



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**09.05.2007 Bulletin 2007/19**

(51) Int Cl.:  
**A46B 9/10 (2006.01)**

(21) Application number: **05380246.8**

(22) Date of filing: **04.11.2005**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA HR MK YU**

(72) Inventor: **Casajuana Pagés, Ramon**  
**08850 GAVA - Barcelona (ES)**

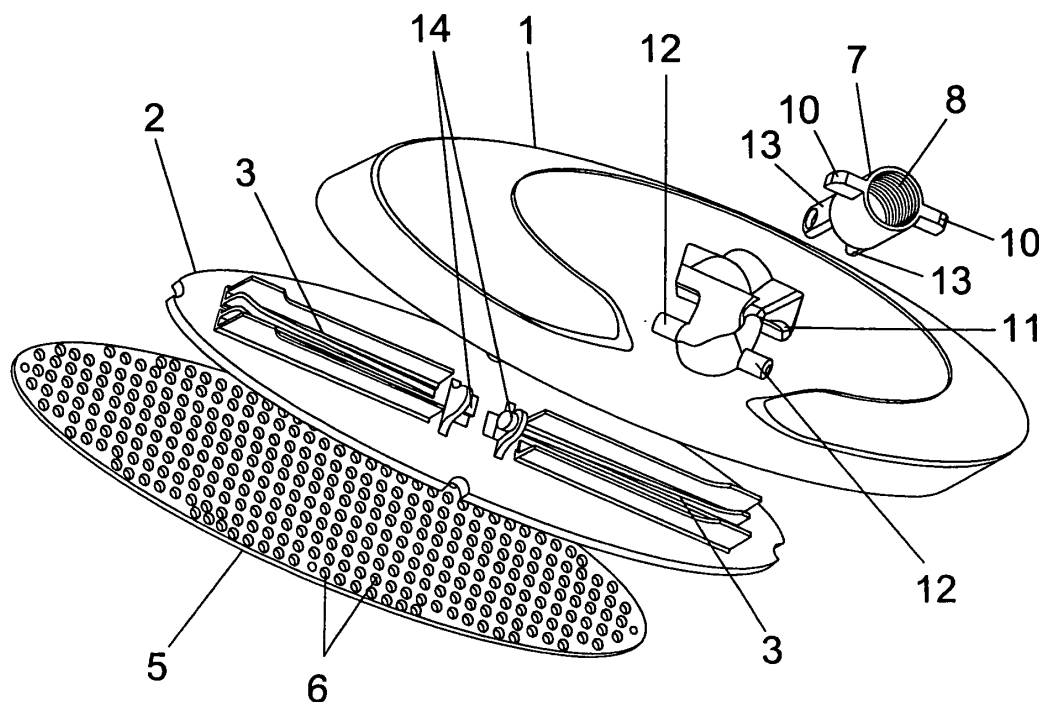
(74) Representative: **PROPI, S.L.**  
**Jorge Juan, 19**  
**28001 Madrid (ES)**

(71) Applicant: **Rayen S.L.**  
**08850 Gava (Barcelona) (ES)**

(54) **Adjustable broom**

(57) The broom has a casing (1) wherein is mounted, with the possibility of upwards and downwards displacement, a plate (2) holding the corresponding bristles that emerge from the orifices (6) of a grille (5) fixed on the lower edge of the casing (1). The novelty consists of the incorporation of a part (7) whereon the corresponding handle is mounted, and whose part (7) has means of connection to the bristle support plate (2), with the pos-

sibility of rotation with respect thereto, and with positioning means in cavities (11) or indentations (12) of the casing (1) to hold a vertical or inclined position of said part (7) and, therefore, a position of maximum lowering of the plate (2) or maximum raising thereof, so that the bristles totally or partially emerge through the grille (5) to form a brush with long bristles or a brush with shorter, and therefore stronger, bristle. Figure 1.



**FIG. 1**

## Description

### OBJECT OF THE INVENTION

[0001] The present invention relates to an adjustable broom, which has the special feature of incorporating a mechanism, based on which it can be achieved that the corresponding broom bristles emerge at a greater or lesser length through the orifices of a plate connected to the broom casing.

[0002] The object of the invention is to achieve a broom which can be used as a normal sweeping brush when the bristles emerge in their greater length and a broom for sweeping grime, with total emergence of the bristles in the first case and partial emergence of the bristles in the second case.

### BACKGROUND OF THE INVENTION

[0003] Numerous devices applied to sweeping brooms are known which permit adjusting the length of the bristles emerging with respect to the general casing, to be used as a soft sweeping broom or as a strong sweeping broom for deep dirt.

[0004] Specifically, patent US 3795024 discloses the head of a broom with said characteristics, basically comprising an upper casing, an intermediate plate holding the corresponding bristles, which is fixed to the casing via an interlock gear, and a lower grille whereby the bristles emerge, said grille being connected to the body via a tubular threaded portion emerging from the inner side of the grille, which goes through the intermediate plate and screws onto an inner neck of the casing.

[0005] In this document, the possibility of achieving greater or lesser emergence of the bristles with respect to the lower grille is achieved by a rotation mechanism of the casing, requiring complementary means for the assembly or fixing of the corresponding handle and use of the broom.

[0006] Likewise, patent US 3803663 discloses another broom with characteristics similar to those stated in the aforementioned United States patent, so that in this second patent 3803663, an intermediate part is included between the casing and the bristle support plate with a neck which is connected to a grille rod, whereby the bristles emerge, which is connected by a rib of that neck which is located in a helicoidal cavity established in the grille rod, so that the rotation in one or the other direction of said part involves the inwards or outwards displacement of the grille and, therefore, the greater or lesser emergence of the bristles. In this patent, the mechanism is complicated with respect to the previous patent, in addition to also requiring additional means to fix and assemble the handle.

[0007] Finally, we can quote the document corresponding to the patent US 2002/0166186, also relating to an adjustable broom with a device to adjust the hardness of the broom bristles, a device which is coupled to

the general casing, so that by the sliding thereof along the broom handle, the bristle length is shortened or lengthened, thus varying the rigidity thereof.

[0008] Said mechanism is problematic, or at least uncomfortable for the user, who should manipulate or actuate it to have bristles with greater or lesser emergence.

### DESCRIPTION OF THE INVENTION

[0009] The broom of the invention, also being based on a casing, with a bristle support plate and a grille whereby the bristles emerge, has the special feature of incorporating a rotating part that is positioned on the upper part of the casing, specifically in a window established for this purpose therein and which may be positioned by rotation in perpendicular position to the casing or in oblique position, so that said part has pins which are connected to the bristle support plate in order that, according to the position thereof, said plate displaces upwards or downwards with respect to the casing and therefore performs a partial concealment of the bristles with respect to the grille, or a total emergence.

[0010] Furthermore, the broom of the invention has the special feature that said rotating part, and based on which a greater or lesser emergence of the bristles is attained, forms the fixing support by screwing the corresponding broom handle, so that the vertical position of said handle corresponds to the downwards displacement of the bristle support plate, and in consequence, the total emergence thereof, whilst in oblique or inclined position of the handle with respect to the casing, it rotates or turns the part which forms the mechanism and with it the inward retraction of the bristle support plate, and therefore the shortening of the bristles.

[0011] As is evident, when the bristles totally emerge from the broom it can be used as a conventional soft sweeping brush, whilst when the bristles partially emerge, i.e. they are shorter, then their hardness is accentuated and it can be used as a brush for very stubborn dirt.

### DESCRIPTION OF THE DRAWINGS

[0012] To complement the description being made, and in order to help towards a better understanding of the characteristics of the invention, in accordance with a preferred example of embodiment thereof, a set of drawings is attached as an integral part of said description, wherein the following has been represented with an illustrative, non-limiting character:

Figure 1 shows an exploded representation of the parts which comprise the broom without the handle.

Figure 2 shows a section view of the broom represented in the previous figure without the corresponding bristles and with the handle coupled to the part which comprises the adjust-

- ing mechanism of the broom.
- Figure 3 shows another section view as in the previous figure but a cross-section cut of said figure 2.
- Figure 4 shows a section view like that in figure 2, with the handle in inclined position and, therefore the bristle support plate retracted towards the inside of the casing so that the bristles emerge with a short length with respect to the lower grille.
- Figure 5 shows, finally, a perpendicular section view of the previous figure and which also corresponds to the position of the broom shown in figure 4.

## PREFERRED EMBODIMENT OF THE INVENTION

**[0013]** In the light of said figures, the broom of the invention, and more specifically the head thereof, comprises a general casing (1), a plate (2) which is mounted on the inside of the casing (1), and whose plate (2) holds the corresponding bristles (not represented), having bushings (3) whereon flexible elements (4) are positioned belonging to the casing (1) and which tend to constantly push towards the outside of the plate (2). Said head is complemented with a grille (5) provided with a plurality of orifices (6) whereby the corresponding bristles emerge which are joined to the lower side of the support plate (2), this grille (5) being permanently fixed on the lower part or edge of the casing (1).

**[0014]** So, from these characteristics, the novelty of the invention is the incorporation of a part (7) by way of a guard and internally provided with a thread (8) for the fixing of the corresponding handle (9), having provided that said part (7) has diametrically opposed protuberances (10) on an external part, which can be positioned in cavities (11) established in the casing, corresponding to a vertical position of the part (7) and therefore of the handle (9), or instead position these diametric protuberances (10) in indentations (12) of the casing (1), both the part (7) and the handle (9) remaining in an inclined position, as is represented in figure 5.

**[0015]** The part (1) also has lower lugs (13) with orifices wherein protuberances (14) belonging to the bushings (3) of the support plate are fitted, in this way the part (7) being able to turn in its assembly.

**[0016]** In accordance with said characteristics, said part (7) by virtue of its characteristics and assembly can turn and holds a vertical position as is represented in figures 2 and 3, and which logically corresponds to a vertical position of the handle (9), so that in that position, the bristle support plate (2) is projected downwards, i.e. until making contact with the grille (5), in which case, the bristles corresponding to that plate (2) totally emerge with respect to the broom head unit, constituting a normal sweeping brush, i.e. for soft surfaces. Now, the part (7) may hold, by virtue of its rotation, an inclined position as is represented in figures 4 and 5, in which case, logically

the handle (9) is also inclined, so that this rotation of the part (7) involves the dragging and upwards displacement of the plate (2), so that the bristles thereof will be shortened with respect to the grille (5), emerging in a shorter length, which constitutes a harder brush for dirty surfaces.

## Claims

1. Adjustable broom, which being formed from the fixing together of three parts, one corresponding to a general casing (1), another corresponding to a grille (5) coupled to the lower edge of the casing (1) and the other part forming a plate (2) which supports the respective bristles which emerge via the orifice (6) of the grille (5), **characterized in that** the casing (1) is mounted on a tubular part (7) provided with an orifice with internal threading (8) for the assembly of the corresponding handle (9) of the broom, having provided that said part (7) has a pair of diametric protuberances (10) which can be positioned in cavities (11) to determine a vertical position of said part (7) and therefore of the handle (9), or instead be positioned in indentations (12) of the casing (1), determining an inclined position of said part (7) and therefore the handle (9), having provided that the part (7) has lugs (13) on its lower part, provided with orifices for its rotary assembly between pins (14) established for this purpose on bushings (13) of the bristle support plate (2), so that in the vertical position of the part (7) the bristle support plate (2) is pushed downwards against the grille (5), the bristles fully emerging outside, whilst in the inclined position of the part (7), the bristle support plate (2) is displaced upwards determining a shortening of the bristles which emerge from the orifices (6) of the grille (5).

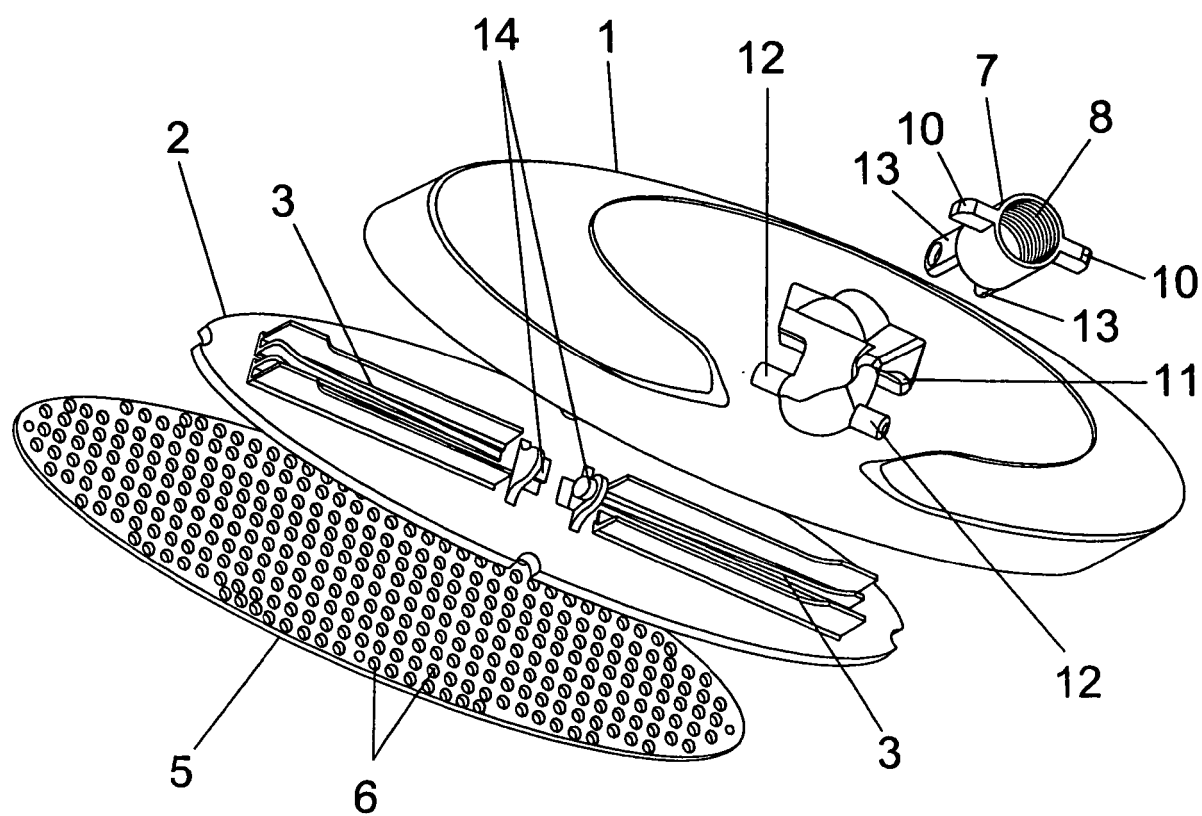
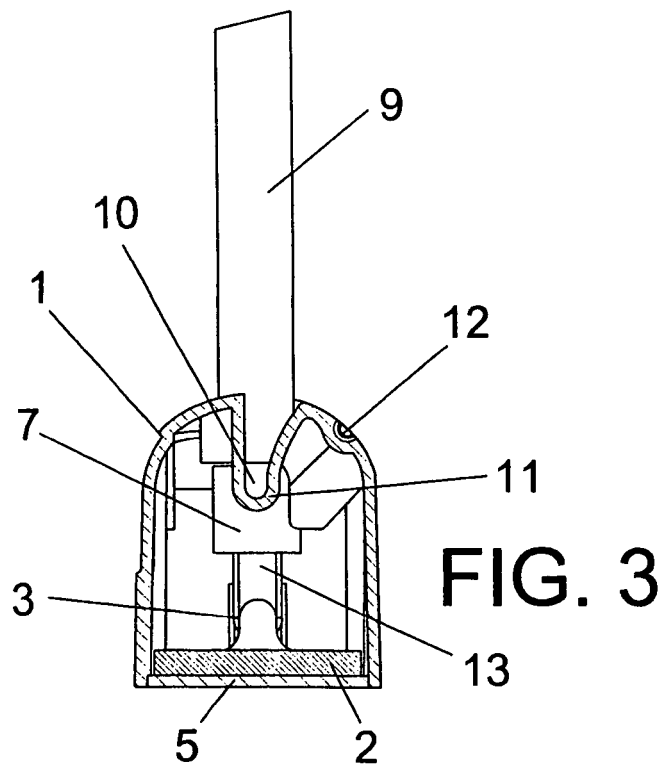
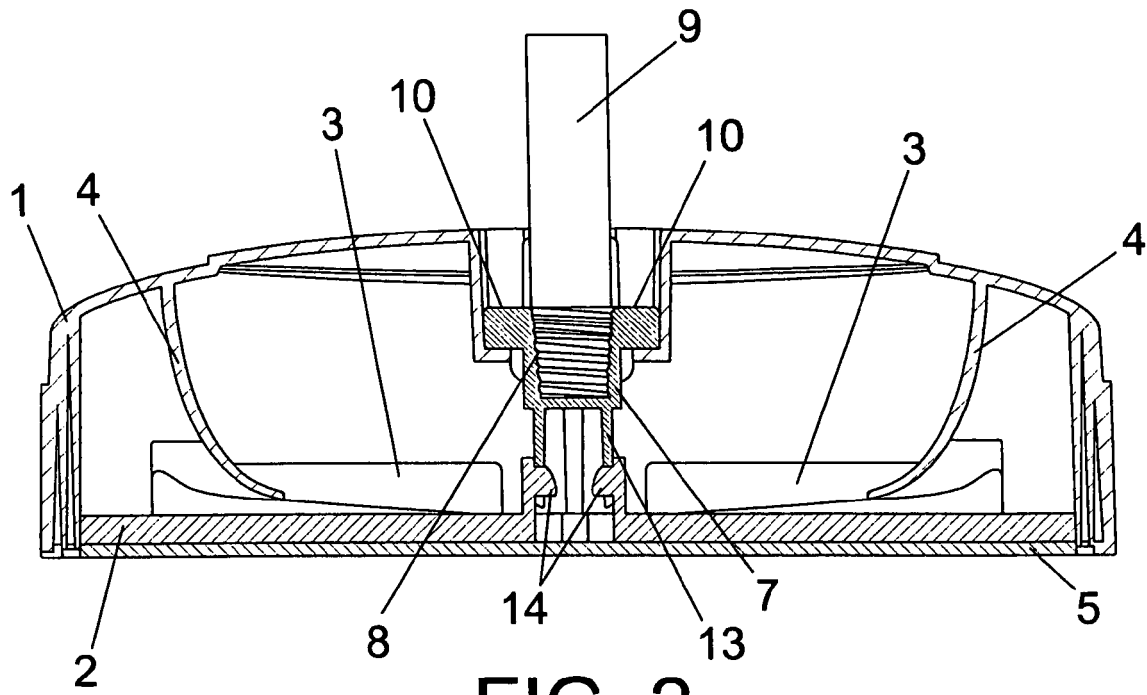


FIG. 1



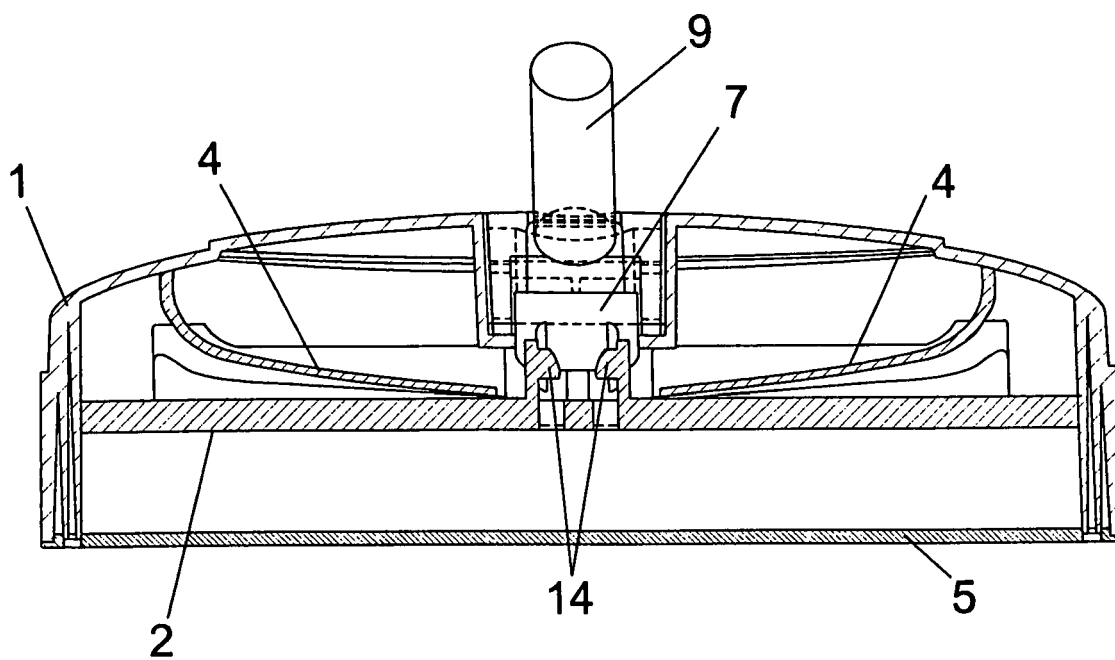


FIG. 4

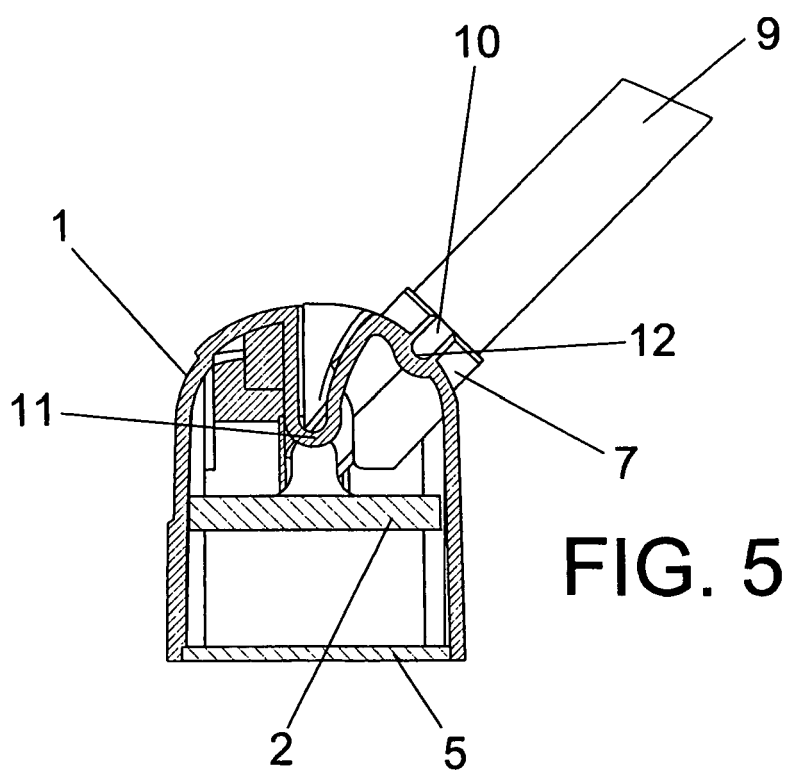


FIG. 5



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 05 38 0246

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
D,A	US 3 795 024 A (WEIHRAUCH G,DT) 5 March 1974 (1974-03-05) * abstract; figures 1-3 *	1	INV. A46B9/10
A	EP 0 933 042 A (NOBEL DI TAGLIAVINI CESARE E C. S.N.C) 4 August 1999 (1999-08-04) * abstract; figures *		
A	DE 103 32 407 A1 (CARL FREUDENBERG KG) 24 February 2005 (2005-02-24) * page 12, paragraph 106; figure 14 *		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A46B
Place of search		Date of completion of the search	Examiner
The Hague		5 April 2006	van Bilderbeek, H.
<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  &amp; : member of the same patent family, corresponding document</p>			

2  
EPO FORM 1503 03.82 (P04C01)

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

EP 05 38 0246

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

05-04-2006

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 3795024	A	05-03-1974	AT	316734 B	25-07-1974
			CH	529530 A	31-10-1972
			DE	2114533 A1	08-06-1972
			FR	2131566 A5	10-11-1972
			GB	1344034 A	16-01-1974
			IT	953540 B	10-08-1973
			SE	382558 B	09-02-1976
-----					
EP 0933042	A	04-08-1999	AT	244525 T	15-07-2003
			CA	2260555 A1	02-08-1999
			DE	69909341 D1	14-08-2003
			DE	69909341 T2	17-06-2004
			ES	2202935 T3	01-04-2004
			IT	MN980002 A1	02-08-1999
			US	6058551 A	09-05-2000
-----					
DE 10332407	A1	24-02-2005	WO	2005016068 A1	24-02-2005
-----					



**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- US 3795024 A [0004]
- US 3803663 A [0006]
- US 3803663 B [0006]
- US 20020166186 A [0007]