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(54) **Razor cartridges**

(57) A wet shaving razor cartridge (10) comprises a housing (12) having a front wall (14), a rear wall (16) and opposing side walls (18,20) disposed transverse to and between said front and rear walls. One or more elongate blade assemblies (22) extend between said opposing side walls. The cartridge has a length of 30mm to 34mm, the length being defined as the distance between external faces of the side walls in a direction substantially parallel to the one or more elongate blade assemblies.

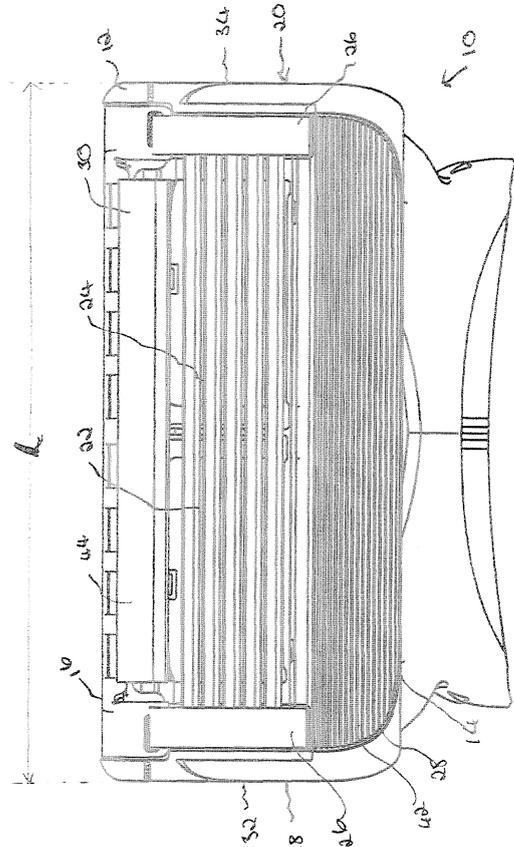


FIGURE 1.

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**Description**

## FIELD OF THE INVENTION

**[0001]** The present invention relates to a wet shaving razor cartridge having a length optimized for effective and efficient shaving.

## BACKGROUND OF THE INVENTION

**[0002]** Wet shaving razors have evolved over the years to include a multiplicity of blades, guards and caps with lubricant strips, all with the goal of increasing the closeness of a shave while also providing a comfortable shaving experience. Despite these many changes to the look of a wet shaving razor cartridge, the cartridge length has remained largely the same.

**[0003]** Razors currently on the market have lengths of approximately 40mm to 42mm. For example, the Fusion razor commercialized by The Gillette Company has a length of 41.36mm. The Wilkinson Sword Quattro has a length of 40.69mm and the Azor by King of Shaves has a length of 40mm.

**[0004]** It is known in the field of female shaving to provide cartridges of different lengths for underarms and legs. For underarms, which are considered to be a generally narrow, restricted area, a length of 27mm is proposed to enable the razor cartridge to comfortably fit in the area. For legs, which have generally flatter surfaces, a length of 50mm is specified. There are some clear advantages to using these different lengths in female shaving as the areas that need to be shaved are quite diverse in their accessibility as a result of shave site orientation, contour, and size. To date, however, little to no consideration has been given to the optimal length of razor cartridges used in male shaving.

**[0005]** There is therefore a need to provide wet shaving razors for men that have a length specifically prescribed to provide a close and efficient shave.

## SUMMARY OF THE INVENTION

**[0006]** The present invention relates to a wet shaving cartridge comprising a housing having a front wall, a rear wall and opposing side walls disposed transverse to and between said front and rear walls; one or more elongate blade assemblies extending between said opposing side walls, wherein the cartridge has a length of 30mm to 34mm wherein said cartridge length is defined as the distance between external faces of the side walls in a direction substantially parallel to the one or more elongate blade assemblies.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0007]** Embodiments of the invention will hereinafter be described, by way of example, with reference to the accompanying drawings, in which:

FIG. 1 is a front view of one possible embodiment of a razor cartridge.

FIG. 2 is a perspective view of a razor encompassing the embodiment shown in Figure 1.

FIG. 3 is a rear view of a razor encompassing the embodiment shown in Figure 1.

## DETAILED DESCRIPTION OF THE INVENTION

**[0008]** The invention is applicable to razor cartridges in general that are used in a wet shaving system.

**[0009]** Figure 1 shows a razor cartridge 10 formed of a housing 12 having a front wall 14, a rear wall 16 and first and second opposing side walls 18, 20 extending between the front wall 14 and rear wall 16. One or more blade assemblies 22 with sharp cutting edges 24 are mounted within the housing 12 and extend between the first and second opposing side walls. In the embodiments shown in Figure 1, the housing has five blade assemblies. However, it will be understood that more or fewer blade assemblies may be mounted within the housing. The blade assemblies are shown secured within the housing with clips 26, but other retention methods known to those skilled in the art may also be used. The housing further has a guard 28 and cap 30 disposed respectively on the front wall 14 and rear wall 16.

**[0010]** An exterior of the housing 12 is defined by external faces 32, 34 of the side walls 18, 20. A length, L, of the cartridge is defined as the distance between the external faces 32, 34 in a direction substantially parallel to the one or more blade assemblies 24. In embodiments of the present invention, this cartridge length is between 30mm or 31 mm and 33mm or 34mm. In a particular embodiment, the cartridge length is 32mm.

**[0011]** In embodiments where the opposing side walls 18, 20 are not parallel to one another, the length, L, is defined as the furthest distance between the external faces 32, 34 of the side walls 18, 20, in a direction substantially parallel to the one or more blade assemblies 24.

**[0012]** Razor cartridges currently on the market have lengths of approximately 40mm to 42mm. Cartridge lengths of between 30mm and 34mm, as described herein, therefore equate to a reduction in existing cartridge lengths of 15% or 20% to 25% or 30%.

**[0013]** The present inventors have found that a reduction in cartridge lengths of the amount prescribed above results in an overall close and more efficient shave, compared with existing razor cartridges where all other dimensions and geometries are approximately the same. Without being limited by theory, it is believed that a close shave is achieved as the shorter cartridge length facilitates easier access of the razor cartridge to more confined and restricted areas such as concave sections of the neck and under the nose. The reduction in length may not affect the closeness on larger flatter areas, such as cheeks; however, as fewer repeat strokes are required in more awkward areas, the overall result is a closer shave that requires fewer strokes. Thus, users will benefit

from a closer shave that may last longer without having to invest more time in the process.

**[0014]** As shown in Figure 2, the wet shaving razor cartridges of the present invention may be mounted on a handle 40 with the intention that the entire razor should be discarded when the sharp edges 24 of the blade assemblies 22 have become dull. Alternatively, the wet shaving cartridges of the present invention may be detachably mounted to a handle 40 so that the cartridge may be replaced on the handle 40 when the blade assemblies have lost the sharpness required for efficient shaving. In typical cartridges, the blade assemblies 22 are usually carried by the housing 12, which is generally a molded plastic frame, and the blade assemblies 22 may then be supported to move within the frame, either independently of each other or in unison, under forces imparted on the blade assemblies by the skin during shaving. In one embodiment, for support within the housing, the blade assemblies are mounted fixedly within slots in a blade retaining member. In another instance, the blade assemblies may be floatably mounted within the housing. Here, the plurality of blade assemblies is supported by one or more spring loaded blade retaining members where such blade assemblies are permitted to respond to the forces encountered during shaving.

**[0015]** Figure 3 shows a rear view of an embodiment of the razor cartridge 10 attached to a handle 40 as shown in Figure 2.

**[0016]** The housing 12 comprises a guard 28 at a forward portion. The guard contacts a shaver's skin immediately ahead of the plurality of blade assemblies 22. The guard may be located within the housing 12 or it may extend over one or more of the front 14 or opposing side walls 18, 20 of the housing. The guard 28 may comprise a plurality of elastomeric fins 42. Such fins may take the form of substantially parallel elongations that run a length of the guard. Alternatively, the fins may comprise a plurality of curved projections, e.g. circular tubes, semicircular projections, chevron shaped projections and combinations thereof.

**[0017]** The cap 70 is disposed after the plurality of blade assemblies within the housing adjacent the rear wall 16. The cap 30 contacts the skin directly behind the plurality of blade assemblies 22 during a shaving stroke. In the case of both the guard 28 and the cap 30, each may comprise additional elements that are also joined to or integral to the housing. The cap 30 may comprise a lubricating strip 44. Such a lubricating strip may comprise skin conditioning agents that improve the appearance and sensation encountered by the shaver upon completion of the shaving stroke. The lubricating strip may comprise a shaving enhancement product, such as a lubricant which gradually leaches out of the strip material during shaving. Moreover, the positions of the fins and lubricating strip may be alternated so that the fins are on the cap and the lubricating strip is disposed on the guard.

**[0018]** In each embodiment of the invention, the level of comfort obtained with any given wet shaving razor car-

tridge is influenced strongly by the shaving geometry, which is the relative positioning of the skin contacting components. Important parameters of the shaving geometry include the blade exposure which is the distance by which the tip of the blade edge projects above, or is retracted below, a plane which is tangential to the skin contacting parts next in front and next behind the blade edge, the blade tangent angle (also known as the blade shaving angle) which is the angle at which the plane of the blade is inclined to a plane which is tangential to the guard and the cap surfaces (the tangent plane), and the blade span which is the distance by which the blade edge is spaced from the skin contacting element immediately in front of the blade edge, as seen in a plane which is tangential to the blade edge and the skin contacting element in front of it. A progressive blade exposure may be used in the present invention as detailed in US Patent No. 6,212,777.

**[0019]** The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as "40 mm" is intended to mean "about 40 mm."

## Claims

1. A wet shaving cartridge (10) comprising:
  - a. a housing (12) having a front wall (14), a rear wall (16) and opposing side walls (18, 20) disposed transverse to and between said front and rear walls (14, 16);
  - b. one or more elongate blade assemblies (22) extending between said opposing side walls

wherein the cartridge has a length of 30mm to 34mm wherein said cartridge length is defined as the distance between external faces (32, 34) of the side walls (18, 20) in a direction substantially parallel to the one or more elongate blade assemblies (22).
2. A razor cartridge as claimed in claim 1 or claim 2, wherein the cartridge length is between 31 mm to 33 mm.
3. A razor cartridge as claimed in any preceding claim, wherein the cartridge length is 32mm.
4. A razor cartridge as claimed in any preceding claim, wherein the side walls (18, 20) extend substantially perpendicular to the elongate blade assemblies.
5. A razor cartridge as claimed in any of claims 1 to 3, wherein the side walls do not extend parallel to one

another and wherein the cartridge length (L) is defined as the furthest distance between said external faces (32, 34) in a direction substantially parallel to the one or more elongate blade assemblies (22).

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6. A razor cartridge as claimed in any preceding claim, further comprising a guard (28) located adjacent the front wall (14) of the housing.

7. A razor cartridge as claimed in claim 6, wherein the guard is located within the housing (12). 10

8. A razor cartridge as claimed in claim 6, wherein the guard (28) extends over one or more of the front wall (14) and side walls (18, 20). 15

9. A razor cartridge as claimed in any preceding claim, further comprising a cap (30) located within the housing (12) adjacent the rear wall (16). 20

10. A razor cartridge as claimed in claim 9, further comprising a lubricating strip (44) disposed on the cap (30). 25

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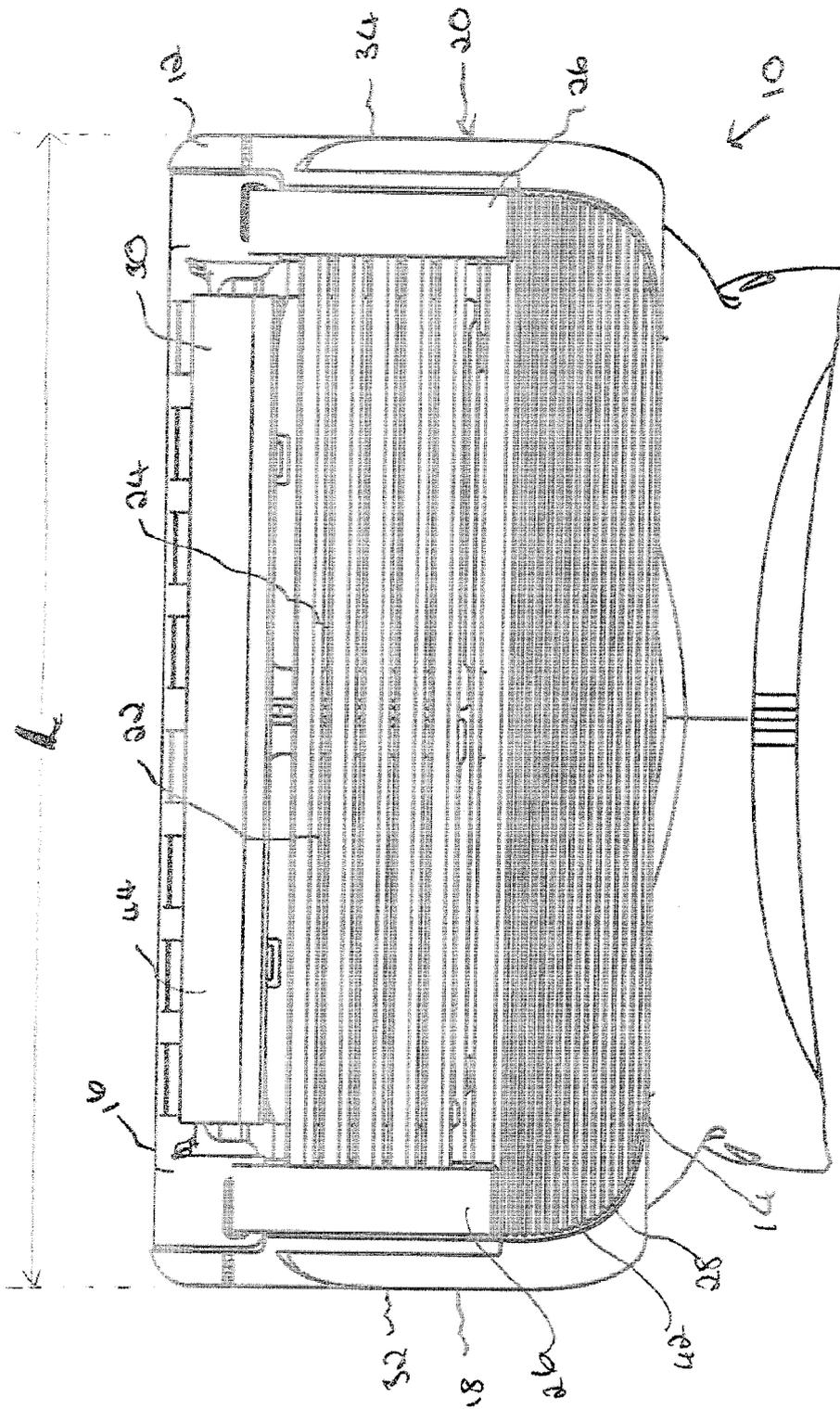


FIGURE 1.

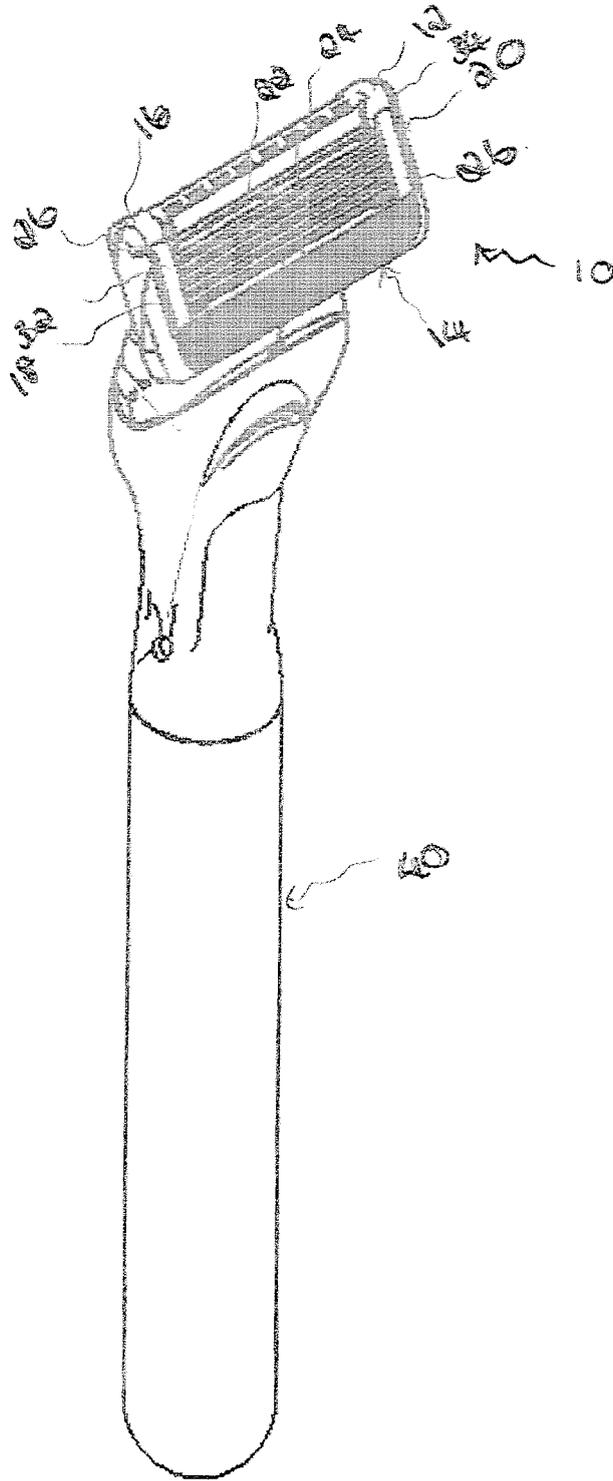


FIGURE Q.

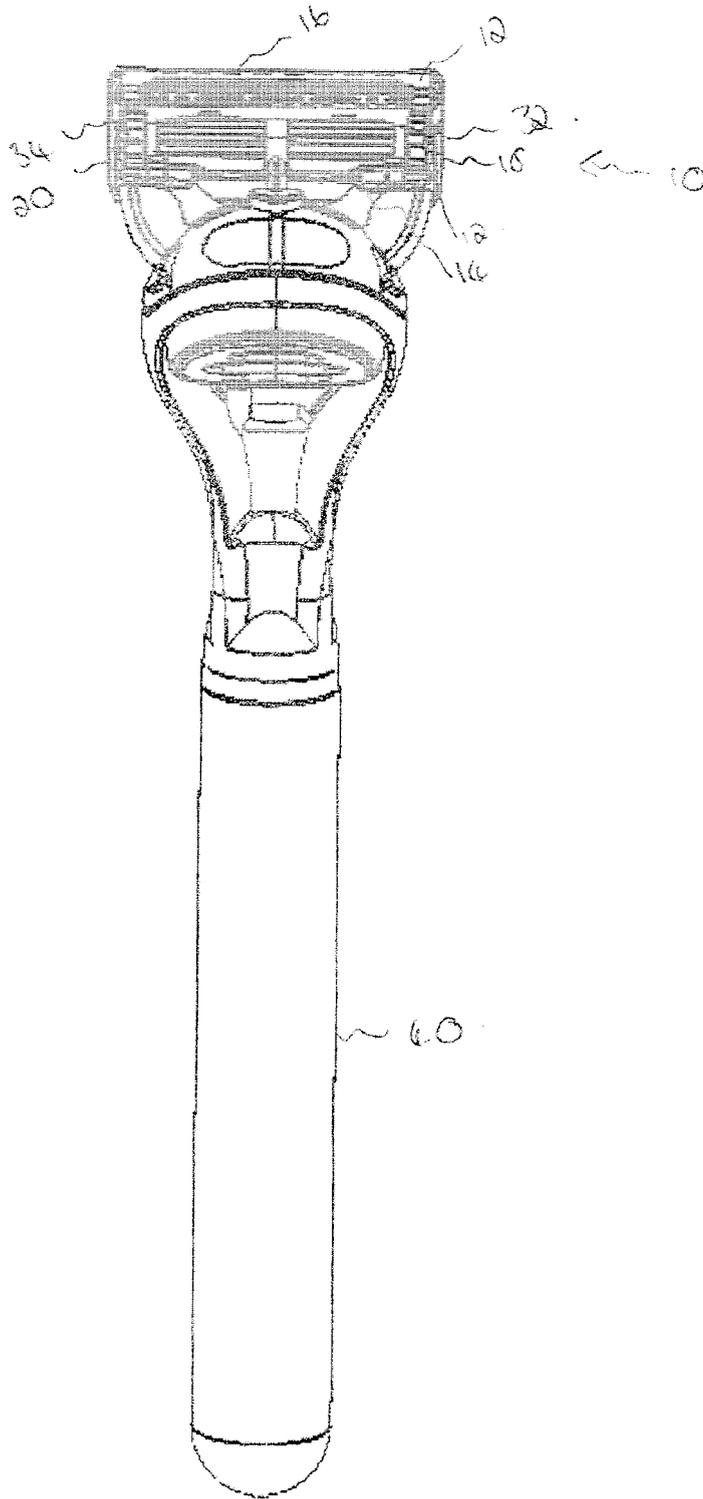


FIGURE 3



EUROPEAN SEARCH REPORT

Application Number  
EP 09 16 3384

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 6 216 345 B1 (ANDREWS EDWARD A [US]) 17 April 2001 (2001-04-17)	1-4,6-10	INV. B26B21/22
Y	* abstract * * column 19, lines 58-61; figures 28-32 *	5	
Y	US 5 778 535 A (LEDESMA JESUS C [US]) 14 July 1998 (1998-07-14) * column 2, line 65 - column 3, line 19; figure 1 *	5	
X	US 6 161 288 A (ANDREWS EDWARD A [US]) 19 December 2000 (2000-12-19) * column 45, lines 8-12; figures 1,23,37,57 *	1-4,6-8	
A	US 6 581 290 B1 (FISHEL RHONDA [US]) 24 June 2003 (2003-06-24) * column 1, lines 6-50; figures 1,3,5,7 *	1	
A	FR 2 818 508 A (LAMBERT HERVE [FR]) 28 June 2002 (2002-06-28) * page 2, lines 29-31; figures 1,2A,2B *	1	
A	US 2007/283567 A1 (MAGLI ANTHONY J [US]) 13 December 2007 (2007-12-13) * paragraph [0020]; figures 1,4 *	1	TECHNICAL FIELDS SEARCHED (IPC) B26B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 15 December 2009	Examiner Rattenberger, B
CATEGORY OF CITED DOCUMENTS 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		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	

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 09 16 3384

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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15-12-2009

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

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