

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
23 March 2006 (23.03.2006)

PCT

(10) International Publication Number  
**WO 2006/031137 A1**

(51) International Patent Classification<sup>7</sup>: **A63F 9/08**

(21) International Application Number:  
PCT/PL2004/000072

(22) International Filing Date:  
16 September 2004 (16.09.2004)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **SWIAT ZABAWEK ANATOLA LOKASTO** [PL/PL]; Spolka z Ograniczona Odpowiedzialnoscia, ul. Sybirakow 32, PL-05-500 Piaseczno (PL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **LOKASTO, Anatol** [PL/PL]; Ul. Nowolipie 26 m. 100, PL-01 011 Warszawa (PL).

(74) Agent: **GRABOWSKA, Malgorzata**; Sulima-Grabowska-Sierzputowska, ul. Warynskiego 1, PL-00-645 Warszawa (PL).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

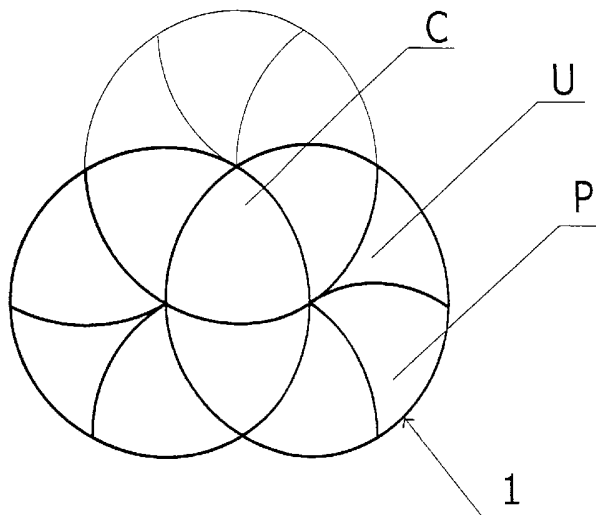
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **MOSAIC PUZZLE AND METHOD OF COMPLETING SAID MOSAIC PUZZLE**



(57) Abstract: The invention relates to a mosaic puzzle and a method of completing the mosaic puzzle. The mosaic puzzle, according to the invention, is made up of coplanar sets of tiles, the edges of which are arcs of circumferences of equal radii, with centres located on the arcs of adjacent tile sets, the tiles of each set having a shape resembling a triangle, the sides of which are concave and/or convex, in addition all the tiles of a given set are rotatable together about an axis perpendicular to the plane of the tiles and passing through the centre of the circumference; and the means for adjacent tiles to be joined while being moved relative to each other. The invention also relates to a completion of the puzzle. The completion of the puzzle begins with the tile set which at that given moment contains the central tile, rotating it around its centre by an angle equal to  $n \times 60^\circ$ , where  $n$  is a natural number other than 6 and its multiples. Of the remaining tile sets, the one that at that point of the tilemoving procedure has a full circumference, is then rotated, clockwise or counter-clockwise, around its centre by an angle equal to  $n \times 60^\circ$ , where  $n$  is

WO 2006/031137 A1

**Mosaic puzzle and method of completing said mosaic puzzle**

The invention relates to a mosaic puzzle in the form of coplanar sets of moveable tiles, the said tiles having a shape resembling a triangle with concave and/or convex sides; the invention also relates to the method of completing this mosaic puzzle.

A mosaic puzzle based on elements of a circle and a slide-bearing mechanism for moving the elements of the mosaic are both known from Polish patent application No. P. 243850 filed on the 22<sup>nd</sup> of September 1983 by Anatol Łokasto and Sławomir Karwiński. This mosaic puzzle is composed of two kinds of moveable tiles, and their total number is twenty-nine. The first kind of moveable tile is characterized by having a shape resembling an equilateral triangle, the vertices of which are joined by arcs with curvature directed  
10 towards the interior of the triple-vertex geometric figure. All the arcs are concave arcs of equal length. In contrast, moveable tiles of the second kind have a shape resembling the cross-section of a biconvex optical lens, of which the two arcs have the same radius of curvature and the same length.

The Polish utility model application No. W 100279 relates to a mosaic puzzle,  
15 characterized by being composed of a base, a cover with a hole in the shape of two overlapping circles and two kinds of coloured, moveable tiles. Tiles of the first kind have a shape resembling an equilateral triangle with three concave sides, whereas tiles of the second kind have a shape resembling the cross-section of a biconvex optical lens, of which the two arcs have the same radius of curvature. The surfaces of these moveable tiles are  
20 coloured. In the middle of the base there is an external projection with a music box.

The mosaic puzzle known from German patent No. 3143735 is composed of two sets of circles, each of the sets comprising eighteen moveable tiles. Among them there are six moveable tiles resembling in shape an equilateral triangle the vertices of which are joined by concave arcs, and twelve moveable tiles of a shape resembling the cross-section  
25 of a biconvex optical lens.

A mosaic puzzle composed of twenty-nine identical, moveable, tongued-and-grooved tiles which form two intersecting circles located inside a casing, is known from U.S. patent No. 3146801.

Another mosaic puzzle is known from Polish patent No. PL 187065. This has  
30 thirteen moveable tiles forming two intersecting circles of equal diameters, which make up the sets of tiles, the circumference of one circle passing through the centre of the other circle. This puzzle is composed of three kinds of moveable tiles: three tiles of a shape resembling the cross-section of a biconvex optical lens; four tiles of a shape resembling an

equilateral triangle with vertices joined by arcs, two arcs being concave and the third being convex; and six tiles of a shape resembling an equilateral triangle with vertices joined by arcs, two arcs being convex and the third being concave. All the arcs are of equal lengths.

Yet another mosaic puzzle is known from Polish patent No. PL 187089. This one is  
5 composed of three kinds of moveable tiles, forming intersecting circles. The total number of these tiles equals sixteen. There are three tiles of a shape resembling the cross-section of a biconvex optical lens; five tiles of a shape resembling an equilateral triangle with vertices joined by arcs, two arcs being concave and the third being convex; and eight tiles of a shape resembling an equilateral triangle with vertices joined by arcs, two arcs being  
10 convex and the third being concave. All the arcs are of equal lengths.

These previous puzzles contain some lens-shaped tiles, described above and shown in the diagrams: their shape does not allow the puzzle to work properly, since the depth of the grooves of these tiles is different at the sharp ends than on the sides (and the width of the tongue varies similarly), thus causing the tiles to stick.

15 Therefore, because of the excessively complex structure of previous puzzles, and in particular because of the tendency of the tiles to become wedged when being slid, there is a need for the development of a simpler construction design for the puzzle, in order to eliminate both difficulties in its exact manufacture and the problem of tiles sticking when slid during use.

20 The mosaic puzzle that is the subject of the invention is made up of coplanar sets of tiles whose edges are the arcs of circumference of equal radii with centres located on the circumferences of adjacent sets of tiles; the tiles of each set are shaped like triangles the sides of which are concave and/or convex; in addition, all the tiles belonging to a given set can together rotate about an axis perpendicular to the plane of tiles and passing through the  
25 centre of the circumference; there are also means for joining tiles which touch while being moved relative to each other. The said game is characterized by being composed of three kinds of tiles: one central tile with all convex sides, a number of basic tiles which have one concave side and two convex sides, and a number of complementary tiles which have one convex side and two concave sides; the sides of all the tiles are of the same length and have  
30 the same radius of curvature; the tiles being slidable along their edges relative to each other in the plane of the puzzle. The said puzzle has a basic arrangement of two sets of tiles, the perimeters of which are circumferences of circles which pass through each others' centres and have a common portion of one central tile and one basic tile and, as a complement, three basic tiles and one complementary tile each; there is at least one additional set of  
35 tiles, composed of one complementary tile and a number of basic tiles, with an external

perimeter in the shape of a circle arc directed towards the outside of the puzzle, and with the end points of this arc on the edge of the pre-existing sets of tiles and its centre at a point on the edge of the pre-existing sets where at least two tiles meet.

Preferably, in a given additional set of tiles at least one basic tile and a  
5 complementary tile are permanently joined together; if the complementary tile is joined to more than one basic tile, the complementary tile is located between the basic tiles.

These joined tiles may form a unit.

A preferred example of the mosaic puzzle is composed of three sets of tiles,  
10 comprising one basic arrangement of two sets of tiles, and one additional set of tiles made up of one complementary tile and three basic tiles forming a semicircular outline with endpoints at the edge of the basic arrangement and its centre at a point defined by the intersection of the circumferences of the tile sets making up the basic arrangement.

Another preferred example of the mosaic puzzle is composed of three sets of tiles,  
15 comprising one basic arrangement of two sets of tiles, and one additional set of tiles composed of one complementary tile and three basic tiles forming the arc of a circle with endpoints at the edge of the basic arrangement, one of these endpoints being located at a point defined by the intersection of the circumferences of the tile sets in the basic arrangement.

Preferably, the puzzle that is the subject of the invention is composed of four sets of  
20 tiles: a basic arrangement of two sets of tiles plus two additional sets, each composed of one complementary tile and two basic tiles forming a semicircular outline with endpoints at the edge of the basic arrangement and centre at a point defined by the intersection of the circumferences of tile sets in the basic arrangement.

Along their convex sides the tiles have a groove with a rectangular cross-section  
25 and along their concave sides a tongue of rectangular cross-section, the cross-sections of the tongue and groove being mutually complementary.

Preferably, in the plane of the puzzle each of the tile sets is rotatable about the  
centre of its circumference, clockwise or counter-clockwise.

Preferably, in addition, along the external arcs of the circumferences, which make  
30 up the outside edge of the puzzle, there is a flexible surround in the form of a thin strip of flexible, elastic material, whose width is essentially equal to the width of the groove in the tile.

Preferably, along the external arcs of the circumferences, which make up the  
outside edge of the puzzle, there is a flexible surround with a T-shaped cross-section; on  
35 the side facing the sets of tiles, three neighbouring sides of this surround form a tongue of

rectangular cross-section and of dimensions ensuring the sliding movement of the tiles, which have a groove of the same cross-section.

According to the invention, the method of completing the mosaic puzzle, is characterized in that completing it begins with rotation of that tile set which at the given moment contains the central tile, around the centre of its circumference by an angle equal to  $n \times 60^\circ$ , where  $n$  is a natural number; of the remaining tile sets, the one that at that point of the tile-moving procedure has a full circumference, is then rotated around its centre by an angle equal to  $n \times 60^\circ$ , where  $n$  is a natural number, clockwise or counter-clockwise; then the tile set that has not been rotated yet, and now has a full circumference, is also rotated around its centre by an angle equal to  $n \times 60^\circ$ , where  $n$  is a natural number, clockwise or counter-clockwise; these actions are repeated alternately until the final configuration of tiles in the whole puzzle is obtained.

The essential preferable effects resulting from the use of the mosaic puzzle, according to the invention and in relation to the state of the art, are that with a lesser quantity of three kinds of moveable tiles, i.e. with a simpler design, a greater number of possible tile combinations is obtained from performing the simple actions of alternately rotating these three sets of tiles around their centres. Furthermore, the possibility of making the puzzle tiles of a synthetic material assures easy production of the puzzle at a relatively low cost, with high dimensional accuracy of the finished tile shape and low friction on the tongue-and-groove guides when the tiles are slid.

An example of the object of the invention is shown in the accompanying diagrams, in which

Fig. 1 shows a general view of the mosaic puzzle from above;

Fig. 2 shows the view from above of the first embodiment of the mosaic puzzle with three coplanar sets of tiles;

Fig. 3 shows the view from above of the second embodiment of the mosaic puzzle with three coplanar sets of tiles;

Fig. 4 shows the view from above of an embodiment of the mosaic puzzle with four coplanar sets of tiles;

Fig. 5 shows the view from above of an embodiment of the mosaic puzzle with four coplanar sets of tiles which have two joined tiles in each set;

Fig. 6 shows the view from above of an embodiment of the mosaic puzzle with four coplanar sets of tiles which have two joined tiles in two of the sets of tiles;

Fig. 7 shows the view from above of a mosaic puzzle similar to that in Fig. 3, which has two joined tiles in all sets of tiles;

Fig. 8 shows the view from above of a mosaic puzzle similar to that in Fig. 7, but which has three joined tiles in two of three sets of tiles;

Fig. 9 shows the view from above of a mosaic puzzle similar to that in Fig. 7, but having three joined tiles in two sets of tiles and two joined tiles in the third set;

5 Fig. 10 shows the view from above of a mosaic puzzle similar to that in Fig. 2, having two joined tiles in all sets of tiles;

Fig. 11 shows the view from above of a mosaic puzzle similar to that in Fig. 10, with three joined tiles in one set and two joined tiles in the remaining sets of tiles;

10 Fig. 12 shows the view from above of a mosaic puzzle similar to that in Fig. 2 with two joined tiles in two of three sets of tiles;

Fig. 13 shows the view from above of a mosaic puzzle similar to that of Fig. 2 with three joined tiles in one of the sets of tiles;

Fig. 14 shows the view from above of the central tile;

Fig. 14a shows the cross-section of the central tile taken along line A-A in Fig. 14;

15 Fig. 15 shows the view from above of the basic tile; Fig. 15a shows the cross-section of the basic tile taken along line A-A in Fig. 15;

Fig. 16 shows the view from above of the complementary tile; Fig. 16a shows the cross-section of the complementary tile taken along line A-A in Fig. 16;

20 Fig. 17 shows the view from above of the surround of a mosaic puzzle with three coplanar sets of tiles;

Fig. 18 shows the cross-section of the surround of Fig. 9;

Fig. 19 shows the view from above of a mosaic puzzle with three coplanar sets of tiles and a surround;

25 Figs. 21a - 23b show different embodiments of the slide connection between adjacent tiles of the mosaic puzzle, and possibly between the tiles and the surround.

30 As shown in Fig. 1, the mosaic puzzle according to the invention consists of several coplanar sets of tiles, the edges of which are arcs of circumferences of equal radii, with centres located on the arcs of adjacent tile sets. The tiles in each set have a shape resembling an equilateral triangle, the sides of which are concave and/or convex; in addition all the tiles of a given set are rotatable together about an axis perpendicular to the plane of the tiles and passing through the centre of the circumference. The puzzle has the means for adjacent tiles to be joined while being moved relative to each other.

35 The mosaic puzzle is composed of three kinds of tiles, including one central tile C with all convex sides, a number of basic tiles P having one concave side and two convex sides, and a number of complementary tiles U having one convex side and two concave

sides. The sides of all the tiles C, P and U have the same length and the same radius of curvature.

Tiles in all the sets are slidable along their edges relative to each other within the plane of the puzzle.

5 The main element of the puzzle is its basic set 1, composed of two sets of tiles, the outlines of which are circumferences which pass through each others' centres; there is a common part of one central tile C and one basic tile P, and a complement of three basic tiles P and one complementary tile U for each set. The mosaic puzzle is made up of such a basic set 1, complemented by at least one additional set of tiles 2; it may be further  
10 complemented by any number of additional sets of tiles consisting of a complementary tile U and enough basic tiles P to ensure that the additional set of tiles has an external perimeter in the shape of a circle arc directed towards the outside of the puzzle, with the end points of this arc on the edge of pre-existing sets of tiles and its centre at a point on the edge of pre-existing sets of tiles where at least two tiles meet.

15 In the embodiment shown in Fig. 2, the mosaic puzzle, according to the invention, has three coplanar sets of tiles, with one basic arrangement 1 and one additional set 2. For the sake of clarity, the perimeter of the basic arrangement 1 in Fig. 2 is outlined in bold.

Further preferable embodiments of the mosaic puzzle according to the invention are shown in Figs. 3–13. Although they have differing numbers of tile sets, each of the puzzles  
20 shown has the basic arrangement 1 and one or two additional sets 2. As shown in Figs. 5–13, there may be joined tiles in the puzzle, and one basic tile P and at least one complementary tile U may be joined together permanently. In joining tiles two conditions have to be met: if complementary tile U is connected to more than one basic tile P, then complementary tile U is located between basic tiles P; those edges of the joined tiles which  
25 face into the centre of the arc are concave. Such joined tiles may make up a unit.

In the embodiment shown in Fig. 2 the mosaic puzzle consists of three sets of tiles: the two sets of the basic arrangement 1 and one additional set composed of a complementary tile U and three basic tiles P, forming a semicircular outline with its endpoints at the edge of the basic arrangement and its centre at a point defined by the  
30 intersection of the circumferences of the tile sets making up the basic arrangement 1.

In the embodiment shown in Fig. 3 the mosaic puzzle consists of three sets of tiles: the two sets of the basic arrangement 1 and one additional set composed of a complementary tile U and three basic tiles P, forming the arc of a circle with endpoints at the edge of the basic arrangement, one of these endpoints being located at a point defined  
35 by the intersection of the circumferences of the tile sets in the basic arrangement 1.

In the embodiment shown in Fig. 4 the mosaic puzzle consists of four sets of tiles: the two sets of the basic arrangement 1 and two additional sets, each composed of a complementary tile U and two basic tiles P, forming a semicircular outline with its endpoints at the edge of the basic arrangement and its centre at a point defined by the intersection of the circumferences of the tile sets making up the basic arrangement 1.

As is shown in Figs. 14–16, the tiles have a shape resembling an equilateral triangle the sides of which are concave and/or convex.

The central tile C has all convex sides. The basic tile P has one concave side and two convex sides, whereas the complementary tile U has one convex side and two concave sides. The sides of all the tiles are of the same length and have the same radius of curvature. All tiles can be moved relative to each other by sliding.

As shown in Figs. 14-16a, along their convex sides tiles C, P and U have a groove a with a rectangular cross-section and along their concave sides a tongue b of rectangular cross-section, the cross-sections of the groove a and tongue b being mutually complementary.

The groove a, a' and tongue b, b' make possible the sliding movement of the tiles relative to each other. All the tiles of the mosaic puzzle may be made of synthetic material; their surfaces can be matt or smooth and shiny, plain or multicoloured.

Along the external arcs of the circumferences there is a surround in the form of a thin strip of flexible, elastic material, whose width is essentially equal to the width of the tongue b on the tile.

In a preferred embodiment of the mosaic puzzle, along the external arcs of the circumferences the puzzle has a surround S, made of a flexible material, e.g. a synthetic material, with a T-shaped cross-section, of which the web, on the side facing the sets of tiles, makes a tongue d with a rectangular cross-section fitting into groove a in the convex sides of the tiles, thus ensuring the sliding movement of the tiles within the surround S.

Figs. 21a-23b show different embodiments of sliding connections for adjacent tiles of the mosaic puzzle and possibly for tiles within the surround. As shown, the tongue may have a rectangular cross-section, rectangular with chamfered edges, or T-shaped; the groove for the chosen tongue shape has a complementary shape and dimensions. All tiles in the mosaic puzzle must have identical tongues and grooves, and a suitable surround.

Before the tiles of the mosaic puzzle begin to be moved, an initial configuration, usually a random arrangement, is defined, likewise a final configuration, e.g. a defined image. In addition, a set time is determined, during which subsequent rotations of tile sets transform the starting configuration of tiles into the final one. The shortest time in which



the final configuration of tiles is reached constitutes the best result.

Completing the puzzle begins with that tile set which at the given moment contains the central tile, rotating it around its centre by an angle equal to  $n \times 60^\circ$ , where  $n$  is a natural number other than 6 and its multiples; of the remaining tile sets, the one that at that point of the tile-moving procedure has a full circumference is then rotated, clockwise or counter-clockwise, around its centre by an angle equal to  $n \times 60^\circ$ , where  $n$  is a natural number other than 6 and its multiples; these actions are repeated, rotating the next set of tiles that now has a full circumference, until the final configuration of tiles in the whole puzzle is obtained.

10 The mosaic puzzle, and its method of arranging tiles, is, according to the invention, suitable for use by people of different ages, both in closed rooms and out in the open, e.g. in parks or recreational areas.

Although in the present description and diagrams the mosaic puzzle according to the invention has been presented in the form of specific embodiments, it will be obvious to those knowledgeable in the field of mosaic puzzles that the information included herein, concerning the construction of the mosaic puzzle and the method of arranging the tiles thereof, can not be interpreted as limiting the idea of the mosaic puzzle and how it is used to that information only. The embodiment of the mosaic puzzle described above may be subject to many modifications, adaptations or equivalent embodiments, being not significantly different from the innovative idea of the mosaic puzzle and thus not tending to diminish the technical and functional results achieved by the said mosaic puzzle.

## Claims

1. A mosaic puzzle comprising coplanar sets of tiles, the edges of which are arcs of circumferences of equal radii, with centres located on the arcs of adjacent tile sets, the tiles of each set having a shape resembling a triangle, the sides of which are concave and/or convex; wherein all the tiles of a given set are rotatable together about an axis  
5 perpendicular to the plane of the tiles and passing through the centre of the circumference; and the means for adjacent tiles to be joined while being moved relative to each other; **characterized in that** it is composed of three kinds of tiles, including one central tile (C) with all convex sides, a number of basic tiles (P) having one concave side and two convex sides, and a number of complementary tiles (U) having one convex side and two concave  
10 sides; the sides of all tiles having the same length and the same radius of curvature; the tiles being slidable along their edges relative to each other in the plane of the puzzle; the puzzle having a basic arrangement (1) of two sets of tiles, the perimeters of which are circumferences which pass through each others' centres, having a common portion of one central tile (C) and one basic tile (P) and, as a complement, three basic tiles (P) and one  
15 complementary tile (U) each, and at least one additional set of tiles composed of one complementary tile (U), and a number of basic tiles (P), with an external perimeter in the shape of a circle arc directed towards the outside of the puzzle, and with the end points of this arc on the edge of pre-existing sets of tiles and its centre at a point on the edge of pre-existing sets of tiles where at least two tiles meet.

20 2. A mosaic puzzle according to claim 1, **characterized in that** in a given set of tiles at least one basic tile (P) and a complementary tile (U) are permanently joined together, and if the complementary tile (U) is joined to more than one basic tile (P), the complementary tile (U) is located between the basic tiles (P).

25 3. A mosaic puzzle according to claim 1, **characterized in that** said joined tiles form a unit.

4. A mosaic puzzle according to claim 1, 2, or 3, **characterized in that** it is composed of three sets of tiles, comprising one basic arrangement of two sets of tiles, (1), and one additional set of tiles made up of one complementary tile (U) and three basic tiles (P) forming a semicircular outline with endpoints at the edge of the basic arrangement (1)  
30 and its centre at a point defined by the intersection of the circumferences of the tile sets making up the basic arrangement (1).

5. A mosaic puzzle according to claim 1, 2, or 3, **characterized in that** it is composed of three sets of tiles, comprising one basic arrangement of two sets of tiles, (1),

and one additional set of tiles composed of one complementary tile (U) and three basic tiles (P) forming the arc of a circle with endpoints at the edge of the basic arrangement (1), one of said endpoints being located at a point defined by the intersection of the circumferences of the tile sets in the basic arrangement (1).

5           6. A mosaic puzzle according to claim 1 or 2, or 3, **characterized in that** it is composed of four sets of tiles, comprising a basic arrangement of two sets of tiles, (1), and two additional sets of tiles, each composed of one complementary tile (U) and two basic tiles (P) forming a semicircular outline with endpoints at the edge of the basic arrangement (1) and centre at a point defined by the intersection of the circumferences of tile sets in the  
10 basic arrangement (1).

7. A mosaic puzzle according to any of the preceding claims, **characterized in that** the tiles (C, P, U) along their convex sides, have a groove (a) with a rectangular cross-section and along their concave sides a tongue (b) of rectangular cross-section, the groove (a) and the tongue (b) having mutually complementary cross-sections.

15           8. A mosaic puzzle according to any of the preceding claims, **characterized in that** in the plane of the puzzle, each of the tile sets is rotatable about the centre of its circumference, clockwise or counter-clockwise.

9. A mosaic puzzle according to any of the preceding claims, **characterized in that** along the external arcs of the circumferences, which make up the outside edge of the  
20 puzzle, there is a surround in the form of a thin strip of flexible, elastic material, whose width is essentially equal to the width of the groove (a) in the tile.

10. A mosaic puzzle according to any of the preceding claims, **characterized in that** along the external arcs of the circumferences, which make up the outside edge of the puzzle, there is a surround (S) made of elastic material, with a T-shaped cross-section and  
25 with a rectangular cross-section fitting into the groove (a) in the convex sides of the tiles.

11. A method of completing mosaic puzzle, **characterized in that** completion begins with the tile set which at that given moment contains the central tile, rotating it around its centre by an angle equal to  $n \times 60^\circ$ , where  $n$  is a natural number other than 6 and its multiples; of the remaining tile sets, the one that at that point of the tile-moving  
30 procedure has a full circumference, is then rotated, clockwise or counter-clockwise, around its centre by an angle equal to  $n \times 60^\circ$ , where  $n$  is a natural number other than 6 and its multiples; these actions are repeated, rotating the next set of tiles that now has a full circumference, until the final configuration of tiles in the whole puzzle is obtained.

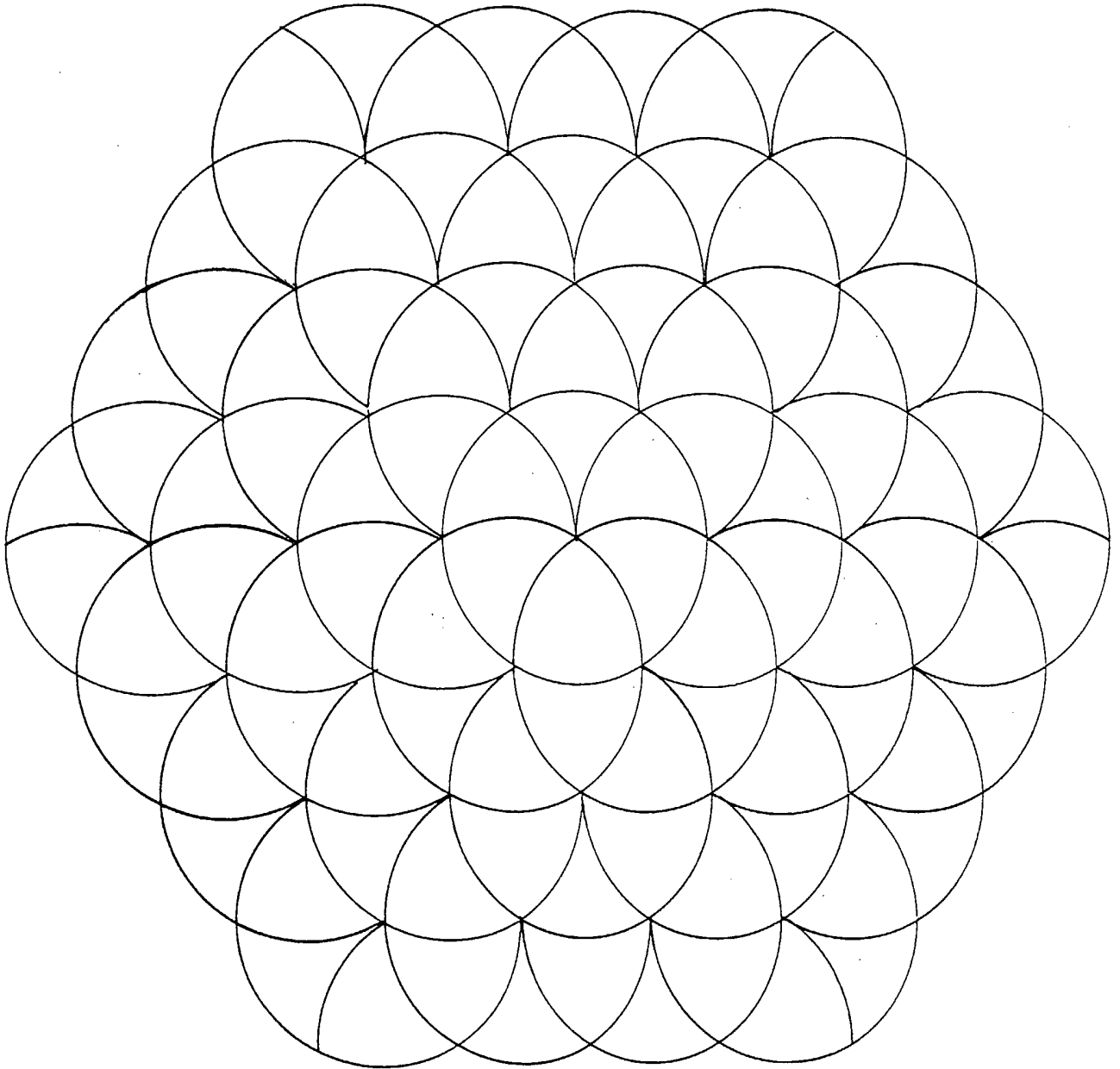


Fig. 1

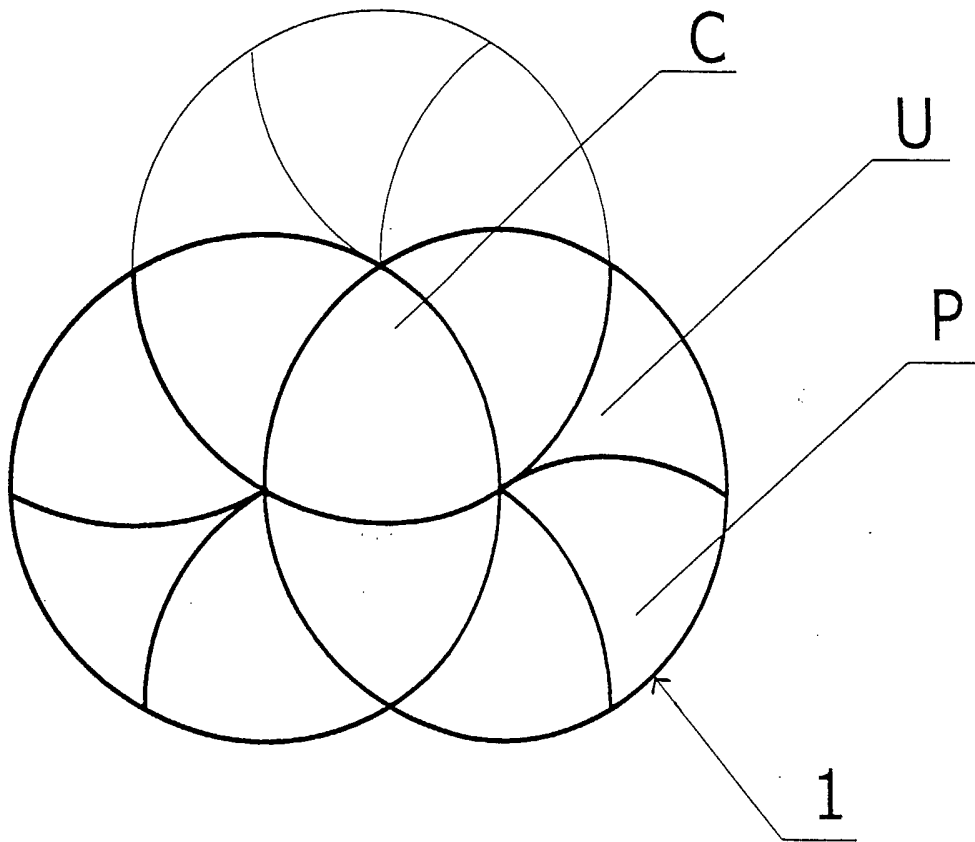


Fig. 2

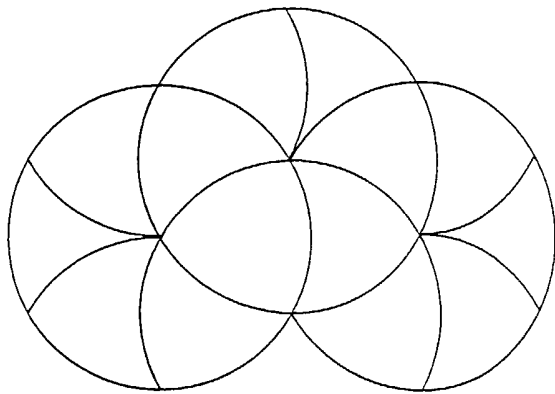


Fig. 3

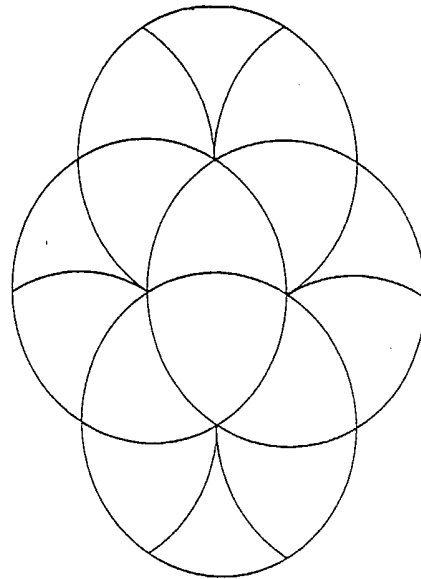


Fig. 4

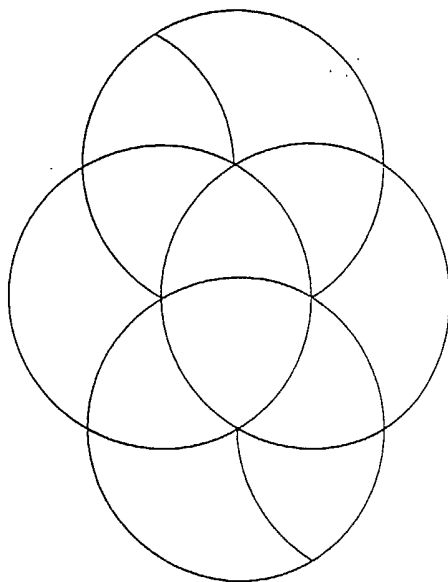


Fig. 5

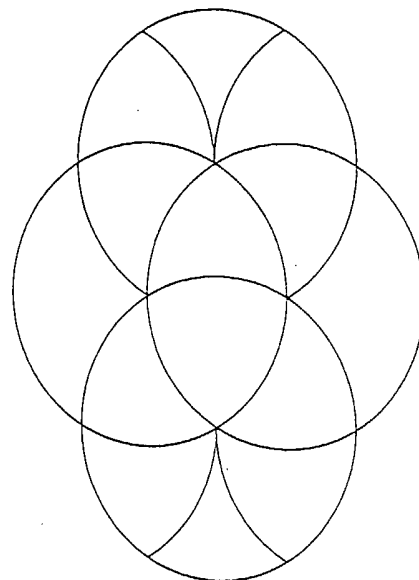


Fig. 6

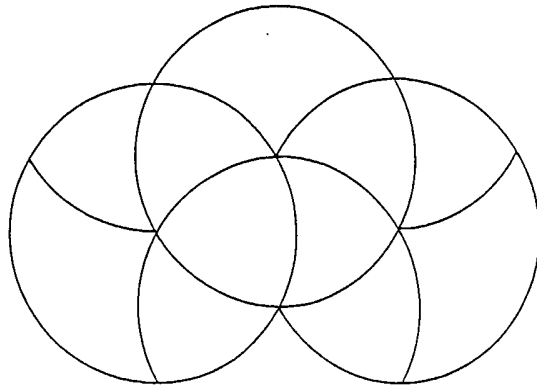


Fig. 7

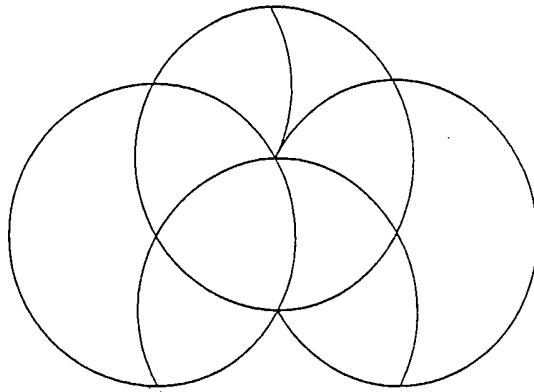


Fig. 8

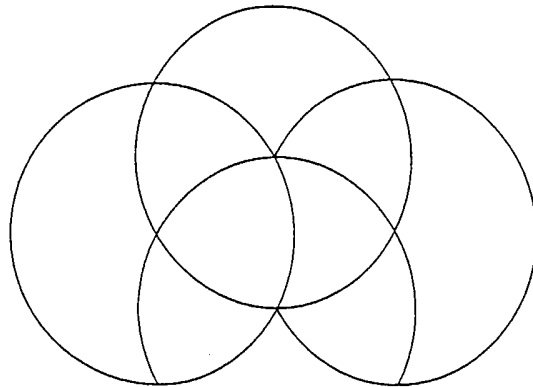


Fig. 9

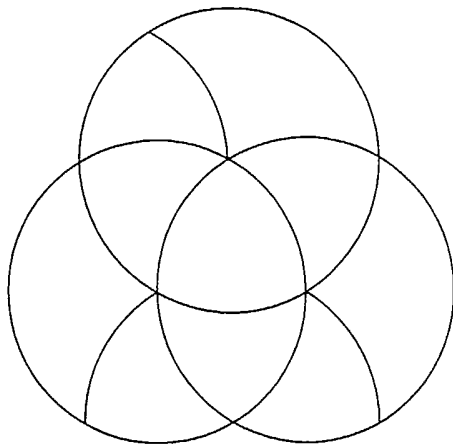


Fig. 10

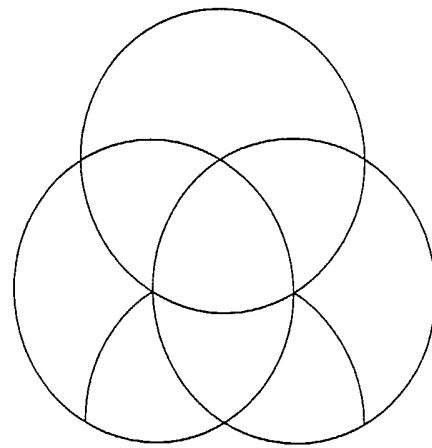


Fig. 11

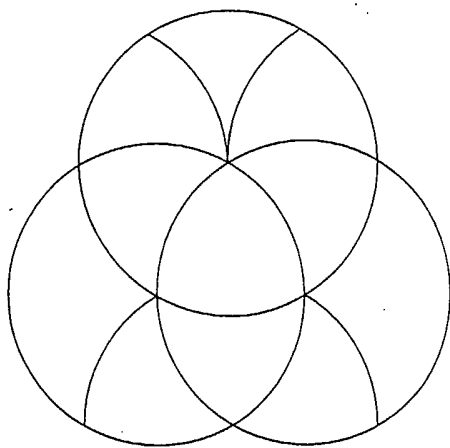


Fig. 12

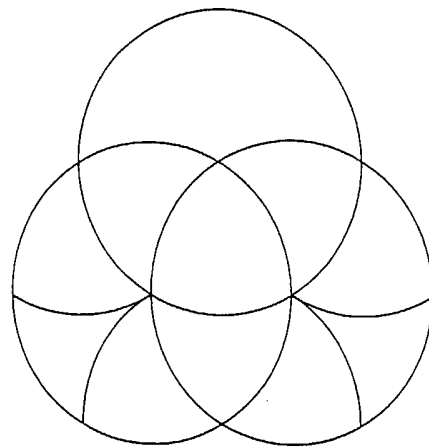


Fig. 13



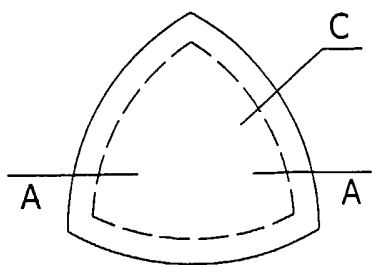


Fig. 14

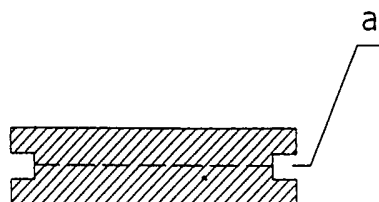


Fig. 14a

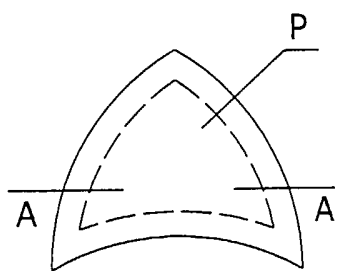


Fig. 15

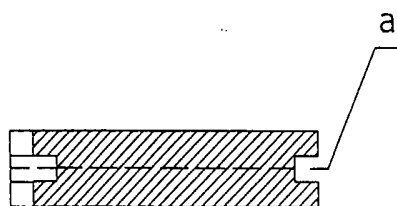


Fig. 15a

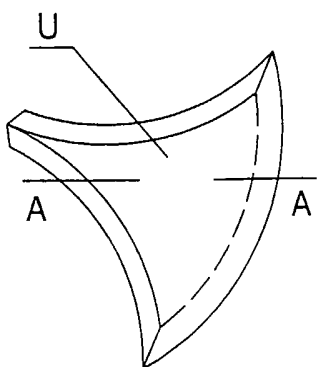


Fig. 16

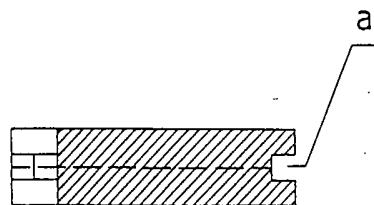


Fig. 16a

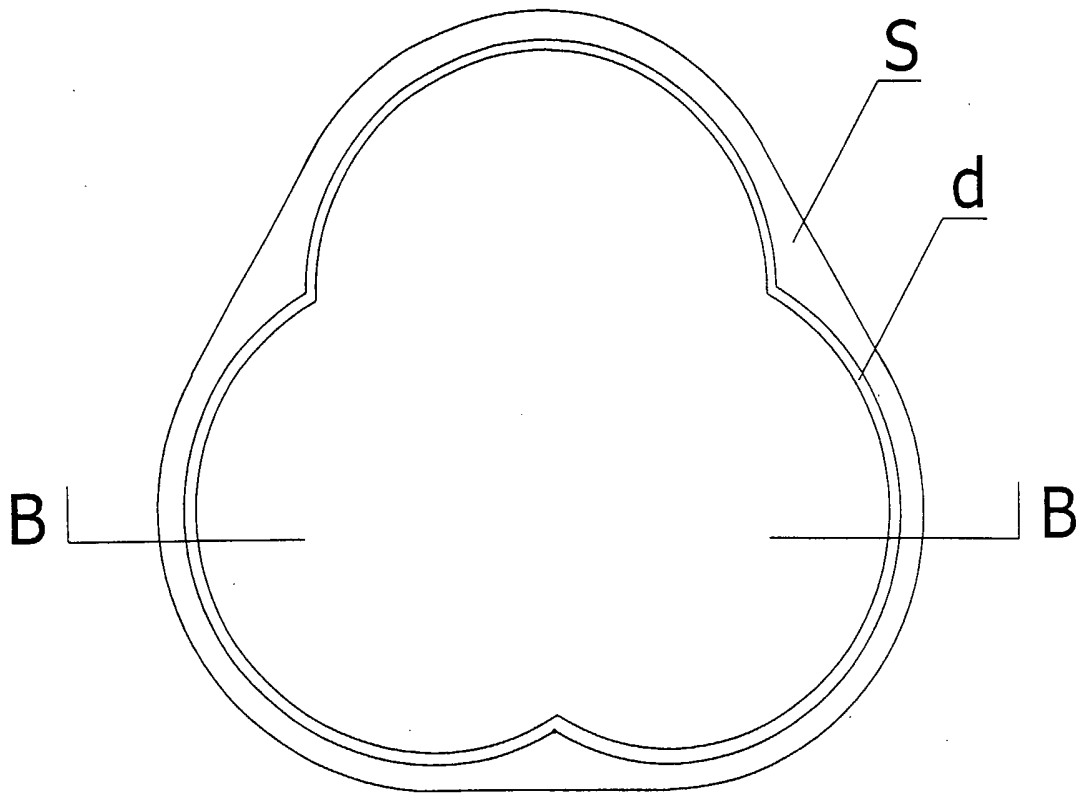


Fig. 17

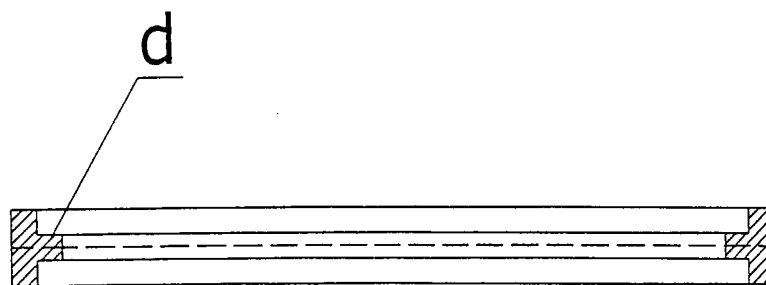


Fig. 18

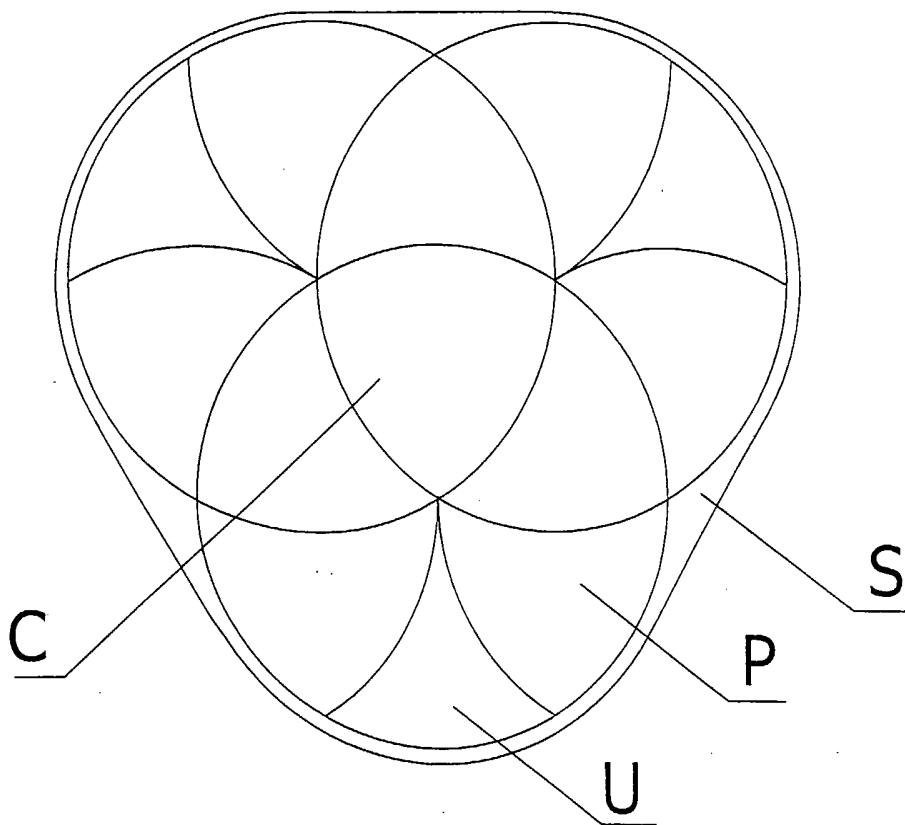


Fig. 19

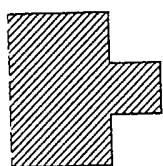


Fig. 20a

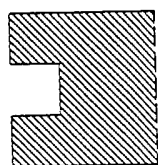


Fig. 20b

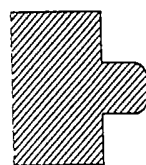


Fig. 21a

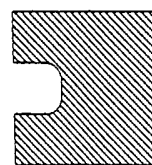


Fig. 21b

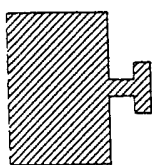


Fig. 22a

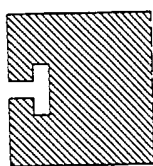


Fig. 22b

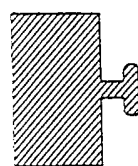


Fig. 23a

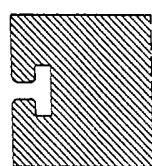


Fig. 23b

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/PL2004/000072

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 A63F9/08		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) IPC 7 A63F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  EPO-Internal, PAJ, WPI Data		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 244 208 A (KALAPACS ET AL) 14 September 1993 (1993-09-14) the whole document -----	1-10
X	FR 2 490 102 A (HENRIQUES RABA RAOUL) 19 March 1982 (1982-03-19) page 1, line 1 - page 5, line 34; figures 1-7 -----	1-10
X	WO 91/04083 A (KALAPACS, JANOS; LOBAK, MIHAIL ISZAKOVICS) 4 April 1991 (1991-04-04) the whole document -----	1
X	FR 2 463 632 A (HENRIQUES RABA RAOUL) 27 February 1981 (1981-02-27) figures 1,19 -----	1
<input type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in annex.		
° Special categories of cited documents :		
*A* document defining the general state of the art which is not considered to be of particular relevance	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
*E* earlier document but published on or after the international filing date	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.	
*O* document referring to an oral disclosure, use, exhibition or other means	*8* document member of the same patent family	
*P* document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search  <div style="text-align: center; font-weight: bold;">25 May 2005</div>	Date of mailing of the international search report  <div style="text-align: center; font-weight: bold;">06/06/2005</div>	
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <div style="text-align: center; font-weight: bold;">Brumme, I</div>	

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/PL2004/000072

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: 11  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iii) PCT - Scheme, rules and method for playing games
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/PL2004/000072

Patent document cited in search report	A	Publication date		Patent family member(s)	Publication date
US 5244208	A	14-09-1993	AU	6412690 A	18-04-1991
			CA	2066235 A1	21-03-1991
			EP	0504145 A1	23-09-1992
			WO	9104083 A1	04-04-1991
			JP	5503435 T	10-06-1993
FR 2490102	A	19-03-1982	FR	2490102 A1	19-03-1982
			FR	2508330 A2	31-12-1982
WO 9104083	A	04-04-1991	AU	6412690 A	18-04-1991
			CA	2066235 A1	21-03-1991
			EP	0504145 A1	23-09-1992
			WO	9104083 A1	04-04-1991
			JP	5503435 T	10-06-1993
			US	5244208 A	14-09-1993
FR 2463632	A	27-02-1981	FR	2463632 A2	27-02-1981