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(54) Cartridge for multiple-component synthetic resins, particularly for chemical anchoring

(57) A cartridge (1) for multiple-component synthetic resins, particularly for chemical anchoring, comprising a containment enclosure (2) that forms a cylindrical chamber that accommodates a dispensing piston (10) and forms a dispensing port (3), and further comprising, in the cylindrical chamber, a region for containing a first component (20) of a synthetic resin and at least one deformable inner container (25) for containing at least one second component (26), the inner container (25) being compressed when the dispensing piston (10) performs a translational motion toward the dispensing port (3).

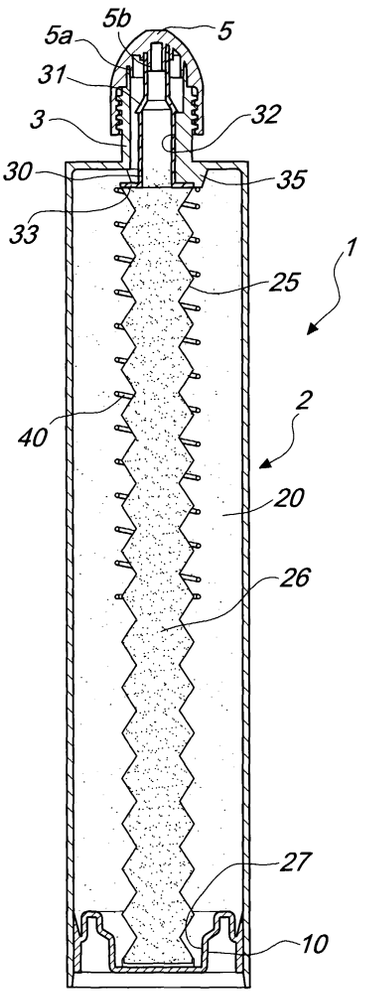

Fig. 3

EP 1 371 576 A1

Description

[0001] The present invention relates to a cartridge for multiple-component synthetic resins, particularly for chemical anchoring.

[0002] As is known, cartridges for multiple-component synthetic resins are currently commercially available which generally have a cylindrical outer enclosure inside which there is a rigid tube that contains a component different from the component placed in the remaining part.

[0003] With cartridges of this type, it is necessary to use specifically-made dispensing guns, since it is necessary to push simultaneously on the piston that closes the region provided with the first component and on the piston located at the inner tube provided with the second component.

[0004] The use of a specifically-made gun causes considerable practical problems, since it forces the user to have available a dispensing gun that is made for that specific product.

[0005] In order to try to solve the problems described above, cartridges for dispensing multiple-component synthetic resins have already been marketed which have, inside the typical outer enclosure used for the cartridges, an element for containing the resins that is constituted by a particular type of bag that forms two separate compartments that are arranged nondetachably side by side for the introduction of the two components.

[0006] This kind of solution has the advantage that it is possible to use the conventional dispensing gun for silicone cartridges, but entails the difficulty of having a particularly complicated packaging step in order to obtain the two side-by-side compartments.

[0007] Moreover, another problem is constituted by the fact that upon dispensing it is necessary to open the end of the bags, so that in the initial region there is an inevitable contact between the two chemical products, with the possibility of mutual contamination.

[0008] The aim of the invention is to eliminate the drawbacks noted above, by providing a cartridge for multiple-component synthetic resins, particularly for chemical anchoring, which besides allowing to use the conventional silicone dispensing gun for dispensing the products, has the advantage of having a structure that is entirely similar to conventional cartridges, although containing two separate and distinct products.

[0009] Within this aim, an object of the invention is to provide a cartridge that allows to use, without particular or complicated modifications, the conventional filling lines used for conventional rigid cartridges, further allowing to perform optimum filling without including air.

[0010] Another object of the present invention is to provide a cartridge for multiple-component synthetic resins that thanks to its particular constructive characteristics is capable of giving the greatest assurances of reliability and safety in use, thus ensuring uniform extrusion.

[0011] Another object of the present invention is to provide a cartridge for multiple-component synthetic resins, particularly for chemical anchoring, that can be obtained easily starting from commonly commercially available elements and materials and is further competitive from a merely economical standpoint.

[0012] This aim and these and other objects that will become better apparent hereinafter are achieved by a cartridge for multiple-component synthetic resins, particularly for chemical anchoring, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a schematic exploded perspective view of the cartridge for multiple-component synthetic resins according to the invention;
Figure 2 is a view of the cartridge during filling;
Figure 3 is a view of the filled cartridge, ready for use;
Figure 4 is an enlarged-scale view of the detail of the connection between the inner container and the containment enclosure;
Figure 5 is a schematic view of the final step of the dispensing of the product;
Figure 6 is a sectional view, taken along the line VI-VI of Figure 4.

[0013] With reference to the figures, the cartridge for multiple-component synthetic resins, particularly for chemical anchoring, generally designated by the reference numeral 1, comprises a containment enclosure 2, which has the typical elongated cylindrical shape and has, at an axial end, an outlet that is designated by the reference numeral 3, forms a dispensing port and is provided with an external thread 4 for connection to a closure cap 5 or to a nozzle 6 for dispensing and mixing the components.

[0014] The other axial end of the containment enclosure 2 is open.

[0015] At the open end it is possible to insert a dispensing piston, designated by the reference numeral 10, which can slide within the cylindrical chamber formed by the enclosure 2.

[0016] The particularity of the invention is constituted by the fact that in the cylindrical chamber there is a region for containing a first component of a synthetic resin or other component, generally designated by the reference numeral 20, and there is at least one inner container 25, which is deformable and contains a second component 26 of the synthetic resin or other component.

[0017] The inner container 25 is advantageously concertina-like, and its closed end is accommodated in a seat 27 formed on the inner face of the piston 10.

[0018] At the other end, the concertina-like container 25 has a dispensing nozzle 30, which is provided with a frustum-shaped tooth 31 that engages against radial abutment spokes 32 formed in the dispensing port of the outlet 3, so as to retain in position the nozzle 30, which

is blocked in the direction of insertion toward the containment enclosure by the engagement of the frustum-shaped tooth 31 on the spokes 32 and cannot disengage due to the engagement of the flange 33, arranged at the base of the nozzle 30, against a contact recess 35 formed for example on the spokes.

[0019] In this manner, the nozzle 30 is retained coaxially to the outlet 3 and exits through said outlet.

[0020] In order to better guide and contain the concertina-like container 25, it is possible to provide a cylindrical spring 40 that surrounds the concertina-like container 25 at least over a certain part of its axial extension. The spring 40, which in practice engages the contact recess 35, can be provided as a separate element that can be simply rested against the recess 35 or fixed to it; optionally, the spring can be provided monolithically with the containment enclosure 2 or with the piston 10.

[0021] With this arrangement, it is possible to fill the cartridge by introducing the two components by way of the outlet 3 and the nozzle 30, so that initially the cartridge is preset with the piston fully inserted in the containment enclosure 2 and the insertion of the two components causes, during filling, the translational motion of the piston, thus limiting drastically the amount of air that can remain trapped.

[0022] Once filling has been performed, the closure cap 5 is provided, such cap having separate abutment seats 5a and 5b for closing the dispensing port of the outlet 3 and the axial end of the nozzle 30, which are thus individually closed hermetically.

[0023] When the product is used, it is sufficient to remove the cap and then place a normal dispensing and mixing nozzle 6, applying, with a conventional dispensing gun for silicone, a thrust to the piston, which by way of its axial translational motion causes the simultaneous dispensing of the two components, with compression of the concertina-like container 25, which occurs uniformly and simultaneously with the dispensing of the two components.

[0024] Advantageously, the piston 10 can be shaped so as to act as a guiding element for the concertina-like container and can contain, once extrusion has been completed, both the concertina-like container 25 and the spring 40; moreover, the shape can be such as to minimize the waste of material that remains inside at the end of the use of the cartridge.

[0025] The arrangement described above, and in particular the use of the concertina-like container, allows to have a separate containment of the two products, with the possibility to obtain uniform dispensing of the two components although using a conventional silicone dispensing gun.

[0026] From the above description it is thus evident that the invention achieves the intended aim and objects, and in particular attention is called once again to the extreme constructive simplicity and functional practicality that arises from the use, within a rigid container, of a flexible container constituted by the concertina-like container 25, which allows to dispense the two products separately, mixing them only in the dispensing nozzle.

[0027] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0028] All the details may further be replaced with other technically equivalent elements.

[0029] In practice, the materials used, so long as they are compatible with the specific use, as well as the contingent shapes and dimensions, may be any according to requirements.

[0030] The disclosures in Italian Patent Application No. MI2002A001287 from which this application claims priority are incorporated herein by reference.

[0031] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A cartridge for multiple-component synthetic resins, particularly for chemical anchoring, comprising a containment enclosure (2) that forms a cylindrical chamber that accommodates a dispensing piston (10) and forms a dispensing port (3), **characterized in that** it comprises, in said chamber, a region for the insertion of a first component (20) of a synthetic resin and a deformable inner container (25) for containing a second component (26), said inner container (25) being compressible when said dispensing piston (10) performs a translational motion toward said dispensing port (3).

2. The cartridge according to claim 1, **characterized in that** said inner container (25) is deformable in an axial direction.

3. The cartridge according to the preceding claims, **characterized in that** said inner container (25) is concertina-shaped.

4. The cartridge according to one or more of the preceding claims, **characterized in that** said inner container (25) has a closed end that can be accommodated in a seat (27) formed on the inner face of said dispensing piston (10).

5. The cartridge according to one or more of the preceding claims, **characterized in that** said inner container (25) has, at the end that lies opposite said closed end, a dispensing nozzle (30) that can be accommodated in the outlet (3) formed by said con-

tainment enclosure (2).

6. The cartridge according to one or more of the preceding claims, **characterized in that** said dispensing nozzle (30) is provided externally with a frustum-shaped tooth (31), which can engage against radial abutment spokes (32) formed in said dispensing port of said outlet (3), said nozzle (30) being retained by the engagement of said frustum-shaped tooth (31) against said spokes (32) and by the engagement of a flange (33) formed at the base of said nozzle (30) against a contact recess (35) formed in said containment enclosure (2).

7. The cartridge according to one or more of the preceding claims, **characterized in that** it comprises a closure cap (5) that forms separate abutment seats for said dispensing port (3) and for the axial end of said dispensing nozzle (30).

8. The cartridge according to one or more of the preceding claims, **characterized in that** said cartridge (1) can be packaged by introducing said first component (20) and said second component (26) by way of said outlet (3) and said dispensing nozzle (30).

9. The cartridge according to one or more of the preceding claims, **characterized in that** it comprises a cylindrical spring (40) that is arranged externally to said deformable inner container (25).

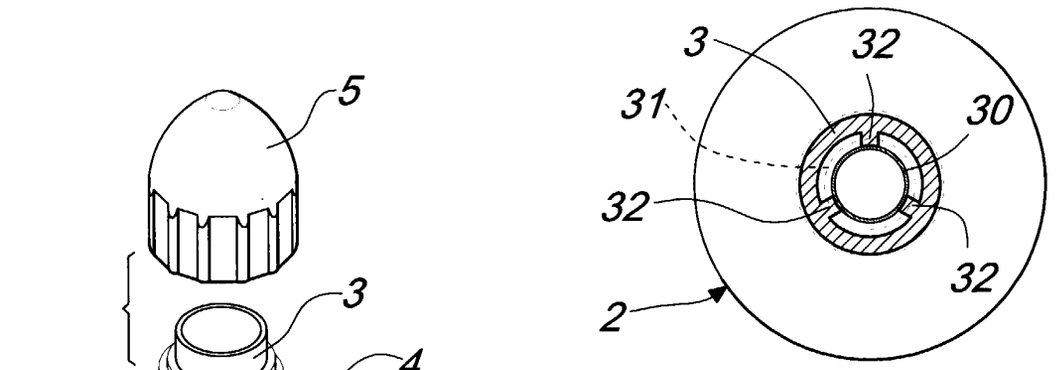

Fig. 6

Fig. 1

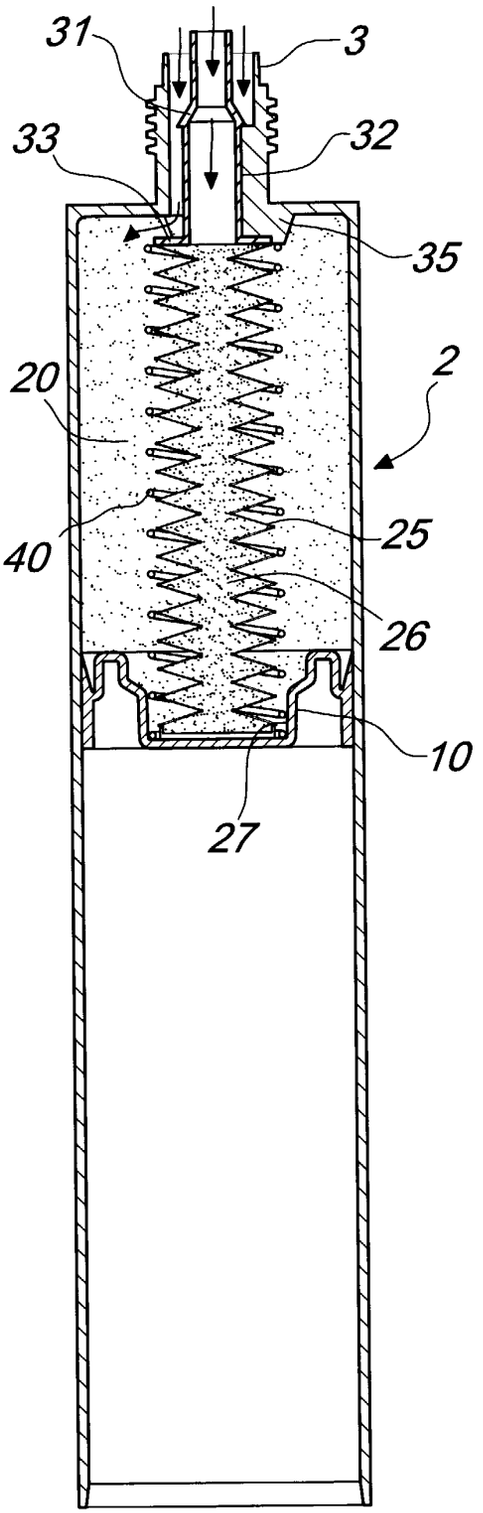

Fig. 2

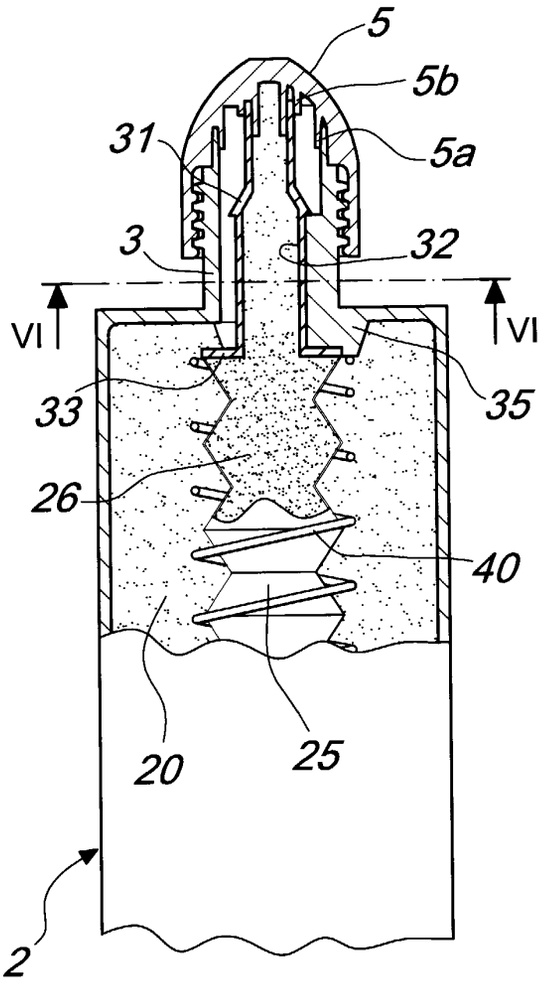

Fig. 4

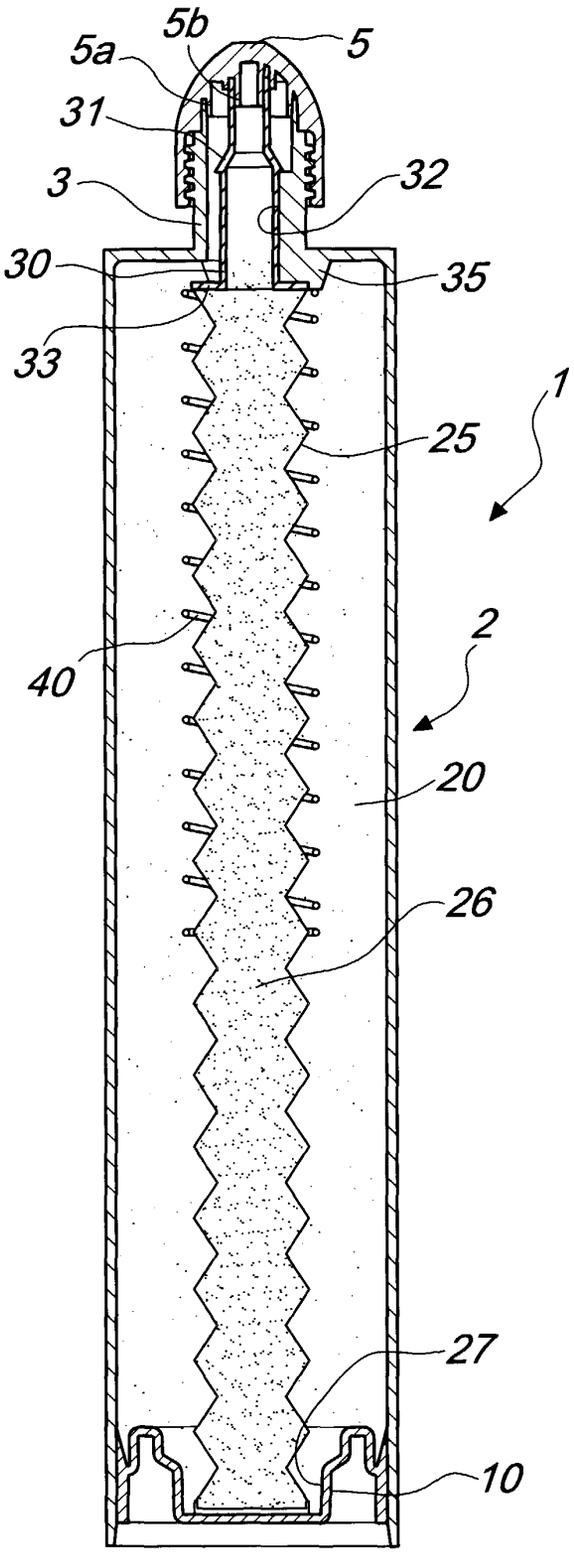
5b
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Fig. 3

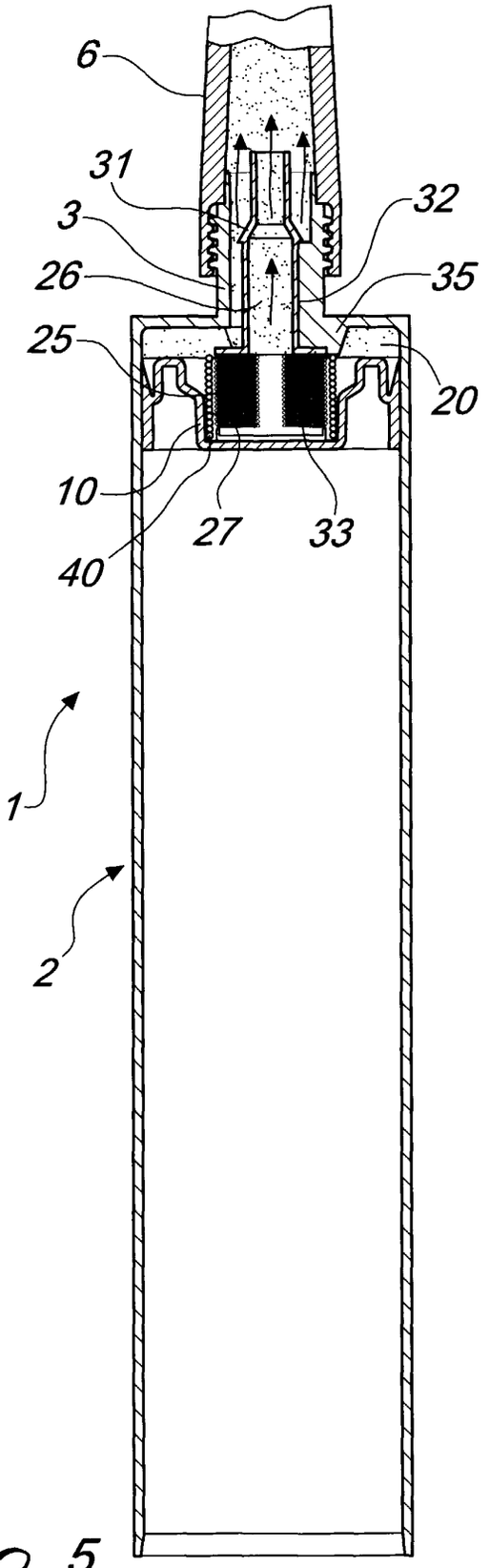
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Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 03 01 1180

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 0 093 185 A (VOPLEX CORP) 9 November 1983 (1983-11-09) * page 3, line 32 - page 4, line 31 * * figures 1-5 *	1-7	B65D81/32 B65D83/00 B05C17/005 B05C17/01 B05B9/08
X	DE 29 39 116 A (HENKEL KGAA) 16 April 1981 (1981-04-16) * page 6, line 8 - page 7, line 8 * * figures 1,2 *	1-5	
Y		8	
Y	US 5 651 397 A (BLACK KEVIN L ET AL) 29 July 1997 (1997-07-29) * figures 14,15 *	8	
A		1	
X	US 4 676 657 A (BOTRIE ALEXANDER) 30 June 1987 (1987-06-30) * figures 1,2,8 *	1,2,5	
Y		9	
Y	US 6 250 505 B1 (PETIT ROBERT G) 26 June 2001 (2001-06-26) * figures 1,4-6 *	9	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65D B05C B05B
A		1-3	
X	EP 0 083 802 A (TEROSON GMBH) 20 July 1983 (1983-07-20) * figures 1-4 *	1-3,5	
Y		6,7	
Y	US 6 257 450 B1 (LEBOEUF JOSEPH ET AL) 10 July 2001 (2001-07-10) * figures 1,4-6,9,10,15 *	6	
A		1	

-/--

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	3 September 2003	Schultz, O

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Application Number
EP 03 01 1180

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	US 4 983 379 A (SCHAEFFER HANS A) 8 January 1991 (1991-01-08) * figure 4A *	7	
A		1,5,6	

X	DE 199 43 877 A (FISCHBACH A KUNSTSTOFF KG) 15 March 2001 (2001-03-15) * figures 1,2,5-7 *	1-3,5,6	

			TECHNICAL FIELDS SEARCHED (Int.Cl.7)

The present search report has been drawn up for all claims

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03-09-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0093185 A	09-11-1983	EP 0093185 A1	09-11-1983
DE 2939116 A	16-04-1981	DE 2939116 A1	16-04-1981
US 5651397 A	29-07-1997	AU 5934496 A	05-06-1997
		CA 2234368 A1	22-05-1997
		DE 69604816 D1	25-11-1999
		DE 69604816 T2	27-07-2000
		EP 0861199 A1	02-09-1998
		JP 2000500106 T	11-01-2000
		WO 9718145 A1	22-05-1997
		US 5988230 A	23-11-1999
US 4676657 A	30-06-1987	NONE	
US 6250505 B1	26-06-2001	AU 4953101 A	08-10-2001
		CA 2399207 A1	04-10-2001
		EP 1309495 A2	14-05-2003
		WO 0172604 A2	04-10-2001
EP 0083802 A	20-07-1983	DE 3200542 A1	21-07-1983
		EP 0083802 A2	20-07-1983
		HU 185760 B	28-03-1985
US 6257450 B1	10-07-2001	AU 763308 B2	17-07-2003
		AU 4234300 A	02-11-2000
		BR 0009234 A	26-12-2001
		CA 2367435 A1	26-10-2000
		CN 1344222 T	10-04-2002
		CZ 20013756 A3	15-05-2002
		EP 1194366 A1	10-04-2002
		JP 2002542022 T	10-12-2002
		PL 351093 A1	24-03-2003
		WO 0063111 A1	26-10-2000
		US 6347726 B1	19-02-2002
US 4983379 A	08-01-1991	US 4849213 A	18-07-1989
		US 4528180 A	09-07-1985
		US 4687663 A	18-08-1987
		IN 166887 A1	04-08-1990
		IN 166888 A1	04-08-1990
		IN 166889 A1	04-08-1990
		AU 580076 B2	22-12-1988
		BR 8503355 A	09-12-1986
		CA 1257545 A1	18-07-1989
		DE 3587725 D1	24-02-1994

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 01 1180

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03-09-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4983379 A		DE 3587725 T2	28-04-1994
		EP 0202359 A2	26-11-1986
		GR 860726 A1	21-03-1986
		JP 1463004 C	28-10-1988
		JP 61271214 A	01-12-1986
		JP 63007522 B	17-02-1988
		ZA 8505018 A	26-02-1986
DE 19943877 A	15-03-2001	DE 19943877 A1	15-03-2001
		AU 7417800 A	17-04-2001
		WO 0119700 A1	22-03-2001
		GB 2369863 A	12-06-2002

EPO FORM P0459

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