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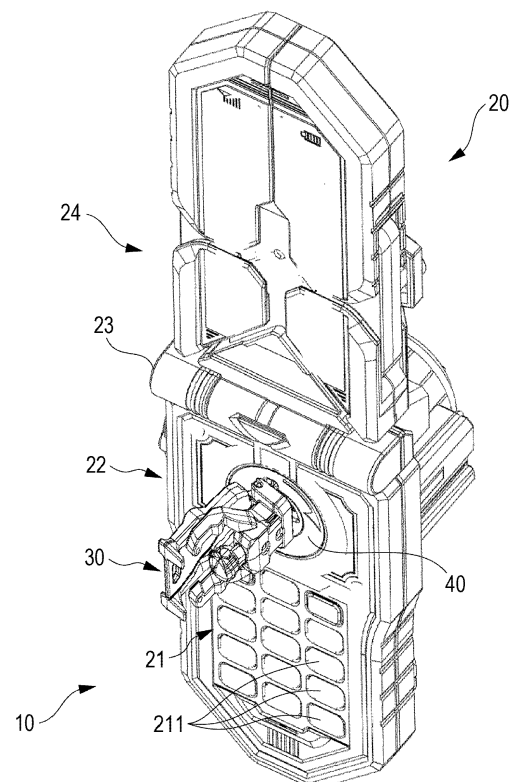
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(54) **Operating toy**

(57) When a key member (30) is inserted into a key cylinder (40) attached to a toy main body (20), and in the case where the key member (30) is inserted completely, the key member (30) turns on a first switch (44), and it is checked that the key member (30) is inserted completely. If in this state the key member (30) is rotated, some of a plurality of second switches (45) are turned on. According to the combination of second switches (45) turned on at this time, sound and light are emitted in a predetermined pattern, and therefore the user feels that sound and light are emitted by their operation.

FIG. 1



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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to an operating toy.

2. Description of the Related Art

[0002] Hitherto, a toy that emits sound and light (displays an image) has been known (Japanese Registered Utility Model No. 3108962). A toy cellular phone 100 described in Japanese Registered Utility Model No. 3108962 is, as shown in FIG. 13, formed by connecting a phone main body 101 and a lid body 103 with a display portion 102 with a hinge portion 104 openably and closably. The phone main body 101 and the lid body 103 are provided with a sound sensor 105, a speaker 106 for emitting sound, and a main switch 107.

[0003] The toy cellular phone 100 has therein a control unit (not shown) that displays an appropriate image on the display portion 102 and outputs a preliminarily stored phrase from the speaker 106 for emitting sounds in response to the turning on of the main switch 107 or the sensing of sound by the sound sensor 105. This control unit is configured to output an appropriate phrase when the sound sensor 105 detects that there is a break in the speaking voice of a user who is an infant.

[0004] Thus, the infant can perform speech play through pseudo-communication interestedly and pleasantly.

[0005] However, the above-described toy cellular phone 100 described in Japanese Registered Utility Model No. 3108962 does nothing other than operating in response to the voice of the user and is monotonous and dull.

SUMMARY OF THE INVENTION

[0006] Accordingly, an object of the present invention is to provide a more exciting operating toy.

[0007] In an aspect of the present invention, an operating toy includes a toy main body, a key cylinder attached to the toy main body, and a key member that can be inserted into the key cylinder. The key cylinder has a first switch that is turned on when the key member is inserted completely, and a plurality of second switches that are turned on at the timing when the first switch is turned off after the key member is rotated with the first switch turned on. The operating toy emits sound and light in a predetermined pattern according to the combination of the second switches turned on.

[0008] It is preferable that the key cylinder have an insertion hole into which the key member is inserted, and a rotating member that rotates with the rotation of the key member, that the first switch be located at the bottom of

the insertion hole, and the plurality of second switches be arranged along the insertion hole, and that the key member have a first switch pressing portion at the distal end of an inserted portion inserted into the key cylinder, the first switch pressing portion turning on the first switch via the rotating member, and a second switch pressing portion on the side of the inserted portion, the second switch pressing portion turning on at least one of the plurality of second switches.

[0009] It is preferable that after the pressing of the first switch by the rotating member is released by the rotation of the key member, the second switches be pressed. It is preferable that the rotating member have a fan-shaped plate having a central angle smaller than the allowable rotation angle of the rotating member, and the first switch be pressed by the fan-shaped plate. It is preferable that the operating toy have a control portion that has a receiving portion receiving signals from the first switch and the second switches and that controls the operation of the operating toy, and the receiving portion start receiving signals from the second switches after the receiving portion receives the OFF signal of the first switch.

[0010] It is preferable that the key member have an inserted portion inserted into the key cylinder and a grip portion gripped by a user, and the grip portion serve as a doll body.

[0011] According to operating toy according to the present invention, a more exciting toy can be provided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is an overall perspective view of an operating toy of an embodiment according to the present invention;

FIG. 2 is a perspective view of a toy main body after transformation;

FIG. 3 is an overall perspective view of a key;

FIG. 4 is an exploded perspective view of the key;

FIGS. 5A, 5B, and 5C are front, side, and rear views of a doll body serving as a grip portion, with the lower body extended downward;

FIGS. 6A, 6B, and 6C are front, side, and rear views of the doll body serving as a grip portion, with the lower body folded upward;

FIGS. 7A and 7B are front and bottom views of a key main body;

FIG. 8 is a perspective view of a key cylinder;

FIG. 9 is a block diagram showing a control system;

FIG. 10 is a sectional view taken along line X-X of FIG. 8;

FIG. 11 is a perspective view of a rotating member as viewed from above;

FIG. 12A is a side view showing the relationship between the key and a first switch, and FIG. 12B is an explanatory diagram showing the rotation angle of the key and the relationship between the first switch

and second switches; and

FIG. 13 is a perspective view of a conventional toy cellular phone.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] The embodiment of the present invention will now be described with reference to the drawings. As shown in FIG. 1, an operating toy 10 in this embodiment has a toy cellular phone 20 serving as a toy main body, a key cylinder 40 attached to this toy cellular phone 20, and a key member 30 that causes this key cylinder 40 to operate.

[0014] As shown also in FIG. 2, the toy cellular phone 20 has a lower housing 22 having an input portion 21 including a plurality of dummy input keys 211, and an upper housing 24 attached to the lower housing 22 with a hinge 23 openably and closably.

[0015] The key cylinder 40 is attached to a part of the lower housing 22 on the hinge 23 side of the input portion 21. An insertion hole 41 into which the key member 30 is inserted is exposed on the surface of the lower housing 22. This key cylinder 40 is electrically connected to a control portion 50 that controls the operation of the toy main body. The control portion 50 is connected to a sound-emission control portion 51 that controls emission of sound, and a light emission control portion 52 that controls emission of light (see FIG. 9). The control portion 50, the sound-emission control portion 51, the light emission control portion 52, and the like can be housed, for example, in the lower housing 22.

[0016] As shown in FIG. 2, the upper housing 24 is transformable. For example, the upper housing 24 is divided into right and left halves and transforms into an X shape. In this case, a sword pattern 25 on the upper housing 24 may be provided with a light-emitting device so as to emit light. The lower housing 22 may also be provided with a light-emitting device 26, for example, around the key cylinder 40, and a speaker 27 emitting sound.

[0017] As shown in FIGS. 3 and 4, the key member 30 has a key main body 31 serving as an inserted portion inserted into the key cylinder 40, and a grip portion 32 gripped by a user. Here, the grip portion 32 is a doll body 33. The doll body 33 has an upper body 34 and a lower body 35. The lower body 35 is supported rotatably forward and backward relative to the upper body 34. A key main body 31 is fixed to the upper body 34 so as to protrude downward. Arms 341, 341 and a head 342 are rotatably attached to the upper body 34.

[0018] As shown in FIGS. 3 and 5A to 5C, in a state where the lower body 35 extends downward relative to the upper body 34, the key member 30 serves as the doll body 33 and can be transformed into various shapes by rotating both arms 341 and the head 342. In this state, when viewed from the front, the key main body 31 is behind the lower body 35 and is not visible.

[0019] As shown in FIGS. 6A to 6C, when the lower body 35 is rotated upward so as to be superimposed onto the upper body 34, the key main body 31 appears, and the upper body 34 and the lower body 35 superimposed thereon serve as the grip portion 32 of the key member 30. When the key member 30 is inserted into the key cylinder 40, as shown in FIGS. 6A to 6C, the lower body 35 is rotated upward.

[0020] As shown in FIGS. 7A and 7B, the key main body 31 has, in the upper part thereof, an attachment portion 311 to which the grip portion 32 is attached. The key main body 31 is provided with a groove 312 that is semicircular in cross-section and extends along the vertical direction. When the key main body 31 is inserted into the key cylinder 40 and is rotated, the groove 312 serves as the center of rotation.

[0021] The distal end face of the key main body 31 serves as a first switch pressing portion 314 that presses a first switch 44 (see FIG. 8) of the key cylinder 40 in order to check that the key main body 31 is completely inserted into the insertion hole 41 of the key cylinder 40 described later. On the outer side of the key main body 31, a plurality of protrusions 313 serving as second switch pressing portions are provided in various patterns. When the key member 30 is rotated, the protrusions 313 turn on second switches 45 (see FIG. 8) of the key cylinder 40.

[0022] Here, the number of the second switches 45 is six as described later, and therefore up to six protrusions 313 can be provided. Therefore, of the six protrusions 313A, 313B, 313C, 313D, 313E, and 313F, only the necessary protrusion or protrusions 313 are provided. Instead of the unnecessary protrusion or protrusions 313, a space or spaces (a gap or gaps) are provided. In the case of the key member 30 shown in FIGS. 7A and 7B, the protrusion 313E is not provided.

[0023] As shown in FIG. 8, the key cylinder 40 has a base portion 48 attached to the lower housing 22 of the toy cellular phone 20, and a key cylinder main body 42 attached to the top of the base portion 48. The key cylinder main body 42 has therein a rotating body 43 that is rotated by the key member 30. The rotating body 43 is provided with an insertion hole 41 (see FIG. 2) into which the key member 30 is inserted. Just under the insertion hole 41, a shaft 46 is provided. Therefore, when the key member 30 is inserted into the insertion hole 41, the shaft 46 fits into the groove 312 of the key member 30 and serves as the center of rotation. The protrusions 313 of the key member 30 protrude to the outside of the rotating body 43.

[0024] Around the rotating body 43, a plurality of second switches 45 are provided in the vertical direction. The second switches 45 are provided at positions rotated by an allowable rotation angle $\theta 1$ from the insertion position of the key member 30 (see FIG. 12B). Here, for example, six second switches 45 are provided. In order from the top, second switches 45A, 45B, 45C, 45D, 45E, and 45F are provided.

[0025] At the lower end of the shaft 46 and above the

base portion 48, a rotating member 47 is provided that is rotatable by a predetermined angle with the rotation of the key member 30. Below the rotating member 47, the first switch 44 is provided. As shown in FIGS. 10 and 11, the rotating member 47 has a substantially semicircular upper plate 471 and a fan-shaped plate 472 provided below the upper plate 471. Above the upper plate 471 and the fan-shaped plate 472, a fitting portion into which the distal end (lower end) of the key member 30 is fitted is formed by a first vertical wall 473 and a second vertical wall 474.

[0026] As shown in FIG. 12B, the angle through which the key member 30 rotates after insertion before coming into contact with the second switches 45, that is to say, the allowable rotation angle of the rotating member 47 is angle θ_1 . On the other hand, the central angle of the fan-shaped plate 472 is θ_2 , and the fan-shaped plate 472 can be in contact with the first switch 44 within this range.

[0027] Therefore, when the key member 30 is inserted and the first switch pressing portion 314 at the distal end of the key member 30 presses the rotating member 47, the lower surface of the fan-shaped plate 472 presses and turns on the first switch 44. When in this state, the key member 30 is rotated (in the direction of arrow in FIG. 12B), the first switch 44 does not move, and therefore the fan-shaped plate 472 of the rotating member 47 slides while pressing the upper end face of the first switch 44.

[0028] Here, the central angle θ_2 of the fan shape of the fan-shaped plate 472 is set smaller than the allowable rotation angle θ_1 of the fan-shaped plate 472, that is to say, $\theta_1 > \theta_2$. For this reason, when the fan-shaped plate 472 rotating with the key member 30 rotates by angle θ_2 , the fan-shaped plate 472 comes out of contact with the first switch 44, and therefore the first switch 44 is turned off.

[0029] At this timing, the protrusions 313 of the key member 30 protruding from the rotating body 43 to the outside come into contact with the corresponding second switches 45 and turn on the second switches 45 (see FIG. 9). Since here the protrusion 313E (see FIG. 8) is not provided, the second switch 45E is not turned on.

[0030] In the operating toy of this embodiment, the first switch is pressed by the fan-shaped plate having a central angle smaller than the allowable rotation angle of the rotating member, the fan-shaped plate comes out of contact with the first switch 44 with the rotation of the key member 30, and the protrusions 313 of the key member 30 come into contact with the second switches at the timing when the first switch is turned off. That is to say, with the release of pressing of the first switch 44, the second switches 45 are pressed, and therefore the second switches can be turned on with the key member 30 completely inserted in the insertion hole. Therefore, the protrusions 313 of the key member 30 can reliably press the corresponding second switches 45, and false recognition of the second switches 45 can be avoided.

[0031] In this embodiment, as shown in FIG. 9, the

control portion 50 has a receiving portion 53, a memory 54, a determination portion 55, a light emission control portion 52, and a sound emission control portion 51. The receiving portion 53 receives signals from the first switch 44 and the second switches 45 of the key cylinder 40. The memory 54 stores patterns of sound output and light output corresponding to combinations of received signals. The determination portion 55 selects from among the output patterns stored in the memory 54 on the basis of the received signal from the receiving portion 53. The light emission control portion 52 causes the light-emitting portions 25 and 26 to operate on the basis of the determination of the determination portion 55. The sound emission control portion 51 causes the sound-emitting portion 27 to operate on the basis of the determination of the determination portion 55. In this embodiment, after the OFF signal of the first switch 44 is received, reception of signals from the second switches 45 is started. Thus, deviation of the timing when the second switches 45 are turned on can be reduced. In addition, the false recognition of the second switches 45 can be prevented more reliably.

[0032] Next, the operation of the operating toy 10 will be described. In the case where the user uses the key member 30 as the doll body 33, the lower body 35 is lowered (see FIGS. 5A to 5C). Since the arms 341 and the head 342 are movable, the user moves these.

[0033] In the case where the user uses the toy cellular phone 20, the lower body 35 of the key member 30 is rotated so as to be superimposed onto the upper body 34, and the key main body 31 is exposed (see FIGS. 6A to 6C). Next, the upper and lower housings 24 and 22 are opened, and the key main body 31 is inserted into the insertion hole 41 of the key cylinder 40.

[0034] When the key member 30 has been inserted completely, the first switch pressing portion 314 at the distal end of the key member 30 turns on the first switch 44 of the key cylinder 40, and the control portion 50 causes the light-emitting portions 25 and 26 and the sound-emitting portion 27 to operate and notifies the user that the key member 30 has been inserted completely (see FIG. 9).

[0035] If it is checked that the key member 30 has been inserted completely, the key member 30 is rotated. At the timing when the first switch 44 is turned off, some of the second switches 45 are turned on. The protrusions 313 of the key member 30 turn on the corresponding second switches 45 of the key cylinder 40. In the control portion 50, the receiving portion 53 receives a key signal from the key cylinder 40, the determination portion 55 selects an output pattern from the memory 54 on the basis of this signal, and the light emission control portion 52 and the sound emission control portion 51 cause the light-emitting portions 25 and 26 and the sound-emitting portion 27 to operate.

[0036] According to the operating toy 10 according to the above-described embodiment, when the key member 30 is inserted into the key cylinder 40 attached to the toy

cellular phone 20 serving as a toy main body, and in the case where the key member 30 is inserted completely, the key member 30 turns on the first switch 44, sound and light are output, and therefore it can be easily checked that the key member 30 is inserted completely. If in this state the key member 30 is rotated, some of the plurality of second switches 45 are turned on. According to the combination of second switches 45 turned on at this time, sound and light are emitted in a predetermined pattern, and therefore the user feels the satisfaction that sound and light are emitted by their operation. Since some of the second switches 45 are turned on at the timing when the first switch 44 is turned off, deviation of the timing when the second switches 45 are turned on can be reduced.

[0037] The key is rotated in a state where the key member 30 has turned on the first switch 44 and the key member 30 has been inserted completely, and the pressing of the second switches 45 is recognized at the timing when the first switch 44 is turned off. Therefore, the second switches 45 are pressed in a state where the key member 30 has been inserted completely. Therefore, false recognition of the selectively pressed second switches 45 can be avoided.

[0038] When the user grips the grip portion 32 of the key member 30 and inserts the key main body 31 of the key member 30 into the insertion hole 41 of the key cylinder 40, and when the key member 30 is completely inserted, the first switch 44 is turned on by the first switch pressing portion 314 at the distal end of the key main body 31. When the key member 30 is rotated, the second switches 45 are turned on by the protrusions 313 provided on the side of the key main body 31.

[0039] Since the doll body 33 is provided in the grip portion 32 of the key member 30, the user can use the key member 30 itself as a toy. In a state where the user grips the doll body 33 provided in the grip portion 32 of the key member 30, operates the key member 30, and inserts the key member 30 into the key cylinder 40, only the doll body 33 stands on the toy cellular phone 20. Therefore, the interest of the user can be attracted.

[0040] In addition, since the toy main body is a toy cellular phone 20, the user can play only with the toy main body. In addition, by inserting and operating the key member 30, various sounds are emitted from the toy cellular phone 20. Therefore, the interest of the user can be attracted.

[0041] Although the preferred embodiment of the present invention has been described above, the operating toy 10 according to the present invention is not limited to the above-described embodiment, and various changes may be made therein without departing from the scope of the present invention described in claims. That is to say, in the above-described embodiment, a case where the toy main body is a toy cellular phone 20 is illustrated, but the present invention is not limited to this. The doll body 33 serving as the grip portion 32 of the key member 30 can be changed according to the

situation.

Claims

1. An operating toy (10) comprising:

a toy main body (20);
a key cylinder (40) attached to the toy main body;
and
a key member (30) that can be inserted into the key cylinder,
wherein the key cylinder has a first switch (44) that is turned on when the key member is inserted completely, and a plurality of second switches (45) that are turned on at the timing when the first switch is turned off after the key member is rotated with the first switch turned on, and wherein the operating toy emits sound and light in a predetermined pattern according to the combination of the second switches turned on.

2. The operating toy according to Claim 1, wherein the key cylinder has an insertion hole (41) into which the key member is inserted, and a rotating member (47) that rotates with the rotation of the key member, wherein the first switch is located at the bottom of the insertion hole, and the plurality of second switches are arranged along the insertion hole, and wherein the key member has a first switch pressing portion (314) at the distal end of an inserted portion (31) inserted into the key cylinder, the first switch pressing portion turning on the first switch via the rotating member, and a second switch pressing portion (313) on the side of the inserted portion, the second switch pressing portion turning on at least one of the plurality of second switches.

3. The operating toy according to Claim 2, wherein after the pressing of the first switch by the rotating member is released by the rotation of the key member, the second switches are pressed.

4. The operating toy according to Claim 2 or 3, wherein the rotating member has a fan-shaped plate (472) having a central angle smaller than the allowable rotation angle of the rotating member, and the first switch is pressed by the fan-shaped plate.

5. The operating toy according to any one of Claims 1 to 4, wherein the operating toy has a control portion (50) that has a receiving portion (53) receiving signals from the first switch and the second switches and that controls the operation of the operating toy, and the receiving portion starts receiving signals from the second switches after the receiving portion receives the OFF signal of the first switch.

6. The operating toy according to any one of Claims 1 to 5, wherein the key member has an inserted portion inserted into the key cylinder and a grip portion (32) gripped by a user, and the grip portion serves as a doll body (33).

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7. The operating toy according to any one of Claims 1 to 6, wherein the toy main body serves as a toy cellular phone.

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FIG. 1

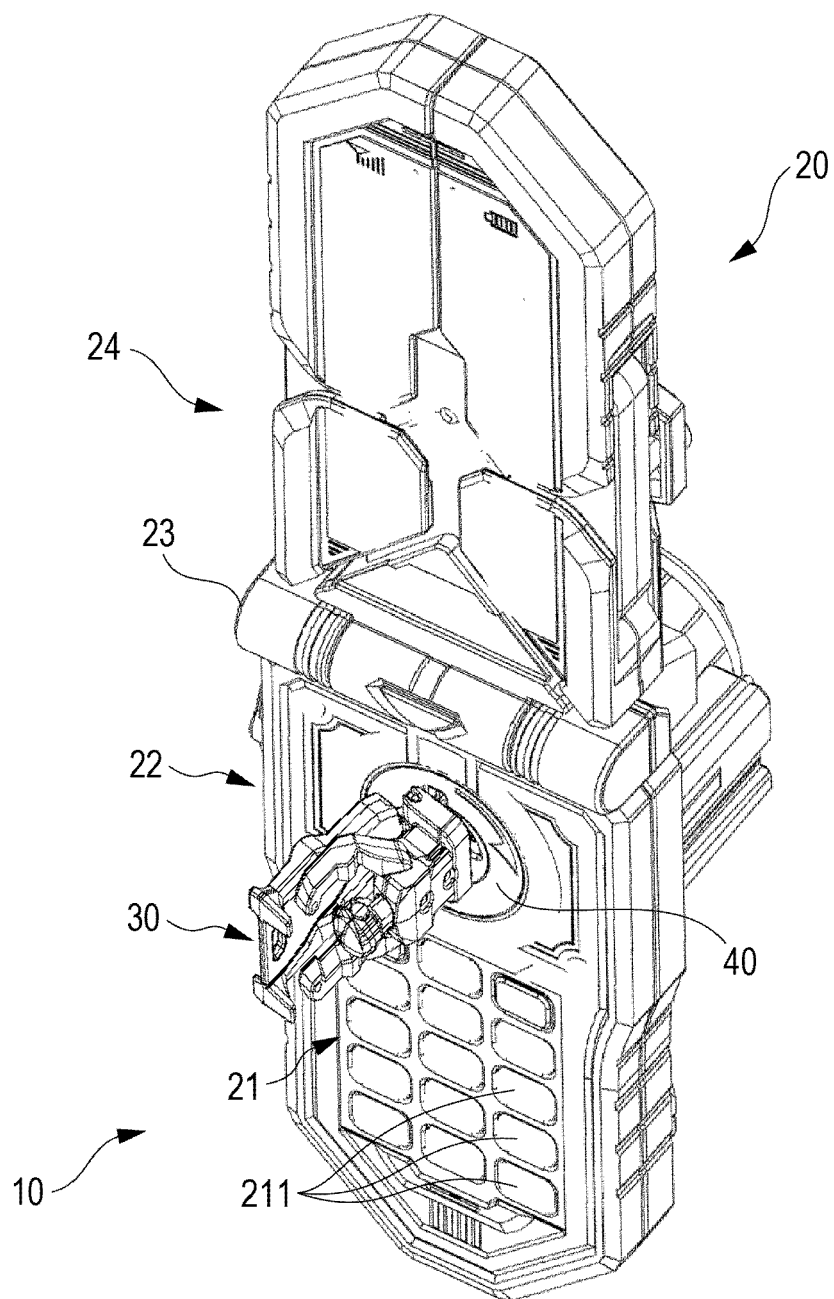


FIG. 2

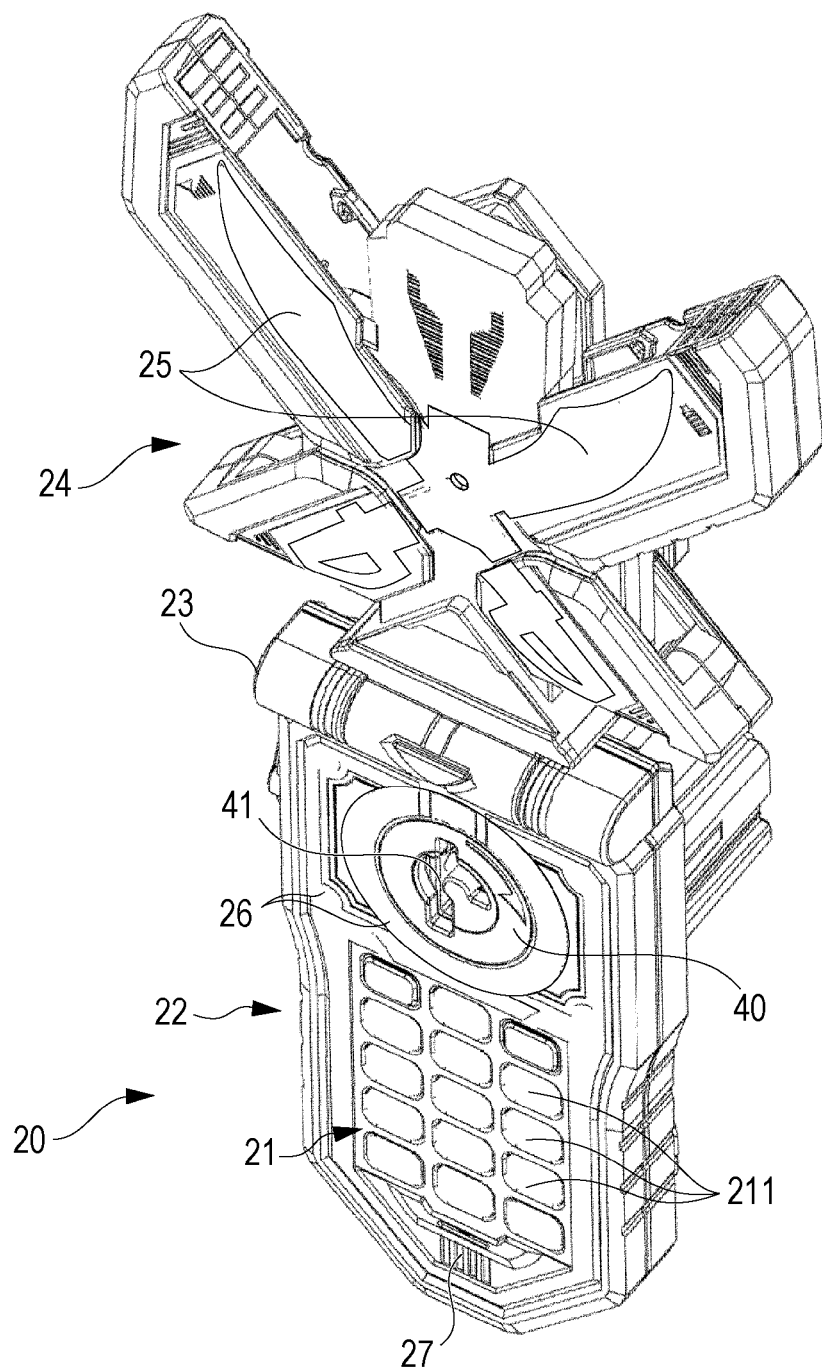


FIG. 3

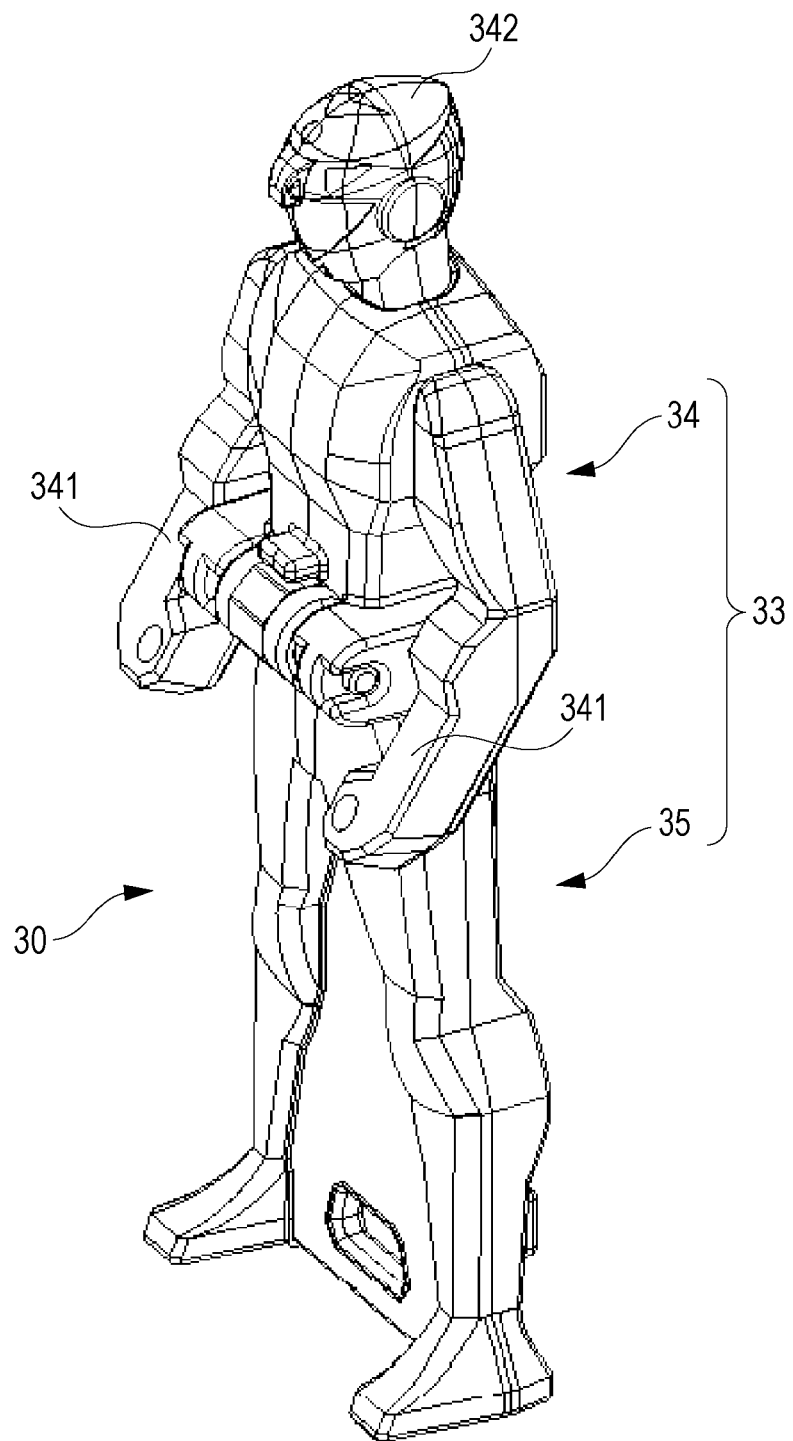


FIG. 4

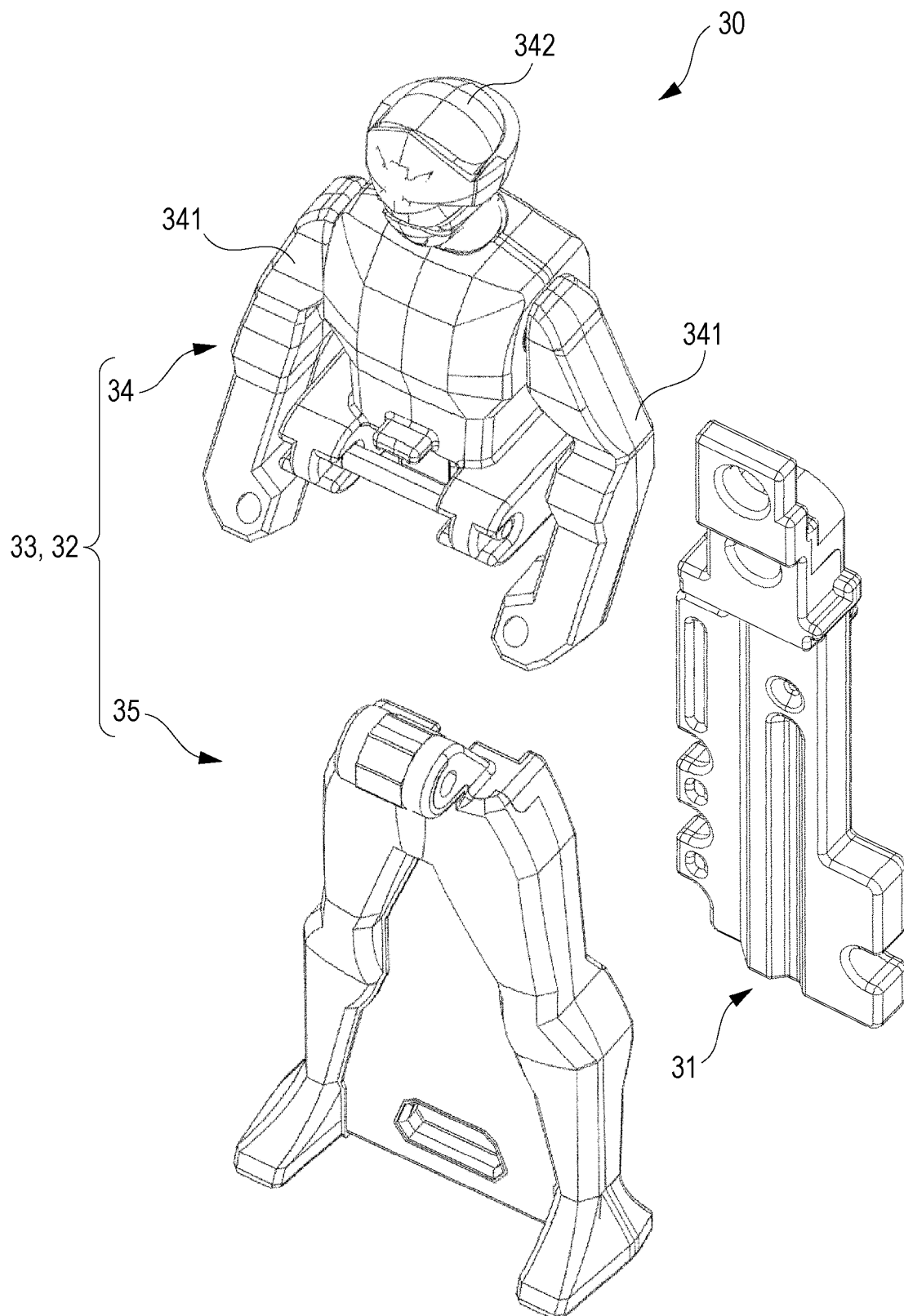


FIG. 5C

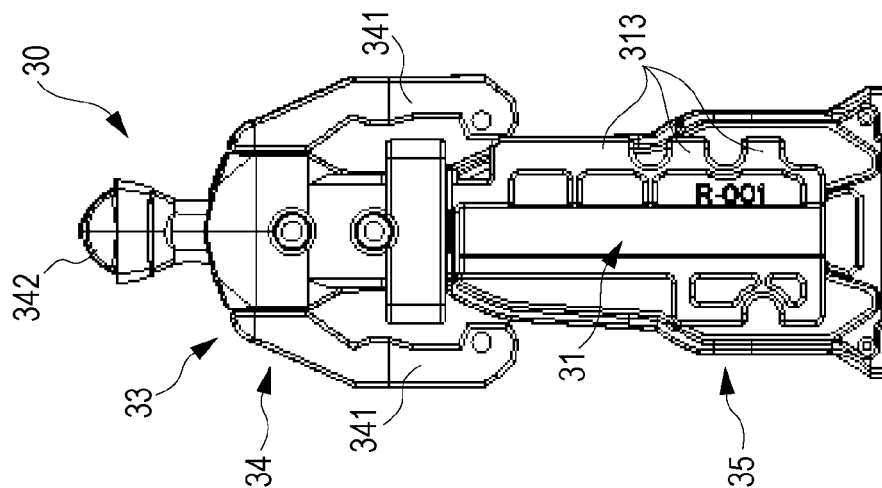


FIG. 5B

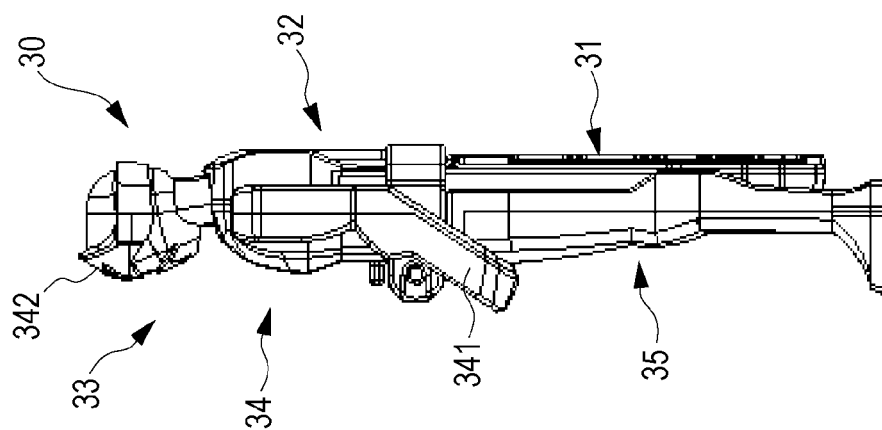
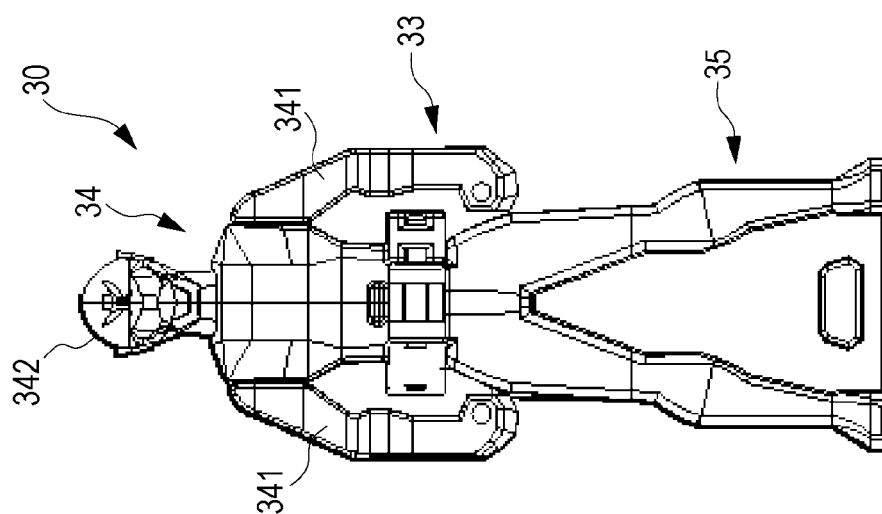


FIG. 5A



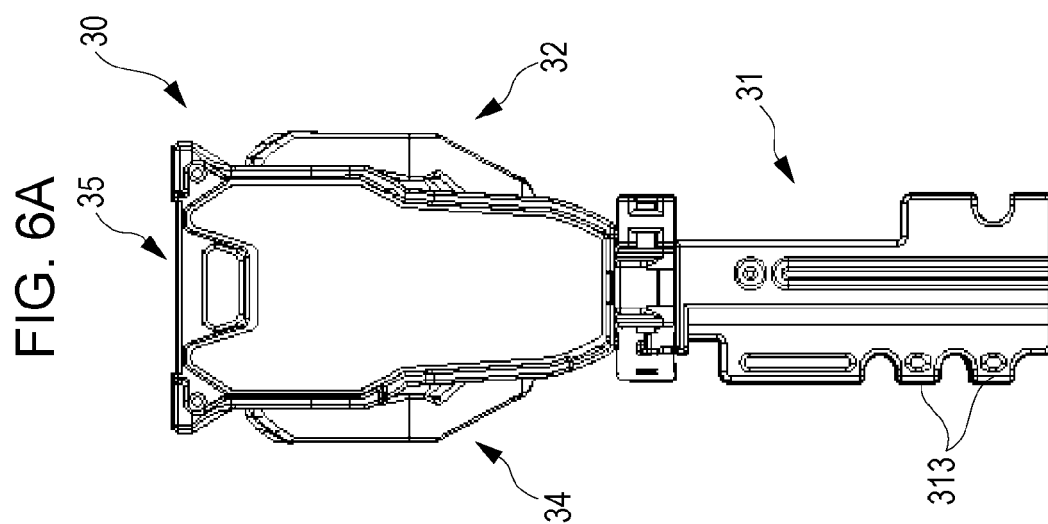
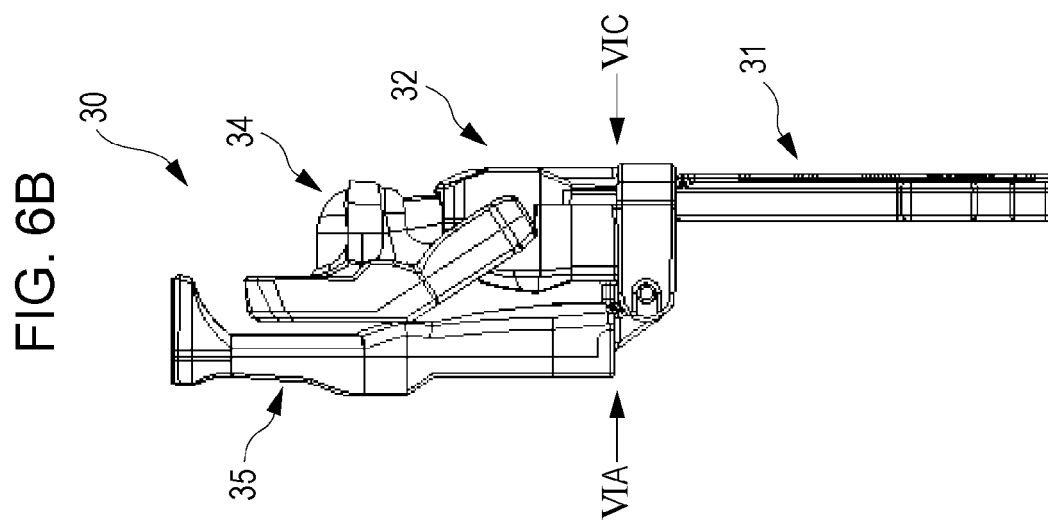
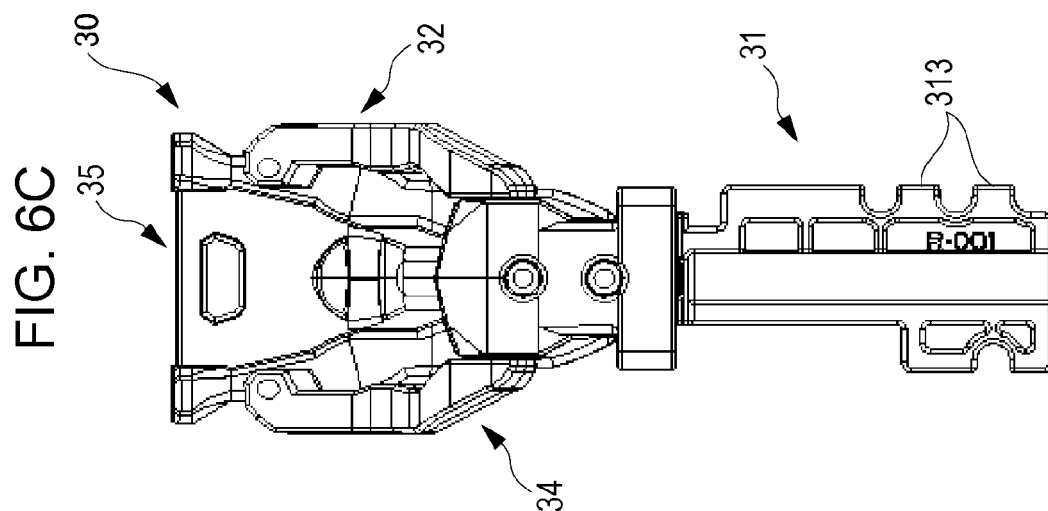


FIG. 7A

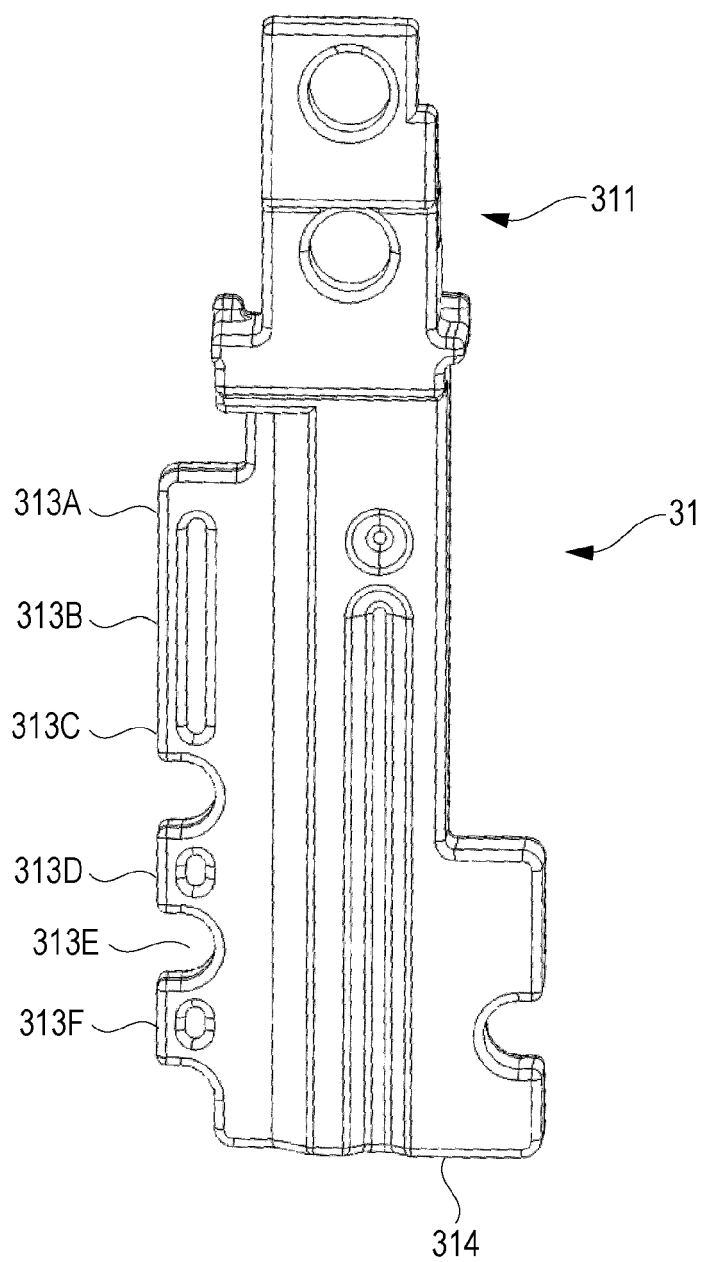


FIG. 7B

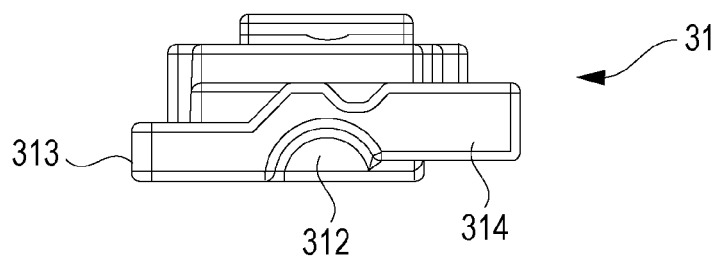


FIG. 8

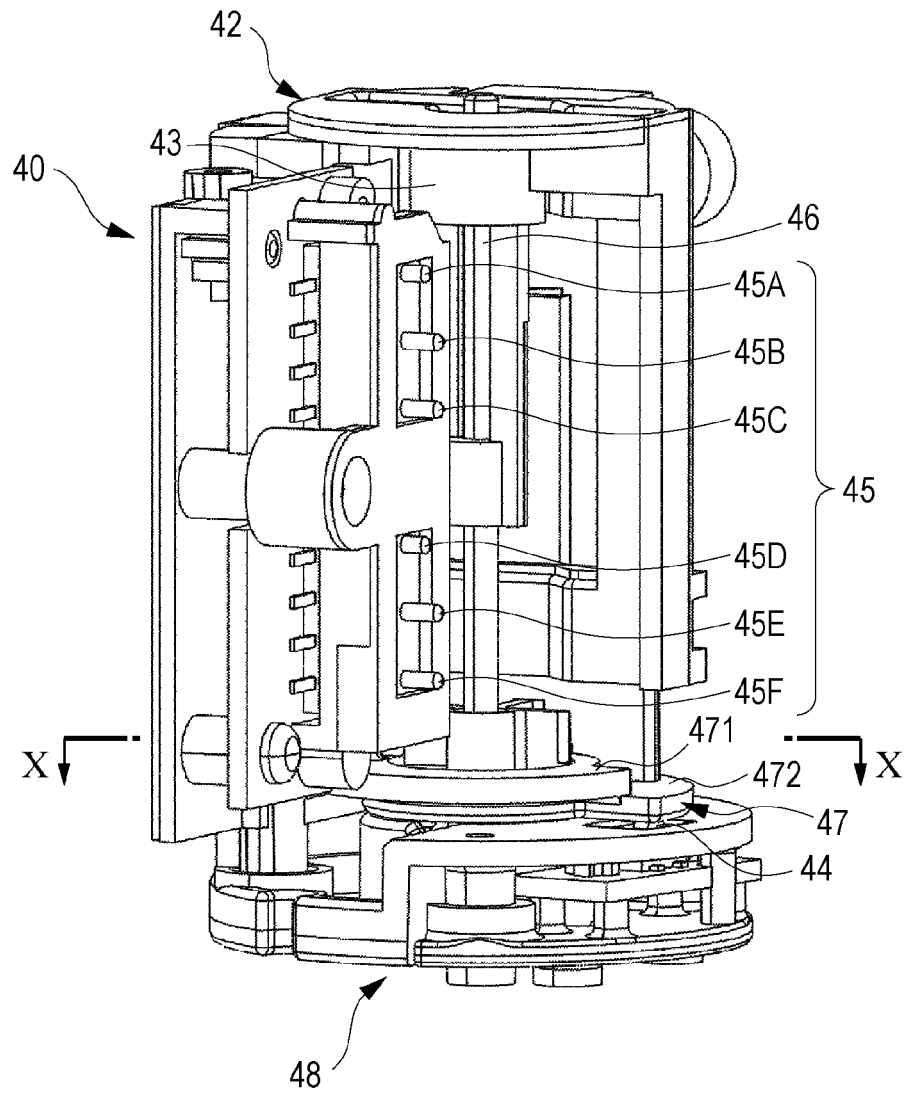


FIG. 9

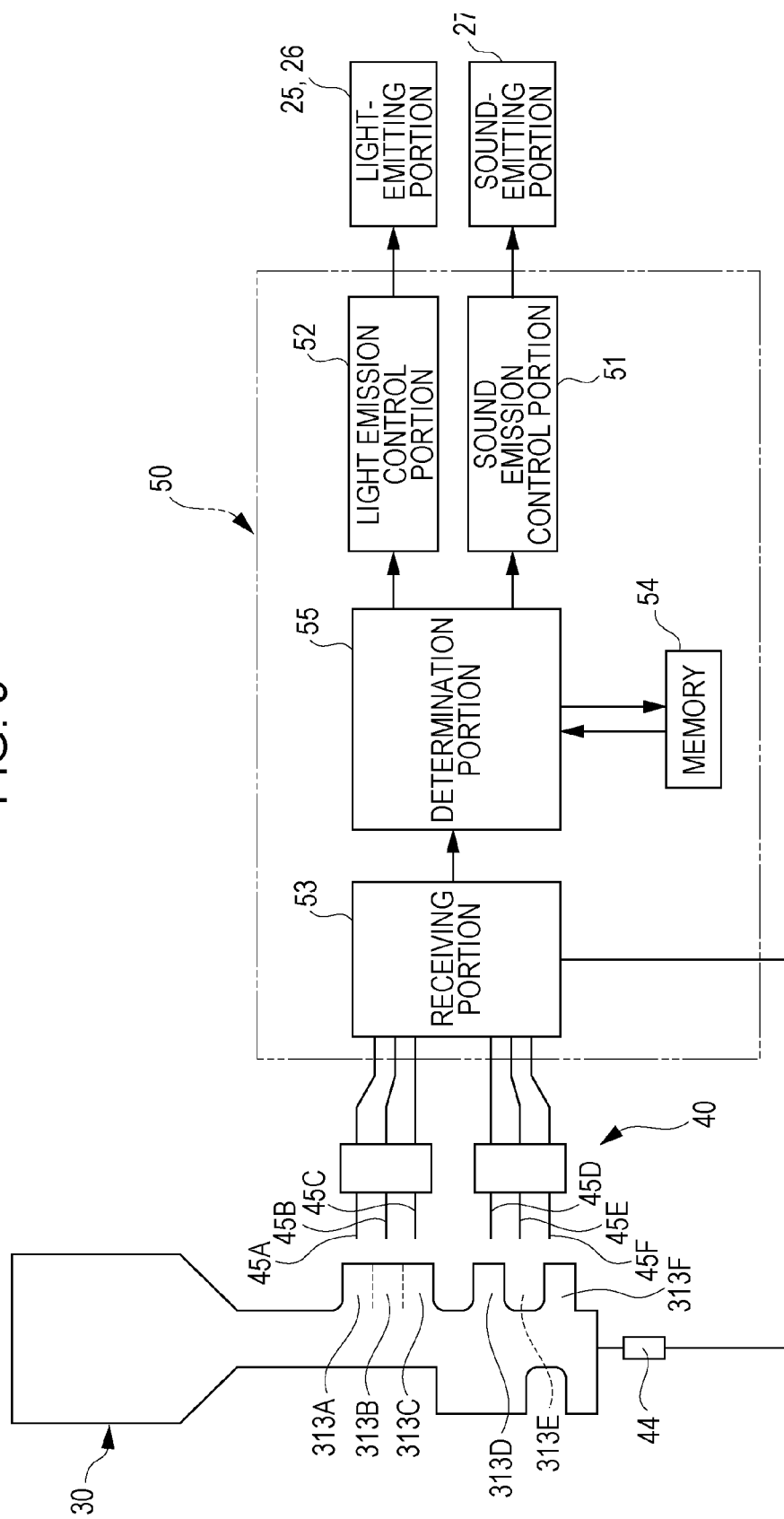


FIG. 10

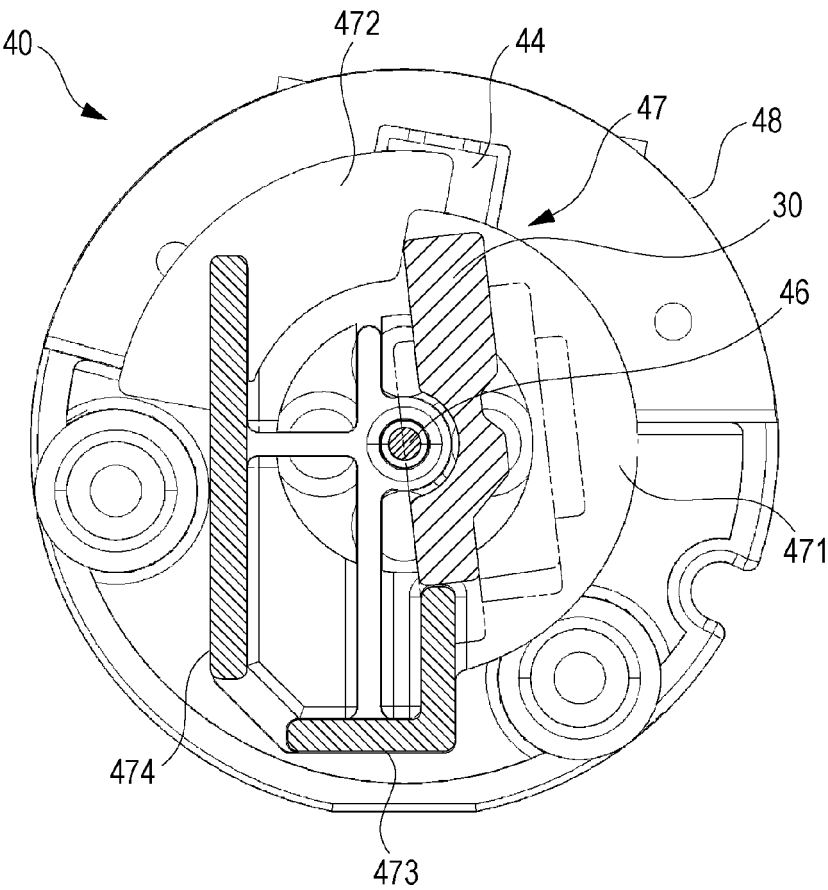


FIG. 11

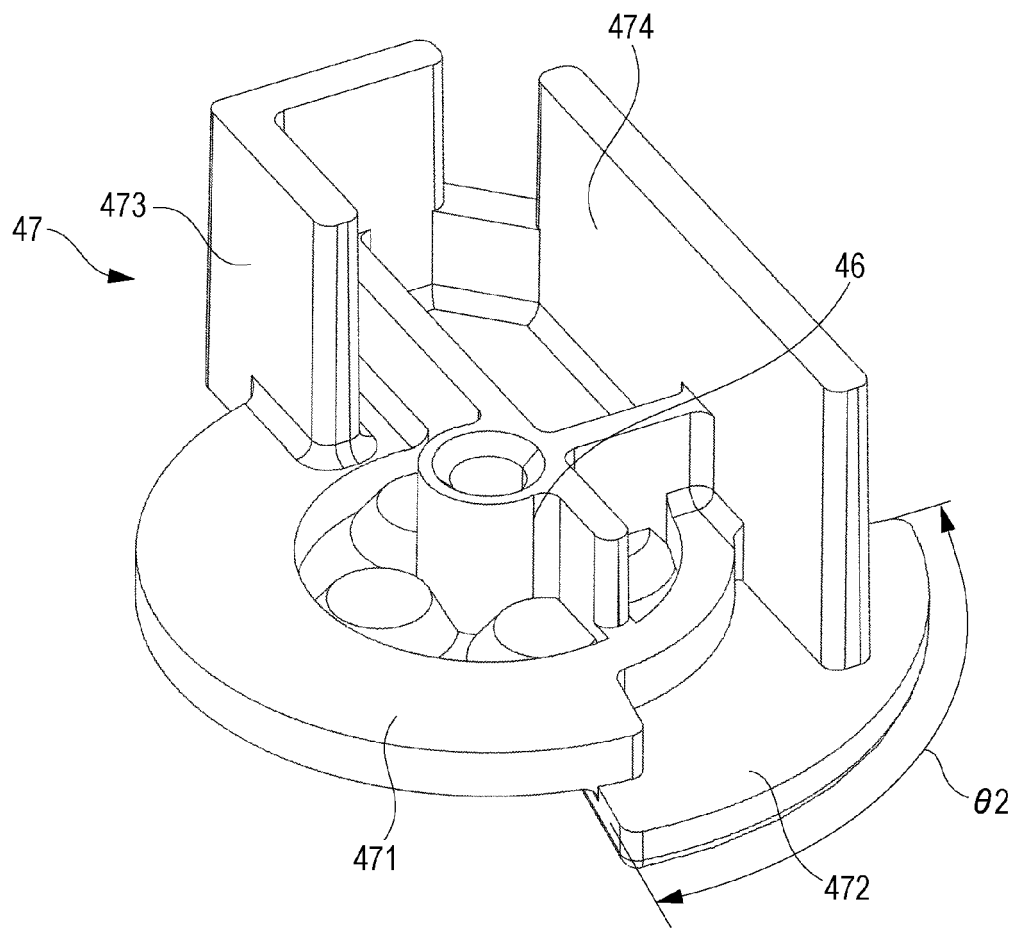


FIG. 12A

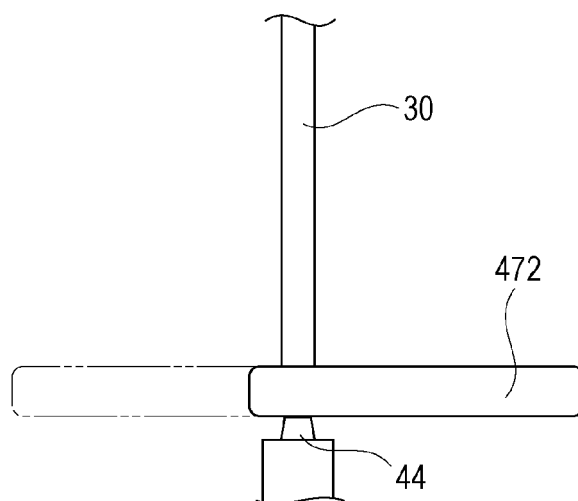


FIG. 12B

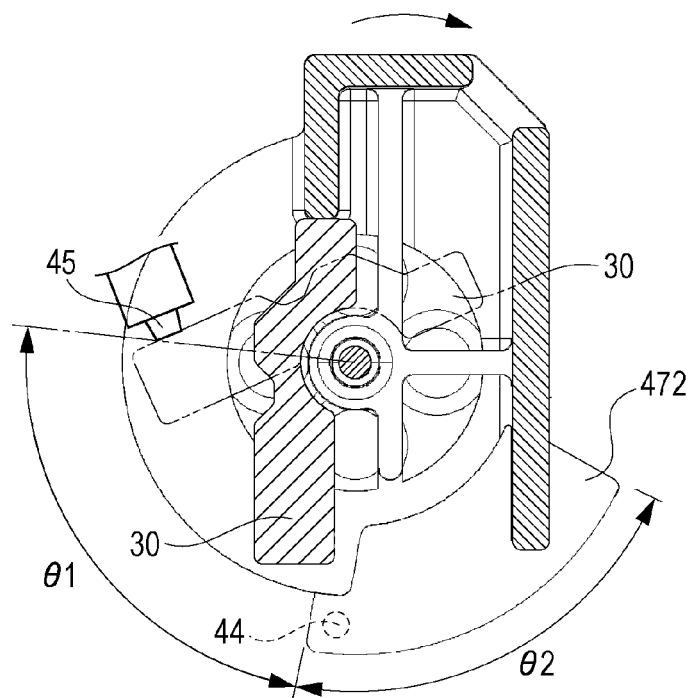
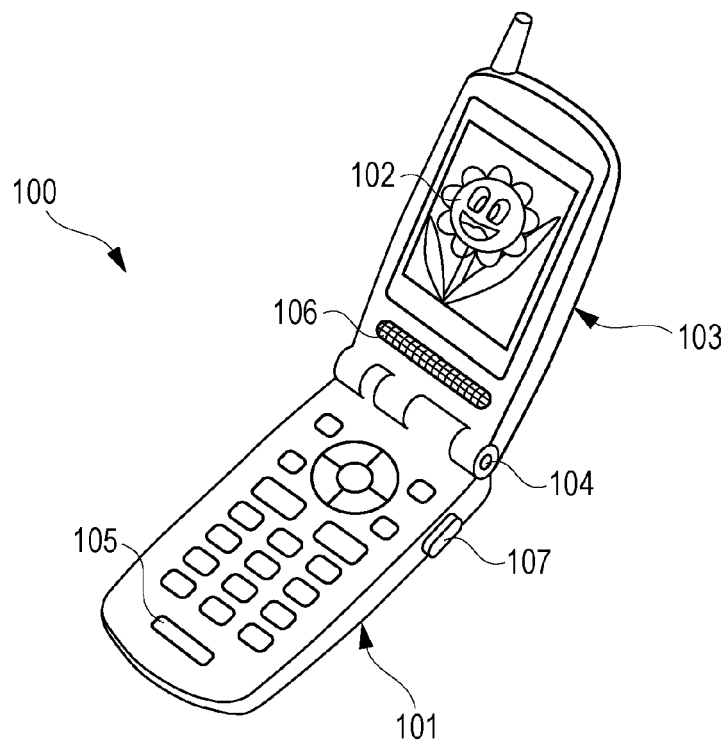


FIG. 13





EUROPEAN SEARCH REPORT

Application Number
EP 11 19 0368

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 306 197 A (WATANABE HIROYUKI [JP]) 26 April 1994 (1994-04-26) * column 3, line 19 - line 27 * * column 4, line 33 - column 5, line 20; claim 1; figures * -----	1-7	INV. A63H33/26
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) A63H
Place of search Munich		Date of completion of the search 27 February 2012	Examiner Lucas, Peter
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 19 0368

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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27-02-2012

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US 4208831	A	24-06-1980	NONE	

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 3108962 B [0002] [0005]