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(54) **DETACHABLE TOY**

(57) The purpose of the present invention is to provide a detachable toy that is configured to detach a portion of a body from the body if a certain condition for

detaching the portion from the body is provided, and the body and the detached portion of the body transform from a first form into a second form.

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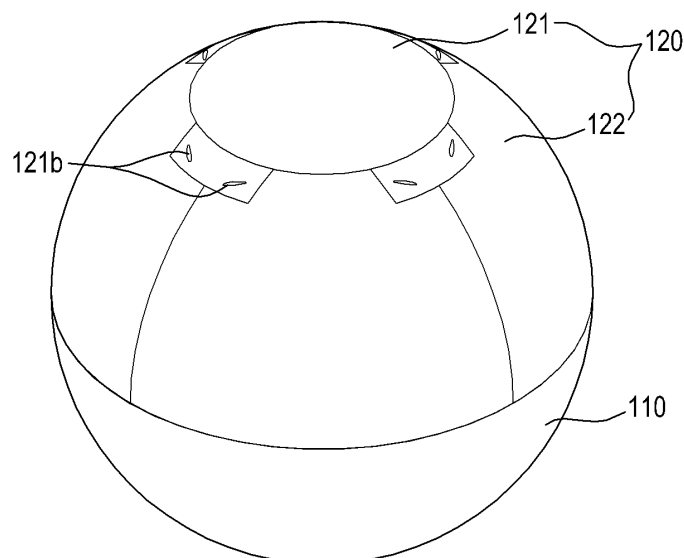


Fig. 1

Description

[Technical Field]

[0001] The present invention relates to a detachable toy, and more particularly, to a detachable toy that is configured to detach a portion of a body from the body if a given condition is provided to detach the portion of the body from the body, so that the body and the detached portion of the body transform from a first form into a second form.

[Background Art]

[0002] Among toys for the play of babies or children, transformable toys provide various playing effects.

[0003] A method for transforming a toy's form is carried out by means of manual manipulation or an operation of locking means using a magnetic force of a magnet.

[0004] Particularly, the toy using the magnetic force includes external structures, internal structures accommodated in interiors of the external structures, and locking means operating cooperatively with the movement of a magnet disposed movably in an interior thereof.

[0005] If the magnet moves by means of the magnetic force, the locking means transforms the toy from a first form into a second form.

[0006] A transforming toy using the magnetic force is disclosed in Korean Patent Application Laid-open No. 2008-101924 entitled 'toy'.

[0007] According to the conventional toy, if the magnetic force generated from the magnet is not supplied, the external structures and a plurality of components constituting a spherical first form are kept to a spherical form by means of locking members, with a force applied from deviation means.

[0008] On the other hand, if the magnetic force is supplied, the locking states caused by the locking members are released cooperatively with the movement of the magnet, and accordingly, locking between the external structures folded to the spherical form in the locking states caused by the locking members is released, so that the external structures transform from the first form into a second form.

[0009] If the magnetic force of the magnet is not supplied, accordingly, it is impossible that the conventional toy transforms from the first form into the second form.

[0010] Further, the conventional toy changes only in the form of a body thereof, so that it does not provide any complex play or interest after transformation.

[Disclosure]

[Technical Problem]

[0011] Accordingly, the present invention has been made in view of the above-mentioned problems occurring in the prior art, and it is an object of the present invention

to provide a detachable toy that is configured to detach a portion of a body from the body if a given condition is provided to detach the portion of the body from the body, so that the body and the detached portion of the body transform from a first form into a second form.

[Technical Solution]

[0012] To accomplish the above object, according to the present invention, there is provided a detachable toy including a first body, a second body detachably or rotatably disposed on the first body, locking parts for fixing the second body to the first body, and latch parts for releasing locking states of the locking parts by means of displacement in position thereof, wherein if the locking states of the locking parts are released, the second body is detached or rotates from the first body, and at least one of the first body and the second body is developed to transform from a first form into a second form.

[0013] According to the present invention, desirably, the detachable toy further includes an auxiliary toy disposed between the first body and the second body in such a manner as to be launched from the first body if the second body rotates to open.

[0014] According to the present invention, desirably, if the auxiliary toy is launched from the first body, the auxiliary toy transforms into a second form from a first form.

[0015] According to the present invention, desirably, the detachable toy further includes a pressurizing part disposed on any one of the first body and the second body to pressurize the second body thereagainst, so that the second body is separated or detached from the first body.

[0016] According to the present invention, desirably, the latch parts have the displacement in position thereof through at least one of an inertial force generated from an impact or crash and a magnetic force formed by a magnetic material.

[0017] According to the present invention, desirably, each of the latch parts includes: a latch part body; a latch part coupling groove formed on one side of the latch part body in such a manner as to support the locking parts to allow the locking parts to be kept to the locking states at a given position; and a latch part spring for providing an elastic force to allow the latch part body to be returned to original states thereof if the latch part body is displaced to a locking releasing position by means of the inertial force.

[0018] According to the present invention, desirably, each of the latch parts includes a magnet adapted to provide the magnetic force so that the locking parts are displaced to locking releasing positions.

[0019] According to the present invention, desirably, the detachable toy further includes an item having a magnetic material disposed at an interior thereof in such a manner as to provide the magnetic force together with the latch parts.

[0020] According to the present invention, desirably,

the first form is any one selected from a spherical form and a polygonal form having at least three or more surfaces.

[Advantageous Effects]

[0021] According to the present invention, the detachable toy is configured to detach a portion of a body from the body if a given condition is provided to detach the portion of the body from the body, so that the body and the detached portion of the body transform from the first form into the second form, thereby greatly improving children's interest in playing with the detachable toy.

[Brief Description of Drawings]

[0022]

FIG.1 is a perspective view showing a detachable toy according to a first embodiment of the present invention.

FIG.2 is a perspective view showing an operating state of the detachable toy of FIG.1 according to the first embodiment of the present invention.

FIG.3 is a sectional view showing a structure of the detachable toy of FIG.1 according to the first embodiment of the present invention.

FIG.4 is an exploded perspective view showing upper parts of the detachable toy of FIG.1 according to the first embodiment of the present invention.

FIG.5 is an exploded perspective view showing upper parts of the detachable toy of FIG.1 according to the first embodiment of the present invention.

FIGS.6a to 6c are perspective views showing operating processes of the detachable toy of FIG.1 according to the first embodiment of the present invention.

FIG.7 is a perspective view showing a detachable toy according to a second embodiment of the present invention.

FIG.8 is a perspective view showing an operating state of the detachable toy of FIG.7 according to the second embodiment of the present invention.

FIG.9 is a sectional view showing a structure of the detachable toy of FIG.7 according to the second embodiment of the present invention.

FIG.10 is a perspective view showing a detachable toy according to a third embodiment of the present invention.

FIG.11 is a perspective view showing an operating state of the detachable toy of FIG.10 according to the third embodiment of the present invention.

FIG.12 is a sectional view showing a structure of the detachable toy of FIG.10 according to the third embodiment of the present invention.

FIG.13 is a perspective view showing a detachable toy according to a fourth embodiment of the present invention.

FIG.14 is a sectional view showing a structure of the detachable toy of FIG.13 according to the fourth embodiment of the present invention.

5 [Mode for Invention]

[0023] Hereinafter, an explanation on a detachable toy according to the present invention will be in detail given with reference to the attached drawing.

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(First Embodiment)

[0024] FIG.1 is a perspective view showing a detachable toy according to a first embodiment of the present invention, FIG.2 is a perspective view showing an operating state of the detachable toy of FIG.1 according to the first embodiment of the present invention, FIG.3 is a sectional view showing a structure of the detachable toy of FIG.1 according to the first embodiment of the present invention, FIG.4 is an exploded perspective view showing upper parts of the detachable toy of FIG.1 according to the first embodiment of the present invention, and FIG.5 is an exploded perspective view showing upper parts of the detachable toy of FIG.1 according to the first embodiment of the present invention.

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[0025] As shown in FIGS.1 to 5, a detachable toy 100 according to a first embodiment of the present invention is configured to detach a portion of a body from the body if an impact or crash for detaching the portion of the body from the body is generated, so that the body and the detached portion of the body transform into a second form from a first form, and the detachable toy 100 includes a first body 110, a second body 120, an auxiliary body 130, locking parts 140, latch parts 150, and a pressurizing part 160.

[0026] The first form of the detachable toy 100 in a locking state is any one selected from a spherical form and a polygonal form having at least three or more surfaces, and desirably, the first form is a generally spherical form.

[0027] For the brevity of the description, further, the first form is the spherical form, but it is not necessarily limited thereto.

[0028] The first body 110 is a hemispherical member and includes a concaved first body housing 111, a first body coupling protrusion 112 formed along top of the first body housing 111, and a protrusion 113 extended upwardly by a given length from a bottom center of the first body housing 111.

[0029] The second body 120 is a hemispherical member disposed on top of the first body 110 in such a manner as to be coupled to the first body 110 to allow the first form in the locking state to become the generally spherical form, and the second body 120 includes a second body base 121, a plurality of flaps 122 whose one side rotatably coupled to the second body base 121 by means of rotary shafts 123 and having a curved portion formed at the inside thereof, and second body springs 124 for

applying elastic forces to the rotary shafts 123 if the flaps 122 are released from locking states, so that the flaps 122 rotate around the rotary shafts 123.

[0030] Further, the second body 120 includes a weight 125 adapted to allow center of gravity of the second body base 121 to be located on the lower portion thereof if the second body 120 is detached from the first body 110.

[0031] The second body base 121 has a curved underside surface and includes coupling grooves 121a equally spaced apart from each other along the outer periphery thereof in such a manner as to be coupled to the flaps 122 and coupling holes 121b pierced into the coupling grooves 121a in such a manner as to insert the rotary shafts 123 thereinto.

[0032] Further, the second body base 121 has a character 121c disposed on top thereof in such a manner as to be exposed to the outside if the second body 120 is separately developed, and the character 121c has various shapes, such as a human being, object, animal, robot and so on.

[0033] The flaps 122 are provided by dividing the second body 120 into four parts around the second body base 121, and each flap 122 includes fastening portions 122a extended by a given length from one side thereof in such a manner as to be inserted into the corresponding coupling groove 121a of the second body base 121, through holes 122b passing through the fastening portions 122a in such a manner as to insert the corresponding rotary shaft 123 thereinto, and a second body coupling protrusion 122c formed on the other side end thereof in such a manner as to be fitted to the protrusion 113 of the first body 110 to allow the second body 120 to be supportedly kept in the coupled state with the first body 110.

[0034] The auxiliary body 130 is disposed between the first body 110 and the second body 120 to partition the first body 110 and the second body 120 and serves to support the locking parts 140, the latch parts 150 and the pressurizing part 160 thereagainst. The auxiliary body 130 includes a disc-shaped auxiliary body base 131, a cylindrical support 132 extended by a given length from one side periphery of the auxiliary body base 131 and having guide slots 132a formed in a longitudinal direction thereof in such a manner as to mount the locking parts 140 thereon, and a through hole 133 formed on the center of the auxiliary body base 131 to allow a portion of the pressurizing part 160 to pass therethrough.

[0035] The locking parts 140 are disposed on the guide slots 132a of the auxiliary body 130 and serve to support the pressurizing part 160 to allow a fixed locking state of the pressurizing part 160 at a given position to be maintained or serve to move radially outward from the support 132 to allow the pressurizing part 160 to be released from the locking state thereof according to operations of the latch parts 150. Each locking part 140 includes a locking part body 141, extended portions 142 protruding laterally from both sides of the locking part body 141 in such a manner as to prevent the locking part body 141 from mov-

ing radially inward from the support 132, a locking part protrusion 143 protruding from one side of the locking part body 141 in such a manner as to be coupled to the corresponding latch part 150, and a locking part locking protrusion 144 protruding by a given length from the front end of the locking part body 141 in a longitudinal direction toward the inside of the support 132 in a radial direction of the support 132.

[0036] The latch parts 150 are disposed on the auxiliary body base 131 of the auxiliary body 130, and if an impact occurs, the latch parts 150 provide displacement through an inertial force to allow the locations of the locking parts 140 to be varied, so that the locking parts 140 move radially outward from the support 132 of the auxiliary body 130 and are thus released from locking states thereof. The latch parts 150 are desirably made of metal materials having a high weight per unit volume so as to provide large moving displacement through the inertial force.

[0037] Further, the latch parts 150 have a member for detecting the impact not exposed to the outside of the first body 110, so that the first form is kept to the generally spherical form rollable.

[0038] Furthermore, each latch part 150 includes a latch part body 151, a latch part coupling groove 152 formed on one side of the latch part body 151 and having a through hole 152a coupled to the corresponding locking part protrusion 143, and an impact sensing spring 153 disposed between the latch part body 151 and the auxiliary body base 131 to provide an elastic force so that the latch part body 151 is kept to a given position.

[0039] The pressurizing part 160 is disposed inside the first body 110 in such a manner as to be movable in upward and downward directions and serves to lock the locking parts 140 thereonto to allow a locking state fixed to the given position to be maintained or released from the locking state thereof, so that if it is released from the locking state, it moves upwardly to provide a pressurizing force to allow the second body 120 to be detached from the first body 110. The pressurizing part 160 includes a pressurizing part body 161 hollow in an interior thereof and open on the bottom thereof, a pressurizing part protrusion 162 protruding by a given length from top of the pressurizing part body 161, a flange 163 formed along the bottom periphery of the pressurizing part body 161, and a pressurizing part spring 164 fixedly coupled to the protrusion 113 of the first body 110 to provide an elastic force so that the pressurizing part 160 moves upwardly.

[0040] If the pressurizing part 160 is released, the pressurizing part protrusion 162 passes through the through hole 133 of the auxiliary body 130 and thus pressurizes or hits the character 121c of the second body 120.

[0041] According to the first embodiment of the present invention, on the other hand, the pressurizing part 160 is disposed inside the first body 110, but it is not limited thereto. That is, the pressurizing part protrusion 162 may be disposed on the second body 120, and the pressurizing part protrusion 162 disposed on the second body 120

may pressurize the pressurizing part body 161 and the pressurizing part spring 164 disposed on the first body 110. Accordingly, the part for providing the pressurizing force to detach the second body 120 from the first body 110 may be disposed on any one of the first body 110 and the second body 120.

[0042] Next, an explanation on operating processes of the detachable toy 100 according to the first embodiment of the present invention will be given.

[0043] The detachable toy 100 in the first form where the first body 110 and the second body 120 are coupled to each other crashes into an arbitrary object or floor by a user.

[0044] If such crash or impact is applied to the detachable toy 100, it is also applied to the latch parts 150 kept to the given position, and at this time, displacement in position of the latch parts 150 occurs by means of an inertial force.

[0045] According to the displacement in position of the latch parts 150, the locking part protrusions 142 of the locking parts 140 coupled to the latch parts 150 move radially outward from the support 132 to allow the locking part locking protrusions 144 to be released from the flange 163 of the pressurizing part 160.

[0046] If the pressurizing part 160 is released, the pressurizing part body 161 moves upwardly by means of the elastic force of the pressurizing part spring 164, and the pressurizing part protrusion 162 pressurizes the character 121c of the second body 120, so that the fastened state between the first body coupling protrusion 112 and the second body coupling protrusions 122c is released to allow the second body 120 to be detached from the first body 110. Accordingly, the detachable toy 100 transforms from the first form into the second form.

[0047] If the second body 120 is detached from the first body 110, further, the flaps 122 are developedly open from the second body base 121 by means of the elastic forces of the second body springs 124, so that the second body 120 transforms from the hemispherical first form into a second form open around the character 121c.

[0048] If the second body 120 is detached from the first body 110 and is thus launched, furthermore, the center of gravity of the second body 120 moves to the underside of the second body base 121 by means of the weight 125 and thus turns over. In this state, the flaps 122 are open.

[0049] That is, as shown in FIGS.6a to 6c, if an impact occurs on the detachable toy 100 kept to the first form as shown in FIG.6a, the first body 110 and the second body 120 are separated from each other, as shown in FIG.6b, so that first transformation for the detachable toy 100 is carried out. After that, as shown in FIG.6c, the second body 120 transforms from the hemispherical first form into the second form open around the character 121c, so that second transformation for the second body 120 is carried out.

(Second Embodiment)

[0050] FIG.7 is a perspective view showing a detachable toy according to a second embodiment of the present invention, FIG.8 is a perspective view showing an operating state of the detachable toy of FIG.7 according to the second embodiment of the present invention, and FIG.9 is a sectional view showing a structure of the detachable toy of FIG.7 according to the second embodiment of the present invention.

[0051] First, the repeated explanation on the same parts as in the first embodiment of the present invention will be avoided, and the same reference numerals will be used to describe the same components.

[0052] As shown in FIGS.7 to 9, a detachable toy 100a according to a second embodiment of the present invention is configured to detach a portion of a body from the body if displacement caused by a magnetic force is generated to detach the portion of the body from the body, so that the body and the detached portion of the body transform into a second form from a first form, and the detachable toy 100a includes a first body 110a, a second body 120, an auxiliary body 130, locking parts 140a, a latch part 150a, a pressurizing part 160a, and an item 200.

[0053] The first body 110a is a hemispherical member and includes a concaved first body housing 111a, a first body coupling protrusion 112a formed along top of the first body housing 111a, and a first body through hole 113a formed on a bottom center of the first body housing 111a.

[0054] The locking parts 140a are disposed under the auxiliary body 130 and serve to support the pressurizing part 160a to allow a fixed locking state of the pressurizing part 160a at a given position to be maintained or serve to rotate upwardly to allow the pressurizing part 160a to be released from the locking state thereof according to an operation of the latch part 150a. Each locking part 140a includes a locking part body 141a locked onto the pressurizing part 160a to allow the fixed locking state of the pressurizing part 160a at the given position to be maintained and a rotary shaft 142a for supporting the locking part body 141a to allow the locking part body 141a to rotate.

[0055] The latch part 150a is disposed inside the first body 110a and moves upwardly and downwardly through the displacement caused by the magnetic force generated in response to the item 200 to allow the locking parts 140a to be varied in position. The latch part 150a includes a latch part body 151a, a magnet 152a disposed on one side end of the latch part body 151a to form the magnetic force, a link member 153a disposed on the other side of the latch part body 151a in such a manner as to be connected to the locking parts 140a by means of rotary shafts 153a', and a latch part spring 154a for providing an elastic force to allow the latch part body 151a to be kept to a given position.

[0056] That is, the latch part 150a allows the locking

parts 140a to be maintained to the fixed locking states to the given position by means of the elastic force of the latch part spring 154a and generates a repulsive force from the magnetic force together with the item 200, so that if the latch part 150a moves downwardly in the drawing, the locking parts 140a rotate through the locking part rotary shafts 142a and are released from the locking states thereof.

[0057] The pressurizing part 160a is disposed movably in upward and downward directions between the auxiliary body 130 and the latch part 150a and serves to lock the locking parts 140 thereonto to allow the locking state fixed to the underside of the auxiliary body 130 to be maintained or released from the locking state onto the locking parts 140a, so that if it is released from the locking state, it moves upwardly in the drawing to provide a pressurizing force to allow the second body 120 to be detached from the first body 110. The pressurizing part 160a includes a pressurizing part body 161a having a protruding portion, a flange 162a formed along the bottom periphery of the pressurizing part body 161a, and a pressurizing part spring 163a for providing an elastic force to allow the pressurizing part body 161a to move upwardly.

[0058] In the state where the pressurizing part body 161a moves downwardly by means of a character 121c of the second body 120, that is, the pressurizing part 160a is lockedly fixed to the locking parts 140a, and if the locking state between the pressurizing part 160a and the locking parts 140a is released according to the displacement in position of the latch part 150a, the pressurizing part body 161a moves upwardly by means of the elastic force of the pressurizing part spring 163a and passes through the through hole 133 of the auxiliary body 130 to pressurize or hit the character 121c of the second body 120.

[0059] Further, a protrusion (not shown) may be not formed on the first body 110a, but formed on the second body 120, so as to pressurize top of the pressurizing part body 161a.

[0060] On the other hand, the elastic force of the latch part spring 154a has a larger value than that of the pressurizing part spring 163a so as to prevent the locking states of the locking parts 140a from being released by the elastic force of the pressurizing part spring 163a.

[0061] The item 200 is a plate-shaped member having any one selected from circular, oval, and polygonal outer shapes, and the item 200 includes a card-shaped item housing 210 made of paper, a plastic synthetic resin, and so on and at least one selected from a magnetic material 220 and a magnet disposed in an interior of the item housing 210 to form the magnetic field together with the magnet 152a of the latch part 150a.

[0062] According to the second embodiment of the present invention, the item 200 has a shape of a card, but it is not limited thereto. That is, the item 200 may be freely changed to a play plate having a given size.

[0063] Further, the item housing 210 has a given character, numbers, text, figure, and pattern printed on the

external surfaces thereof, and otherwise, the external surfaces of the item housing 210 may be formed by means of depressed engraving or embossed carving.

[0064] Next, an explanation on operating processes of the detachable toy 100a according to the second embodiment of the present invention will be given.

[0065] The detachable toy 100a in the first form where the first body 110a and the second body 120 are coupled to each other moves to top of the item 200 by a user.

[0066] If a magnetic force is generated by the magnetic field between the detachable toy 100a and the item 200, displacement in position of the latch part 150a occurs by means of the magnetic force.

[0067] According to the displacement in position of the latch part 150a, the locking parts 140 coupled to the latch part 150a rotate and are thus released from the flange 162a of the pressurizing part 160a.

[0068] If the pressurizing part 160a is released, the pressurizing part body 161a moves upwardly by means of the elastic force of the pressurizing part spring 163a, and the pressurizing part protrusion 162a pressurizes the character 121c of the second body 120, so that the fastened state between the first body coupling protrusion 112a and the second body coupling protrusions 122c is released to allow the second body 120 to be detached from the first body 110a. Accordingly, the detachable toy 100a transforms from the first form into the second form.

[0069] If the second body 120 is detached from the first body 110a, further, the flaps 122 are developedly open from the second body base 121 by means of the elastic forces of the second body springs 124, so that the second body 120 transforms from the hemispherical first form into a second form open around the character 121c.

[0070] If the second body 120 is detached from the first body 110a and is thus launched, furthermore, the center of gravity of the second body 120 moves to the underside of the second body base 121 by means of the weight 125 and thus turns over. In this state, the flaps 122 are open.

(Third Embodiment)

[0071] FIG.10 is a perspective view showing a detachable toy according to a third embodiment of the present invention, FIG.11 is a perspective view showing an operating state of the detachable toy of FIG.10 according to the third embodiment of the present invention, and FIG.12 is a sectional view showing a structure of the detachable toy of FIG.10 according to the third embodiment of the present invention.

[0072] As shown in FIGS.10 to 12, a detachable toy 100b according to a third embodiment of the present invention is configured to rotate a portion of a body from the body if an impact or crash for detaching the portion of the body from the body is generated, so that the body and the rotating portion of the body transform into a second form from a first form, and the detachable toy 100b includes a first body 110b, a second body 120b, an auxiliary body 130b, a locking part 140b, latch parts 150b, a

pressurizing part 160b, and an auxiliary toy 300.

[0073] A first form of the detachable toy 100b in a locking state is any one selected from a spherical form and a polygonal form having at least three or more surfaces, and desirably, the first form is a generally spherical form.

[0074] The first body 110b is a hemispherical member and includes a concaved first body housing 111b, a support 111b' disposed on top of the first body housing 111b to allow flaps 121b of the second body 120b to be rotatably supported thereagainst, first body through holes 112b formed on top of the first body housing 111b, an accommodation portion 113b extended by a given length upwardly from a bottom center of the first body housing 111b, and a first body spring 114b disposed in the accommodation portion 113b to provide an elastic force for the locking part 140b.

[0075] The second body 120b is a hemispherical member disposed on top of the first body 110b in such a manner as to be coupled to the first body 110b to allow the first form in the locking state to become the generally spherical form, and the second body 120b includes the flaps 121b whose one side rotatably coupled to the support 111b' of the first body 110b by means of rotary shafts 122b and having a curved portion formed at the inside thereof, second body springs (not shown) for applying elastic forces to allow the flaps 121b to rotate around the rotary shafts 123 if the flaps 121b are released from locking states, and hooks 123b disposed on the inner surfaces of the flaps 121b in such a manner as to be coupled to the locking part 140b.

[0076] The auxiliary body 130b is disposed between the first body 110b and the second body 120b to partition the first body 110b and the second body 120b and serves to fixedly seat the auxiliary toy 300 thereonto. The auxiliary body 130b includes a disc-shaped auxiliary body base 131b, a seating groove 132b formed on the center of the auxiliary body base 131b to seat the auxiliary toy 300 thereonto, and a through hole 133b formed on the center of the seating groove 132b to allow the pressurizing part 160b to pass therethrough.

[0077] The locking part 140b serves to allow the flaps 121b of the second body 120b and the pressurizing part 160b to be kept to fixed locking states at given positions or serves to move to the upward direction of the first body 110b to release the locking states of the flaps 121b of the second body 120b and the pressurizing part 160b according to operations of the latch parts 150b. The locking part 140b includes a locking part body 141b, a flange 142b formed on one side end periphery of the locking part body 141b, and coupling portions 143b formed on the other side of the locking part body 141b in such a manner as to be locked onto the hooks 123b of the second body 120b.

[0078] The latch parts 150b are disposed in the lower portion of the first body 110b, and if an impact occurs, they vary the position of the locking part 140b through displacement caused by an inertial force, so that the locking part 140b moves radially outward from the first body

110b and is thus released from the locking state thereof. The latch parts 150b are desirably made of metal materials having a high weight per unit volume so as to provide large moving displacement through the inertial force.

[0079] Further, the latch parts 150b have the members for detecting the impact not exposed to the outside of the first body 110b, so that the first form is kept to the generally spherical form rollable.

[0080] Furthermore, each latch part 150b includes a latch part body 151b, a latch part locking protrusion 152b formed on one side of the latch part body 151b in such a manner as to be locked onto the flange 142b of the locking part 140b to allow the locking part 140b to be kept to the fixed locking state at the given position, and an impact sensing spring 153b disposed between the latch part body 151b and the first body 110b to provide an elastic force so that the latch part body 151b is kept to a given position.

[0081] The pressurizing part 160b is extended by a given length from top of the locking part 140b and serves to pressurize and launch the auxiliary toy 300 seated on the seating groove 132b toward the outward direction by means of the elastic force of the first body spring 114b, in the process where the locking part 140b moves upwardly.

[0082] According to the third embodiment of the present invention, on the other hand, the pressurizing part 160b is extended from top of the locking part 140b, but it is not limited thereto. That is, the pressurizing part 160b may be disposed on the second body 120 to pressurize the locking part 140b.

[0083] Further, pressurizing means having a separate pressurizing force may be disposed on the second body 120b, so that in case where the second body 120b is detached from the first body 110b, the pressurizing means provides the pressurizing force.

[0084] The auxiliary toy 300 is disposed between the first body 110b and the second body 120b in such a manner as to be launched from the first body 110b if the second body 120b rotates to open. If the launched auxiliary toy 300 crashes into floor or an arbitrary object, it transforms into a second form from a first form, and desirably, it has the same configuration as the detachable toy according to the first embodiment of the present invention.

[0085] Next, an explanation on operating processes of the detachable toy 100b according to the third embodiment of the present invention will be given.

[0086] The detachable toy 100b in the first form where the first body 110b and the second body 120b are coupled to each other crashes into an arbitrary object or floor by a user.

[0087] If such crash or impact is applied to the detachable toy 100b, an inertial force caused by the crash or impact is generated from the latch parts 150b kept to the given position, and at this time, the generated inertial force causes displacement in position of the latch parts 150b.

[0088] According to the displacement in position of the

latch parts 150b, the locking part 140b coupled to the latch parts 150b and thus kept to the locking state is released from the locking state, and if the locking part 140b moves upwardly by means of the first body spring 114b, the coupling state between the locking part locking protrusion 143b and the hooks 123b of the second body 120b is released.

[0089] If the second body 120b is released, the flaps 121b are open around the rotary shafts 122b of the second body 120b by means of the elastic forces of the springs, so that the detachable toy 100b transforms from the first form into a second form.

[0090] On the other hand, if the locking part 140b is released to move upwardly by means of the elastic force of the first body spring 114b, the pressurizing part 160b pressurizes or hits the auxiliary toy 300 in the upward direction of the first body 110b open through the rotation of the second body 120b and launches the auxiliary toy 300 therefrom.

[0091] If the auxiliary toy 300 is separated from the first body 110b, it crashes into the arbitrary object or floor, and through the impact caused by the crash, it transforms into a second form from the first form through the same developing operation as the detachable toy according to the first embodiment of the present invention.

(Fourth Embodiment)

[0092] FIG. 13 is a perspective view showing a detachable toy according to a fourth embodiment of the present invention, and FIG. 14 is a sectional view showing a structure of the detachable toy of FIG. 13 according to the fourth embodiment of the present invention.

[0093] First, the repeated explanation on the same parts as in the third embodiment of the present invention will be avoided, and the same reference numerals will be used to describe the same components.

[0094] As shown in FIGS. 13 and 14, a detachable toy 100c according to a fourth embodiment of the present invention is configured to rotate a portion of a body from the body if displacement caused by a magnetic force is generated to detach the portion of the body from the body, so that the body and the rotating portion of the body transform into a second form from a first form, and the detachable toy 100c includes a first body 110c, a second body 120b, an auxiliary body 130c, a locking part 140c, a latch part 150c, a pressurizing part 160c, an item 200, and an auxiliary toy 300.

[0095] The first body 110c is a hemispherical member and includes a concaved first body housing 111c, a support disposed on top of the first body housing 111c to allow flaps 121b of the second body 120b to be rotatably supported thereagainst, first body through holes 112c formed on top of the first body housing 111c, and a first body through hole 113c formed on a bottom center of the first body housing 111c.

[0096] The auxiliary body 130c is disposed between the first body 110c and the second body 120b to partition

the first body 110c and the second body 120b and serves to fixedly seat the auxiliary toy 300 thereonto. The auxiliary body 130c includes a disc-shaped auxiliary body base 131c, a seating groove 132c formed on the center of the auxiliary body base 131c to seat the auxiliary toy 300 thereonto, a through hole 133c formed on the center of the seating groove 132c to allow the pressurizing part 160c to pass therethrough, and a pressurizing part installation groove 134c formed on the bottom of the seating groove 132c to dispose the pressurizing part 160c thereinto.

[0097] The locking part 140c serves to allow the flaps 121b of the second body 120b to be kept to fixed locking states at a given position or serves to move to the upward direction of the first body 110c to release the locking states of the flaps 121b of the second body 120b according to an operation of the latch part 150c. The locking part 140c includes a locking part body 141c, a link member 142c disposed on one side of the locking part body 141c and having locking protrusions 142c' locked onto the hooks 123b of the second body 120b, and a locking part spring 143c for providing an elastic force to allow the locking part body 141c to be kept to a given position.

[0098] The latch part 150c is disposed on the other side end of the locking part body 141c and serves to move the locking part body 141c in upward and downward direction through displacement caused by a magnetic force, so that the position of the locking part 140c is varied. Desirably, the latch part 150c is formed of a magnet.

[0099] The pressurizing part 160c is disposed in the pressurizing part installation groove 134c of the auxiliary body 130c, and if the flaps 121b of the second body 120b are released to rotate around rotary shafts 122b and to thus open, the pressurizing part 160c serves to launch the auxiliary toy 300. The pressurizing part 160c includes a pressurizing part body 161c and a pressurizing part spring 162c for providing an elastic force for the pressurizing part body 161c.

[0100] According to the fourth embodiment of the present invention, on the other hand, the pressurizing part 160c is disposed inside the first body 110c, but it is not limited thereto. That is, the pressurizing part 160c may be disposed on the second body 120b.

[0101] Next, an explanation on operating processes of the detachable toy 100c according to the fourth embodiment of the present invention will be given.

[0102] The detachable toy 100c in the first form where the first body 110a and the second body 120 are coupled to each other moves to top of the item 200 by a user.

[0103] If a magnetic force is generated by the magnetic field between the detachable toy 100a and the item 200, displacement in position of the latch part 150c occurs by means of the magnetic force.

[0104] According to the displacement in position of the latch part 150c, the locking part 140c coupled to the latch part 150c moves downwardly to allow the locking state onto the hooks 123b of the second body 120b to be re-

leased.

[0105] If the second body 120b is released, the flaps 122 are developedly open around the rotary shafts 122b by means of the elastic forces of the second body springs, so that the detachable toy 100c transforms from the first form into a second form.

[0106] On the other hand, if the locking part 140c is released to open top of the first body 110c, the pressurizing part 160c pressurizes or hits the auxiliary toy 300 by means of the elastic force of the pressurizing part spring 162c to launch the auxiliary toy 300.

[0107] If the auxiliary toy 300 is separated from the first body 110c, it crashes into an arbitrary object or floor, and through the impact caused by the crash, it transforms into a second form from a first form through the same developing operation as the detachable toy according to the first embodiment of the present invention.

[0108] If a given condition is provided to detach the portion of the body from the body, therefore, the body and the detached portion of the body transform from the first form into the second form, thereby greatly improving children's interest in playing with the detachable toy.

[0109] While the present invention has been described with reference to the particular illustrative embodiments, it is not to be restricted by the embodiments but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiments without departing from the scope and spirit of the present invention.

[0110] In the description, the thicknesses of the lines or the sizes of the components shown in the drawing may be magnified for the clarity and convenience of the description. Further, the terms as will be discussed later are defined in accordance with the functions of the present invention, but may be varied under the intention or regulation of a user or operator. Therefore, they should be defined on the basis of the whole scope of the present invention.

Explanations on Reference Numerals

[0111]

100, 100a, 100b, 100c: detachable toy
110, 110a, 110b, 110c: first body
120, 120b: second body
130, 130a, 130b, 130c: auxiliary body
140, 140a, 140b, 140c: locking part
150, 150a, 150b, 150c: latch part
160, 160a, 160b, 160c: pressurizing part
200: item
300: auxiliary toy

Claims

1. A detachable toy comprising a first body (110, 110a, 110b, 110c), a second body (120, 120b) detachably

or rotatably disposed on the first body, locking parts (140, 140a, 140b, 140c) for fixing the second body (120, 120b) to the first body (110, 110a, 110b, 110c), and latch parts (150, 150a, 150b, 150c) for releasing locking states of the locking parts (140, 140a, 140b, 140c) by means of displacement in position thereof, wherein if the locking states of the locking parts are released, the second body (120, 120b) is detached or rotates from the first body (110, 110a, 110b, 110c), and at least one of the first body (110, 110a, 110b, 110c) and the second body (120, 120b) is developed to transform from a first form into a second form.

2. The detachable toy according to claim 1, further comprising an auxiliary toy (300) disposed between the first body (110b, 110c) and the second body (120b) in such a manner as to be launched from the first body 110b if the second body (120b) rotates to open.

3. The detachable toy according to claim 2, wherein if the auxiliary toy (300) is launched from the first body (110b, 110c), the auxiliary toy (300) transforms into a second form from a first form.

4. The detachable toy according to claim 3, further comprising a pressurizing part (160, 160a, 160b, 160c) disposed on any one of the first body (110, 110a, 110b, 110c) and the second body (120, 120b) to pressurize the second body (120, 120b) thereagainst, so that the second body (120, 120b) is separated or detached from the first body (110, 110a, 110b, 110c).

5. The detachable toy according to claim 1, wherein the latch parts (150, 150a, 150b, 150c) have the displacement in position thereof through at least one of an inertial force generated from an impact or crash and a magnetic force formed by a magnetic material.

6. The detachable toy according to claim 5, wherein each of the latch parts (150, 150b) comprises:

a latch part body (151, 151b);
a latch part coupling groove formed on one side of the latch part body (151, 151b) in such a manner as to support the locking parts (140, 140b) to allow the locking parts (140, 140b) to be kept to the locking states at a given position; and
a latch part spring (153, 153b) for providing an elastic force to allow the latch part body (151, 151b) to be returned to original states thereof if the latch part body (151, 151b) is displaced to a locking releasing position by means of the inertial force.

7. The detachable toy according to claim 5, wherein each of the latch parts (150, 150b) comprises a magnet adapted to provide the magnetic force so that

the locking parts (140a, 140c) are displaced to locking releasing positions.

8. The detachable toy according to claim 7, further comprising an item (200) having a magnetic material (220) disposed at an interior thereof in such a manner as to provide the magnetic force together with the latch parts (150, 150b) . 5
9. The detachable toy according to any one of claims 1 to 8, wherein the first form is any one selected from a spherical form and a polygonal form having at least three or more surfaces. 10

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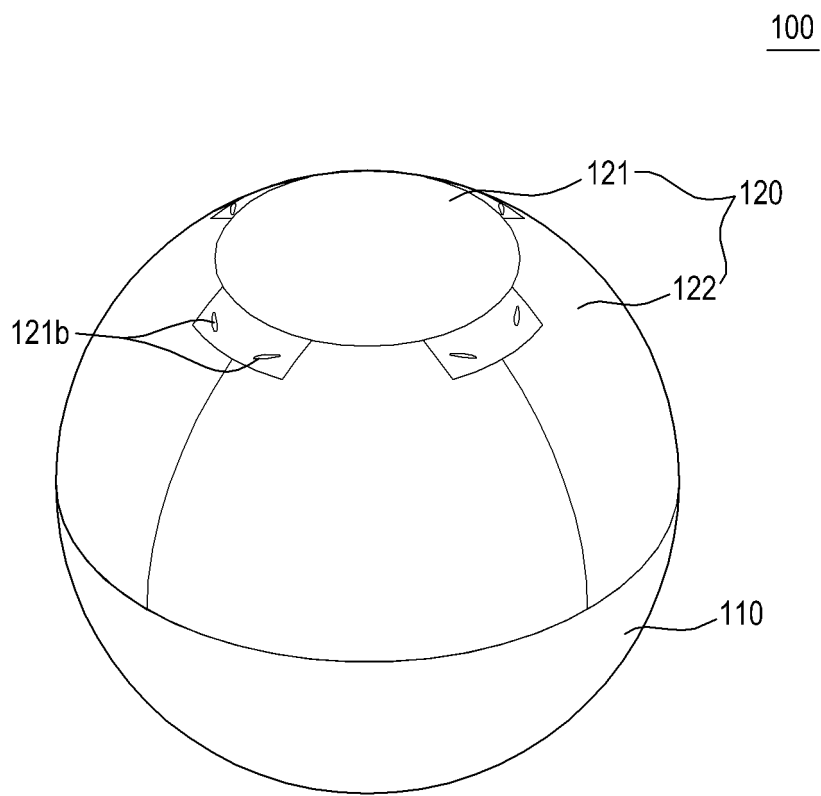


Fig. 1

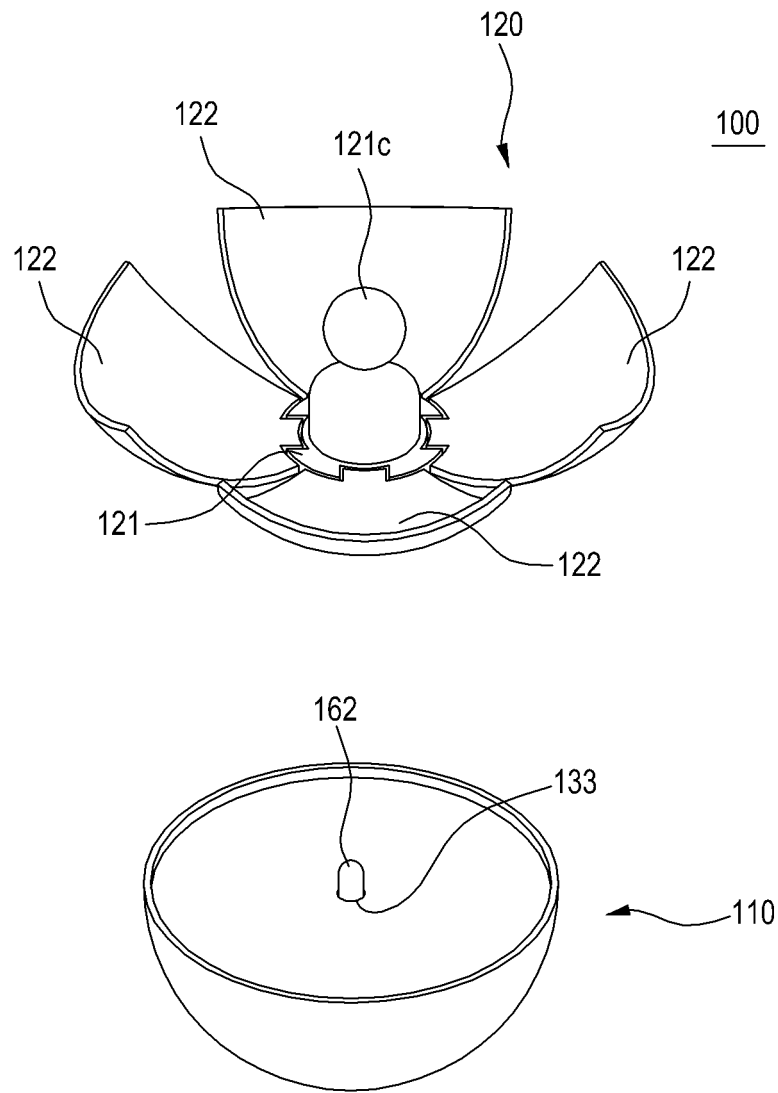


Fig. 2

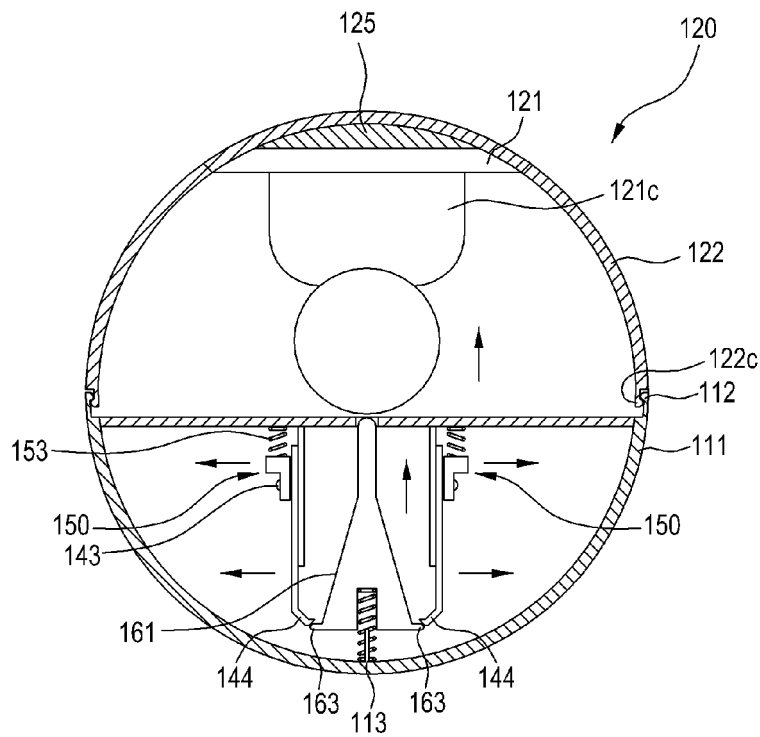


Fig. 3

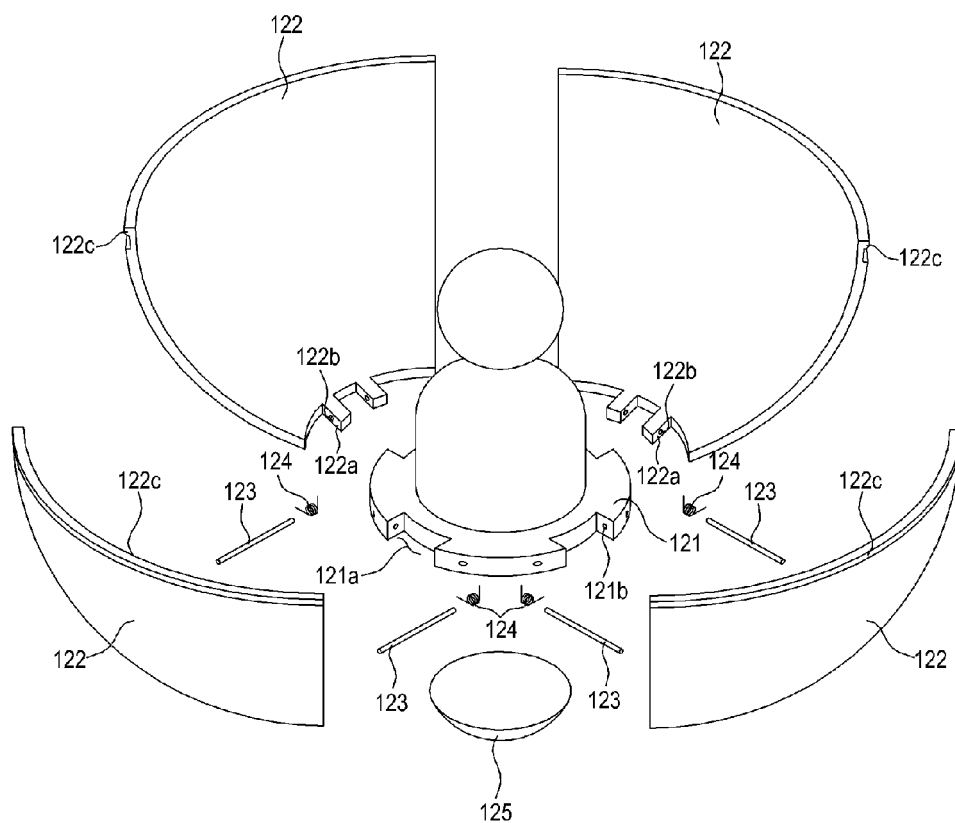


Fig. 4

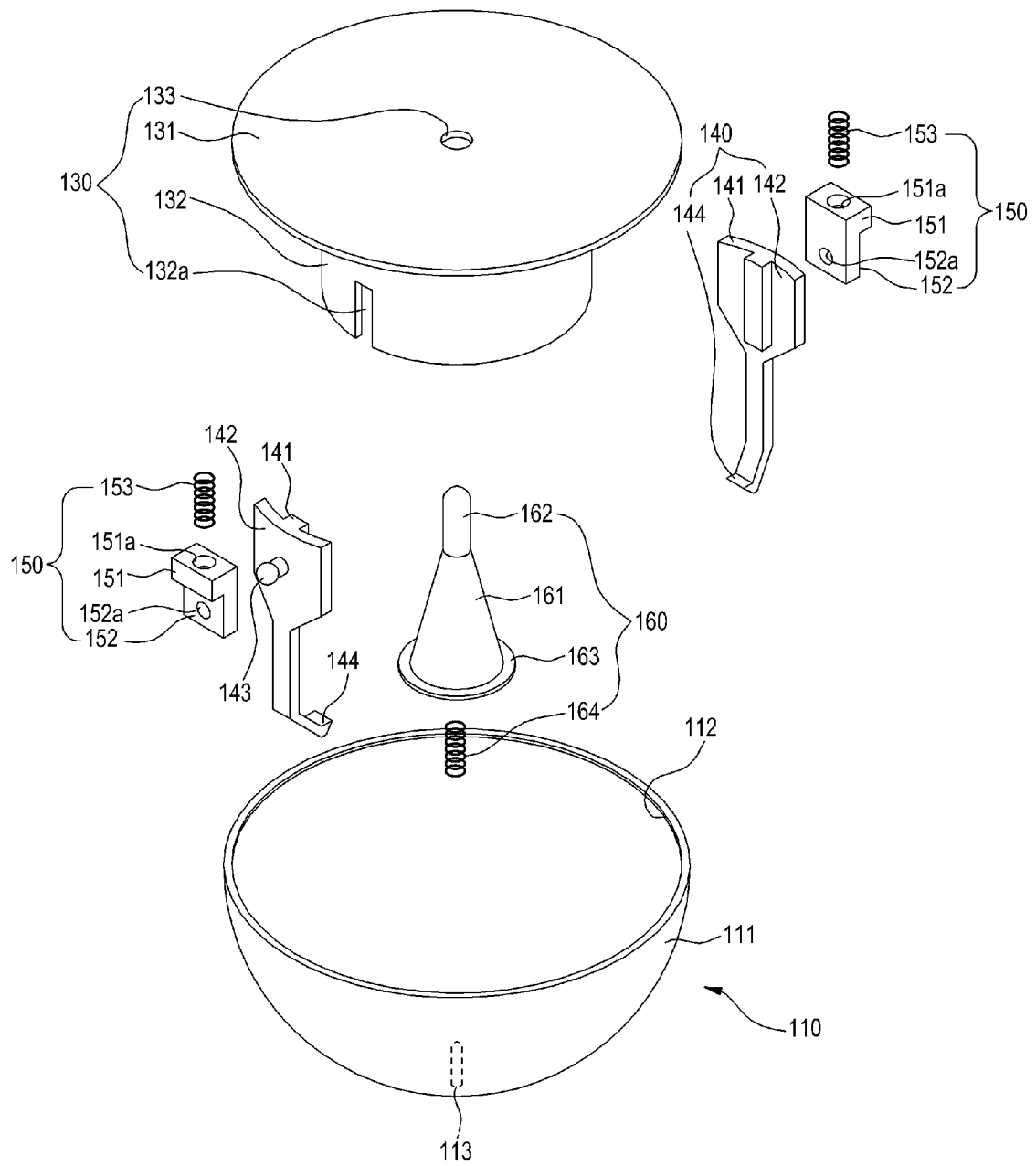


Fig. 5

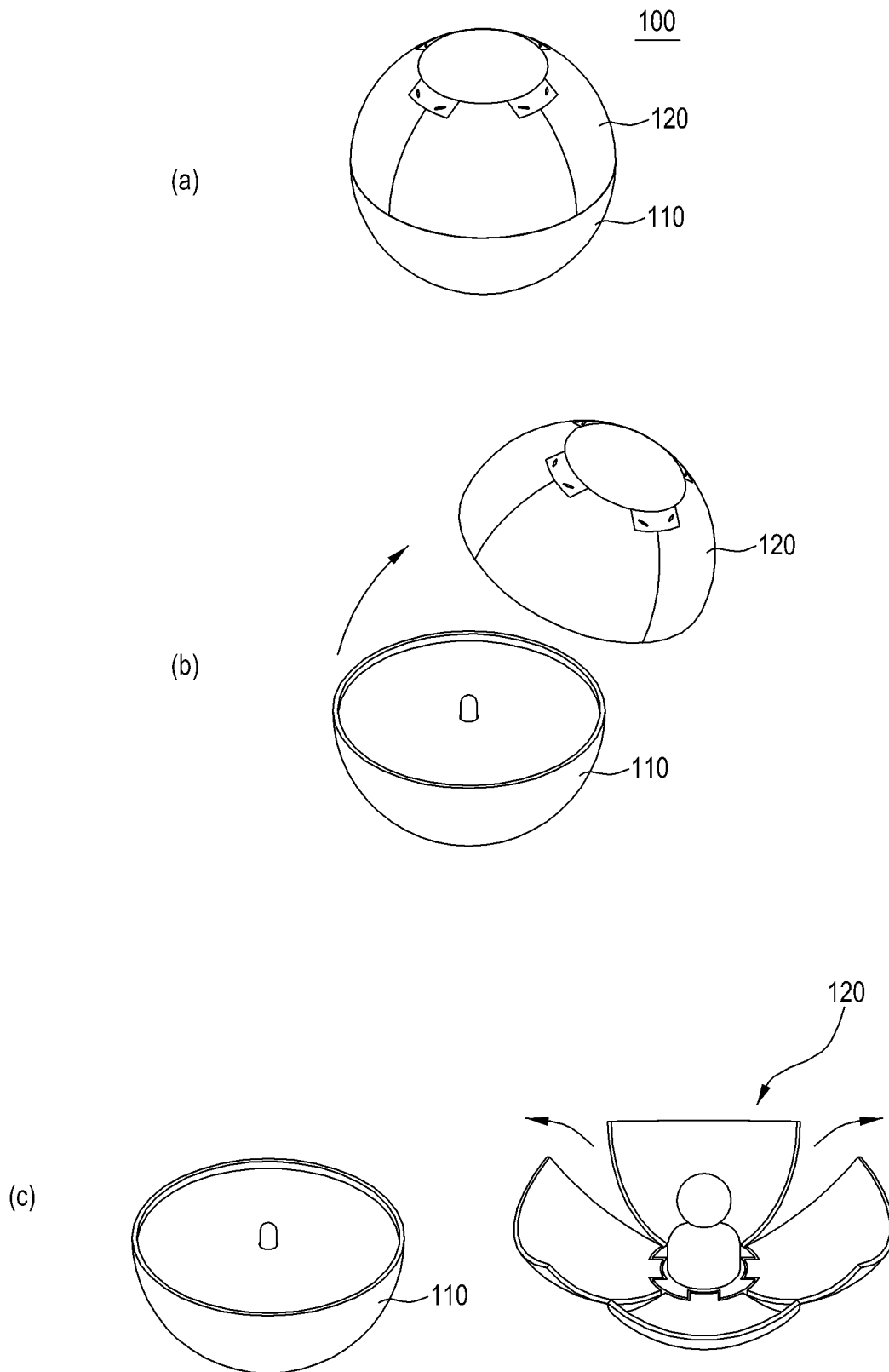


Fig. 6

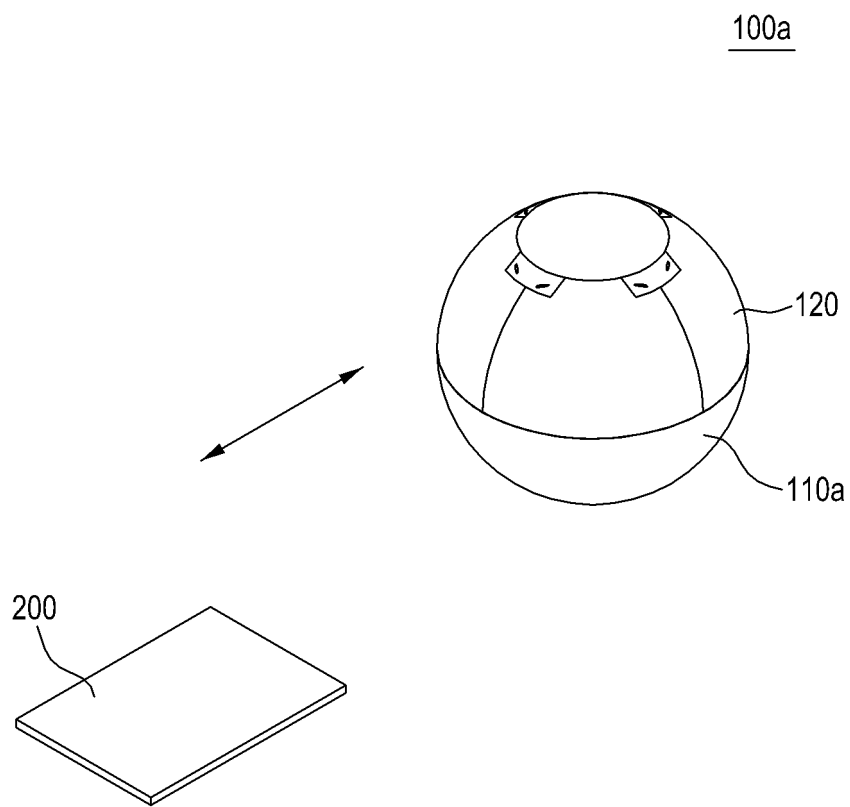


Fig. 7

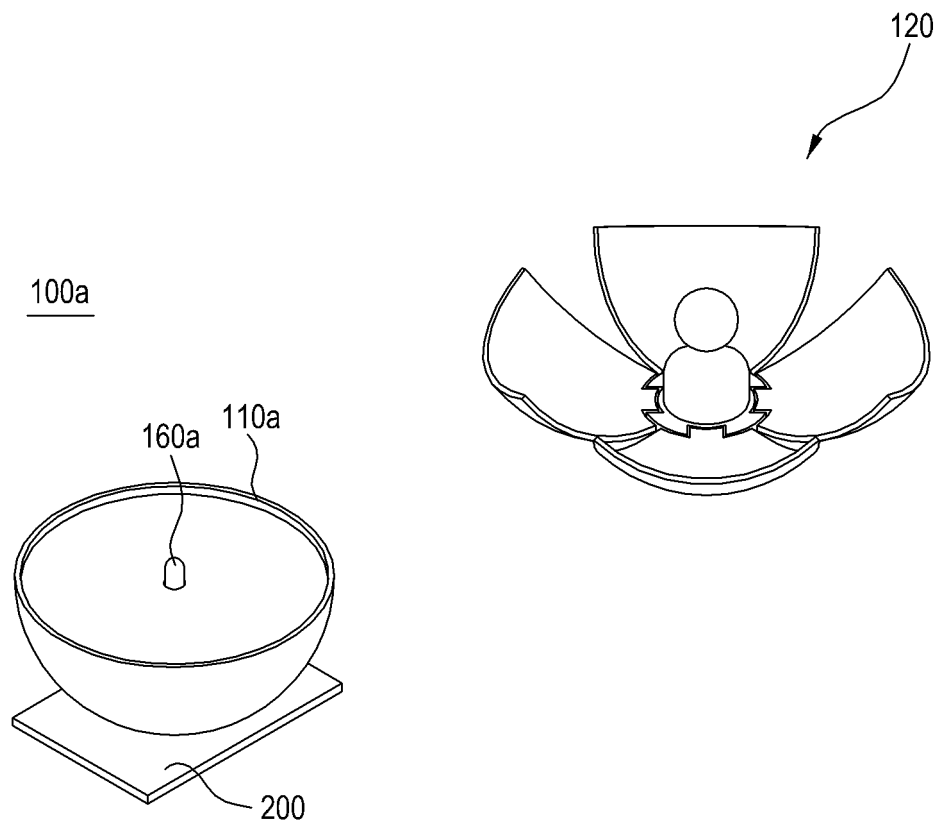


Fig. 8

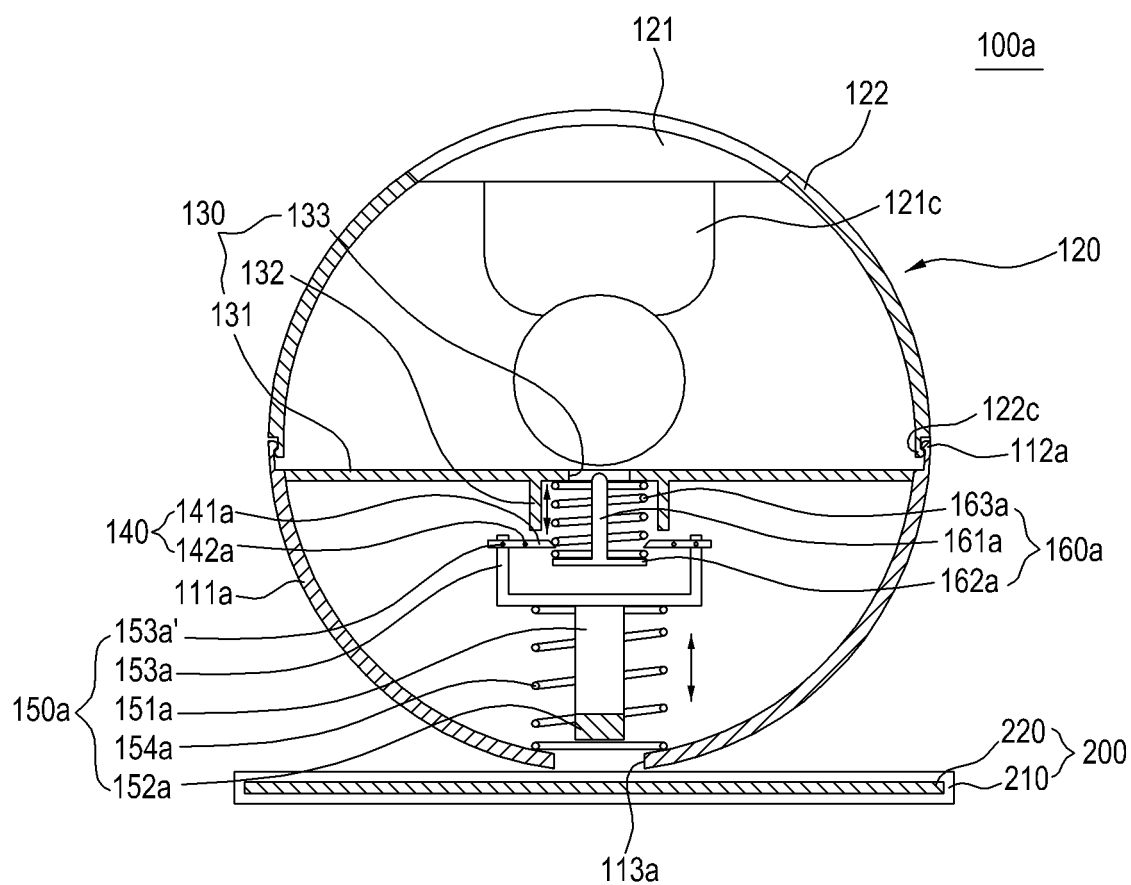


Fig. 9

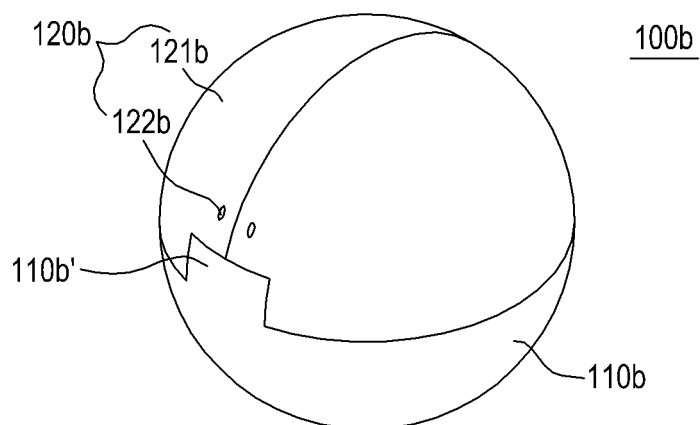


Fig. 10

100b

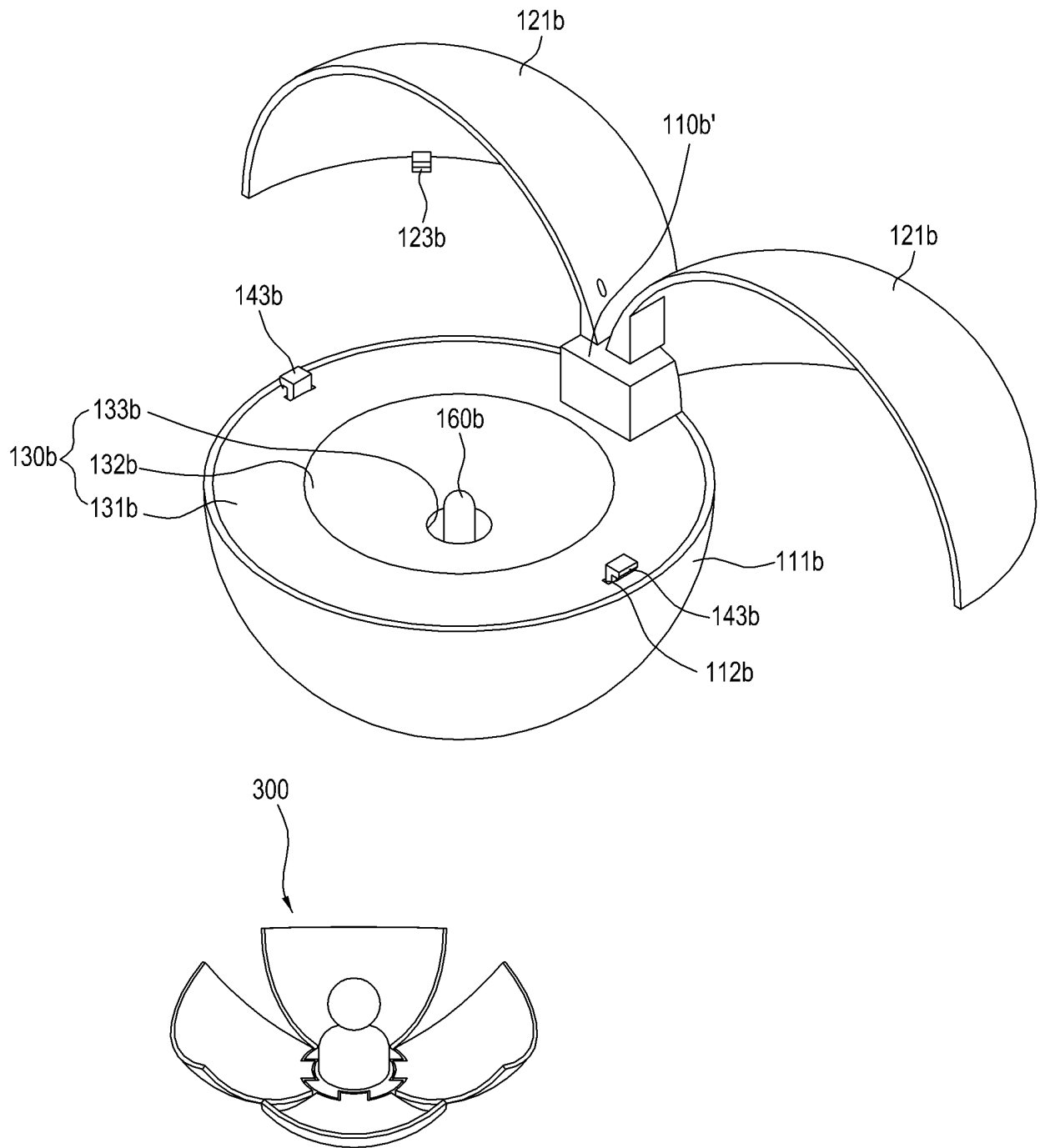


Fig. 11

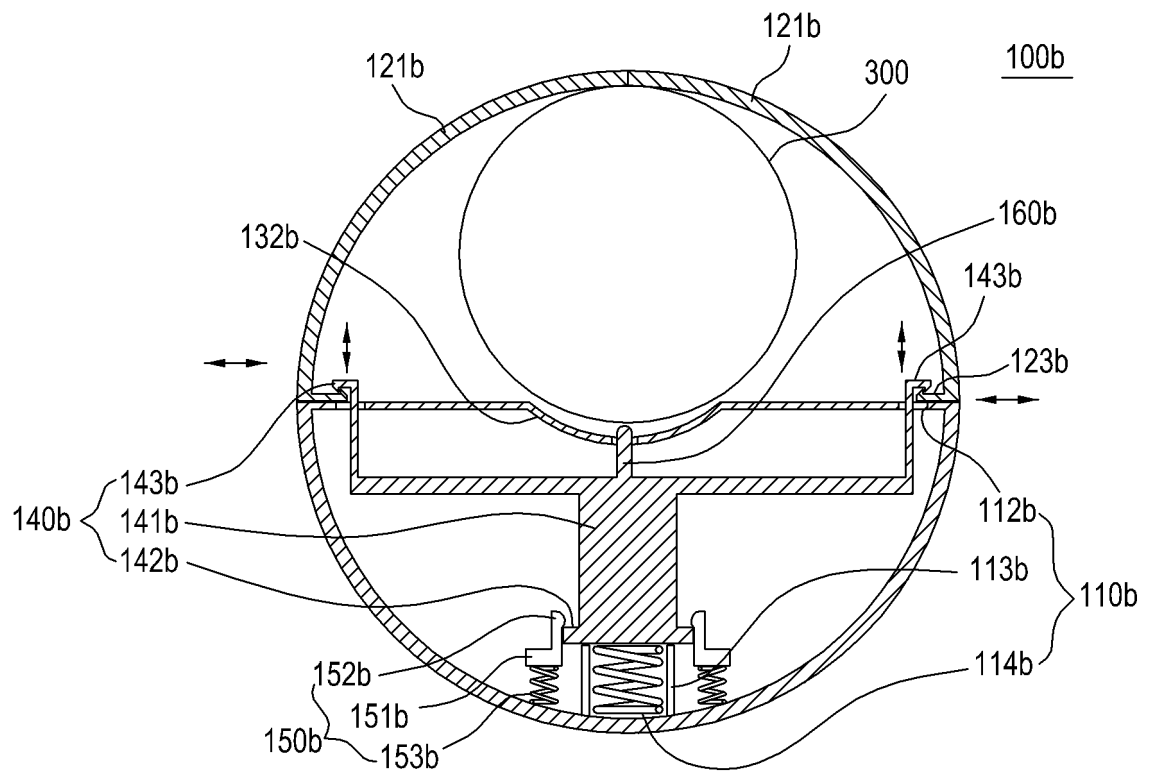


Fig. 12

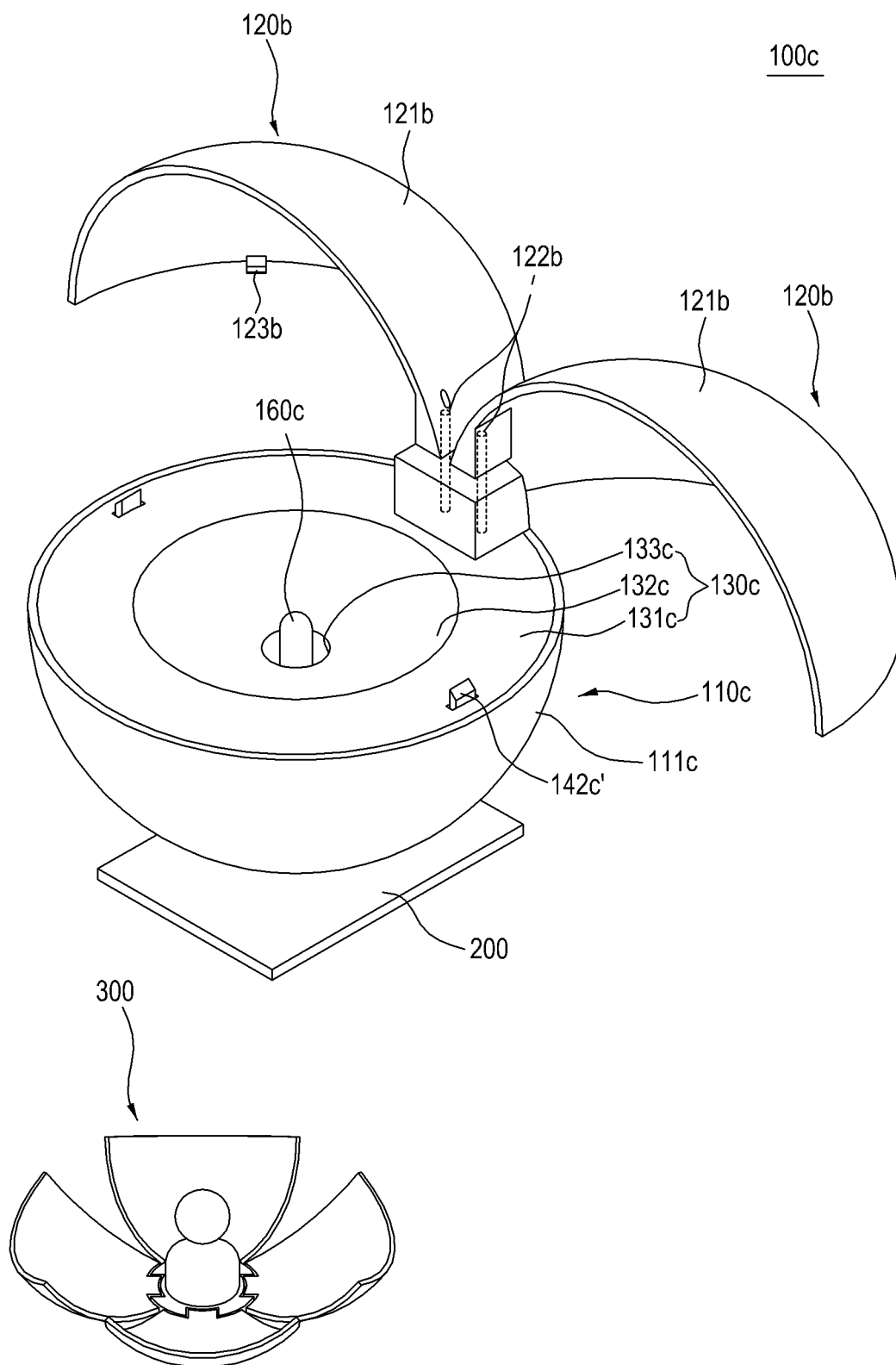


Fig. 13

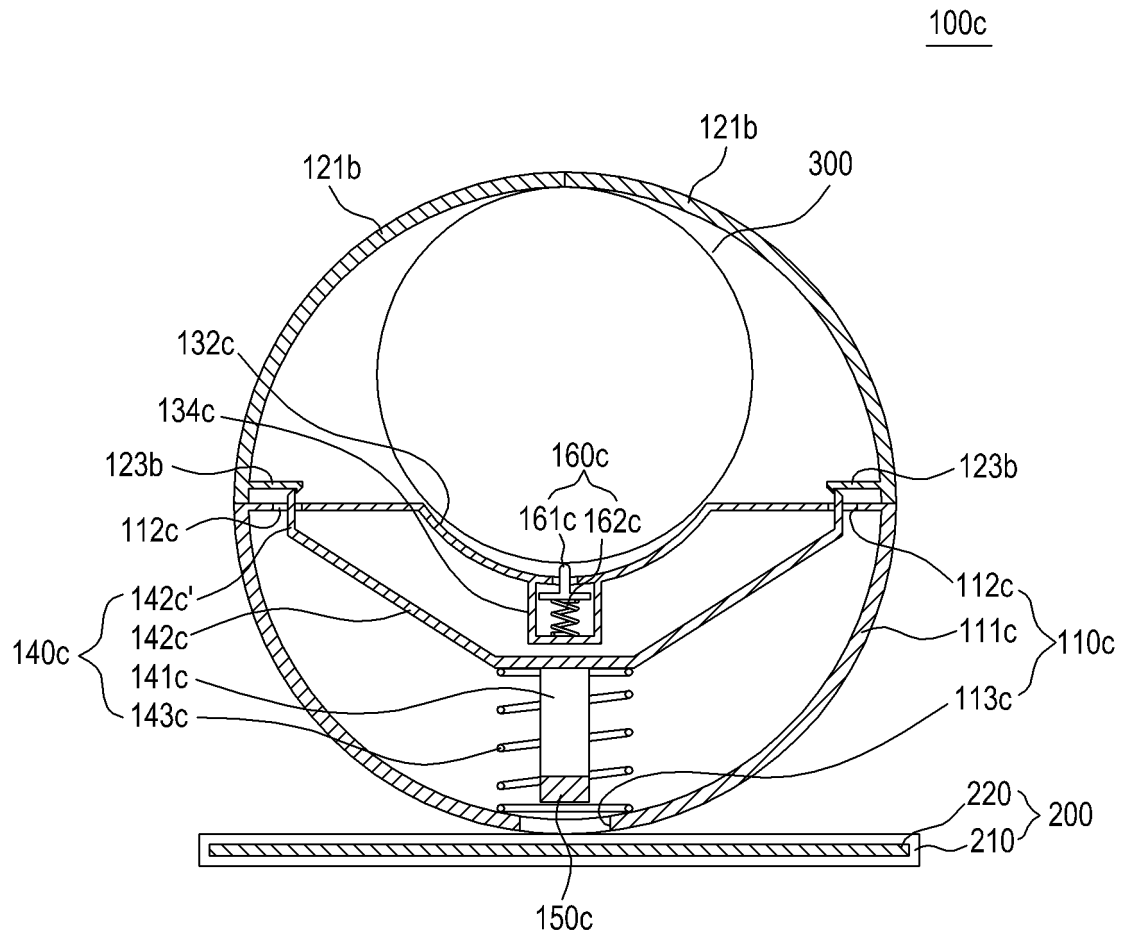


Fig. 14

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2016/005302

5	A. CLASSIFICATION OF SUBJECT MATTER		
	<i>A63H 33/00(2006.01)i, A63H 3/04(2006.01)i</i>		
	According to International Patent Classification (IPC) or to both national classification and IPC		
	B. FIELDS SEARCHED		
10	Minimum documentation searched (classification system followed by classification symbols)		
	A63H 33/00; A63H 3/36; A63H 1/00; A63H 1/02; A63H 3/04; A63H 11/00; A63H 13/00; A63H 3/00		
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean Utility models and applications for Utility models: IPC as above Japanese Utility models and applications for Utility models: IPC as above		
15	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
	eKOMPASS (KIPO internal) & Keywords: toy, first body, second body, separation and rotation		
	C. DOCUMENTS CONSIDERED TO BE RELEVANT		
20	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	X	KR 10-1375110 B1 (CHOI, Shin Kyu) 17 March 2014	1,5-6,9
	Y	See paragraphs [0013], [0028], [0037], [0047]-[0050] and figures 1-2.	2-4,7-8
25	Y	KR 10-2011-0083364 A (PARK, Byung Sun) 20 July 2011	2-4
		See paragraphs [0005], [0012] and figures 1, 3-4.	
	Y	KR 10-2008-0101924 A (SEGA CORPORATION et al.) 21 November 2008	7-8
		See paragraphs [0055], [0064] and figures 5A-5B, 7.	
30	A	JP 4242017 B2 (BANDAI CO., LTD. et al.) 18 March 2009	1-9
		See paragraphs [0007]-[0012]; and figures 1-5.	
	A	KR 20-2000-0008487 U (CHOI, Shin Kyu) 15 May 2000	1-9
35		See abstract and figure 1.	
40	☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
	* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "I" 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 "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 "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 "&" document member of the same patent family		
50	Date of the actual completion of the international search		Date of mailing of the international search report
	18 AUGUST 2016 (18.08.2016)		18 AUGUST 2016 (18.08.2016)
55	Name and mailing address of the ISA/KR  Korean Intellectual Property Office Government Complex-Daejeon, 189 Saonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140		Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

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Information on patent family members

International application No.

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