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(54) Closing element to be coupled, with a snap action, with bottles having a standard threaded bottle-neck

(57) A particularly shaped bottle cap 1 to be coupled with a snap action is proposed to cover bottles showing a standard threaded bottle-neck. Usually, said bottles are covered with threaded caps which are screwed on the bottle-necks.

The present bottle cap has one or more protruding components 3 which position under the convexity of bottle-necks of a particular type in which the convexity is usually utilized to apply the seal of inviolability.

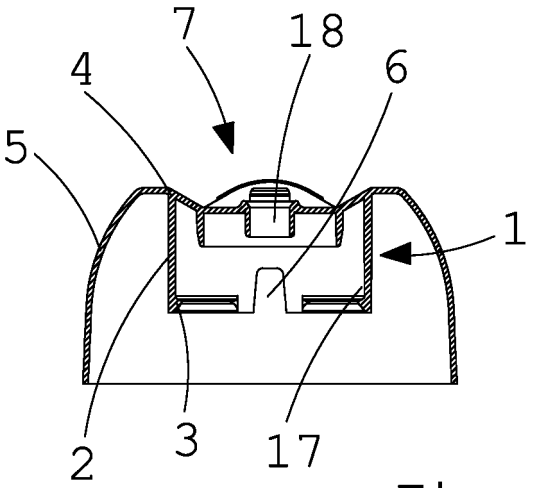

Fig. 6

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Description

[0001] The present invention refers to a particularly shaped bottle cap with trip gear to cover a bottle showing a standard threaded bottle-neck. Usually, said bottles are covered with threaded caps which are screwed on the bottle-necks.

[0002] The present bottle cap has one or more protruding components which position under the convexity of bottle-necks of a particular type in which the convexity is usually utilized to apply a threaded cap.

[0003] As is known, the market offers bottles showing standard necks such as the ones designed with the abbreviations 28 PCO, 28 BPF, 28 BPF Light, 28 ROPP, which are identified in Figures 1, 2, 3, 4, respectively.

[0004] Said bottle-necks have a shape which permits the closing cap to be screwed on. In particular, said bottle-necks have projections, which form the thread, as well as an annular element with which the lower sealing part or claw of the cap is coupled.

[0005] Said bottle-necks have a definite and internationally recognized shape and therefore, said standardization is very advantageous as regards production and commerce.

[0006] In particular, the production of bottles takes place in two subsequent phases.

[0007] In the first phase, rough-shapes are obtained as represented in Figures 1, 2 3, 4. These rough-shapes are produced in an injection moulding process and are particular elements which have an upper part which corresponds to the bottle-neck which is the final product, and a lower part which is shaped like a hollow cylinder. The end part of the hollow cylinder is closed with a hemispheric element.

[0008] In the second phase, the finished product is obtained in a blow moulding process. Moulds of a particular shape allow the production of bottles of the wished shape since it is sufficient to change the lower part of the rough-shapes.

[0009] The first phase is performed with rather expensive machines and usually, is performed by a producer different from the producer who performs the second phase because the utilization of rough-shapes permits to obtain simpler and less expensive blow moulds.

[0010] In this way, the producers of bottles who have to perform only the second phase are facilitated in the production and construction of the plants with consequent reduction of the cost of the finished product. In addition, the producers can modify the design of the product more frequently and with less cost in order to adapt the design to the requests of the market.

[0011] In addition, in case the production takes place in several countries, it is advantageous to utilize the rough-shapes with standard bottle-necks so that the rough-shapes are available on the local market thanks to the standardization of the product.

[0012] As described, in the rough-shapes of the above specified types and the bottles as obtained therewith the cap is applied on the bottle-neck by screwing the cap onto the bottle-neck.

[0013] Said screwing is accomplished with special bottling machines which screw the cap onto the bottle-neck on paying particular attention to the length of the thread as well as to the orientation of the cap if this is not symmetric to two orthogonal axes. As a consequence of this, said bottling machines have to satisfy said specific requirements and are, therefore, rather expensive because the resulting structure of these machines is complex and requires a frequent maintenance.

[0014] Besides, said machines tend to break.

[0015] Another problem in the utilization of bottles and caps to be screwed together refers to the production of caps that must have both a precise thread and a seal to be arranged on the annular rim under the bottle-neck.

[0016] Obviously, to meet said requirements involves an increase in the costs of production.

[0017] The aim and function of the present invention is to remove the above drawbacks through a cap that is easy to be produced and mounted on threaded bottle-necks.

[0018] The invention relates to a closing element for bottles having standard bottle-necks to be covered with caps through screwing, the bottle-neck being provided with an annular rim to seal the caps in the known conformation through screwing, the closing element being characterized in that it comprises a cylindrical body which has at least a protruding body on the lower part of the inner surface, the protruding body being fit to couple with said annular seat.

[0019] The so-described conformation allows the bottle cap of the present invention to be arranged on all the standard bottle-necks such as the bottle-necks designed with the following designations: 28 PCO, 28 BPF, 28 BPF Light, 28 ROPP, all of them being closed through screwing.

[0020] Besides, the protruding body inside the bottle cap is fixed with a click on the annular projection of the bottle neck, which permits to obtain a safe anchorage of the cap on the bottle neck and an easy positioning; in this way, the use of connections of threaded elements is avoided so that in the present invention, simpler machines are used to put the cap on the bottle neck.

[0021] In addition, the present invention does reduce the risk of errors and the quality of production and the tightness are increased.

[0022] In other terms, the caps to be coupled through screwing need complex machines which have to determine the orientation of the bottle cap while the caps to be coupled with a click need simple machines which act by pressing the cap itself on the bottle neck.

[0023] In this way, the time of production is reduced, the screwing operation is avoided and the machine is simplified and unified. Finally, the time for the preparation of the production line is reduced.

[0024] Further features and details of the present invention will be better understood from the following spec-

ification which is provided as a non-restriction embodiment on the hand of the accompanying drawings wherein:

Figures 1, 2, 3, 4 are lateral views of four types of pre-moulds, namely, 28 PCO, 28 BPF, 28 BPF Light, 28 ROPP, respectively, all of them being provided with a standardized bottle neck and arranged to be coupled through screwing with their respective bottle caps; said pre-moulds allows the coupling with a cap according to the present invention;

Figure 5 represents a cap according to the present invention which is provided with an outer cover showing a particular shape;

Figures 6, 7 are sectional views of the cap of Figure 5 according to two orthogonal axes, respectively;

Figure 8 is a sectional view of the inner structure of the cap of the present invention according to a first embodiment;

Figure 9 is a sectional view of the inner structure of the cap according to a second embodiment;

Figure 10 is a sectional view of the cap according to the present invention which is coupled with a bottle neck showing a stadardized shape;

Figure 11 is a bottom view of the cap of Figure 9.

[0025] With reference to the accompanying drawings, number 1 denotes a bottle cap according to the present invention on the whole.

[0026] Bottle cap 1 comprises a hollow cylindrical body 2.

[0027] A cover 5 forms the outer part of bottle cap 1 and is connected with the upper part 4 of the hollow cylindrical body 2.

[0028] A protruding body 3 is disposed on a lower part 17 of the inner surface of the cylindrical body 2. The protruding body 3 extends along the circumference of the lower part 17 of the inner surface of the cylindrical body 2.

[0029] Cover 5 of bottle cap 1 can have different shapes depending on the function of the bottle in question and requests from the market.

[0030] For instance, in Figures 5, 6, 7 cover 5 has an elliptic section and shows an upper part 7 which is positioned on the cylindrical body 2. On the upper part 4, the upper part 7 of cover 5 forms an only body with the cylindrical body 2. A movable part 8 is connected through flexible elements 9 with the upper part 7. The movable part 8 opens or closes a hole 18 which is provided on the upper part 7 and through which the liquid can pass or not. If the movable part 8 is open, the liquid can pass through the hole 18. If the movable part 18 is closed, the liquid can not pass through.

[0031] Besides, the protruding body 3 can be shaped in a continuous way on the lower part 17 of the inner surface of the cylindrical body 2 so that the protruding body 3 be shaped like an annular element.

[0032] Alternately, the protruding element 3 can be provided only in some sectors of the circumference in question.

[0033] According to another embodiment, a bottle cap 101 has a lower part 17 which is provided with openings 6 which give a better flexibility to the cylindrical body 2. Consequently, the coupling between bottle and cap is facilitated.

[0034] The coupling of cap 1 with the bottle neck 10, 20, 30, 40 is obtained by positioning the protruding body 3 under the annular component 11, 21, 31, 41 of standard bottles such as 28 PCO, 28 BPF, 28 BPF Light, 28 ROPP and other types of bottles to be coupled with their respective caps through screwing.

[0035] Said annular component 11, 21, 31, 41 is usually utilized to retain the jaw clutch which is disposed on the lower part of the caps that are utilized to close said bottles or to retain the seal of inviolability.

[0036] The cylindrical body 2 is positioned outside the thread 12, 22, 33, 42 of the bottle neck 10, 20, 30, 40 while the upper part 7 is arranged inside the opening 15, 25, 35, 45 of the bottle neck 10, 20, 30, 40.

[0037] The present invention takes advantage of the shape of the bottle necks of standardized type. These bottle necks are very diffused and easy to be found to couple bottle caps through hooking thanks to the particular presence of one or more protruding bodies 3 disposed inside the cap itself.

[0038] An immediate advantage is represented by the facility and speed of the coupling operation for the coupling of cap and bottle neck. It is thus possible to utilize a machine of simple structure and operation. It is sufficient to position a cap on its bottle neck and to press the upper surface of the cap so that the walls of the cylindrical body 2 bend slightly in order to permit the positioning of the protruding body 3 at first on the annular element 11, 21, 31, 41 and then, under the annular element.

[0039] In this way, a stable, safe coupling of cap 1 and bottle is obtained, no threading of cap 1 and no special machines being necessary for said type of coupling.

[0040] A skilled artisan of the sector can provide changes and versions which are to be considered as included in the scope of protection of the present invention.

Claims

1. Closing element (1) for bottles having standard bottle necks (10, 20, 30, 40) for the connection of caps through screwing, said type of neck (10, 20, 30, 40) being provided with an annular element (11, 21, 31, 41) for the sealing of bottle caps having a known conformation through screwing, said closing element (1) is **characterized in that** it comprises a hollow cylindrical body (2) which on the lower part (17) of the inner surface comprises at least a protruding body (3) which is coupled with said annular element (11, 21, 31, 41).

2. Closing element (1) as claimed in the foregoing

claim, **characterized in that** said hollow cylindrical body (2) comprises at least an opening (6) which is to make the cylindrical body (2) flexible in order to facilitate the coupling of the protruding body (3) with the annular element (11, 21, 31, 41).

3. Closing element (1) as claimed in the foregoing claims, **characterized in that** it comprises a cover (5) which forms an only body with the cylindrical body (2) through the end part (4) of said cylindrical body (2).

4. Closing element (1) as claimed in the foregoing claims, **characterized in that** said end part (4) of said cylindrical body (2) is coupled with an upper part (7) which has at least an opening (18).

5. Closing element (1) as claimed in the foregoing claims, **characterized in that** a movable part (8) is connected with said upper part (7) through at least a flexible element (9).

6. Closing element (1) as claimed in the foregoing claims, **characterized in that** the cylindrical body (2) is positioned on the upper part of the thread (12, 22, 32, 42) of the bottle neck with which said closing element (1) is coupled.

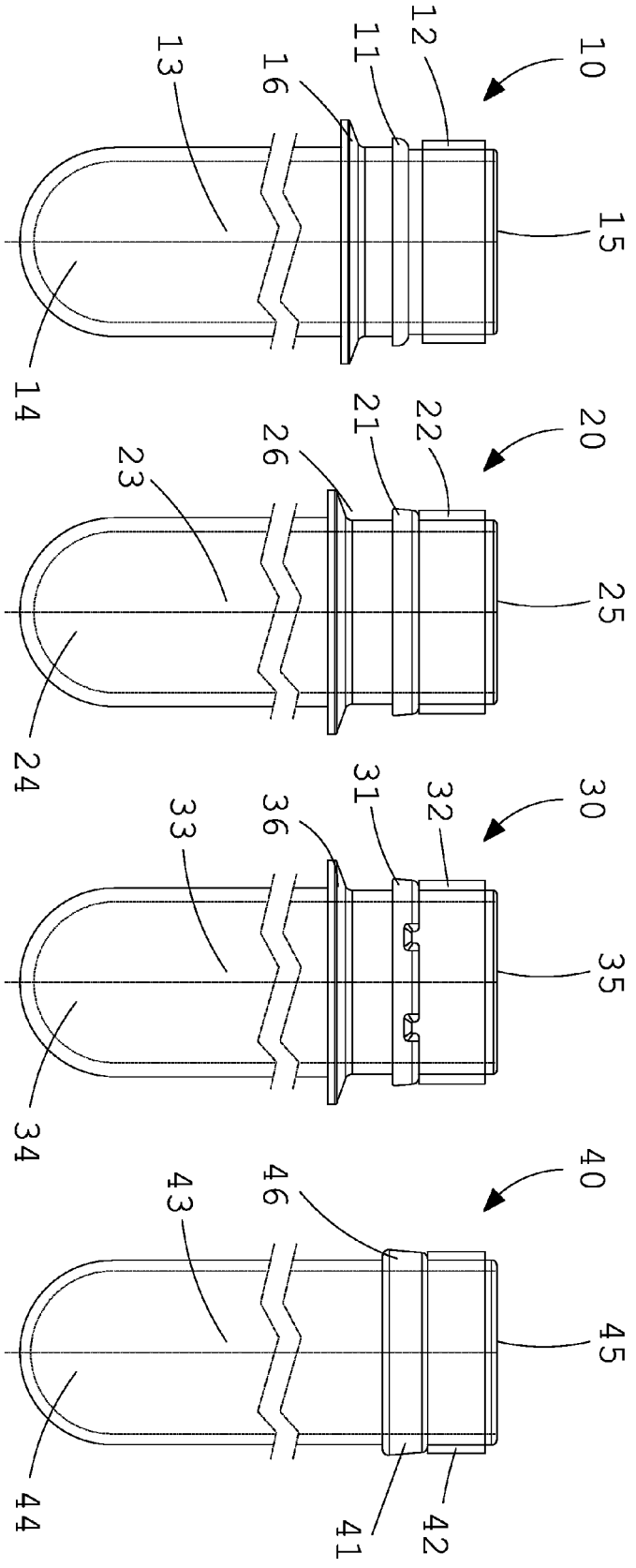

Fig. 1

Fig. 2

Fig. 3

Fig. 4

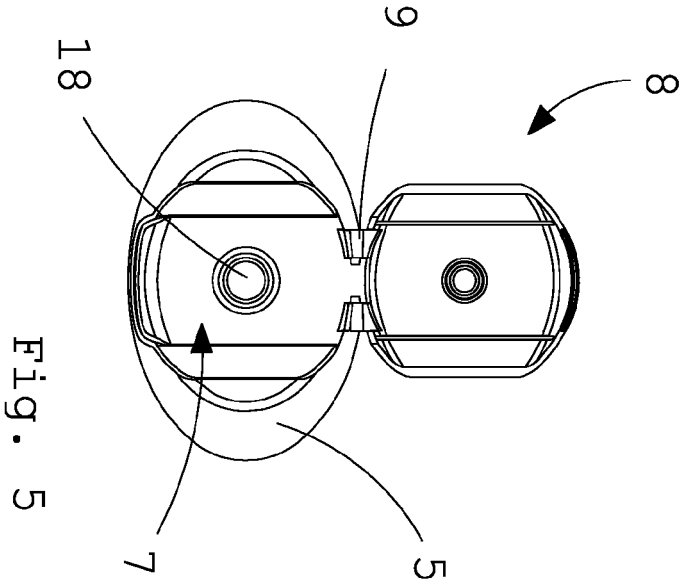

Fig. 5

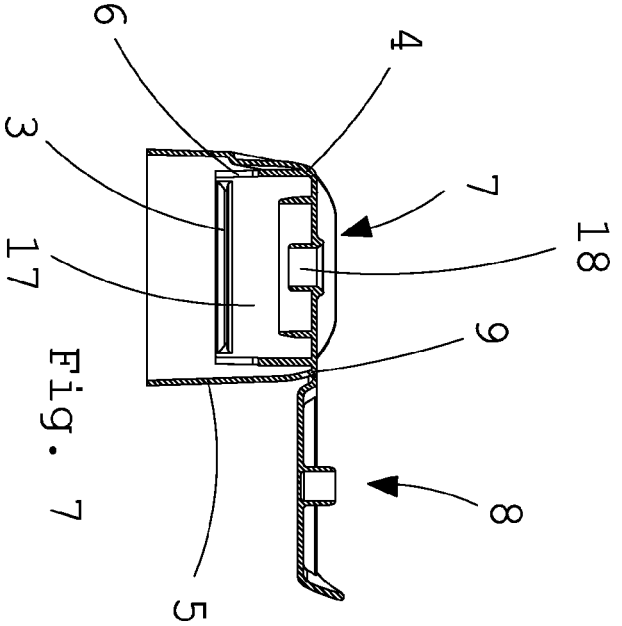

Fig. 7

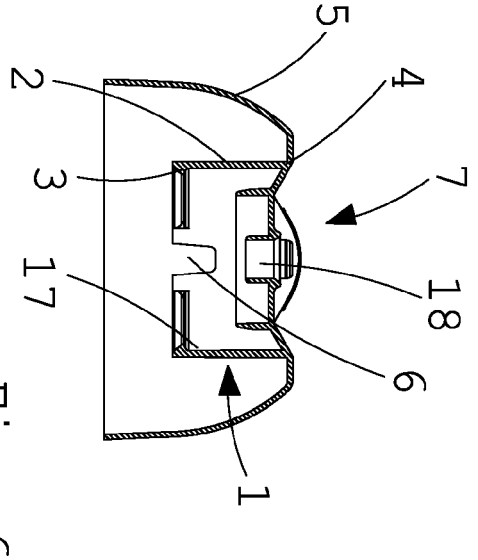

Fig. 6

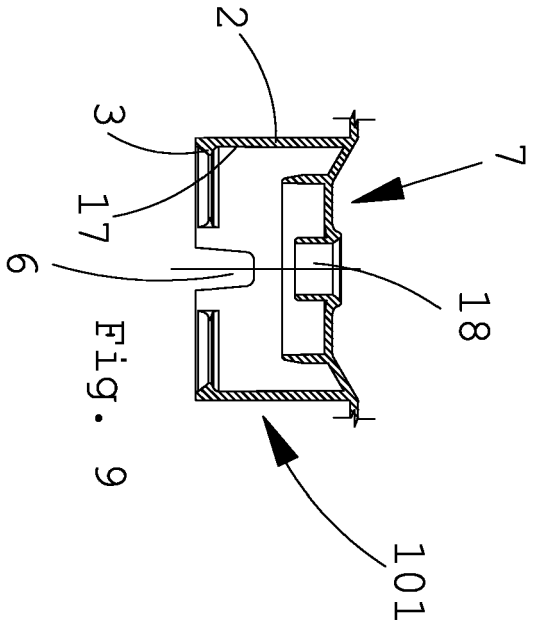

Fig. 9

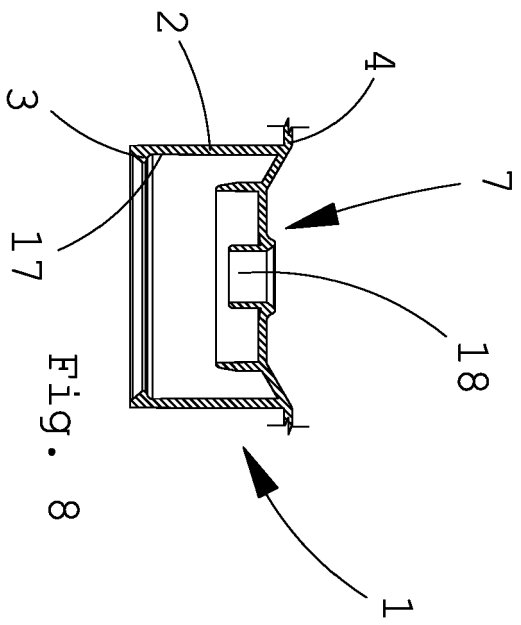

Fig. 8

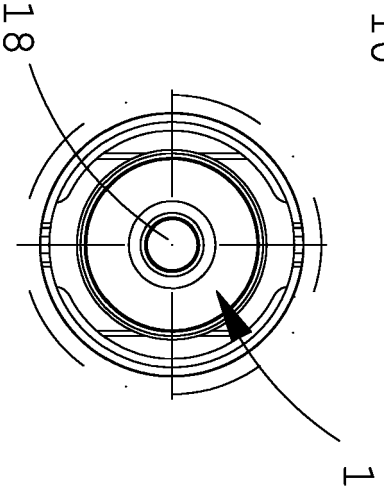

Fig. 11

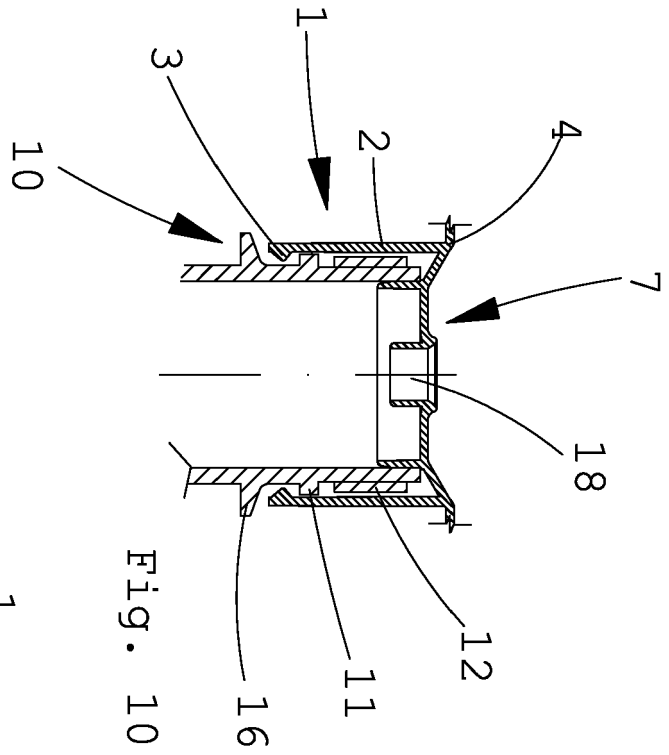

Fig. 10

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EUROPEAN SEARCH REPORT

Application Number
EP 07 10 0481

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	US 2006/006129 A1 (BAUDIN GILLES [FR]) 12 January 2006 (2006-01-12) * paragraph [0049] - paragraph [0076]; figures 1-6 *	1-6	INV. B65D47/08 ADD. B65D41/18
X	US 6 041 975 A (FLAK FRANK [US]) 28 March 2000 (2000-03-28) * column 2, line 66 - column 3, line 50; figures 3-5 *	1-6	
X	WO 93/14000 A (PHAFF BV [NL]) 22 July 1993 (1993-07-22) * page 3, line 24 - line 38; figures 1,2 *	1	
X	EP 0 909 717 A1 (COURTAULDS PACKAGING LTD [GB] ARISTA TUBES LTD [GB]) 21 April 1999 (1999-04-21) * paragraph [0018] - paragraph [0030]; figures 1-4 *	1	
X	US 2002/108924 A1 (WHITE CHARLES RAYMOND [US] ET AL) 15 August 2002 (2002-08-15) * paragraph [0012] - paragraph [0019]; figures 1-4 *	1	TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 April 2007	Fitterer, Johann

CATEGORY OF CITED DOCUMENTS

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18-04-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006006129 A1	12-01-2006	NONE	
US 6041975 A	28-03-2000	AT 241522 T	15-06-2003
		AU 711301 B2	07-10-1999
		AU 1486297 A	28-08-1997
		BR 9701051 A	15-12-1998
		CA 2198065 A1	21-08-1997
		DE 69722283 D1	03-07-2003
		DE 69722283 T2	29-01-2004
		DK 791542 T3	01-09-2003
		EP 0791542 A2	27-08-1997
		ES 2201244 T3	16-03-2004
		PT 791542 T	30-09-2003
		US 5918777 A	06-07-1999
		ZA 9701531 A	28-08-1997
WO 9314000 A	22-07-1993	AU 3368793 A	03-08-1993
		DE 69302673 D1	20-06-1996
		DE 69302673 T2	28-11-1996
		EP 0620795 A1	26-10-1994
		NL 9200050 A	02-08-1993
EP 0909717 A1	21-04-1999	AT 233208 T	15-03-2003
		DE 69811595 D1	03-04-2003
		DE 69811595 T2	18-12-2003
		GB 2330355 A	21-04-1999
US 2002108924 A1	15-08-2002	AT 322429 T	15-04-2006
		BR 0207688 A	23-03-2004
		CA 2438365 A1	29-08-2002
		CN 1491171 A	21-04-2004
		DE 60210421 T2	28-09-2006
		EP 1360115 A2	12-11-2003
		HK 1060870 A1	17-11-2006
		MA 26008 A1	31-12-2003
		MX PA03007226 A	04-12-2003
		PL 363539 A1	29-11-2004
		WO 02066332 A2	29-08-2002
		US 2003106874 A1	12-06-2003
		ZA 200306686 A	13-09-2004

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