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(11)

EP 1 524 014 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.04.2005 Bulletin 2005/16

(51) Int Cl.7: **A63F 9/12**

(21) Application number: **03023411.6**

(22) Date of filing: **17.10.2003**

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

(74) Representative: **Patentanwälte
Hauck, Graalfs, Wehnert, Döring, Siemons,
Schildberg
Postfach 11 31 53
20431 Hamburg (DE)**

(71) Applicant: **Chuang, Shih-Hung
Yungho City, Taipei Hsien (TW)**

Remarks:
Amended claims in accordance with Rule 86 (2)
EPC.

(72) Inventor: **Chuang, Shih-Hung
Yungho City, Taipei Hsien (TW)**

(54) **Bladder-free spherical jigsaw puzzle**

(57) A three-dimensional and spherical jigsaw puzzle includes multiple identical pieces (10). Each piece (10) has a thickness defined by a lower contour and an upper contour. A radius of the spherical jigsaw puzzle

passes through the lower contour and the upper contour so that the thickness of the piece is tapered. A quantity of the sides of each piece may be odd and each side has a shape the same as a shape of the other sides.

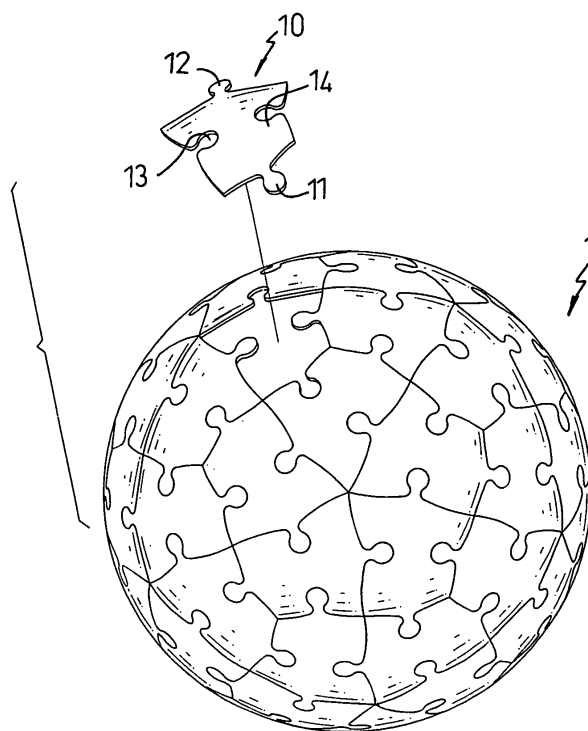


FIG. 1

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Description

1. Field of the Invention

[0001] The present invention is related to a spherical jigsaw puzzle, and more particularly to a three-dimensional, spherical jigsaw puzzle which is free of using a bladder inside the 3D jigsaw puzzle.

2. Description of Related Art

[0002] Jigsaw puzzles are popular toys for children and even adults. Conventional jigsaw puzzles generally are planar pictures which have been cut up into pieces, and then the pieces are fitted together to recreate the pictures again. The quantities of pieces in puzzles can be varied by manufacturers so that assorted difficulty levels in doing the puzzles are achieved in order to satisfy consumer demands.

[0003] There have been some jigsaw puzzles invented that are called three-dimensional puzzles. One of the three dimensional puzzles is composed of cubic pieces that each have six surfaces coated with various patterns and that can be recombined to form six pictures corresponding to the respective surfaces of the cubic pieces.

[0004] Another three-dimensional jigsaw puzzle has a three dimensional frame being composed of horizontal brackets and vertical brackets. The brackets have a plurality of apertures defined therein. Puzzle pieces with poles can be mounted on the brackets by the poles being inserted in the apertures to form a three-dimensional shape.

[0005] In a third three-dimensional jigsaw puzzle, there is a plurality of sheets coated with the same picture. The sheets are cut up according to the pieces of the jigsaw puzzle. The pieces are respectively adhered with the sheets having different numbers. Whereby, the pieces have different thicknesses and the picture reformed by the pieces has a three-dimensional effect.

[0006] However, all the conventional jigsaw puzzles have two-dimensional pictures combined by the pieces. There is no true three-dimensional effect in the jigsaw puzzles.

[0007] Therefore, the invention provides an improved jigsaw puzzle to mitigate and/or obviate the aforementioned problems.

[0008] The main objective of the invention is to provide a jigsaw puzzle which has a true three-dimensional effect.

[0009] Another objective of the present invention is to provide a 3D, spherical jigsaw puzzle which is free of a bladder inside the 3D jigsaw puzzle. The spherical jigsaw puzzle is completely supported by the pieces of the jigsaw puzzle such that fun and difficulty levels are upgraded when the quantity of the pieces of the puzzle is increased.

[0010] Still another objective of the present invention is that when the quantity of sides of each piece is even,

the shape of one side is complementary to the shape of an adjacent side.

[0011] A further objective of the present invention is that when the quantity of the sides of each piece is odd, the shape of one side is the same as that of an adjacent side.

[0012] Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

In the drawings:

Fig. 1 is an exploded perspective view of the 3D jigsaw puzzle of the present invention;

Fig. 2 is a perspective view of one piece from the jigsaw puzzle shown in Fig. 1;

Fig. 3 is a schematic view showing the characteristic of the piece in Fig. 2;

Fig. 4 is an exploded perspective view of another embodiment of the jigsaw puzzle of the present invention;

Fig. 5 is a perspective view of one piece from the jigsaw puzzle shown in Fig. 4; and

Fig. 6 is a schematic view showing the characteristic of the piece in Fig. 5.

[0013] Referring to Figs. 1 and 2, a three-dimensional jigsaw puzzle (1) in accordance with the invention is composed of multiple pieces (10) each with the same shape as the others. It is appreciated that each piece (10) includes substantially four sides. Two out of the four sides, as shown in the embodiment, are respectively formed with a protrusion (11,12) and the other two sides are respectively formed with a cutout (13,14). Therefore, it is noted that the quantity of the protrusions is the same as the quantity of the cutouts in this embodiment. Although the positions of the two protrusions (11,12) (or the cutouts (13,14)) are opposite to each other, the positions of the two protrusions (11,12) (or the cutouts (13,14)) may be adjacent to one another. That is, the protrusion (11) may be formed to be adjacent to the protrusion (12) and the cutout (13) may be defined to be adjacent to the cutout (14). Therefore, it is concluded that the shape of one side of the even-sided jigsaw puzzle is complementary to the shape of another side of the jigsaw puzzle.

[0014] With reference to Fig. 3, it is also noted that due to the jigsaw puzzle being bladder free, each piece (10) of the jigsaw puzzle has a thickness defined with an upper contour and a lower contour. In order to construct the puzzle to form a sphere, the radius R from the center O of the spherical jigsaw puzzle (1) first passes through the lower contour and then the upper contour such that the thickness of each side of the piece (1) is formed tapered.

[0015] With reference to Figs. 4 and 5, it is noted that the spherical jigsaw puzzle (2) of the present invention has multiple pieces (20). Each piece (20) has a shape

the same as the shape of the others. It is appreciated that each pieces (20) includes substantially three sides each with a protrusion (21) and a cutout (22). Therefore, it is concluded that the quantity of the protrusions (21) is the same as the quantity of the cutouts (22) in this embodiment.

[0016] With reference to Fig. 6, it is noted that due to the jigsaw puzzle being bladder free, each piece (20) of the jigsaw puzzle has a thickness defined with an upper contour and a lower contour. In order to construct the puzzle to form a sphere, the radius R' from the center O' of the spherical jigsaw puzzle (2) first passes through the lower contour and then the upper contour such that the thickness of each side of the piece (2) is formed tapered.

[0017] It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

Claims

1. A bladder free three dimensional (3D) spherical jigsaw puzzle comprising:

multiple pieces (10) each with sides, wherein each piece is formed with multiple protrusions (11,12), and multiple cutouts (13,14) respectively formed on the sides, each piece has a shape the same as that of the other pieces, a quantity of the protrusions of each piece is the same as a quantity of the cutouts of the piece, each piece has a thickness defined to be an upper contour and a lower contour, a radius of the sphere passes through the lower contour and the upper contour so that the multiple pieces are able to form a 3D spherical jigsaw puzzle.

2. The 3D spherical jigsaw puzzle as claimed in claim 1, wherein a quantity of the sides of each piece is even and each side has a shape complementary to one of the other sides.

3. The 3D spherical jigsaw puzzle as claimed in claim 1, wherein a quantity of the sides of each piece is odd and each side has a shape the same as a shape of the other sides.

4. A bladder free 3D spherical jigsaw puzzle comprising:

multiple pieces (10) each with sides, wherein each piece (10) is formed with multiple protrusions (11,12) and multiple cutouts (13,14) respectively formed on the sides, each piece has a shape the same as that of the other pieces, a quantity of the protrusions of each piece is the same as a quantity of the cutouts of the piece,

each piece has a thickness defined to be an upper contour and a lower contour, a radius of the sphere passes through the lower contour and the upper contour so that the multiple pieces are able to form a 3D spherical jigsaw puzzle,

wherein a quantity of the sides of each piece is even and each side has a shape complementary to one of the other sides.

5. A bladder free 3D spherical jigsaw puzzle comprising:

multiple pieces (10) each with sides, wherein each piece is formed with multiple protrusions (11,12) and multiple cutouts (13,14) respectively formed on the side, each piece (10) has a shape the same as that of the other pieces, a quantity of the protrusions of each piece is the same as a quantity of the cutouts of the piece,

each piece has a thickness defined to be an upper contour and a lower contour, a radius of the sphere passes through the lower contour and the upper contour so that the multiple pieces are able to form a 3D spherical jigsaw puzzle,

wherein a quantity of the sides of each piece is odd and each side has a shape the same as a shape of the other sides.

Amended claims in accordance with Rule 86(2) EPC.

1. A bladder-free three-dimensional spherical jigsaw puzzle comprising:

multiple pieces (10) each with sides, wherein each piece is formed with multiple protrusions (11, 12) and multiple cutouts (13, 14) respectively formed on the side, each piece (10) has a shape the same as that of the other pieces, a quantity of the protrusions of each piece is the same as the quantity of the cutouts of the piece,

each piece has a thickness defined by an upper contour and a lower contour, a radius of the sphere passes through the lower contour and the upper contour so that the multiple pieces are able to form a 3D spherical jigsaw puzzle,

characterized in that the quantity of the sides of each piece is odd and

each side has a shape the same as the shape of the other sides.

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2. A bladder-free three-dimensional spherical jigsaw puzzle as claimed in claim 1, **characterized in that** each piece has three sides.

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3. A bladder-free three-dimensional spherical jigsaw puzzle as claimed in claim 1 or 2, **characterized in that** each side includes a protrusion (21) and a cutout (22).

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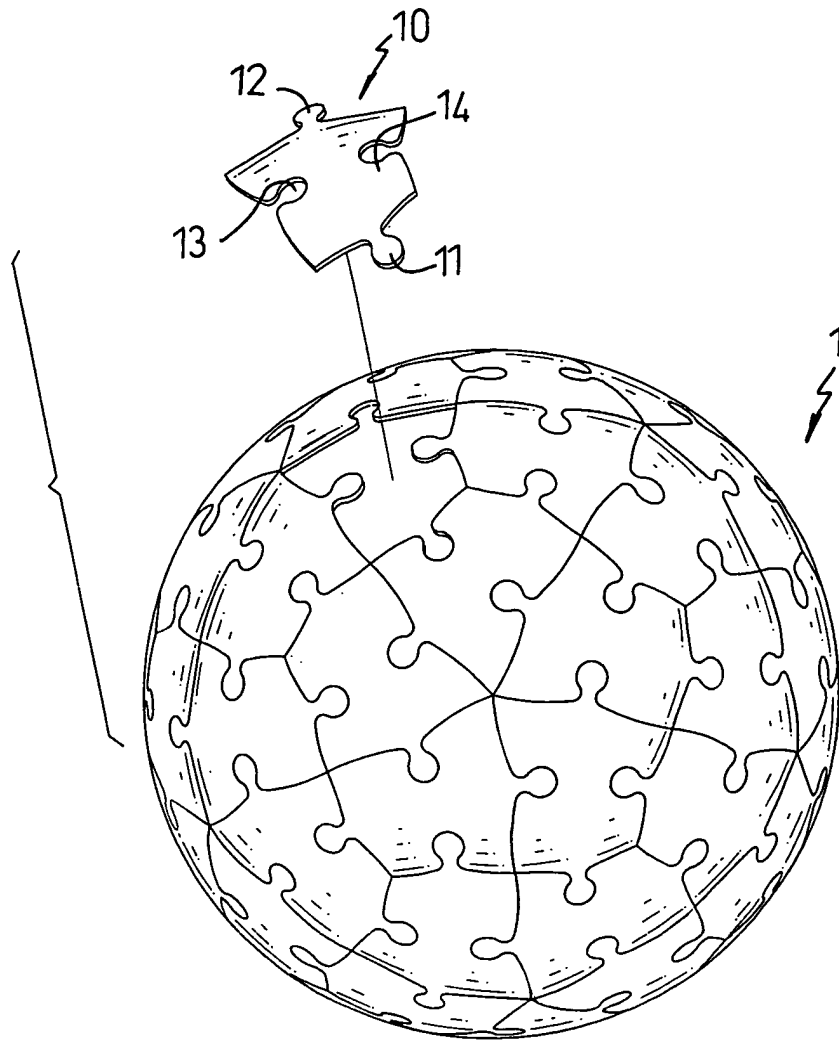


FIG. 1

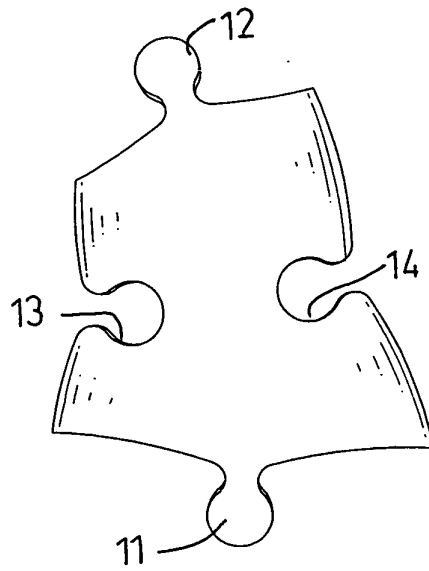


FIG. 2

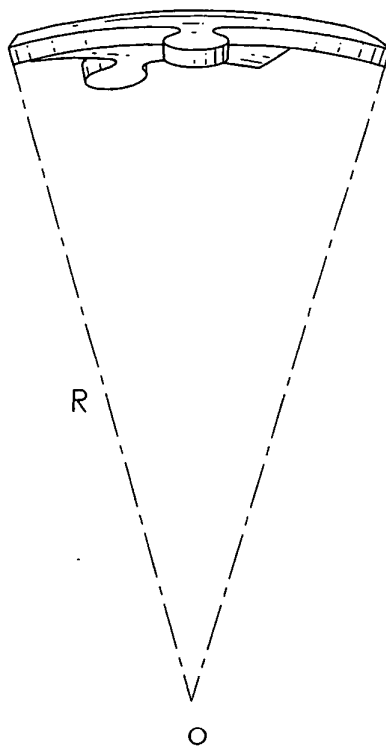


FIG. 3

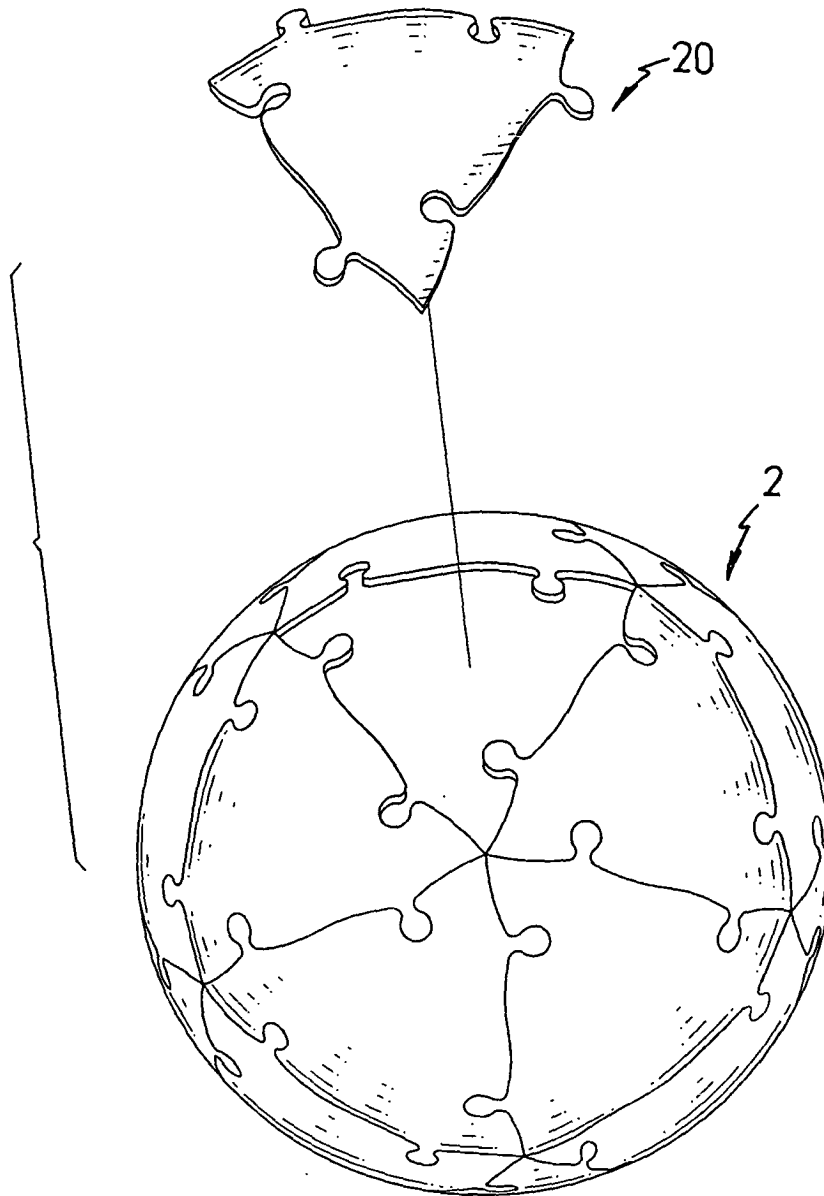


FIG. 4

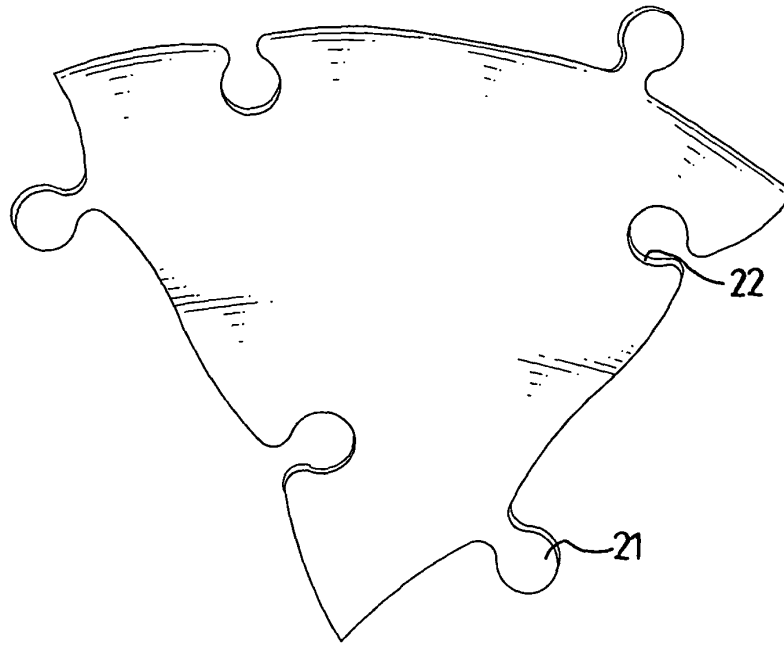


FIG. 5

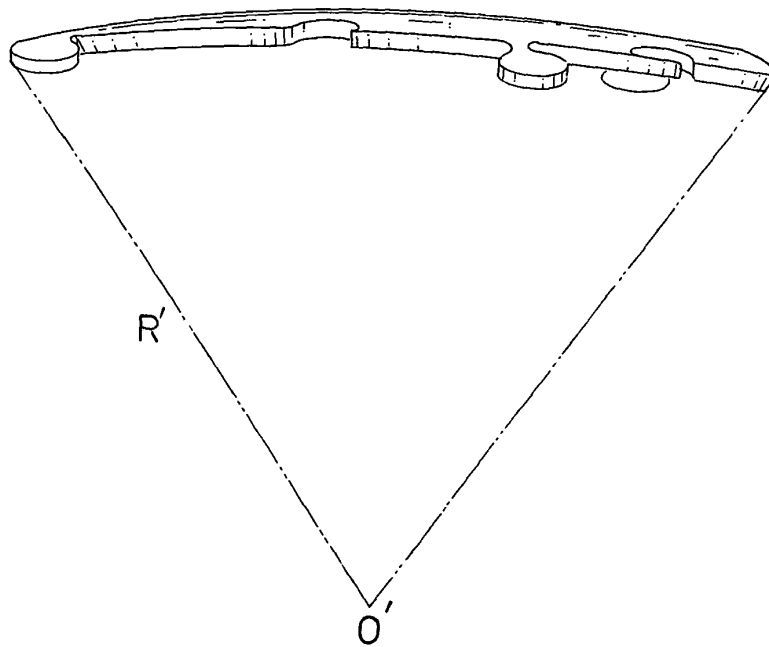


FIG. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 03 02 3411

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	US 3 578 331 A (DEGAST HILAIRE G) 11 May 1971 (1971-05-11)	1,2	A63F9/12
Y	* column 2, line 6 - line 55 * * figures 1-3 *	3	

Y	GB 161 045 A (WILLIAM JOHN CORBETT) 7 April 1921 (1921-04-07) * page 2, line 39 - line 49 * * figure 1 *	3	

A	FR 2 648 358 A (NAHON JEAN CHARLES) 21 December 1990 (1990-12-21) * the whole document *	1	

E	EP 1 371 401 A (CHUANG SHIH-HUNG) 17 December 2003 (2003-12-17) * the whole document *	1-3	

			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 17 February 2004	Examiner Turmo Peruga, R
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 (P04/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 03 02 3411

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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17-02-2004

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