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(54) **Assemblable spherical building blocks**

(57) A set of blocks assembled to form a four-facet pyramid, three sets assembled to form a three-facet pyramid, each of the pyramids are formed at different angle respectively, to transform the four-facet to the three facet pyramid challenges the spatial concept of the players. At least, the player faces the challenges from the pyramids is to improve his reasoning about space with fun. Each of 12 building blocks is composed of 3~5 spheres, totally

a set of blocks are aggregated 55 spheres on the base to form a four-facet pyramid, each of four sides of the base having 5 location pits, totally 25 location pits formed on the base. Totally 3 sets of blocks are aggregated 165 spheres assembled on the base to form a three-facet pyramid, each of three sides of the base having 9 location pits respectively, totally 45 location pits formed on the base.

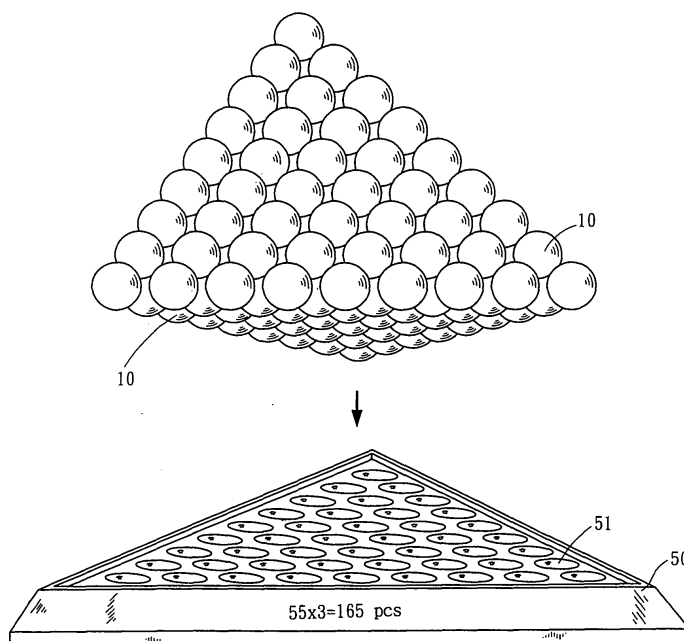


Fig. 8

Description

FIELD OF THE INVENTION

[0001] The present invention is related to the configuration of building blocks of spheres, especially about a set of 12 building blocks totally 55 spheres arrayed as a four-facet pyramid, while three sets of 36 building blocks totally 165 spheres arrayed as a three-facet pyramid.

BACKGROUND OF THE INVENTION

[0002] The conventional "jigsaw puzzle" or "tangram" has various "piece together" or "snap together" techniques to challenge the players' IQ and EQ restricted to two-dimensional scope. Sets of building blocks to stimulate and satisfy the three-dimensional construction reasoning is to be on the way for more fun, more interesting games discovered by the players. As a result, the inventor provided sets of building blocks of spheres assembled in two-dimensional or three-dimensional ways, which has been approved in many countries' patent issuances. Such as Taiwan Patent no. 398313 entitled "variable building blocks assembled at degrees 60°, 90°, and 120°" issued to the inventor of the present invention on 11 July 2001.

Point against the problems

[0003] In TW398313, 19 building blocks assembled to form at least one base level, or more than one level or four-facet pyramid. However, a conventional set of building blocks applied to assemble only four-facet pyramid, such three-facet pyramid is impossible to construct at the same time. Owing to a three-facet or four-facet pyramid has been constructed at specific angle respectively, sets of building blocks required for a three-facet or four-facet pyramid are also different from their numbers and sets. Players face the challenges -- more building blocks to construct a three-facet pyramid rather than a four-facet pyramid. Based on one set of 12 building blocks 55 spheres as a four-facet pyramid, if players know how to do so, three sets of 36 building blocks 165 spheres added to develop a three-facet pyramid is expected in this invention.

Summary of the invention

[0004] Accordingly, to improve the assemblage of sets of conventional building blocks, the present invention provides assembled building blocks of spheres characterized in that each of 12 building blocks assembled in different type, each building block consists of 3~5 spheres, a set of 12 building blocks consist totally of 55 spheres to construct a four-facet pyramid, wherein each of the four sides of the base consists of 5 spheres, the base level consists of 25 spheres.

[0005] While 3 sets of 12 different shaped building

blocks consist of 36 building blocks to construct a three-facet pyramid being composed of 165 spheres, each of three sides of the base consists of 9 spheres, the base level consists of 45 spheres.

[0006] Aforesaid 12 building blocks, only 7 blocks of them such as the building blocks A, B, C, F, I, J and K are assembled to form a four-facet pyramid, in which each of four sides of the base consists of 4 spheres, the base level consists of 16 spheres.

Effect and function

[0007] Thereby, 12 different shaped building blocks of spheres are assembled to form three base levels, each of them shaped as one square, one rectangle, or one triangle according to the shapes of three different bases respectively. Besides, assembling of a set of 12 building blocks 55 spheres adapted to and based on each of such three different shaped bases to form a four-facet pyramid. The 12 different shaped building blocks of spheres assembled on three different bases all can be transformed from two-dimensional to three-dimensional assemblage. Till now, multi-level assemblage of sets of building blocks of spheres based on the aforesaid base levels, more options can be selected by the users, with heuristic values is expected by the inventor, and the inventor devoted his whole career life to that.

[0008] Rather, 3 sets of 12 building blocks of spheres, each set has 12 different shaped building blocks of spheres as mentioned above can be assembled on the base to form a three-facet pyramid, not only the angles of pyramids are different, but also the numbers of building blocks as required are different. Three-dimensional macroscopic assemblages designed for the users are expected to challenge the availability of building blocks to its utmost.

[0009] Besides, 7 building blocks of one set of 12 different shaped building blocks can be assembled to form one four-facet pyramid or one level rectangle. As a result, sets of building blocks are provided with more options, more imaginative power coherently for the users.

Brief description of the drawings

[0010]

Fig. 1 is a perspective view of the 12 different shaped building blocks of spheres of the present invention. Fig. 2 is a schematic view of a first type of the first embodiment of the present invention. Fig. 3 is a schematic view of a second type of the first embodiment of the present invention. Fig. 4 is a schematic view of a first type of the second embodiment of the present invention. Fig. 5 is a schematic view of a second type of the second embodiment of the present invention. Fig. 6 is a schematic view of a first type of the third embodiment of the present invention.

Fig. 7 is a schematic view of a second type of the third embodiment of the present invention.

Fig. 8 is a schematic view of the fourth embodiment of the present invention.

Fig. 9 is a schematic view of a first type of the fifth embodiment of the present invention.

Fig. 10 is a schematic view of a second type of the fifth embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0011] The description is described in detail according to the appended drawings hereinafter.

[0012] As shown in Fig. 1, the 12 different shaped building blocks of spheres are denominated in a sequence of Characters in order as following: A, B, C, D, E, F, G, H, I, J, K, and L, each of them is in different shape. These 12 building blocks are totally aggregated to 55 spheres, but each building block is composed of 3~5 spheres.

[0013] As to the different shapes of the 12 building blocks can be described as following:

[0014] Building block A is composed of 4 spheres in the shape of an "L", a first sphere to a third sphere are connected in alignment with one by one in sequence, and lined up from right to left, while a fourth sphere and a third sphere are in vertical alignment with each other at a right angle.

[0015] Building block B is composed of 5 spheres in the shape of a "P", the first sphere to the third sphere are connected in alignment with one by one in order, and lined up from right to left, a fourth sphere and a fifth sphere are in alignment with each other, and lined up from right to left, each of first and second spheres are in vertical alignment with each of fourth and fifth spheres at a right angle respectively.

[0016] Building block C is composed of 5 spheres in the shape of an "L", a first sphere to a fourth sphere are in alignment with one by one in sequence, and lined up from right to left, while a fifth sphere is in vertical alignment with a fourth sphere at a right angle.

[0017] Building block D is composed of 5 spheres in the shape of an inversed "T", a first to a fourth spheres are in alignment one by one in sequence, and lined up from right to left, while a third and a fifth spheres are in vertical alignment at a right angle.

[0018] Building block E is composed of 5 spheres, in which a first to a third spheres are in alignment with one by one in order, and lined up from right to left, while a fourth sphere is in alignment with a fifth sphere in order, and lined up from left to right.

[0019] Building block F is composed of 3 spheres in the shape of a mapped inversed "L", a first sphere is in alignment with a second sphere in order, and lined up from right to left, while a third sphere is in vertical alignment with a second sphere at a right angle.

[0020] Building block G is composed of 5 spheres in

the shape of a mapped inversed "L", a first to a third spheres are in alignment with one by one in sequence, and lined up from right to left, while a fourth sphere is in vertical alignment with a third sphere at a right angle; further, a fifth sphere and a fourth sphere are connected with each other vertically in an up and down relationship. In other words, a third to a fifth spheres are in alignment with one by one, but lined up from "up" to "down". The two lined up a first to a third spheres and a third to a fifth spheres are perpendicular to each other.

[0021] Building block H is composed of 5 spheres in the shape of "W", a first sphere is in vertical alignment with a second sphere in an up and down relationship, a second sphere is in alignment with a third sphere, and lined up from right to left, a third sphere is in vertical alignment with a fourth sphere in an up and down relationship, a fourth sphere is in alignment with a fifth sphere, and lined up from right to left.

[0022] Building block I is composed of 5 spheres in the shape of an inversed "U", a first to the third spheres are in alignment one by one in order, and lined up from right to left, a fourth sphere is in vertical alignment with a third sphere, a fifth sphere is in vertical alignment with a first sphere.

[0023] Building block J is composed of 4 spheres in the shape of a transverse "I", a first to the fourth spheres are in alignment with one by one in sequence, and lined up from right to left.

[0024] Building block K is composed of 4 spheres in the shape of a rectangular "O", a first sphere is in alignment with a second sphere, and lined up from right to left, a third sphere is in alignment with a fourth sphere, and lined up from right to left, while each of a first and a second spheres are in vertical alignment with each of a third and a fourth spheres respectively.

[0025] Building block L is composed of 5 spheres in the shape of a cross-type as an upright "X", a first to a third spheres are in alignment with one by one in sequence, and lined up from right to left; a fourth sphere is in vertical alignment with (placed above) a second sphere in an up and down relationship, a fifth sphere is in vertical alignment with (placed below) a second sphere in a down and up relationship.

[0026] As mentioned above, each of the 12 building blocks is composed of 3~5 spheres respectively, the way to combine the spheres can be selected from one of the steps as following: the spheres (10) are connected among one another by a tenon (12) embedded into a mortise (11), or the spheres (10) are connected among one another by adhesives (for example, by heating, welding, or gluing), or the spheres (10) are connected among one another as a whole integrally by injection molding.

[0027] 12 different shaped building blocks as mentioned above can be assembled on the bases, according to the different shapes of the bases to construct significant embodiments such as three-dimensional pyramid by three sets of blocks. While 7 building blocks selected from a set of blocks can be assembled in two-dimensional

or three-dimensional assemblages. The embodiments can be exemplified as following:

First embodiment

[0028] As shown in Fig. 2, a set of 12 building blocks can be assembled on the base (20) to form one four-facet pyramid, the base (20) having four sides, each side has 5 location pits (21), 25 location pits (21) are formed on the base (20) to shape a square. Location pit (21), when looking down, is better formed circular in shape; while taking a side view or cross section view, the location pit (21) is preferably shown as a smaller crater, looks like small birds' nest.

[0029] As shown in Fig. 3, a set of blocks assembled on the base (20) to form one level in rectangular shape, 11 location pits (22) in longitudinal direction, 5 location pits (22) in wide direction, totally 55 location pits (22) are aggregated on the base (20) to shape a rectangle. When looking down, the location pit (22) is better formed circular in shape. While taking a side view or a cross section view, the location pit (22) is preferably shown as a small crater, looks like small birds' nest.

[0030] As shown in Figs. 2 and 3, a set of blocks assembled on the same rectangular base (20). Such as an upper lid (23) is pivotally connected to a lower base (24) so as to form a base (20). In which each of the location pits (21,22) are formed on the surface of the upper lid (23) and the lower base (24) respectively. The user can assemble a four-facet pyramid on the upper lid and a rectangular base on the lower base (24) respectively.

Second embodiment

[0031] As shown in Fig. 4, a set of 12 building blocks of 55 spheres is assembled on the base (30) to form a four-facet pyramid. Each of the four sides of base (30) has 5 location pits (31) respectively, totally 25 location pits (31) are aggregated on the base (30) to shape a square. Location pit (31) is formed circular in shape as a small crater, looks like a small birds' nest.

[0032] As shown in Fig. 5, a set of 12 building blocks of 55 spheres is assembled on the base (30) to form a triangle. Each of the three sides of base (30) has 10 location pits (32) respectively. Location pit (32) is formed circular in shape as a small crater, looks like small birds' nest.

[0033] As shown in Figs. 4 and 5, a set of blocks is assembled on the same half-circular base (30). An upper lid (33) is pivotally connected to the lower base (34) to form a base (30). In which the location pits (31) are formed on the upper lid (33), the location pits (32) are formed on the lower base (34). The users can assemble a set of blocks on the upper lid (33) to construct a four-facet pyramid, or on the lower base (34) to form a triangle.

Third embodiment

[0034] As shown in Fig. 6, a set of blocks assembled on the base (40) to form a four-facet pyramid. Each of four sides of base (40) has 5 location pits (41) respectively, totally 25 location pits (41) are aggregated on the base (40) arrayed to shape a square. Location pit (41) is formed circular in shape as a smaller crater, looks like small birds' nest.

[0035] As shown in Fig. 7, a set of blocks is assembled on the base (40) to form a one-level "ball home plate" or "ball home base". Totally 55 location pits (42) are aggregated on the base (40) with a column (43) in it. Said column (43) can be formed with the base (40) integrally as a whole by injection modeling. Or a prefabricated column (43) can be inserted into a hole (not shown) on the base (40) and then fixed to the base (40).

[0036] As shown in Figs. 6 and 7, different assemblages can be practiced on the same base (40), such as the location pits (41) formed on the surface (or front side) of the base (40) for a set of 12 building blocks assembled to form a four-facet pyramid. Totally 55 location pits (42) are also formed on the back (or reverse side) of the base (40) with a column (43), a set of blocks assembled to form a "ball home plate" or "ball home base".

Fourth embodiment

[0037] Based on the aforesaid a set of 12 building blocks can be assembled to form different three-dimensional assemblages. As shown in Fig. 8, 3 sets of 12 building blocks from A to L as depicted in Fig. 1, totally 36 building blocks consist of 165 spheres are assembled to form a three-facet pyramid. Each of the three sides of the base is composed of 9 spheres. Totally 45 spheres are aggregated on the base.

[0038] Said 36 building blocks can be adapted to the base (50) with 45 location pits (51). Each of the three sides of the base (50) is composed of 9 location pits. Totally 45 location pits on the base is shaped as a triangle.

Fifth embodiment

[0039] As shown in Fig. 9, a first type of the fifth embodiment is illustrated. The 7 building blocks denominated by Characters in sequence as following: A, B, C, F, I, J, and K of a set of 12 building blocks depicted in the Fig. 1, totally 30 spheres (10) are aggregated to form a four-facet pyramid. Each of four sides of the base (60) is composed of 4 location pits (61), totally 20 location pits (61) are formed on the base to shape a square.

[0040] As shown in Fig. 10, a second type of the fifth embodiment is illustrated. Said 7 building blocks denominated as A, B, C, F, I, J, and K assembled on the base (60) to shape a one-level rectangle. The base (60) has 6 location pits (62) in longitudinal direction and 5 location pits (62) in wide direction so as to shape a one-level rectangle.

[0041] As shown in Figs. 9 and 10, different assemblages can be practiced on the same base (60). Such as the location pits (61) formed on the surface (or front side) of the base (60) for said 7 building blocks A, B, C, F, I, J, and K assembled to form a four levels four-facet pyramid. Totally 30 location pits (62) are formed on the back (or reverse side) of the base (60) to shape a rectangle.

[0042] As discussed above, the description is described according to the appended drawings, various substitutions and modifications will be practiced by those of ordinary skill in the art. All such substitutions and modifications are confined within the spirit and scope of the present invention as defined in the appended claims.

Claims

1. Assembled building blocks of spheres **characterized in that** the 12 building blocks of spheres are denominated in sequence of characters as A, B, C, D, E, F, G, H, I, J, K, and L, each of a set of 12 building blocks of spheres is in different shape, these 12 building blocks are totally aggregated to 55 spheres, each building block is composed of 3~5 spheres; the different shapes of the 12 building blocks can be described as following:

building block A is composed of 4 spheres in the shape of an "L", a first sphere to a third sphere are in alignment with one by one in sequence, and lined up from right to left, while a fourth sphere and a third sphere are in vertical alignment with each other at a right angle;

building block B is composed of 5 spheres in the shape of a "P", the first sphere to the third sphere are in alignment with one by one in order, and lined up from right to left, a fourth sphere and a fifth sphere are in alignment with each other, and lined up from right to left, each of first and second spheres are in vertical alignment with each of fourth and fifth spheres at a right angle respectively;

building block C is composed of 5 spheres in the shape of an "L", a first sphere to a fourth sphere are in alignment with one by one in sequence, and lined up from right to left, while a fifth sphere is in vertical alignment with a fourth sphere at a right angle;

building block D is composed of 5 spheres in the shape of an inversed "T", a first to a fourth spheres are in alignment with one by one in sequence, and lined up from right to left, while a third and a fifth spheres are in vertical alignment at a right angle;

building block E is composed of 5 spheres, in which a first to a third spheres are in alignment with one by one in order, and lined up from right to left, while a fourth sphere is in alignment with

a fifth sphere in order, and lined up from left to right;

building block F is composed of 3 spheres in the shape of a mapped inversed "L", a first sphere is in alignment with a second sphere in order, and lined up from right to left, while a third sphere is in vertical alignment with a second sphere at a right angle;

building block G is composed of 5 spheres in the shape of a mapped inversed "L", a first to a third spheres are in alignment with one by one in sequence, and lined up from right to left, while a fourth sphere is in vertical alignment with a third sphere at a right angle; a fifth sphere and a fourth sphere are connected with each other vertically in an up and down relationship;

building block H is composed of 5 spheres in the shape of "W", a first sphere is in vertical alignment with a second sphere in an up and down relationship, a second sphere is in alignment with a third sphere, and lined up from right to left, a third sphere is in vertical alignment with a fourth sphere in an up and down relationship, a fourth sphere is in alignment with a fifth sphere, and lined up from right to left;

building block I is composed of 5 spheres in the shape of an inversed "U", a first to the third spheres are in alignment one by one in order, and lined up from right to left, a fourth sphere is in vertical alignment with a third sphere, a fifth sphere is in vertical alignment with a first sphere; building block J is composed of 4 spheres in the shape of a transverse "I", a first to the fourth spheres are in alignment with one by one in sequence, and lined up from right to left;

building block K is composed of 4 spheres in the shape of a rectangular "O", a first sphere is in alignment with a second sphere, and lined up from right to left, a third sphere is in alignment with a fourth sphere, and lined up from right to left, while each of a first and a second spheres are in vertical alignment with each of a third and a fourth spheres respectively;

building block L is composed of 5 spheres in the shape of a cross-type as an upright "X", a first to a third spheres are in alignment with one by one in sequence, and lined up from right to left; a fourth sphere is in vertical alignment with, which is placed above, a second sphere in an up and down relationship, a fifth sphere is in vertical alignment with, which is placed below, a second sphere in a down and up relationship.

2. Assembled building blocks of spheres according to claim 1, wherein a set of 12 building blocks assembled to form a four-facet pyramid based on a square base, each of four sides of the base has 5 location pits, totally 25 location pits on the base.

3. Assembled building blocks of spheres according to claim 1, wherein a set of 12 building blocks assembled to form a one-level rectangle based on a rectangular base, which has 11 location pits along longitudinal side, 5 location pits along wide side, totally 55 location pits on the base. 5
4. Assembled building blocks of spheres according to claim 1, wherein a set of 12 building blocks assembled to form a one-level triangle based on a triangular base, each of the three sides has 10 location pits, totally 55 location pits on the base. 10
5. Assembled building blocks of spheres according to claim 1, wherein a set of 12 building blocks assembled to form a ball home plate based on a base, which has 55 location pits and a column. 15
6. Assembled building blocks of spheres according to claim 1, wherein each of a set of 12 building blocks of spheres is composed of 3~5 spheres respectively, the way to combine the spheres can be selected from one of the steps as following: the spheres (10) are connected among one another by a tenon (12) embedded into a mortise (11); the spheres (10) are connected among one another by adhesives; the spheres (10) are connected among one another as a whole integrally by injection molding. 20
25
7. Assembled building blocks of spheres **characterized in that:** 7 building blocks of a set of blocks according to claim 1, denominated in sequence of characters as A, B, C, F, I, J, and K, totally composed of 30 spheres, assembled to form a four-facet pyramid, each of four sides of the base level of pyramid has 4 spheres, totally 16 spheres of the base level. 30
35
8. Assembled building blocks of spheres according to claim 7, wherein 7 building blocks of spheres assembled to form a four-facet pyramid based on a base totally having 16 location pits, each of four sides of the base has 4 location pits. 40
9. Assembled building blocks of spheres according to claim 7, wherein 7 building blocks assembled to form a one-level rectangle based on a base totally having 30 location pits, the base has 6 location pits in longitudinal side, 5 location pits in wide side. 45
10. Assembled building blocks of spheres **characterized in that:** 3 sets of blocks according to claim 1, totally 36 building blocks composed of 165 spheres assembled to form a three-facet pyramid, each of the three sides of the base level of the pyramid has 9 spheres, totally 45 spheres of the base level. 50
55
11. Assembled building blocks of spheres according to claim 10, wherein 36 building blocks assembled to form a three-facet pyramid based on a base having totally 45 location pits, each of the three sides of the base having 9 location pits.

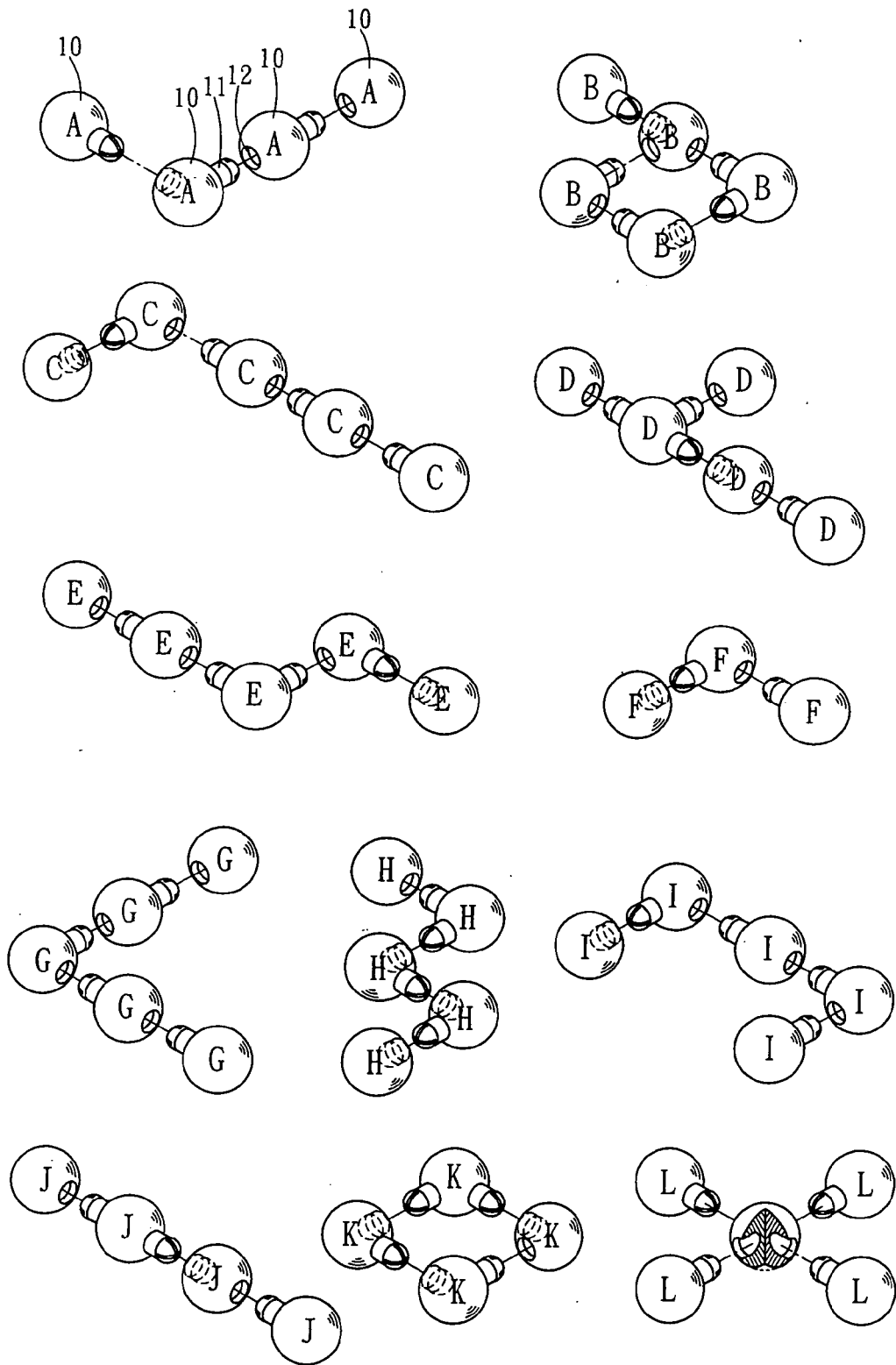


Fig. 1

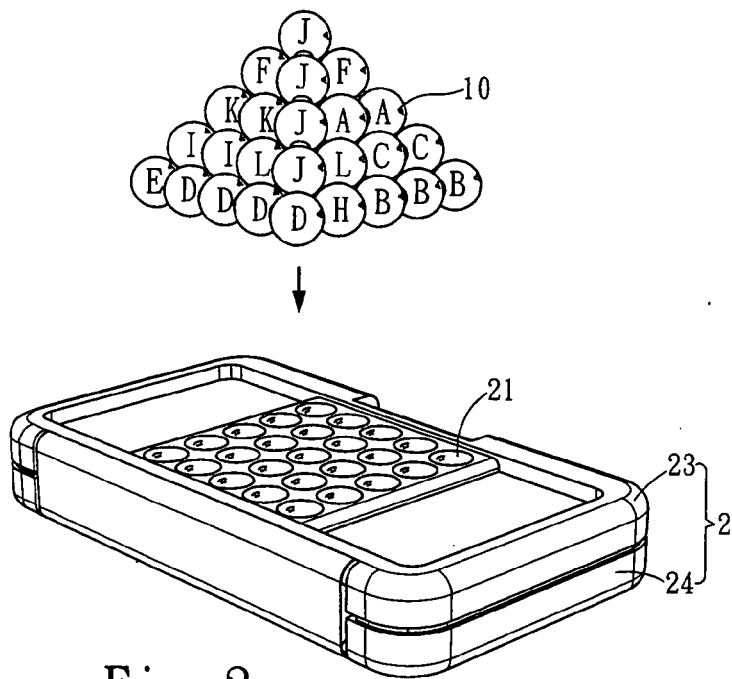


Fig. 2

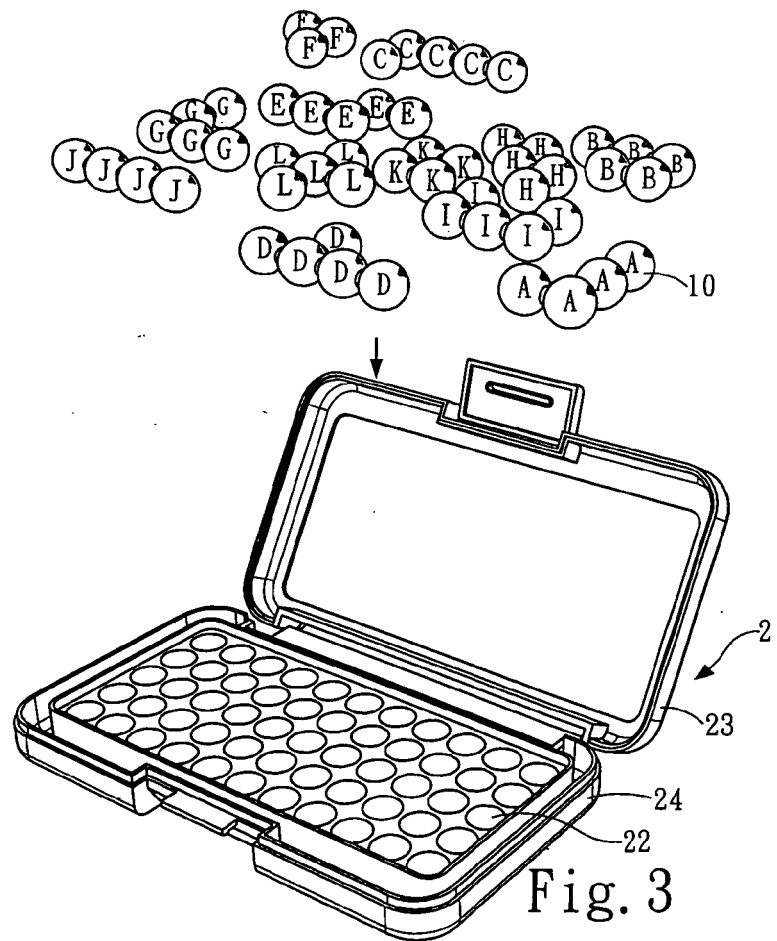


Fig. 3

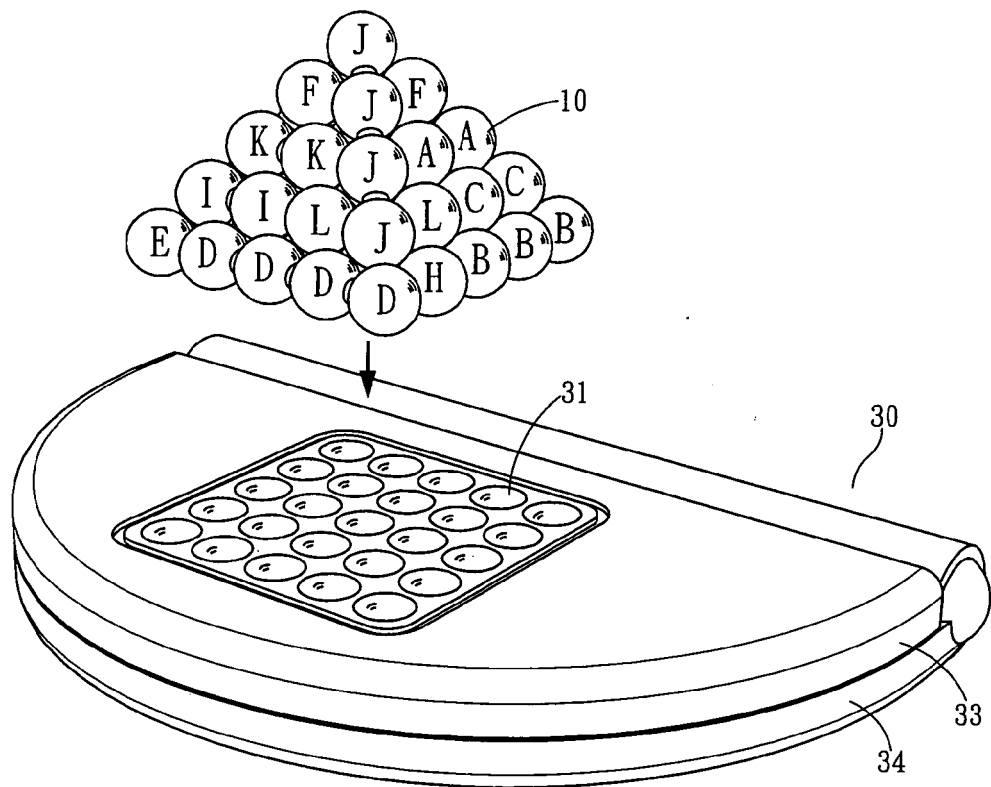


Fig. 4

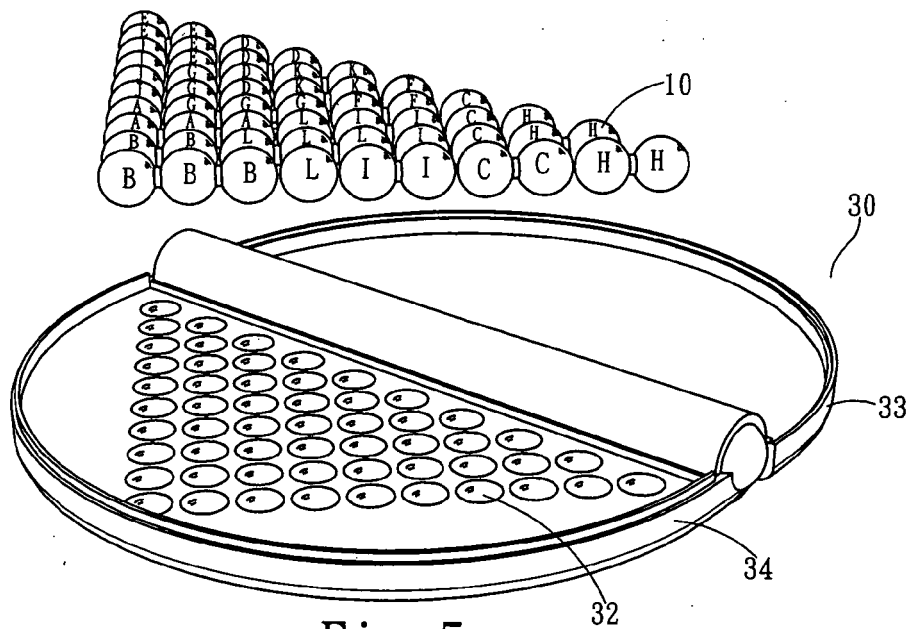
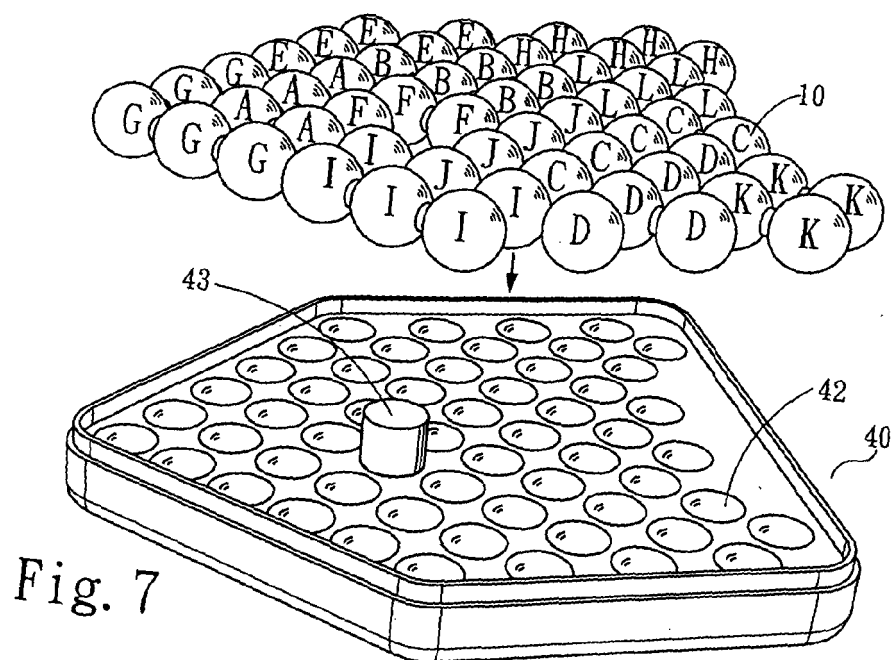
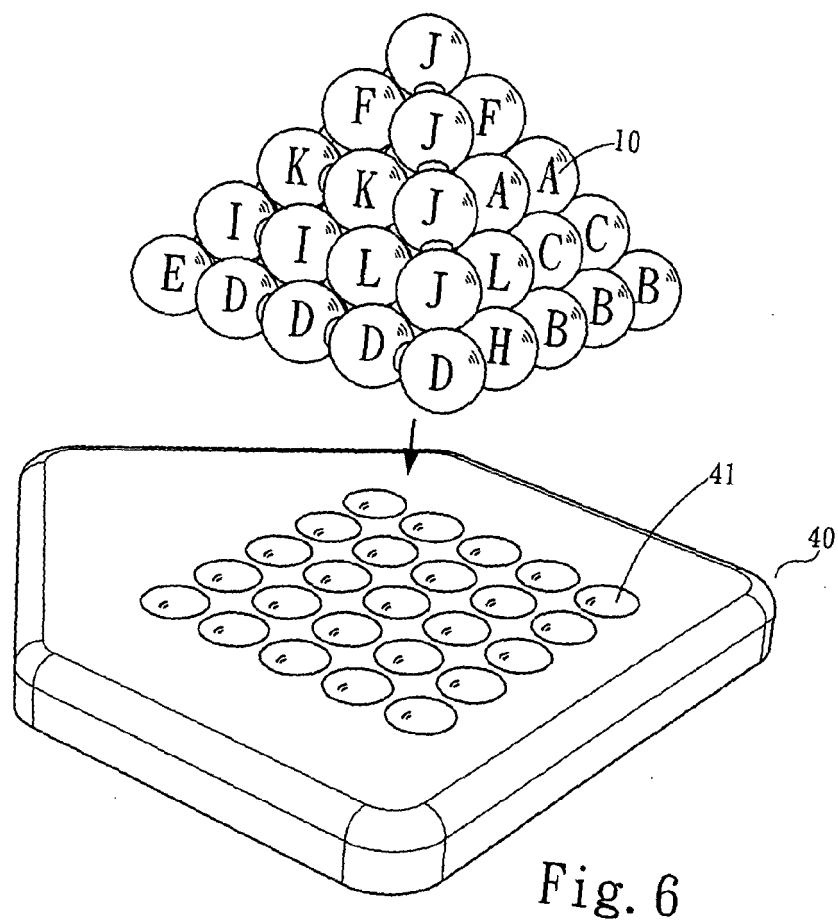


Fig. 5



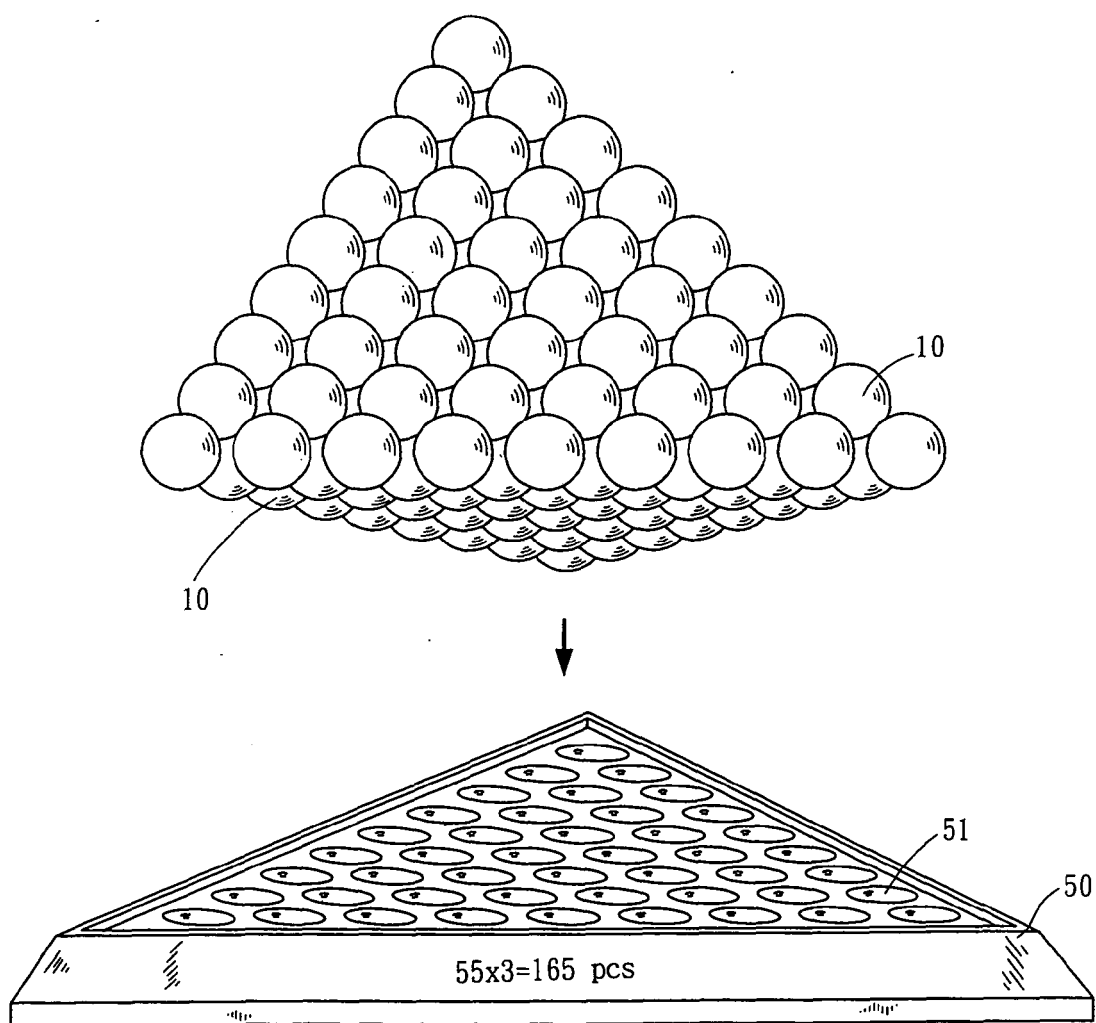


Fig. 8

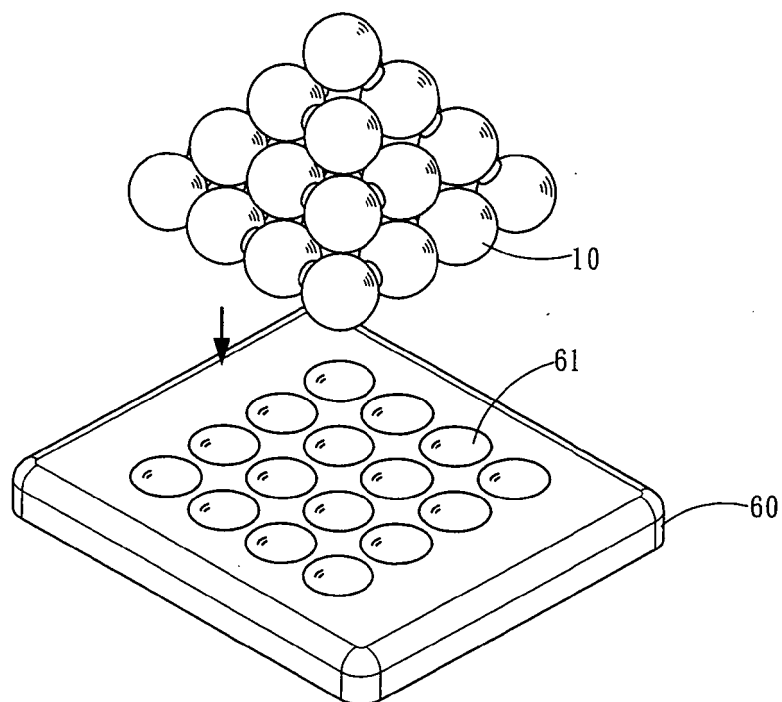


Fig. 9

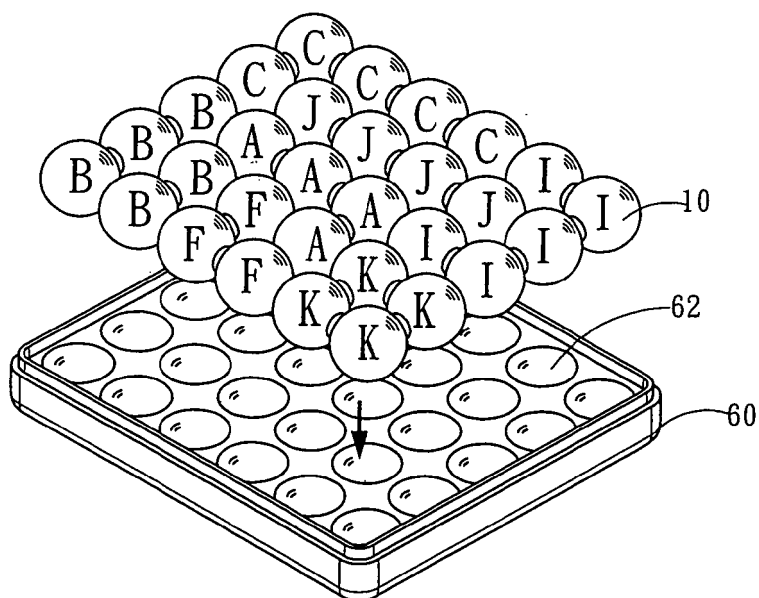


Fig. 10



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 00 3206

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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	* figure 3a *		
			TECHNICAL FIELDS SEARCHED (IPC)
			A63F A63H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 24 July 2006	Examiner Turmo Peruga, R
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24-07-2006

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