[0009] However, this system also has a number of drawbacks, including the fact that, in order to open the bottle, the protective element has to be removed first, and then the stopper has to be removed. Furthermore,

in order to allow an efficient and simple operation for moving the protective element laterally, this element must be suitably spaced apart from the stopper and sufficiently high, thus leading to an increase in overall dimensions.

[0010] In this case also, a flange extending radially from the neck of the container is present, with the same negative effects on the appearance of the container as those mentioned above.

10 Description of the invention

[0011] The problem to which the present invention is directed is that of providing a beverage bottle with an improved closure, which is structurally and functionally designed to overcome the limitations described above with reference to the cited prior art.

[0012] In the context of this problem, one object of the invention is to provide a bottle which also has a pleasing appearance, is easily opened, and has a high degree of safety in hygienic terms.

[0013] This problem is resolved and this object is achieved by the present invention by means of a beverage bottle made in accordance with the following claims.

25 Brief description of the drawings

[0014] The characteristics and advantages of the invention will be made clearer by the following detailed description of a preferred example of embodiment thereof, illustrated, for the purposes of guidance and without restrictive intent, with reference to the attached drawings, in which:

- Figure 1 is a view in perspective from above of a beverage bottle made according to the present invention;
- Figure 2 is a view in front elevation of the bottle of Figure 1;
- Figure 3 is a plan view from above of the bottle of Figure 1;
- Figure 4 is a view in longitudinal section of the bottle of Figure 1;
- Figure 5 is a view on an enlarged scale of a detail of Figure 4;
- Figure 6 is a view in longitudinal section of the bottle of Figure 1 with the stopper open.

Preferred embodiment of the invention

[0015] In the drawings, the number 1 indicates the whole of a beverage bottle made according to the present invention.

[0016] The bottle 1 comprises a containing body 2 intended to contain a beverage and provided with an aperture 3 made at the top of a neck portion 4 formed on the containing body 2.

[0017] The containing body 2 extends around a longitudinal axis X, having for example a generally cylindrical

shape, of which one end, opposite a closed base 5, is tapered symmetrically about the axis X until it reaches the neck portion 4.

[0018] The neck portion 4 comprises a shoulder 6 from which a cylindrical mouth 7 extends, the aperture 3 being provided at the top of this mouth.

[0019] The bottle 1 also comprises a stopper 8, engaged removably with the neck portion 4 at the position of the aperture 3 for the purpose of opening or closing the aperture, thus allowing or preventing the pouring of the beverage contained in the bottle 1.

[0020] Preferably, the stopper 8 and the mouth 7 have corresponding threads formed on them to enable the stopper 8 to be engaged by screwing on to the neck portion 4.

[0021] According to a first aspect of the present invention, the bottle 1 comprises a protective element 10 which laterally surrounds the stopper 8 and is fixed thereto.

[0022] The protective element 10 is shaped in the form of a cylinder, also extending around the axis X, and has an outer surface 11 which substantially forms an extension of an outer surface of the neck portion 4 adjacent to the shoulder 6.

[0023] The protective element 10 preferably surrounds only the sides of the stopper 8, while it is open at its two opposing longitudinal ends. In particular, the lower edge 12 of the protective element 10, which directly faces the neck portion 4, is substantially coplanar with the corresponding lower edge of the stopper 8, while the upper edge 13 is raised above the stopper 8.

[0024] Preferably, the lower edge 12 of the protective element 10 faces the shoulder 6 and is spaced slightly apart from it so as to form a channel 14, extending circumferentially around the bottle 1, between the protective element 10 and the neck portion 4.

[0025] Preferably, the protective element 10 is made of semi-transparent material such that the stopper 8 is partially visible through it. Thus, in addition to an attractive appearance, the correct positioning of the stopper in the protective element 10 can be verified.

[0026] The stopper 8 and the protective element 10 can be fastened together in any suitable way, but is preferable to provide snap connecting means 16, shown only schematically in the drawings, on the stopper 8 and on the protective element 10 respectively.

[0027] When the bottle 1 is intact, that is to say before it has been opened for the first time, the protective element 10 comprises a connecting portion 15 extending from the lower edge 12 and directly joined to the neck portion 4 at the position of the shoulder 6.

[0028] In particular, the connecting portion 15 is joined to the neck portion 4 at the base of the channel 14, as shown more clearly in Figure 5. Thus the connecting portion 15 is kept substantially concealed from view.

[0029] The connecting portion 15 extends circumferentially and continuously between the protective element 10 and the neck portion 4 and has a reduced thickness, such that it can be broken by the first removal of the

stopper 8 from the aperture 3.

[0030] Alternatively, the connecting portion 15 can be joined discontinuously to the neck portion 4.

[0031] Both the containing body 2 and the protective element 10 are preferably made from polymer material, for example a material based on polyolefins, polyvinyl chloride, polyethylene terephthalate or other polymers used in this field.

[0032] Preferably, the protective element 10 is made of optically semi-transparent material such that the stopper 8 is visible through it. This feature not only has a significant effect on the appearance, but also advantageously makes it possible to check that the stopper 8 is correctly positioned inside the protective element 10.

[0033] Additionally, according to a further aspect of the invention, the containing body 2 and the protective element 10 are made from the same polymer material.

[0034] In particular, it is preferable for the containing body 2 and the protective element 10 to be made in one piece, by blow moulding for example.

[0035] When the containing body 2 has been filled with the beverage through the protective element 10, which is advantageously open at its two longitudinally opposed ends, the stopper 8, produced separately, is connected to the semi-finished product obtained in this way, being engaged by screwing on to the mouth 7 of the neck portion 4.

[0036] The screwing operation continues until the corresponding snap connecting means 16 provided on the stopper 8 and on the protective element 10 engage with each other so as to fix the stopper 8 to the protective element 10.

[0037] Because these two components are fixed together, the stopper 8 can subsequently be unscrewed or screwed on by acting directly on the protective element 10, without touching the stopper 8.

[0038] When the bottle is first opened, the action of unscrewing the protective element 10 and consequently the stopper 8 causes the connecting portion 15 to break because of its reduced cross section.

[0039] Owing to the concealed position of the connecting portion 15, it will be noted that, when the protective element 10 is subsequently closed, the outer configuration of the bottle 1 is not noticeably different from the configuration before the initial opening of the bottle 1.

[0040] Thus the present invention resolves the problem stated above with reference to the cited prior art, while also offering numerous other advantages, including the fact that the stopper is opened and reclosed by a single action, even on the first occasion.

Claims

1. A bottle comprising:

- a containing body having an aperture through which the contents of said body can be poured,

- a stopper engaged removably with said containing body at the position of said aperture for the purpose of opening and, alternatively, closing it,
- a protective element for said stopper, this element being directly joined to said containing body by means of a connecting portion of reduced thickness, and

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characterized in that said protective element is fixed to said stopper in such a way that said connecting portion is broken when said stopper is first removed from said aperture.

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2. A bottle according to Claim 1, in which said protective element is shaped in such a way that its outer surface is substantially an extension of a corresponding outer surface of said containing body adjacent to said protective element.
3. A bottle according to Claim 1 or 2, in which a channel is formed between the outer surfaces of said containing body and said protective element, said connecting portion being formed in the base of this channel.
4. A bottle according to any one of the preceding claims, in which said connecting portion extends continuously along the whole perimetric edge of said protective element facing towards said containing body.
5. A bottle according to any one of the preceding claims, in which said protective element is optically semi-transparent, to enable said stopper to be viewed.
6. A bottle according to any one of the preceding claims, in which said stopper is engaged with said containing body by screw means.
7. A bottle according to any one of the preceding claims, in which said protective element is open at the end opposite said containing body, to allow access to said stopper.
8. A bottle according to any one of the preceding claims, in which said containing body and said protective element are made from the same material.
9. A bottle according to Claim 8, in which said containing body and said protective element are made in one piece.

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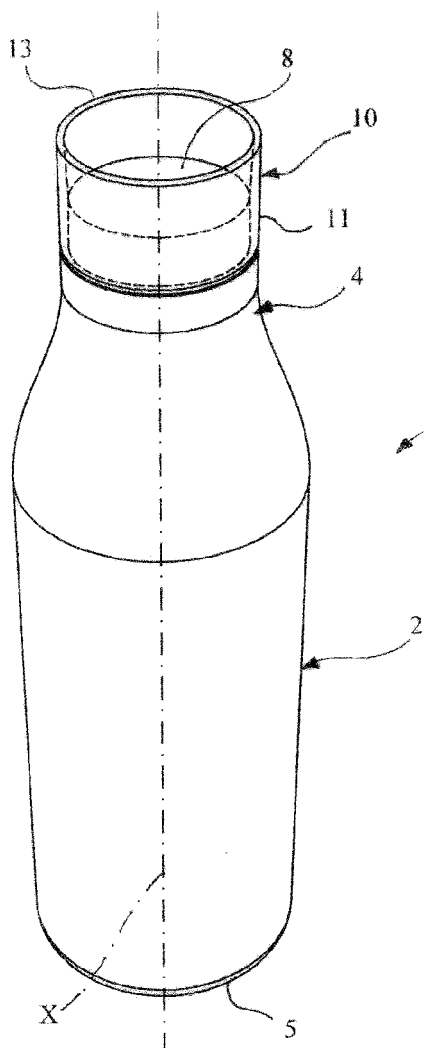


Fig. 1

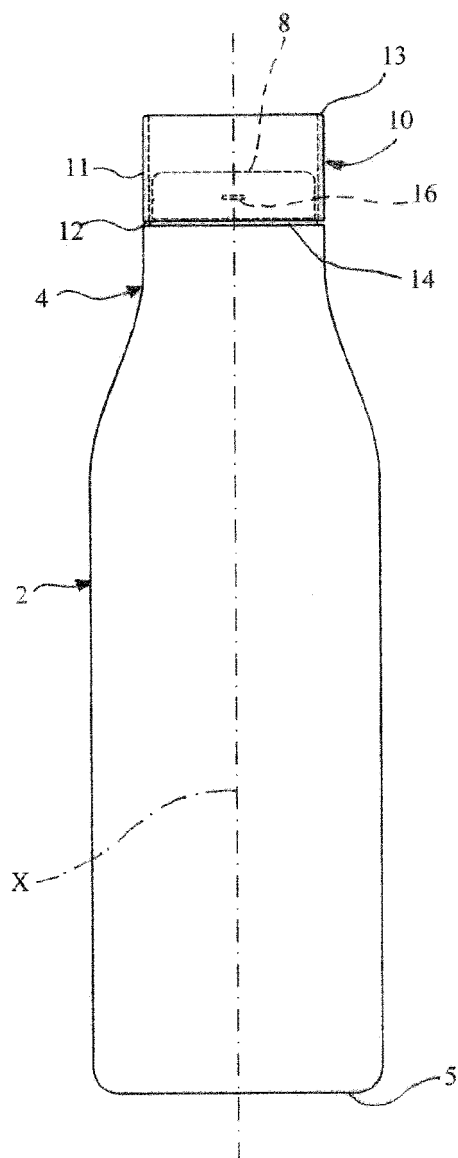


Fig. 2

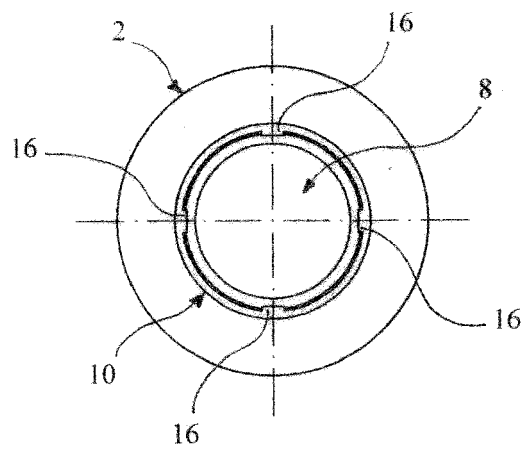


Fig. 3

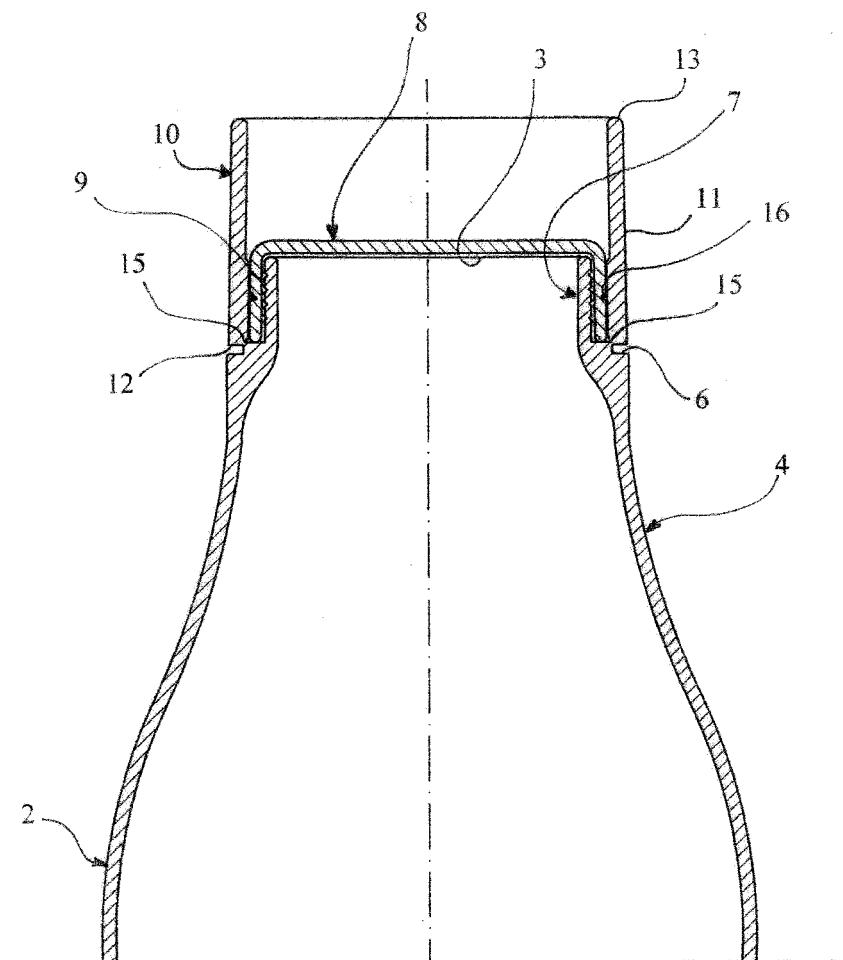


Fig. 5

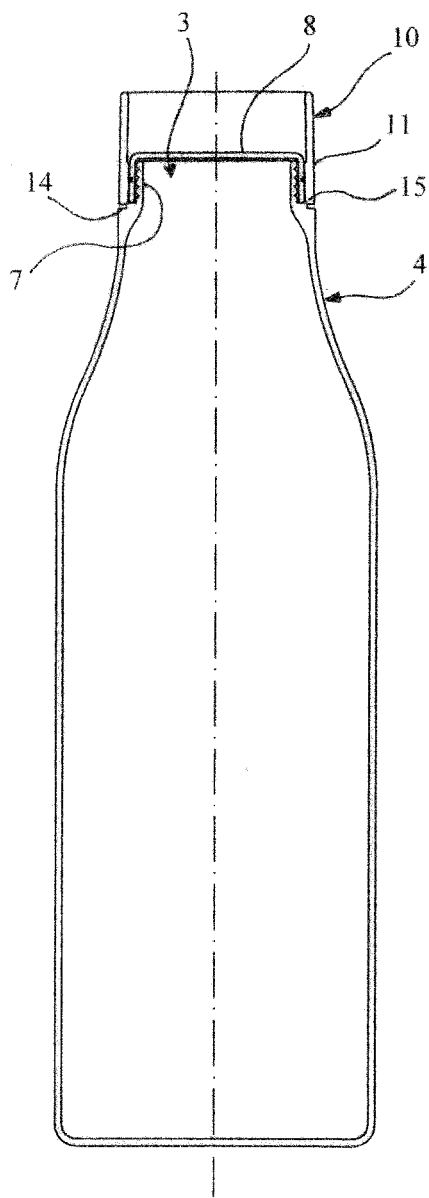


Fig. 4

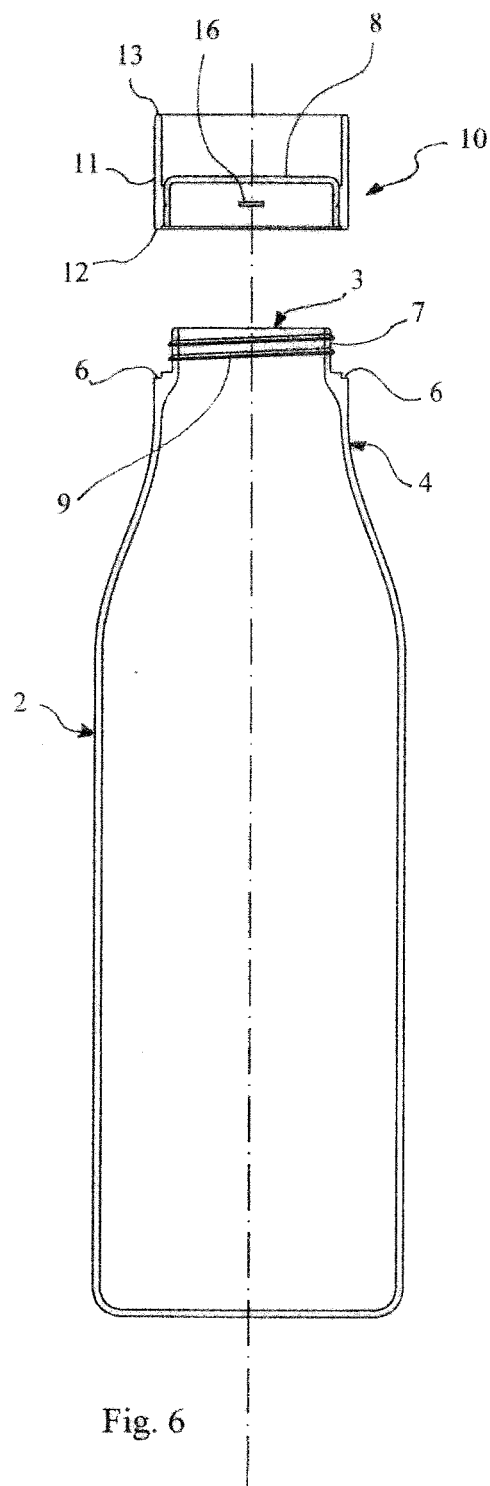


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 09 17 7461

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2000 128220 A (TOPPAN PRINTING) 9 May 2000 (2000-05-09) * abstract; figures *	1-4,6-9	INV. B65D41/34
X	US 4 494 663 A (BERTAUD) 22 January 1985 (1985-01-22) * column 2, line 42 - column 3, line 65; figures *	1,5	
X	DE 19 43 349 A (STELLA KG WERNER DEUSSEN) 3 June 1971 (1971-06-03) * page 5, line 1 - page 6, line 9; figures *	1-4,6-8	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 January 2010	Examiner Newell, Philip
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 17 7461

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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14-01-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2000128220 A	09-05-2000	NONE	
US 4494663 A	22-01-1985	AU 3725285 A CA 1249243 A1	18-07-1985 24-01-1989
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REFERENCES CITED IN THE DESCRIPTION

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- US 4111324 A [0008]