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

Stützfrees sphärisches Puzzle

Puzzle sphérique sans boule de support

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(56) References cited:
**EP-A- 1 371 401 FR-A- 2 648 358
GB-A- 161 045 US-A- 3 578 331**

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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] 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.

[0008] In US 3,578,331 is disclosed a spherical jigsaw puzzle with multiple pieces according to the preamble of claim 1.

[0009] Therefore, it is an object of the present invention to provide a jigsaw puzzle which has a true three-dimensional effect and has an increased difficulty-level.

[0010] It is proposed that the quantity of the sides of each piece is odd and each side has a shape the same

as a shape of the other sides.

[0011] Furthermore, it is proposed that each piece has three sides, which provide a clear structure of the jigsaw.

[0012] Each side may include a protrusion and a cut-out, so the user is given plenty of possibilities to combine the pieces and the difficulty-level is further increased.

[0013] 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:

[0014]

Fig. 1 is an exploded perspective view of the 3D jigsaw puzzle not forming part 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 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.

[0015] Referring to Figs. 1 and 2, a three-dimensional jigsaw puzzle (1) 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.

[0016] 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.

[0017] 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.

[0018] 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.

[0019] 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 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.

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

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).

Patentansprüche

1. Stützfrees, dreidimensionales, sphärisches Puzzle, umfassend:

mehrere Teile (10), jeweils mit Seiten, wobei jedes Teil mit mehreren Vorwölbungen (11,12) und mehreren Ausschnitten (13,14) ausgebildet ist, die jeweils an der Seite ausgebildet sind, wobei jedes Teil (10) eine Form aufweist, die der Form der anderen Teile entspricht,

eine Menge der Vorwölbungen jedes Teils der Menge Ausschnitte des Teils entspricht,

jedes Teil eine Dicke aufweist, die durch einen oberen Umriss und einen unteren Umriss bestimmt ist, wobei ein Radius der Sphäre durch den oberen Umriss und den unteren Umriss verläuft, so dass die mehreren Teile ein sphärisches 3D-Puzzle bilden können, **dadurch gekennzeichnet, dass** die Menge der Seiten jedes Teils ungerade ist und jede Seite eine Form aufweist, die der Form der anderen Seiten entspricht.

2. Stützfrees, dreidimensionales, sphärisches Puzzle nach Anspruch 1, **dadurch gekennzeichnet, dass** jedes Teil drei Seiten aufweist.

3. Stützfrees, dreidimensionales, sphärisches Puzzle nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** jede Seite eine Vorwölbung (21) und einen Ausschnitt (22) umfasst.

Revendications

1. Un puzzle sphérique en trois dimensions et sans boule de support :

à éléments multiples (10) comportant des bordures, où toutes les pièces sont formées de plusieurs protubérances (11,12) et de nombreuses découpes (13,14) respectivement formées sur les bordures et dont les pièces (10) sont toutes de la même forme, le nombre des protubérances de chaque pièce est égal au nombre de découpes de cette pièce, toutes les pièces ont une épaisseur définie par un contour supérieur et un contour inférieur, un

rayon de la sphère passe par le contour inférieur et le contour supérieur tel que l'ensemble des pièces s'assemblent en un puzzle sphérique en trois dimensions,

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caractérisé par le fait que chaque pièce a un nombre impair de bordures,
chaque bordure est de la même forme que toutes les autres bordures.

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2. Un puzzle sphérique en trois dimensions et sans boule de support tel qu'il apparaît dans Revendication 1, **caractérisé par le fait que** chaque pièce comporte trois bordures.

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3. Un puzzle sphérique en trois dimensions et sans boule de support tel qu'il apparaît dans Revendication 1 et Revendication 2, **caractérisé par le fait que** chaque bordure comporte une protubérance (21) et une découpe (22).

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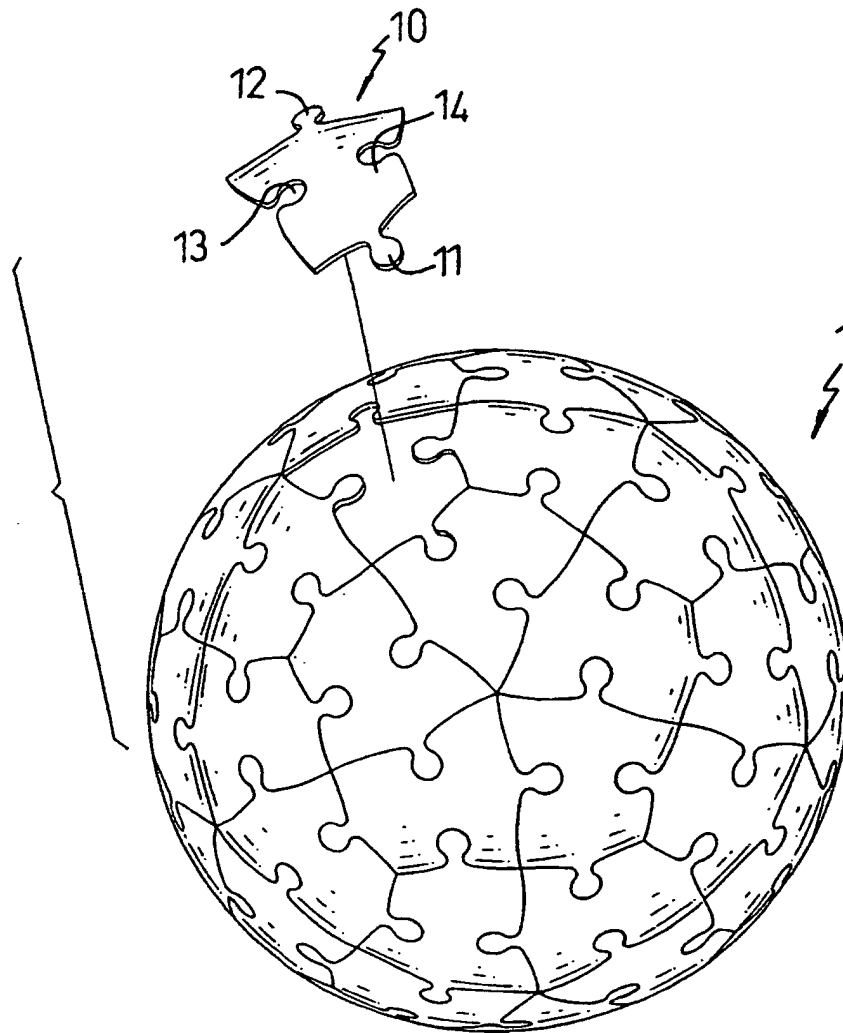


FIG .1

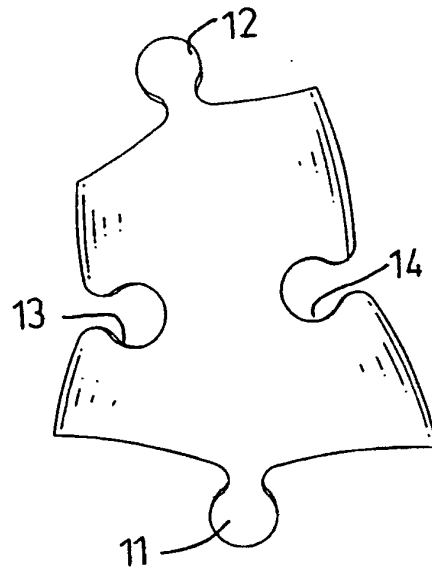


FIG. 2

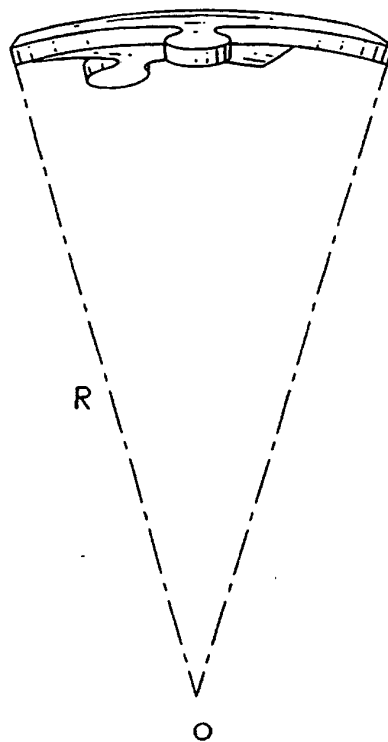


FIG. 3

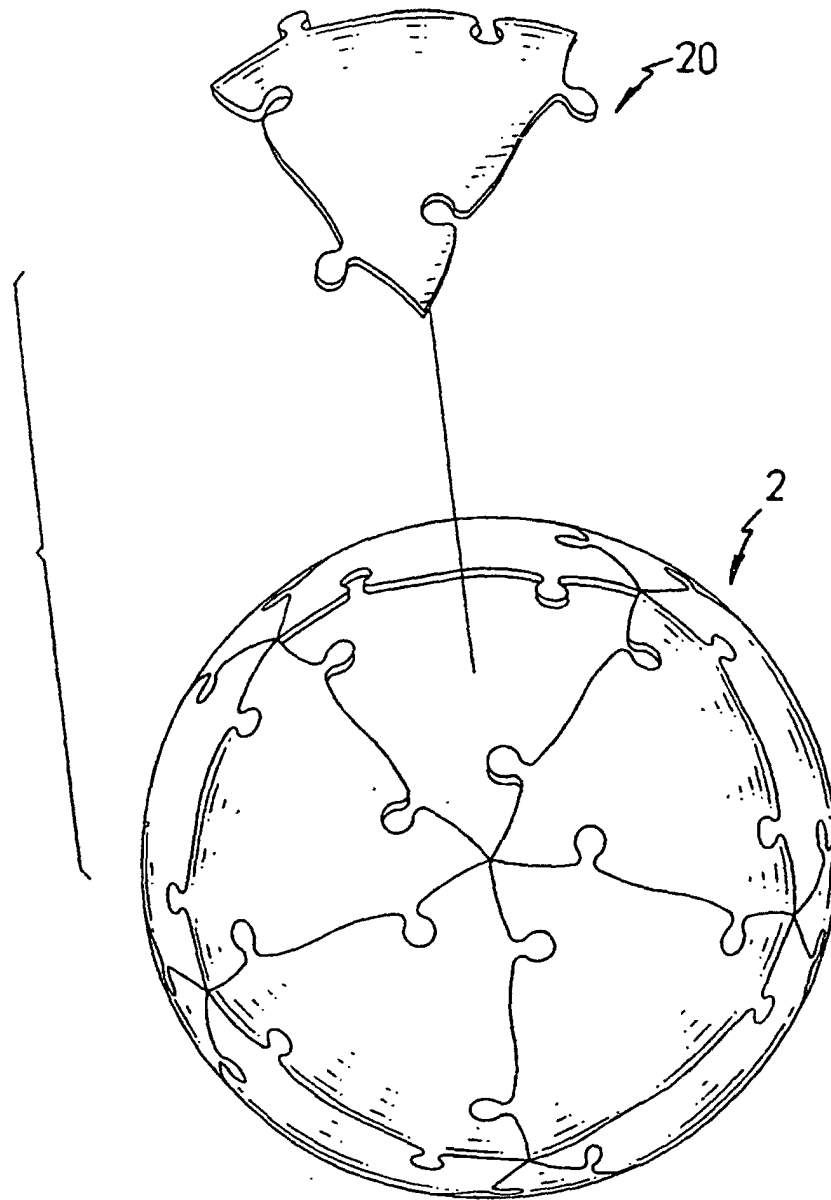


FIG. 4

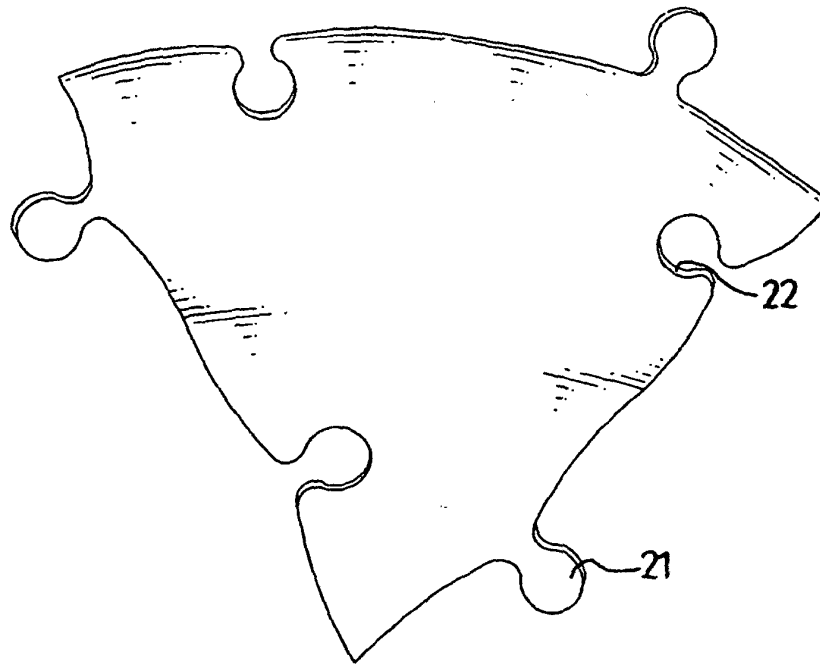


FIG. 5

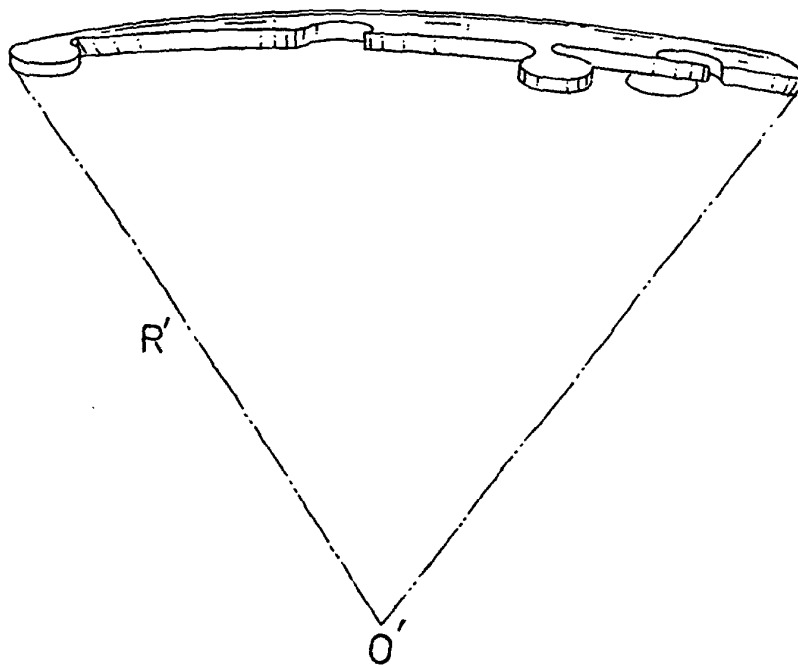


FIG. 6