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(71) Applicant: **Magfun Toys Co., Ltd.**
Shenzhen, Guangdong 518109 (CN)

(72) Inventors:
- **Chen, Yu**
  518109 Shenzhen (CN)
- **Tao, Jin**
  518109 Shenzhen (CN)

(74) Representative: **advotec.**
Patent- und Rechtsanwälte
Beethovenstrasse 5
97080 Würzburg (DE)

(54) Scene puzzle

(57) A scene puzzle is provided according to the present application, which includes a puzzle component and a base plate. A magnet is provided inside the puzzle component, and a metal substance capable of attracting the magnet is provided inside the base plate. In this arrangement, the puzzle component and the base plate are connected by a magnetic force between the magnetic substance and the metal substance. Compared with a connection method of hole plugging or snap fitting in the conventional technology, in the connection method in the present application, the player does not need to plug/unplug or snap fit the puzzle components, thereby effectively reducing the abrasion of the puzzle components and improving the reutilization rate of the puzzle.

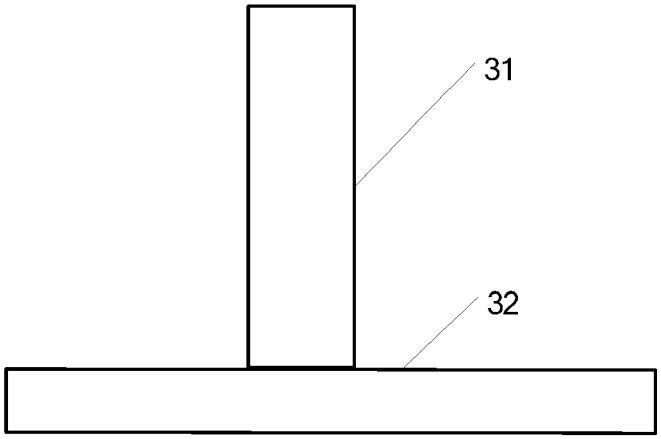

Fig. 3

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Description

TECHNICAL FIELD

[0001] The present application relates to the field design technique of puzzles, and particularly to a scene puzzle.

BACKGROUND

[0002] A puzzle is a tool for an educational game, and multiple picture parts are spliced together by a player to form a complete picture or layout setting having a particular scene. In present, toy puzzles available in the market are generally classified as three categories according to the space construction, including a planar type, a three-dimensional type and a plane stacking three-dimensional type which is between the planar type and the three-dimensional type; and are generally classified as several categories according to the materials, including wooden type, paper type, plastic type and etc.; and are generally classified as several categories according to the assembling method, including wedge embedding type, glue bonding type, track jointing type, and etc..

[0003] The assembling method of the wedge embedding type is commonly used in a puzzle made of wooden or plastic materials. Wooden or plastic puzzle parts are wedged together by a hole pluggable manner or a snap-fit manner, thereby forming a layout structural picture having a certain scene.

[0004] However, in the above scene puzzle, the puzzle parts are assembled by wedging, and repeated plugging and unplugging or snap fitting are prone to cause abrasion of the puzzle parts, which further results in a low reutilization rate of the puzzle.

SUMMARY

[0005] In view of this, a scene puzzle is provided according to the present application, to address the technical issue of a low reutilization rate of the puzzle in the conventional technology. Technical solutions according to the present application are as follows.

[0006] A scene puzzle includes a base plate and at least one puzzle component having a scene pattern; wherein,

[0007] a magnet is provided inside the puzzle component, and a metal substance capable of attracting the magnet is provided inside the base plate.

[0008] In the scene puzzle, a magnet mounting seat is provided inside the puzzle component, the magnet mounting seat is rotatably connected to the puzzle component, and a rotating axis of the magnet mounting seat is parallel to a connecting surface of the puzzle component.

[0009] In the scene puzzle, a sliding groove is provided inside the puzzle component, a protrusion is provided on the magnet mounting seat, and a maximum length of the protrusion is smaller than a width of the sliding groove.

[0010] In the scene puzzle, the connecting surface of the puzzle component is vertically connected to the sliding groove arranged in the puzzle component, and the connecting surface is provided with a retaining portion configured to cooperate with the protrusion on the magnet mounting seat.

[0011] In the scene puzzle, an outer end surface of the magnet mounting seat is provided with a positioning groove.

[0012] In the scene puzzle, a magnetic force between each puzzle component and the base place is larger than a gravity of the respective puzzle component.

[0013] In the scene puzzle, the base plate is provided with at least one connecting component, wherein the connecting component is configured for hanging the base plate.

[0014] In the scene puzzle, the connecting component has an annular structure.

[0015] In the scene puzzle, the connecting component is provided inside the base plate.

[0016] Another scene puzzle is further provided according to the present application, includes a base plate and at least one puzzle component having a scene pattern; wherein,

[0017] a metal substance is provided inside the puzzle component, and a magnet capable of attracting the metal substance is provided inside the base plate.

[0018] According to the above technical solutions, a scene puzzle according to the present application includes a puzzle component and a base plate. A magnet is provided inside the puzzle component, and a metal substance capable of attracting the magnet is provided inside the base plate. In this arrangement, the puzzle component and the base plate are connected by a magnetic force between the magnetic substance and the metal substance. Compared with a connection method of hole plugging or snap fitting in the conventional technology, in the connection method in the present application, the player does not need to plug/unplug or snap fit the puzzle components, thereby effectively reducing the abrasion of the puzzle components and improving the reutilization rate of the puzzle.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] For more clearly illustrating the technical solution of embodiments of the present application, drawings referred to describe the embodiments will be briefly described hereinafter. Apparently, the drawings in the following description are only several embodiments of the present application, and for the person skilled in the art, other drawings may be obtained based on these drawings without any creative efforts.

Figure 1 is a schematic view of a puzzle in the conventional technology described in the present application;

Figure 2 is another schematic view of a puzzle in the conventional technology described in the present application;

Figure 3 is a schematic view showing the structure of a scene puzzle according to a first embodiment of the present application;

Figure 4 is a schematic view showing a setting of the scene puzzle according to the present application;

Figure 5 is an another schematic view showing the structure of a scene puzzle according to an embodiment of the present application;

Figure 6 is an another schematic view showing the structure of a scene puzzle according to an embodiment of the present application;

Figure 7 is a partial schematic view of a scene puzzle according to the present application;

Figure 8 is an another schematic view showing the structure of a scene puzzle according to an embodiment of the present application;

Figure 9 is a schematic view of a component of a scene puzzle according to the present application;

Figure 10 is a schematic view showing the structure of a scene puzzle according to the present application when the scene puzzle is placed vertically;

Figure 11 is a schematic view showing the structure of a scene puzzle according to the present application when the scene puzzle is placed upside down;

Figure 12 is a schematic view of a connecting component of the scene puzzle according to the present application; and

Figure 13 is a schematic view showing another setting of the scene puzzle according to the present application.

DETAILED DESCRIPTION

[0020] The technical solutions in the embodiments of the present application will be described clearly and completely hereinafter in conjunction with the drawings in the embodiments of the present application. Apparently, the described embodiments are only a part of the embodiments of the present application, rather than all embodiments. Based on the embodiments in the present application, all of other embodiments, made by the person skilled in the art without any creative efforts, fall into the scope of the present application.

[0021] A scene puzzle is a tool for an educational game, and parts of the puzzle are spliced together by a player to form a complete picture or setting having a particular scene, for example, a hospital, a police office, or a supermarket. In present, the method for assembling parts of the scene puzzle includes a wedge embedding method, which is specifically realized by hole plugging or snap fitting. Reference is made to Figure 1, which is a schematic view showing the hole plugging manner, and in the Figure, a puzzle part 11 and a puzzle part 12 are connected via a hole 13. Reference is made to Figure 2, which is a schematic view showing the snap fitting manner, and in the Figure, a puzzle part 21 is connected to a puzzle part 22 by snap-fitting.

[0022] Reference is made to Figure 3, which is a schematic view showing the structure of a scene puzzle according to a first embodiment of the present application. This embodiment may include a puzzle component 31 and a base plate 32.

[0023] A magnet is provided inside the puzzle component 31, and a metal substance capable of attracting the magnet is provided inside the base plate 32. A player may place the puzzle component 31 on the base plate 32, and the puzzle component 31 and the base plate 32 are connected by a magnetic force.

[0024] Apparently, the present application may have another implementation, wherein, a magnet is provided inside the base plate 32 of the scene puzzle, and a metal substance capable of attracting the magnet is provided inside the puzzle component 31.

[0025] Furthermore, the magnet may be a magnetic iron, or an electromagnet. The electromagnet is a device which may generate electromagnetism when being energized, and consists of a built-in coil and an iron core. The intensity of the magnetism of the electromagnet may be controlled by the intensity of a current or a number of turns of the coil. When being de-energized, the magnetism of the electromagnet may be removed. Alternatively, in order to demagnetize the electromagnet quickly, the iron core may be made of a soft iron and a silicon steel. A device for supplying power, such as a battery, may be provided inside the base plate, to provide electricity support for the electromagnet, thus the electromagnet may be magnetized for connecting the components. Of course, preferably, the magnetic substance may be a magnetic iron having a natural magnetism.

[0026] The metal substance includes but not limit to iron, nickel, cobalt, or alloy, and the existing metal substances capable of being attracted by a magnet all fall into the scope of the present application.

[0027] The puzzle parts in the conventional technology are assembled by hole plugging or snap fitting, and since most puzzle parts are made of materials such as paper, wood or plastic, and repeated plugging and unplugging or snap fitting are prone to cause abrasion or damage of the parts to be spliced (including wedge heads or engaging teeth), which shortens the service life of the puzzle and reduces the reutilization rate of the puzzle. In the scene puzzle according to this embodiment, the puzzle

component and the base plate are connected by a magnetic force between the magnet and the metal substance. In such connecting method, the player does not need to plug/unplug or snap fit the puzzle components, thereby effectively reducing the abrasion of the puzzle components and improving the reutilization rate of the puzzle.

[0028] In addition, compared with the conventional technology using the plugging or snap-fitting assembling method, the scene puzzle according to the above embodiment using the magnetic force for connection may enable the connection between the components to be more stable. In addition, in the puzzle using the plugging or snap-fitting method, a junction is provided in each of the puzzle parts, which limits the position of the puzzle part to be connected, for example, an automobile part can only be inserted in a fixed position. In the scene puzzle according to the above embodiment, no junction is provided on the base plate and the puzzle component, thus the position to be connected is not limited, and the player may arrange and connect the puzzle components as desired according to his own imagination, to create any various settings of different layouts and structures, thereby facilitating developing the spatial imagination of the player.

[0029] It is to be noted that, the number of the puzzle components in the scene puzzle may be one or multiple. Preferably, the number of the puzzle components is multiple. Reference is made to Figure 4, which is a schematic view showing a setting of the scene puzzle according to the present application. In this Figure, not only the puzzle components may be connected to the base plate, but also the puzzle components may be connected to each other by a magnetic force, thereby constructing a setting having a certain layout structure. A surface of the puzzle component to be connected to another puzzle component is defined as a connecting surface of the puzzle component.

[0030] Since the magnet has a characteristic that unlike poles attract and like poles repel, and if the magnet inside the puzzle component is fixed, an end of the puzzle component close to the connecting surface has a fixed magnetic polarity, i.e., can only be a negative pole or a positive pole, thus the connection between various puzzle components is limited, that is, if ends, close to the connecting surfaces, of two puzzle components has the same magnetic polarity, the two puzzle components cannot be connected.

[0031] Therefore, the method for arranging the magnet inside the puzzle component may be achieved by the following technical means. As shown in Figure 5, reference numeral 5 in this figure refers to a puzzle component, and a magnet mounting seat is provided inside the puzzle component 5, the magnet mounting seat is indicated by reference numeral 51, and the connecting surface of the puzzle component is indicated by reference numeral 52. The magnet mounting seat 51 is rotatably connected to the puzzle component 5, and a rotating axis of the magnet mounting seat 51 is parallel to the connecting surface 52 of the puzzle component, thus after the magnet inside the magnet mounting seat 51 is rotated, the polarity of the magnet close to the connecting surface 52 may be adjusted according to practical connection requirements. For example, when the puzzle component 1 is to be connected to the puzzle component 2, if sides of the magnets in the puzzle component 1 and the puzzle component 2 close to the connecting surfaces both have a negative polarity, then due to the attraction between magnetic polarities, the magnet mounting seat in the puzzle component 1 is rotated, which then rotates the positive polarity of the magnet on the magnet mounting seat to be close to the connecting surface, and finally, the puzzle component 1 and the puzzle component 2 are connected via the connecting surfaces.

[0032] It is to be noted that, there are various methods for rotatably connecting the magnet mounting seat and the puzzle component, for example, the magnet mounting seat is provided with a rotating shaft and the puzzle component is provided with a rotating hole, alternatively, the puzzle component is provided with a rotating shaft and the magnet mounting seat is provided with a rotating hole, and then the rotating shaft is rotatably inserted into the rotating hole. Of course, the rotatable connection may also be realized in a way as shown in Figure 6, in the figure, a sliding groove 53 is provided inside the puzzle component, a protrusion 510 is provided on the magnet mounting seat 51, and a maximum linear length of the protrusion in the sliding groove is slightly smaller than a width of the sliding groove, thus the magnet mounting seat is rotatable inside the sliding groove.

[0033] According to the technical solutions of the above embodiments, puzzle components can be connected by configuring the magnet mounting seat to be rotatably connected to the puzzle component, thereby improving the flexibility of the connection between the puzzle components.

[0034] Connecting two puzzle components via connecting surfaces refers to that the two puzzle components are connected by magnetism of the magnets inside the puzzle components. The tightness of the connection between the puzzle components is related to the magnitude of the magnetic force between the magnets, which in turn is related to a distance between the two magnets, i.e., when the distance between two magnets has the smallest value, the magnetic force has the greatest value, and the connection between the puzzle components is firmest. Hence, the position of the magnet mounting seat with respect to the connecting surface may not be fixed, and as shown in Figure 6, the sliding groove 53 in the puzzle component 5 is perpendicular to the connecting surface 52, and a magnet 511 is placed inside the magnet mounting seat 51. Accordingly, the magnet mounting seat 51 is rotatable inside the puzzle component, and when the magnet mounting seat 51 is rotated to an appropriate position and the puzzle component is to be connected to another puzzle component, due to the attraction of the magnetic force, the magnet mounting seat 51

is driven to slide along the sliding groove 53 to a position in the same plane with the connecting surface 52, and thus the magnet 511 is at a position closest to the magnet inside the another puzzle component, thus the magnetic force between the two magnets has the maximum value, thereby improving the firmness of the connection between the puzzle components.

[0035] In addition, as shown in Figure 6, the magnet mounting seat 51 is provided with a protrusion 510, and the connecting surface 52 of the puzzle component is provided with a retaining portion 520, and the protrusion is configured to cooperate with the retaining portion. The retaining portion may be considered as a retaining groove, and the cooperation therebetween refers to that the protrusion may be stuck inside the retaining groove. A sectional view of the protrusion 510 (the section cutting plane is perpendicular to the connecting surface) is shown in Figure 7, and the protrusion may have a sectional shape shown in Figure 7(a) or 7(b). When the magnet mounting seat slides to be flush with the connecting surface, the portion 71 or the portion 72 of the protrusion 510 may be stuck in the retaining portion, thereby enabling the magnet mounting seat to be in a fixed state, and facilitating the connection with another puzzle component.

[0036] Further, an outer end surface of the magnet mounting seat is provided with a positioning groove, to further improve the firmness of the connection between two puzzle components. The outer end surface refers to a surface of the magnet mounting seat close to the connecting surface. The positioning groove may be a sawtooth-shaped protrusion, or a spherical protrusion and a spherical groove. It is to be noted that, the positions of the spherical protrusion and the spherical groove are not limited, for example, a spherical protrusion is provided on an outer end surface of a magnet mounting seat of a puzzle component, and a spherical groove is provided on an outer end surface of a magnet mounting seat of another puzzle component; or, both a spherical protrusion and a spherical groove are provided on an outer end surface of a magnet mounting seat of the same puzzle component.

[0037] As shown in Figure 8, an outer end surface of a magnet mounting seat is provided with a positioning groove 512, and the positioning groove is of a sawtooth shape, and a positioning retaining groove of another puzzle component may be staggeredly snapped in the positioning retaining groove in the previous puzzle component. As further shown in Figure 9, reference numeral 91 in Figure 9(a) refers to a magnet mounting seat, and an outer end surface of the magnet mounting seat is provided with a spherical groove 910. Reference numeral 92 in Figure 9(b) refers to a magnet mounting seat, and an outer end surface of the magnet mounting seat is provided with a spherical protrusion 920. The spherical protrusion and the spherical groove can be connected by snap fitting, thereby increasing the firmness of the connection between the puzzle components.

[0038] In the scene puzzle according to the above embodiments, the base plate and the puzzle component are connected by a magnetic force, and the magnetic force between any one of the puzzle components and the base place is larger than the gravity of the respective puzzle component. The magnitude of the magnetic force is determined by several factors, including the category and size of each of the magnetic substance and the attractable metal substance, thus, a magnetic substance and a metal substance which may generate a larger magnetic force may be adopted. The gravity of the puzzle component is determined by the weight of the puzzle component, thus, the weight of the puzzle component may be limited, to allow the gravity of the puzzle component to be smaller than the magnetic force between the puzzle component and the base plate, thus the base plate of the scene puzzle may be placed vertically or upside down.

[0039] Reference is made to Figure 10, which is a schematic view showing a scene puzzle being placed vertically. In this Figure, a base plate 101 is vertically placed, a puzzle component 102 and the base plate 101 are connected by a magnetic force, and the magnetic force is larger than the gravity of the puzzle component 102. Reference is made to Figure 11, which is a schematic view showing a scene puzzle being placed upside down. In this Figure, a base plate 111 is placed upside down, a puzzle component 112 and the base plate 111 are connected by a magnetic force, and the magnetic force is larger than the gravity of the puzzle component 112.

[0040] It is to be noted that, a base plate of a scene puzzle may be provided with a connecting component for hanging the base plate, so as to place the scene puzzle vertically or upside down. Optionally, the connecting component has an annular structure. Reference is made to Figure 12, which is a schematic view showing the structure of the connecting component, and this figure is a side view of the connecting component, and in this figure, the base plate 12 is provided with a connecting component 120, and the connecting component 120 is annular. A player can arrange a hook-shaped hanger on a wall, and then the base palate 12 can be hanged onto the hook-shaped hanger via the connecting component 120. Optionally, the connecting component 120 is connected to the base plate 12 by screw threads.

[0041] There may be one or multiple connecting components.

[0042] Optionally, the connecting component 120 is arranged inside the base plate.

[0043] Apparently, the embodiments of various scene puzzles according to the present application are described by simple connection diagrams, and reference is made to Figure 13, which shows a setting when the scene puzzle is placed vertically.

[0044] The above embodiments are described in a progressive manner. Each of the embodiments is mainly focused on describing its differences from other embodiments, and references may be made among these embodiments with respect to the same or similar portions

among these embodiments.

[0045] Based on the above description of the disclosed embodiments, the person skilled in the art is capable of carrying out or using the present application. It is obvious for the person skilled in the art to make many modifications to these embodiments. The general principle defined herein may be applied to other embodiments without departing from the spirit or scope of the present application. Therefore, the present application is not limited to the embodiments illustrated herein, but should be defined by the broadest scope consistent with the principle and novel features disclosed herein.

Claims

1. A scene puzzle, comprising a base plate and at least one puzzle component having a scene pattern; wherein,
   a magnet is provided inside the puzzle component, and a metal substance capable of attracting the magnet is provided inside the base plate.

2. A scene puzzle, comprising a base plate and at least one puzzle component having a scene pattern; wherein,
   a metal substance is provided inside the puzzle component, and a magnet capable of attracting the metal substance is provided inside the base plate.

3. The scene puzzle according to claim 1, wherein a magnet mounting seat is provided inside the puzzle component, the magnet mounting seat is rotatably connected to the puzzle component, and a rotating axis of the magnet mounting seat is parallel to a connecting surface of the puzzle component.

4. The scene puzzle according to claim 3, wherein a sliding groove is provided inside the puzzle component, a protrusion is provided on the magnet mounting seat, and a maximum length of the protrusion is smaller than a width of the sliding groove.

5. The scene puzzle according to claim 4, wherein the connecting surface of the puzzle component is vertically connected to the sliding groove arranged in the puzzle component, and the connecting surface is provided with a retaining portion configured to cooperate with the protrusion on the magnet mounting seat.

6. The scene puzzle according to claim 3, wherein an outer end surface of the magnet mounting seat is provided with a positioning groove.

7. The scene puzzle according to claim 1 or 2, wherein a magnetic force between each puzzle component and the base place is larger than a gravity of the respective puzzle component.

8. The scene puzzle according to claim 1 or 2, wherein the base plate is provided with at least one connecting component, wherein,
   the connecting component is configured for hanging the base plate.

9. The scene puzzle according to claim 8, wherein the connecting component has an annular structure.

10. The scene puzzle according to claim 8, wherein the connecting component is provided inside the base plate.

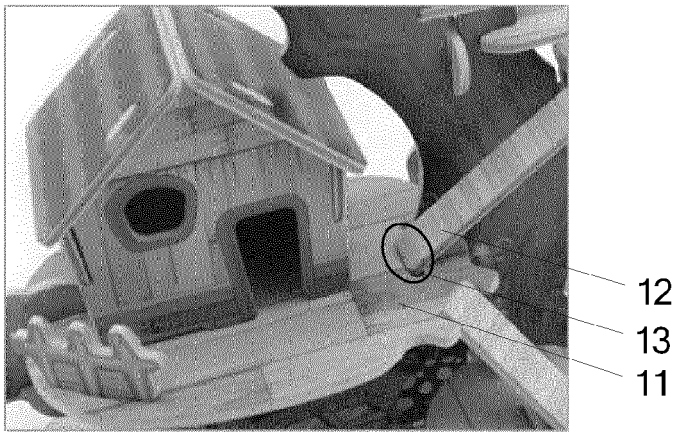


Fig. 1

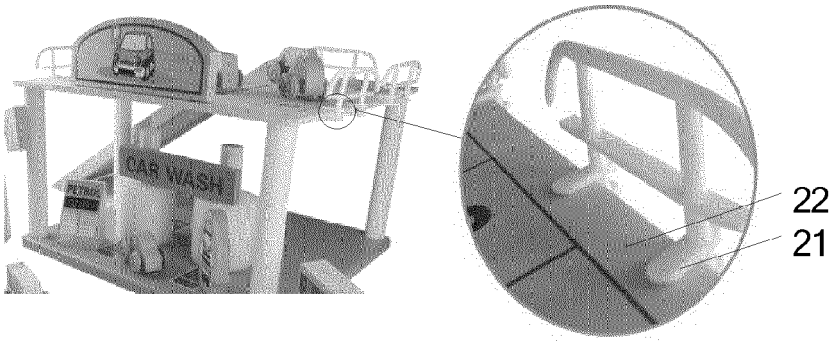


Fig. 2

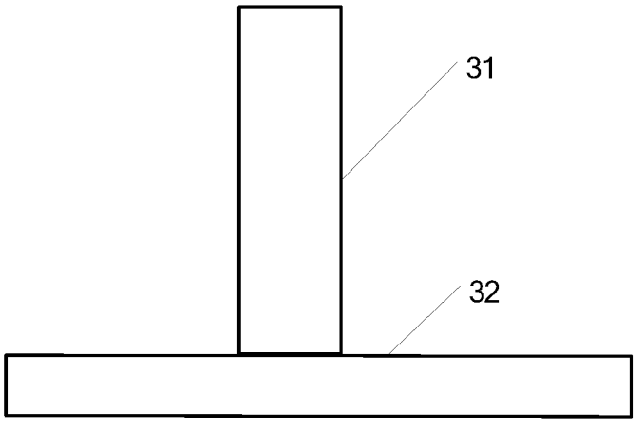


Fig. 3

Fig. 4

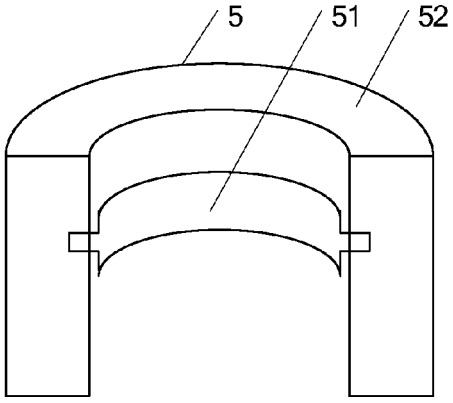


Fig. 5

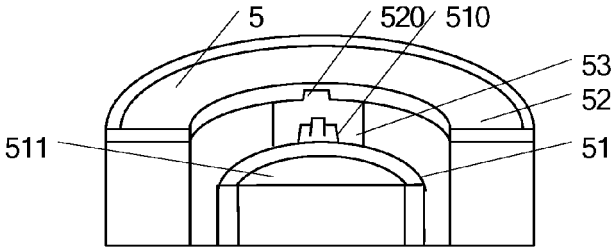
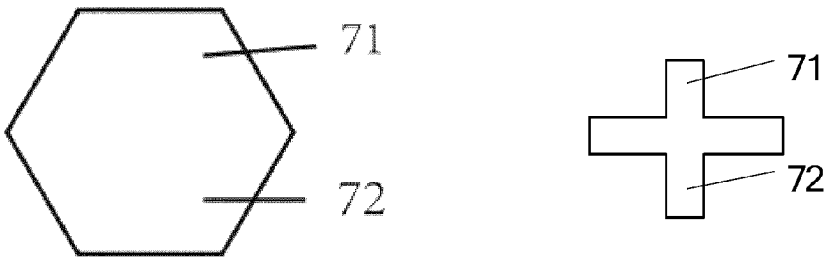


Fig. 6



(a) (b)

Fig. 7

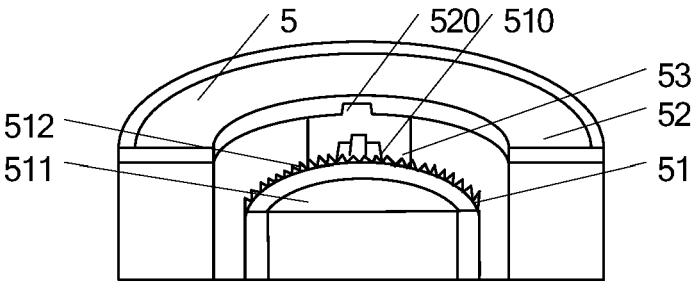
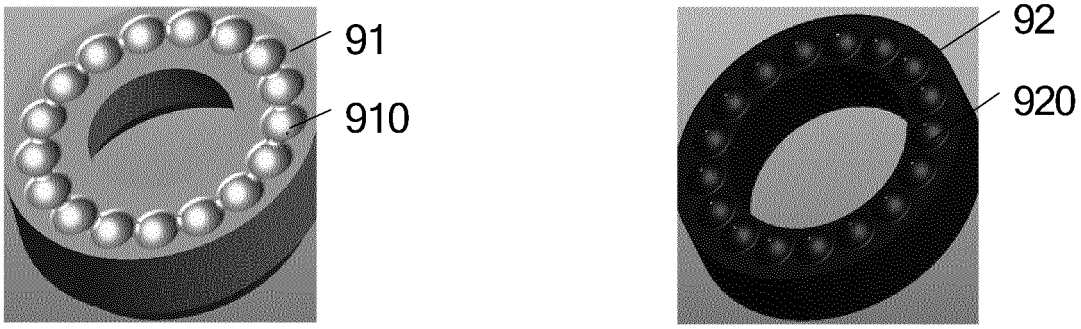


Fig. 8



(a) (b)

Fig. 9

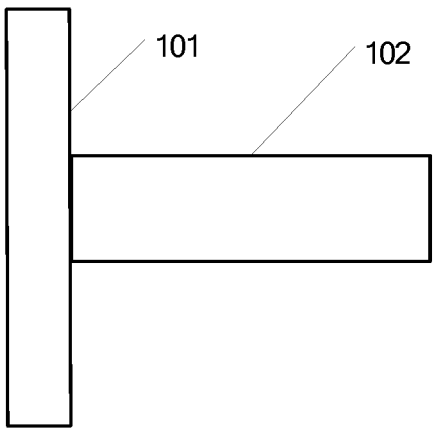


Fig. 10

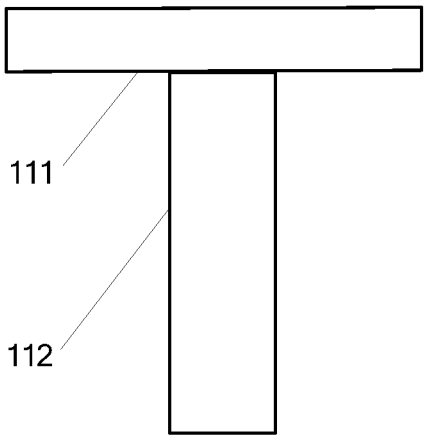


Fig. 11

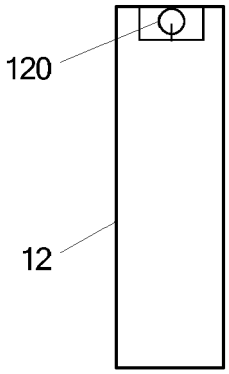


Fig. 12

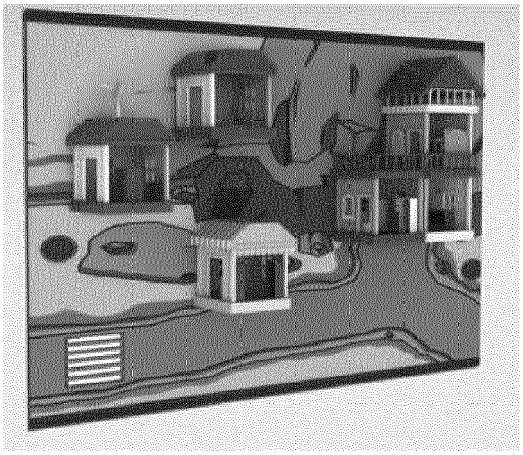


Fig. 13

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EUROPEAN SEARCH REPORT

Application Number
EP 14 19 4665

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 741 534 A (ROGAHN DINO J [US]) 3 May 1988 (1988-05-03)	1,2,7-10	INV. A63F9/12
Y	* column 2, lines 15-61; figures 1-3 *	3-6	A63H33/04
Y	EP 2 239 026 A1 (EDTOY CO LTD [KR]) 13 October 2010 (2010-10-13) * paragraphs [0022] - [0058]; figures *	3-6	ADD. A63F9/10
Y	WO 2013/100491 A1 (KIM SANG HOON [KR]) 4 July 2013 (2013-07-04) * abstract; figures *	3-6	

TECHNICAL FIELDS SEARCHED (IPC)

A63F
A63H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 September 2015	Bagarry, Damien

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 14 19 4665

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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10-09-2015

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