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(54) Circular spiral assembly closed on itself for playing purposes

(57) A circular spiral assembly used as amusement and hobby consists of a leaf of flexible material having a spherical, tetrahelicoidal shape closed on itself and characterized by four windings which alternate in the right-handed and left-handed directions. Said assembly which is manipulated without taking off the hands can be rotated continuously about its quaternary of polar axes without being subjected to deformations. This assembly can be delivered either ready to use or in assembling kit.

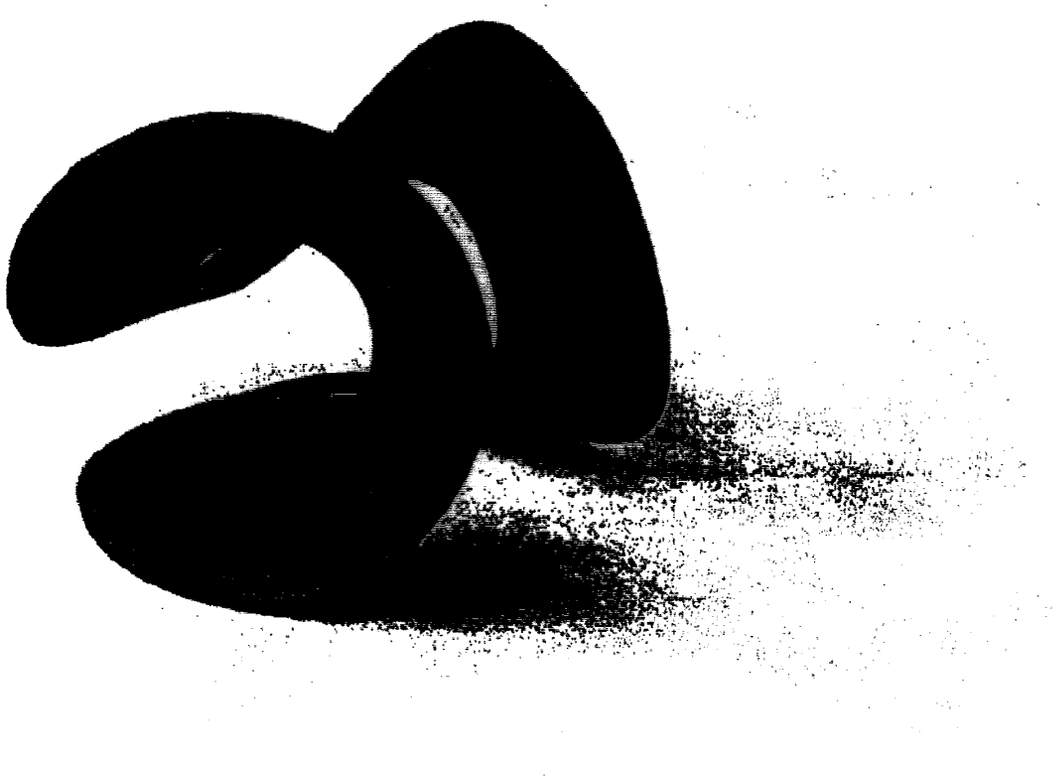

FIG. 9

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Description

[0001] The present invention relates to the dexterity and recreation games and concerns an assembly consisting of a leaf of flexible material having a spherical, tetrahelicoidal shape closed on itself which is manipulated without taking off the hands so that it is rotated continuously about its quaternary of polar axes without being subjected to deformations. This assembly can be delivered either ready to use or in assembling kit.

[0002] Puzzles and dexterity games testing the skill of the players during the assembling or the manipulation are known. Reference is made for example to fitting games and Yo-yo.

[0003] The present invention seeks to provide a new dexterity game for fans of such games consisting of first assembling and then manipulating an assembly that has marked similarity both with the sphere and the tetrahedron and is provided with a continuous helicoidal shape characterized by four windings which alternate in the right-handed and left-handed directions.

[0004] The present invention will be more readily understood with reference to the accompanying drawings that show a preferred embodiment by way of a not limiting example:

[0005] In the drawings:

Figs. 1 and 2 show in succession the first three steps of assembling a leaf shaped as a helicoidal spiral crown extending to 720°;

Figs. 4, 5 and 6 show the next steps for transforming the leaf shaped as a helicoidal spiral crown of Fig. 3 into a leaf having a spherical tetrahelicoidal shape closed on itself;

Fig. 7 shows the assembly in its final shape;

Fig. 8 shows a perspective front view of the assembly;

Fig. 9 shows a perspective view of the assembly rotated by 90° with respect to Fig. 8;

Figs. 10 and 11 show the assembly in two following moments during the manipulation;

Figs. 12, 13 and 14 show a variation of the invention during the assembling and in the assembled state providing the use of three spiral crown to make a spiral having an extension of 783° instead of 720°.

[0006] With reference to Figures 1 to 3, according to a first embodiment, the assembly is assembled directly by the user from a sheet 4 of flexible material on which the pre-cut contours of two circular crowns 6 and 8 are drawn, both crowns being provided with a radial cut 10.

[0007] Once the two circular crowns are cut, they are put on each other, as seen in Fig. 2, and are joined as follows: one edge of the upper crown 6 is stuck (for example, by superimposing a little portion thereof) to the opposite edge of the underlying crown 8.

[0008] Thus, a spiral crown is obtained which is characterized by a right-handed or left-handed helical direction of winding depending on the initial choice of the edge to be stuck. In the illustrated example, the helical direction of winding is right-handed as that of a corkscrew.

[0009] After a leaf shaped as a helicoidal spiral crown is provided, just a particular operation has to be performed so that such a leaf is transformed into a spherical, tetrahelicoidal leaf closed on itself.

[0010] Such operation, shown in Figures 4 to 6, consists of introflexing the edges of the spiral crown at the same time (Fig. 4) and rotating them about the centre until they are positioned in front of each other and then stuck together (Figs. 5 and 6).

[0011] The shape of the final assembly will have marked similarity both to the sphere and the tetrahedron as well as it will have, as already mentioned, a continuous direction of winding characterized by four windings which alternate in the right-handed and left-handed direction, as can be seen in Figs. 7 and 8. This assembly has an extension of 720°.

[0012] Once the model is made, it can be continuously rotated about its quaternary of polar axes without undergoing excessive deformations by a manipulation that does not require for the hands to be taken off the assembly.

[0013] The polar axes are meant to be the four half straight lines originating from the centre of gravity of the assembly and coinciding with the heights of the four conical incomplete (2/3) surfaces corresponding to the four windings.

[0014] Such manipulation can be made by holding correctly the assembly among fingers and by moving it properly. In practice, one of the two portions of the assembly put on each other is gripped among the fingers of the left hand, the other portion among the fingers of the right hand so that the thumbs are in contact with each other. From this position little movements are first experienced by the user by moving one hand towards his body and the other hand to the opposite direction at the same time as the hands ar rotated downwards. The user can soon note that, if one portion of the assembly gripped by the fingers is rotated in clockwise direction, the other portion (shifted by 90° to the first portion) will rotate in counterclockwise direction. Of course, it is not easy to learn immediately to rotate the assembly continuously without taking off the fingers. As it is the case in many games, attempts should be made until the right co-ordination of the hands is found, and nobody can say that someone will succeed in doing that in a few minutes.

[0015] It should be appreciated that the finished assembly, as can be seen in Figs. 8 and 9, has four stable bearing positions corresponding to each winding, which

allows the assembly to be used as knick-knack or paperweight when it is not being manipulated.

[0016] As an alternative to the embodiment described above testing the skill and the patience of the user also upon assembling the assembly, the latter can be provided already assembled and ready to use. To this purpose, an advantageous feature of the assembly according to the invention is that it can be stacked on other similar assemblies without increasing the overall dimensions of the assembly.

[0017] A variation of the play assembly according to the invention provides that two circular crowns along with an additional portion of circular crown corresponding to 63° are used instead of only two circular crowns (or two circles) so that the total length of the spiral extends to about 783°.

[0018] This second embodiment provides a model in which the pair of edges are in contact with each other.

[0019] It should be noted that the diameter of the hole at the centre of the circular crown depends on the characteristics of the material used for the assembly and in principle could be reduced to a very little size.

Claims

1. A spiral assembly for play purpose characterized in that it consists of a leaf of flexible material having a spherical, tetrahelicoidal shape closed on itself which is manipulated without taking off the hands so that it is rotated continuously about its quaternary of polar axes.

2. The spiral assembly for play purpose of claim 1, characterized by a continuous helicoidal shape with four windings which alternate in the right-handed and left-handed directions.

3. The spiral assembly of the preceding claims, characterized in that it is assembled from a sheet of flexible material, on which the pre-cut contours of at least two circular crowns are drawn, both crowns being provided with a radial cut, as follows:

   - once said circular crowns are cut, they are put on each other and joined together by sticking one edge of the upper crown to the opposite edge of the underlying crown so as to provide a spiral crown having a right-handed or left-handed helical direction of winding depending on the initial choice of the edge to be stuck;
   - the edges of said spiral crown are introflexed at the same time and rotated about the centre until they are positioned in front of each other to be stuck together.

4. The spiral assembly of the preceding claims, characterized by a continuous direction of winding and having four stable bearing positions corresponding to four windings which alternate in the right-handed and left-handed direction.

5. The spiral assembly of the preceding claims, characterized in that it extends to 720° when it is made of two circular crowns.

6. The spiral assembly of the preceding claims, characterized in that it extends to 783° when it is made of three circular crowns from which a corresponding portion is cut away.

7. The spiral assembly of the preceding claims, characterized in that it has a spherical, tetrahelicoidal shape and is made of a rigid material, a dynamic effect being provided by mechanical and/or electronic means.

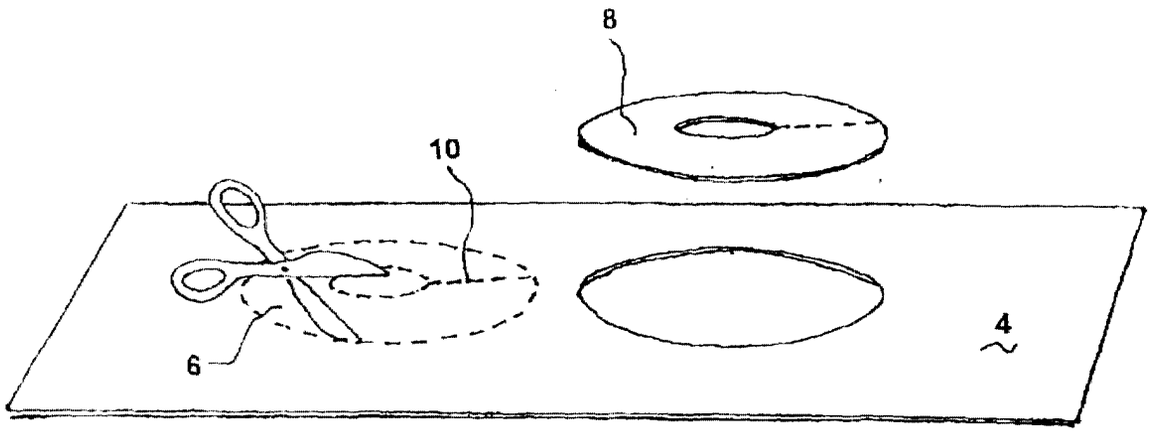

FIG. 1

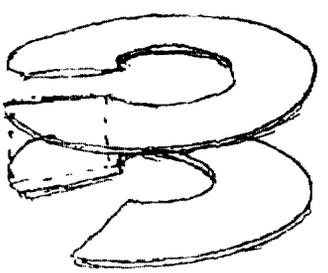

FIG. 2

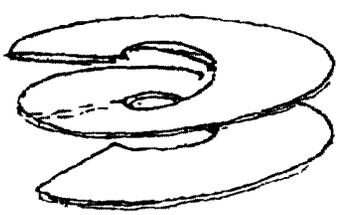

FIG. 3

FIG. 4

FIG. 5

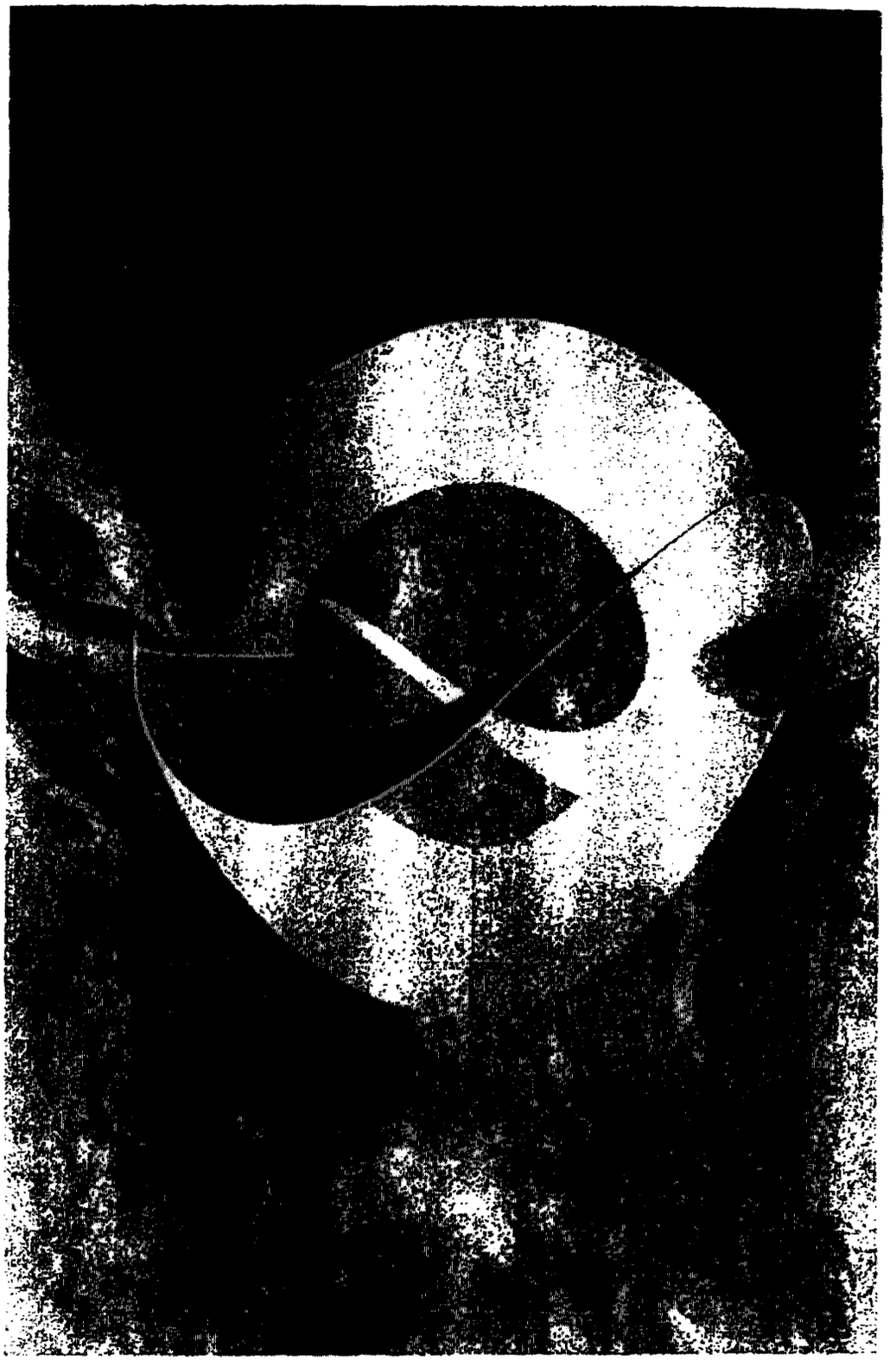

FIG. 6

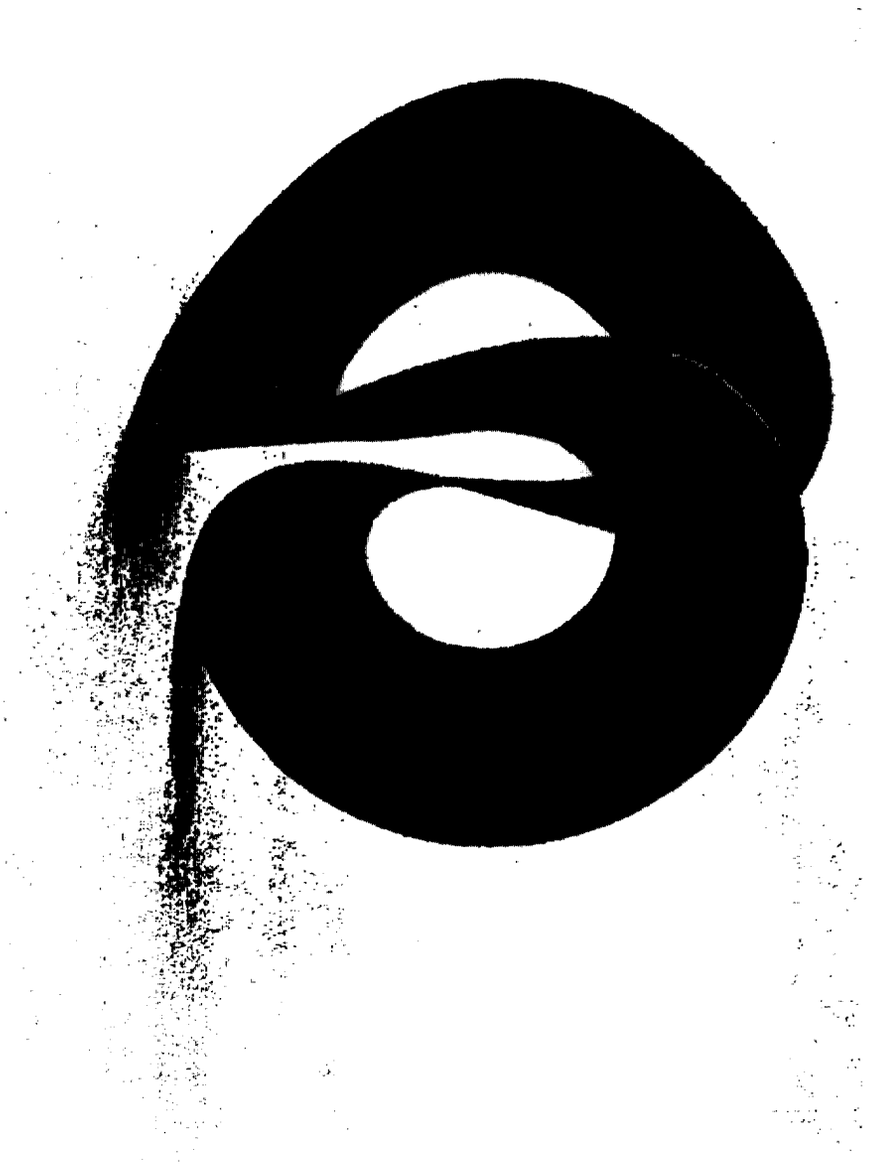

FIG. 7

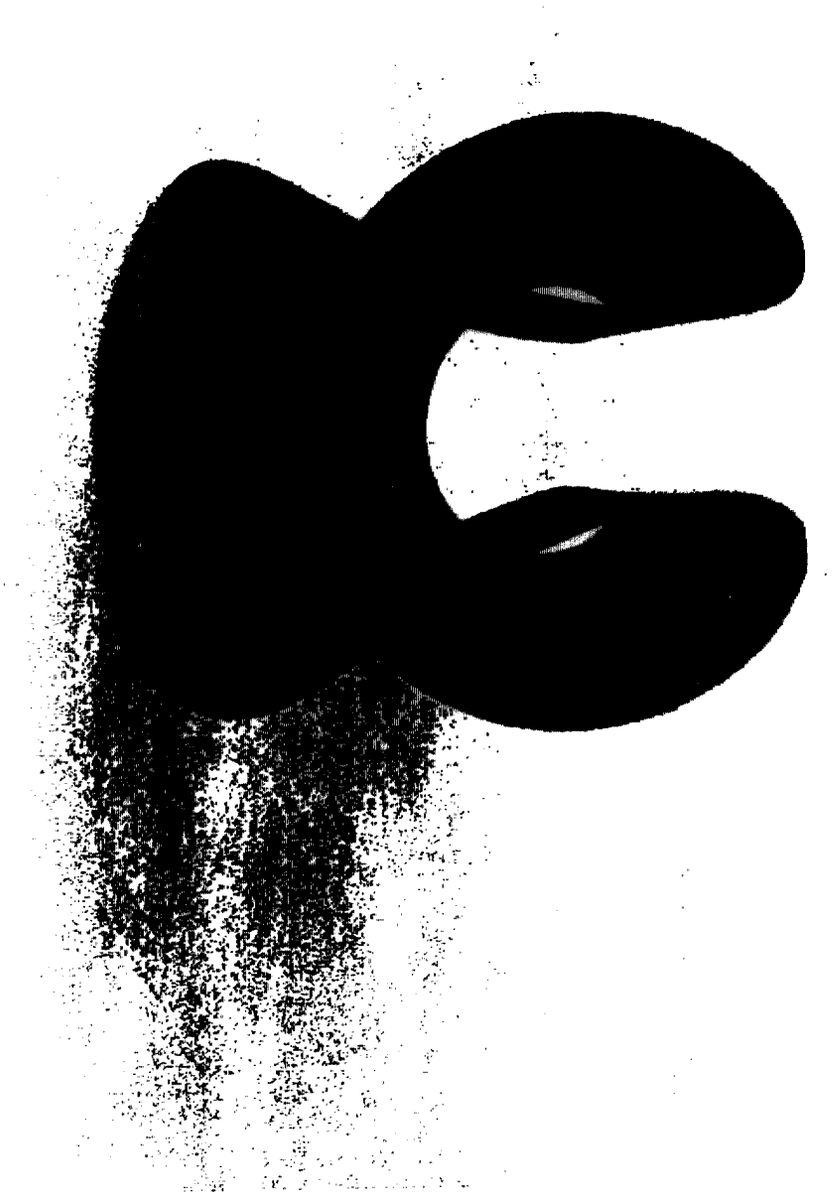

FIG. 8

FIG. 9

FIG. 10

FIG. 11

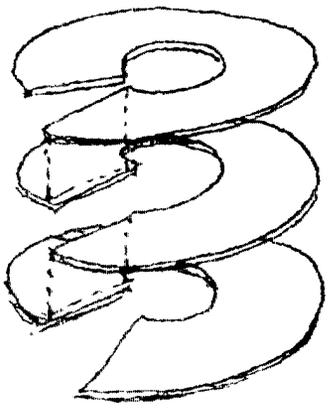

FIG. 12

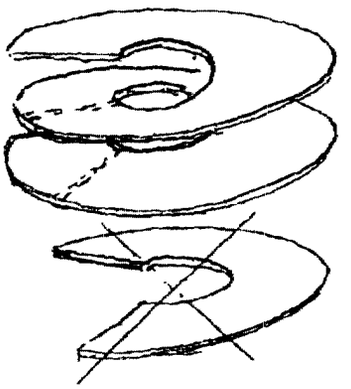

FIG.13

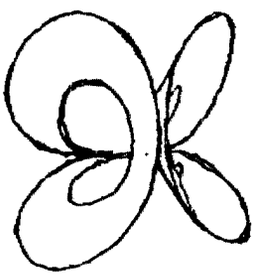

FIG.14

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EUROPEAN SEARCH REPORT

Application Number
EP 99 83 0823

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	DE 34 39 509 A (FUGE PETER DIPL ING) 30 April 1986 (1986-04-30) * page 8, line 28 - page 8, line 31; claims 1,5; figure 1 *	1,2,4,5	A63F9/06 A63F9/08
X	US 4 919 427 A (KEIDAR ITZHAK ET AL) 24 April 1990 (1990-04-24) * abstract; figure 2 *	1,2,4	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A63F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	9 May 2000	Feber, L

CATEGORY OF CITED DOCUMENTS

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09-05-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3439509 A	30-04-1986	NONE	
US 4919427 A	24-04-1990	NONE	

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