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(54) **SEX TOY**

(57) A sex toy includes a shell and a first stimulation module. The shell includes at least two massage portions, a first inner chamber is defined between the at least two massage portions for accommodating a sexual sensitive portion of a human body. The first stimulation module is mounted in the shell and configured to drive the at least two massage portions to move towards or away from each other, thereby changing a radial dimension of the first inner chamber at a position corresponding to the at least two massage portions. The sex toy can provide better stimulation effects, thereby improving the sexual experience.

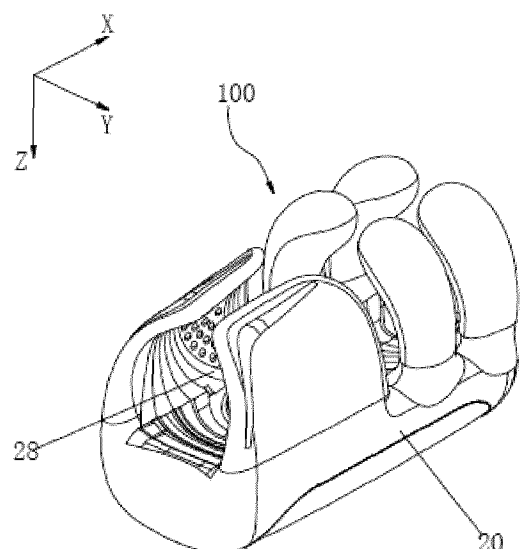


FIG. 1

Description

TECHNICAL FIELD

[0001] The present application relates to the technical field of adult products, and in particular to a sex toy.

BACKGROUND

[0002] In recent years, adult sex products are developed to help the users to release their sex pressure. Generally, an existing sex toy uses a vibration motor to provide vibration to the user's sensitive areas, such as the female genitalia, the male genitalia and the like, which has poor stimulation effects and is therefore difficult to meet users' needs.

SUMMARY

[0003] An object of the present application is to provide a sex toy which can provide better stimulation effects, thereby improving the sexual experience.

[0004] In order to achieve the above object, a technical solution of the present application provides a sex toy, including a shell including at least two massage portions, a first inner chamber being defined between the at least two massage portions for accommodating a sexual sensitive portion of a human body; and a first stimulation module mounted in the shell and configured to drive the at least two massage portions to move towards or away from each other, thereby changing a radial dimension of the first inner chamber at a position corresponding to the at least two massage portions.

[0005] The present application further provides a sex toy, including a shell and a first stimulation module. The shell includes at least two massage portions arranged opposite to each other, and a first inner chamber is defined between the at least two massage portions for accommodating a male penis. The first stimulation module is mounted in the shell and configured to drive the at least two massage portions to move towards or away from each other, thereby changing a radial dimension of the first inner chamber at a position corresponding to the at least two massage portions.

[0006] In some embodiments, the sex toy further includes a vibration member arranged in or between the at least two massage portions.

[0007] In some embodiments, the first stimulation module includes at least two swinging bars rotatably connected to the shell, respectively, and each of the at least two swinging bars includes a swinging end extending into one of the at least two massage portions.

[0008] In some embodiments, the first stimulation module includes at least two sliding bars slidably connected to the shell, respectively, and each of the at least two sliding bars includes a support end extending into one of the at least two massage portions.

[0009] In some embodiments, the shell further includes

a sliding portion arranged at an end side of the at least two massage portions, the sliding portion defines a second inner chamber therein, and the first inner chamber and the second inner chamber communicate with each other and cooperatively define a stimulation chamber for receiving the male penis.

[0010] In some embodiments, the shell further includes a rotary portion arranged at an end side of the at least two massage portions, the rotary portion defines a second inner chamber therein, and the first inner chamber and the second inner chamber communicate with each other and cooperatively define a stimulation chamber for receiving the male penis.

[0011] In some embodiments, the rotary portion is slidable relative to the at least two massage portions.

[0012] In some embodiments, a plurality of protrusions is provided on an inner wall of the sliding portion or the rotary portion.

[0013] In some embodiments, the first stimulation module further includes a first motor, a first transmission unit connected between the first motor and the at least two swinging bars or sliding bars, and a second transmission unit connected between the first motor and the rotary portion.

[0014] In some embodiments, the first transmission unit includes a fixed member defining a first sliding groove extending along an axial direction, a rotary member defining a second sliding groove extending spirally in a circumferential direction, and a sliding member with a first sliding block engaged into the first sliding groove and a second sliding block engaged into the second sliding groove; and the second transmission unit is connected between the rotary member and the rotary portion.

[0015] In some embodiments, a third sliding groove is defined in the rotary portion and extends spirally in a circumferential direction of the rotary portion, and a fixed pin is fixed inside the shell and engages into the third sliding groove.

[0016] In some embodiments, the first stimulation module further includes a first motor and a first transmission unit connected between the first motor and the at least two swinging bars or sliding bars, and the transmission unit is configured to convert a rotational motion of the first motor into a linear reciprocating motion.

[0017] In some embodiments, the first transmission unit includes a first eccentric wheel and a sliding piece cooperating with the eccentric wheel, the sliding piece defines an elongated sliding slot therein, and a first rod extends from an outer periphery of the eccentric wheel and slidably engages into the elongated sliding slot.

[0018] In some embodiments, the first transmission unit includes a fixed member defining a first sliding groove extending along an axial direction, a rotary member defining a second sliding groove extending spirally in a circumferential direction, and a sliding member with a first sliding block engaged into the first sliding groove and a second sliding block engaged into the second sliding groove.

[0019] In some embodiments, the shell further includes a fixed portion arranged at an end side of the at least two massage portions, the fixed portion defines a second inner chamber therein, and the first inner chamber and the second inner chamber communicate with each other and cooperatively define a stimulation chamber for receiving the male penis.

[0020] In some embodiments, the shell includes an inner tube and an outer tube mounted around the inner tube, the first inner chamber is defined by the inner tube, and parts of the inner tube corresponding to the first stimulation module function as the at least two massage portions.

[0021] The present application further provides a sex toy, including a shell, a first stimulation module and a second stimulation module. The shell includes a main body, at least two first massage portions and a second massage portion extending from the main body, and the at least two first massage portions are arranged around the second massage portion. The first stimulation module is mounted in the shell and configured for driving the at least two first massage portions to swing towards or away from the second massage portion. The second stimulation module is mounted in the shell and configured for driving the second massage portion to vibrate and/or rotate and/or swing.

[0022] In some embodiments, the at least two first massage portions cooperatively define a chamber for accommodating a breast.

[0023] In some embodiments, the second stimulation module includes a vibration motor mounted in the second massage portion.

[0024] In some embodiments, the second stimulation module includes a driving component and a driving rod, the driving rod includes a first end portion and a second end portion inclined relative to the first end portion, the first end portion is connected to the driving component in a transmission way, and the second end portion is inserted into the second massage portion.

[0025] In some embodiments, the second stimulation module includes a motor, a driving rod and a swinging component, the swinging component is embed in the second massage portion and defines an elongated groove, one end of the driving rod is connected to the driving component in a transmission way, and an eccentric rod extends from another end of the driving rod and engages into the elongated groove.

[0026] In some embodiments, the first stimulation module further includes a gearbox, a first transmission unit and a swinging unit rotatably connected to the shell, the swinging unit includes swinging ends extending into the at least two first massage portions, the first transmission unit is connected between the gearbox and the swinging unit, and the gearbox functions as the driving component.

[0027] In some embodiments, the first transmission unit includes a fixed member defining a first sliding groove extending along an axial direction, a rotary mem-

ber defining a second sliding groove extending spirally in a circumferential direction, and a sliding member with a first sliding block engaged into the first sliding groove and a second sliding block engaged into the second sliding groove; and the driving rod is connected to the gearbox through the rotary member.

[0028] Compared with the prior art, the sex toy according to the embodiments of this application includes different stimulation modules, one of which has massage portions towards or away from each other to occlude a part of the human body put therebetween, and others may generates vibration, rotation, tapping, swinging or other stimulation effects to other parts of the human body put therebetween, thereby providing better stimulation effects to the user and accordingly improving the user's sexual experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] In order to illustrate the technical solution in embodiments of the present application more clearly, the following briefly introduces accompanying drawings used in the description of the embodiments. Obviously, the accompanying drawings in the following description are only some embodiments of the present application. Those of ordinary skill in the art can obtain other accompanying drawings from these accompanying drawings without any creative efforts.

FIG. 1 is a schematic, assembled view of a sex toy according to a first embodiment of the present application.

FIG. 2 is a top plan view of the sex toy of FIG. 1.

FIG. 3 is a cross sectional view of the sex toy taken along line III-III of FIG. 2.

FIG. 4 is a cross sectional view of the sex toy taken along line IV-IV of FIG. 2.

FIG. 5 is a cross sectional view of the sex toy taken along line V-V of FIG. 2.

FIG. 6 is an exploded view of the sex toy of FIG. 1.

FIG. 7 is a further exploded view of the sex toy of FIG. 1, wherein an outer shell and an upper portion of an inner shell are removed.

FIG. 8a is an exploded view of a first stimulation module of the sex toy of FIG. 1.

FIG. 8b is an exploded view of the first stimulation module from another aspect.

FIG. 9a is a schematic view of an alternative embodiment of a swinging unit of the first stimulation

module.

FIG. 9b is a schematic view of a third embodiment of the swinging unit.

FIG. 9c is a schematic view of a fourth embodiment of the swinging unit.

FIG. 9d is a schematic view of a fifth embodiment of the swinging unit.

Fig. 10a is an exploded view of a second stimulation module of the sex toy of FIG. 1.

FIG. 10b is an exploded view of the second stimulation module from another aspect.

FIG. 11 is an isometric, assembled view of a sex toy according to a second embodiment of the present application.

FIG. 12 is a schematic view of a sex toy of a third embodiment of the present application.

FIG. 13 is a top view of the sex toy of FIG. 12.

FIG. 14 is a cross sectional view of the sex toy of FIG. 13, taken along line A-A.

FIG. 15 is a cross sectional view of the sex toy of FIG. 13, taken along line B-B.

FIG. 16 is an exploded view of the sex toy of FIG. 12.

FIG. 17 is a further exploded view of the sex toy of FIG. 16, wherein main structures of a first stimulation module and a massage portion are shown schematically.

FIG. 17a is a schematic view of a sex toy according to a fourth embodiment of the present application.

FIG. 18 is an isometric, assembled view of a sex toy of a fifth embodiment of the present application.

FIG. 19 is a schematic view of FIG. 18, viewed from another aspect.

FIG. 20 is a cross sectional view of the sex toy of FIG. 19, taken along line C-C;

FIG. 21 is a schematic view of the sex toy of FIG. 20 viewed from another aspect, wherein an inner tube is removed for clarity.

FIG. 22 is an exploded view of the sex toy of FIG. 18.

FIG. 23 is a further exploded view of the sex toy of

FIG. 22, wherein main structures of the inner tube, a first stimulation module, and a massage portion are shown schematically.

FIG. 24 is a schematic, assembled view of a sex toy according to a sixth embodiment of the present application.

FIG. 25 is a top plan view of the sex toy of FIG. 24.

FIG. 26 is a cross sectional view of the sex toy taken along line XIII-XIII of FIG. 25.

FIG. 27 is a cross sectional view of the sex toy taken along line XIV-XIV of FIG. 25.

FIG. 28 is a cross sectional view of the sex toy taken along line XV-XV of FIG. 25.

FIG. 29 is an exploded view of the sex toy of FIG. 24.

FIG. 30 is an exploded view of the sex toy of FIG. 24 from another aspect.

FIG. 31 is a schematic view of a first stimulation module of the sex toy of FIG. 24.

FIG. 32 shows the first stimulation module of FIG. 31 from another aspect.

FIG. 33 is an exploded view of the first stimulation module of FIG. 31.

FIG. 34 is a schematic view of a third stimulation module of the sex toy of FIG. 24.

FIG. 35 is an exploded view of the third stimulation module of FIG. 34.

FIG. 36 is a schematic, assembled view of a sex toy according to a seventh embodiment of the present application.

FIG. 37 is a schematic view of a stimulation assembly of the sex toy of FIG. 36.

FIG. 38 is a schematic, exploded view of the stimulation assembly of FIG. 37.

FIG. 39 is a schematic, assembled view of a sex toy according to an eighth embodiment of the present application.

FIG. 40 is an exploded view of the sex toy of FIG. 39.

FIG. 41 is a further exploded view of a first stimulation module of the sex toy of FIG. 40.

FIG. 42 is a schematic, assembled view of a sex toy according to a ninth embodiment of the present application.

FIG. 43 shows the sex toy of FIG. 42 from another aspect, wherein a portion of a shell being removed. 5

FIG. 44 is an enlarged view of a circle XXVII of FIG. 43. 10

FIG. 45 is a schematic, assembled view of a third stimulation module of the sex toy of FIG. 42.

FIG. 46 is an exploded view of the third stimulation module of FIG. 45. 15

FIG. 47 is a schematic, assembled view of a sex toy according to a tenth embodiment of the present application. 20

FIG. 48 is a schematic, assembled view of a stimulation assembly of the sex toy of FIG. 47.

FIG. 49 is an exploded view of the stimulation assembly of FIG. 48. 25

FIG. 50 is an isometric, assembled view of a sex toy according to an eleventh embodiment of the present application. 30

FIG. 51 is a top plan view of the sex toy of FIG. 50.

FIG. 52 is a cross sectional view of the sex toy taken along line E-E of FIG. 51. 35

FIG. 53 is an exploded view of the sex toy of FIG. 50.

FIG. 54 is a further exploded view of a first stimulation module of the sex toy of FIG. 50. 40

FIG. 55 is an exploded view of the first stimulation module of FIG. 54 viewed from another aspect.

FIG. 56 is a further exploded view of a gearbox of the first stimulation module of FIG. 54. 45

FIG. 57 is a schematic view of an alternative embodiment of the first stimulation module.

FIG. 58 is a schematic view of a sex toy according to a twelfth embodiment of the present application. 50

FIG. 59 is a schematic view of a sex toy according to a thirteenth embodiment of the present application.

FIG. 60 is an isometric, assembled view of a sex toy according to a fourteenth embodiment of the present application.

FIG. 61 is a top plan view of the sex toy of FIG. 60.

FIG. 62 is a cross sectional view of the sex toy taken along line XI-XI of FIG. 61.

FIG. 63 is an enlarged view of a circle XII of FIG. 62.

FIG. 64 is a schematic view of the sex toy of FIG. 60, wherein an outer shell and a half of an inner shell are removed to show a stimulation assembly inside the shell.

FIG. 65 is an enlarged view of a circle F of FIG. 64

FIG. 66 is a schematic view of the stimulation assembly of the sex toy of FIG. 60.

FIG. 67 is an exploded view of the stimulation assembly of FIG. 66.

FIG. 68 is an exploded view of the stimulation assembly of FIG. 66 viewed from another aspect.

FIG. 69 is an assembled view of a rotary member and a sliding member of the stimulation assembly of FIG. 66.

FIG. 70 is a side view of a driving rod of the stimulation assembly of FIG. 66.

FIG. 71 is an isometric, assembled view of a sex toy according to a fifteenth embodiment of the present application.

FIG. 72 is a cross-sectional view of the sex toy of FIG. 71.

FIG. 73 is a schematic view of the sex toy of FIG. 71, wherein an outer shell and a half of an inner shell are removed to show a stimulation assembly inside the shell.

FIG. 74 is an exploded view of FIG. 73.

DESCRIPTION OF THE EMBODIMENTS

[0030] In order to make those skilled in the art better understand the technical solution of the present application, the technical solution in the embodiments of the present application will be clearly and completely described below with reference to accompanying drawings in the embodiments of the present application. Obviously, the described embodiments are only a part of the embodiments of the present application, but not all of the embodiments. Based on the embodiments of the present application, all other embodiments obtained by those skilled in the art without any creative efforts fall within the protection scope of the present application.

[0031] It should be noted that when an element is said to be "connected" to another element, it may be directly connected to another element, or indirectly connected to another element through one or multiple intermediate elements.

[0032] In the specification, the oriental or positional relationships indicated by the terms "longitudinal", "transverse", "top", "bottom", "inner", "outer", "central", "axial", "radial", "circumferential" and the like are only intended to facilitate the description of the present application and simplify the description based on oriental or positional relationships shown in the accompanying drawings, not to indicate or imply that the apparatus or element referred must have a specific orientation, is constructed and operated in a specific orientation, and therefore cannot be understood as a limitation of the present application.

[0033] Unless otherwise specified and limited, the specific meanings of all technical and scientific terms used in the specification can be specifically understood by persons of ordinary skill in the art. The terms used in the specification of this application is for the purpose of describing specific embodiments only and is not intended to limit this application.

[0034] Referring to FIG. 1 to FIG. 6, a sex toy 100 according a first embodiment of the present application is shown. The sex toy 100 includes a shell 20 and a stimulation assembly mounted in the shell 20.

[0035] As shown in FIG. 1 and FIG. 6, the shell 20 in whole is configured as a human hand, which includes a main portion 22 configured as a palm and several massage portions 24 extending from two opposite sides of the main portion 22, respectively. The massage portions 24 each are elongated, curved, and column-shaped, being configured as a finger. Further, two fixed portions 26 extend from two opposite sides of the main portion 22, respectively. The fixed portions 26 each are configured as a curved sheet, and arranged in a row with the massage portions 24 at a same lateral side of the main portion 22.

[0036] Referring also to FIG. 2, the massage portions 24 of the shell 20 cooperatively define a first inner chamber 241 thereamong. Referring also to FIG. 4, the fixed portions 26 of the shell 20 cooperatively define a second inner chamber 261 therebetween. The first inner chamber 241 and second inner chamber 261 communicate with each other and cooperatively define an stimulation chamber 28, which is generally column-shaped and configured for receiving a sensitive part of the human body, such as a male genitalia therein.

[0037] As shown in FIG. 3 to FIG. 6, the shell 20 is a double-layer structure, and includes an outer shell 20a and an inner shell 20b inside the outer shell 20a. The inner shell 20b may be made of hard materials, such as plastic, metal and etc., providing support to the stimulation assembly mounted inside the shell 20; and the outer shell 20a may be made of soft materials, such as silicone, rubber and etc., for directly contacting the male genitalia, thereby the sex toy 100 in whole has high strength and

comfortable use experience.

[0038] Referring to FIG. 6 and FIG. 7, the stimulation assembly of this embodiment includes a first stimulation module 40, a second stimulation module 50 and a third stimulation module 60.

[0039] As shown in FIG. 8a and FIG. 8b, the first stimulation module 40 includes a first motor 42, a swinging unit 44 and a first transmission unit 46 connected between the first motor 42 and the swinging unit 44. The swinging unit 44 includes a first swinging bar 441 and a second swinging bar 443 which are substantially arranged symmetric to each other. During operation of the first motor 42, the first swinging bar 441 and second swinging bar 443 are driven to swing relative to the shell 20, close to or away from each other, thereby achieving an occlusion action to occlude the male genitalia inside the stimulation chamber 28.

[0040] The first swinging bar 441 includes a first connecting arm 441a and a first swinging arm 441b which are connected to each other. Preferably, the first connecting arm 441a and the first swinging arm 441b are integrally formed as one piece, and an included angle is set therebetween. A joint portion of the first connecting arm 441a and the first swinging arm 441b is rotatably connected to the inner shell 20b by a first pivot 442. A distal end of the first connecting arm 441a away from the first swinging arm 441b is connected to the first transmission unit 46, and a distal end of the first swinging arm 441b away from the first connecting arm 441a is configured as a first swinging end 441c and extends into one of the massage portions 24 at a first lateral side (such as a left side in FIG. 8a) of the shell 20.

[0041] Similarly, the second swinging bar 443 includes a second connecting arm 443a and a second swinging arm 443b which are connected to each other and angled with each other. A joint portion of the second connecting arm 443a and the second swinging arm 443b is rotatably connected to the inner shell 20b by a second pivot 444. A distal end of the second connecting arm 443a away from the second swinging arm 443b is connected to the first transmission unit 46, and a distal end of the second swinging arm 443b away from the second connecting arm 443a is configured as a second swinging end 443c and extends into one of the massage portions 24 at a second lateral side (such as a right side in FIG. 8a) of the shell 20.

[0042] The distal ends of the first and second connecting arms 441a, 443a can be driven to move along a first direction, such as Z-direction, and thus the first and second swinging arms 441b, 443b can swing about the first pivot 442 and second pivot 444, respectively.

[0043] The first pivot 442 and second pivot 444 both extend along a second direction, such as X-direction, being parallel to and spaced from each other. The first swinging end 441c and the second swinging end 443c are opposite to each other in a third direction, such as Y-direction. During operation, the first motor 42 drives the distal ends of the first connecting arm 441a and the

second connecting arm 443a to do reciprocating movement synchronously in the Z-direction through the first transmission unit 46, making the first swinging bar 441 swing about the first pivot 442 and the second swinging bar 443 swing about the second pivot 444 in opposite directions, thereby the first swinging end 441c and second swinging end 443c swinging towards or away from each other to achieve the occlusion action.

[0044] In this embodiment, the swinging unit 44 further includes a third swinging bar 445 and a fourth swinging bar 447 which are arranged substantially symmetric to each other. The first pivot 442 extends into a middle portion of the third swinging bar 445 to rotatably connect the third swinging bar 445 to the inner shell 20b, and the second pivot 444 extends into a middle portion of the fourth swinging bar 447 to rotatably connect the fourth swinging bar 447 to the inner shell 20b. The first pivot 442 may be fixed to the first and third swinging bars 441, 445 to rotate along therewith, or, may be fixed to the inner shell 20b; and the second pivot 444 may be fixed to the second and fourth swinging bars 443, 447 to rotate along therewith, or, may be fixed to the inner shell 20b.

[0045] The third swinging bar 445 has one end configured as a third swinging end 445c and extending into another one of the massage portions 24 at the first lateral side of the shell 20, and another end being fixedly connected to the first connecting arm 441a of the first swinging bar 441 by a third pivot 446, thereby the third swinging bar 445 can swing about the first pivot 442 together with the first swinging bar 441; and the fourth swinging bar 447 has one end configured as a fourth swinging end 447c and extending into another one of the massage portions 24 at the second lateral side of the shell 20, and another end being fixedly connected to the second connecting arm 443a of the second swinging bar 443 by a fourth pivot 448, thereby the fourth swinging bar 447 can swing about the second pivot 444 together with the second swinging bar 443. The third swinging end 445c and the fourth swinging end 447c are opposite to each other in the Y-direction, which can swing towards or away from each other to achieve an occlusion action.

[0046] In this embodiment, corresponding to the first to fourth swinging ends 441c, 443c, 445c, 447c of the first to fourth swinging bars 441, 443, 445, 447 of the swinging unit 44 of the first stimulation module 40, the shell 20, specifically the outer shell 20a, is provided with four massage portions 24 which accommodate the four swinging ends 441c, 443c, 445c, 447c therein, respectively. During operation, the massage portions 24 swing together with the swinging ends 441c, 443c, 445c, 447c to occlude the male genitalia in the stimulation chamber 28. Such sex toy can simulate a human hand to hold and pinch the male genitalia, which can better stimulate users.

[0047] It should be understood that a number of the swinging bars of the swinging unit is preferably multiple, such as two, three, four, six, eight, etc., which should not be limited to specific embodiments; and, a number of the

massage portions of the shell may be designed the same as that of the swinging bars, thereby accommodating and swinging together with the swinging ends of the swinging bars, respectively.

[0048] FIG. 9a to FIG. 9d show alternative embodiments of the swinging unit. FIG. 9a shows a swinging unit 44a with a first swinging bar 441 and a second swinging bar 443, wherein the two swinging bars 441, 443 are arranged substantially symmetric to each other in the Y-direction. FIG. 9b shows a swinging unit 44b with three swinging bars 441, 443 being staggered in the X-direction, wherein two first swinging bars 441 are located at the same lateral side, and one second swinging bar 443 is located at an opposite lateral side. FIG. 9c shows a swinging unit 44c with five swinging bars 441, 443, wherein four first swinging bars 441 are located at the same lateral side, and one second swinging bar 443 is located at an opposite lateral side. FIG. 9d shows a swinging unit 44d with six swinging bars 441, 443, wherein one lateral side is provided with three first swinging bars 441 and an opposite lateral side is provided with three second swinging bars 443.

[0049] Referring to FIG. 8a and FIG. 8b, in this embodiment, the first motor 42 is a rotary motor, and has a rotary shaft 421 for outputting torque. The first transmission unit 46 is configured for converting rotation of the first motor 42 into reciprocating movement along the first direction, thereby driving the distal ends of the first and second connecting arms 441a, 443a to move in the first direction. The first transmission unit 46 includes a first eccentric wheel 461 and a sliding piece 462.

[0050] The first eccentric wheel 461 is connected to the rotary shaft 421 of the first motor 42. In this embodiment, the first eccentric wheel 461 is generally circular-shaped, and a central hole 463 is defined in a central portion thereof for inserting of the rotary shaft 421 therein. The central hole 463 of the first eccentric wheel 461 is non-circular shaped, such as D-shaped, and a cross section of the rotary shaft 421 has a shape matching with that of the central hole 463. After inserting of the rotary shaft 421 into the central hole 463 of the first eccentric wheel 461, a relative rotation therebetween is limited for shape matching, thereby the first eccentric wheel 461 can rotate along with the rotary shaft 421 of the first motor 42.

[0051] A first rod 464 extends outwardly from a periphery of the first eccentric wheel 461, that is, the first rod 464 is set eccentrically on the first eccentric wheel 461. Generally, the first rod 464 is parallel to the rotary shaft 421 of the first motor 42. During rotation of the first eccentric wheel 461 along with the rotary shaft 421 of the first motor 42, the first rod 464 revolves round the rotary shaft 421. In this embodiment, the rotary shaft 421 extends along the X-direction, and the first rod 464 revolves round the rotary shaft 421 in YZ plane. In other words, the first rod 464 generates displacements on both the Y-direction and the Z-direction under the driving of the first motor 42.

[0052] The sliding piece 462 defines an elongated

sliding slot 465 therein, which is strip-shaped and elongated in the Y-direction. The first rod 464 engages into the elongated sliding slot 465, and is fixed relative to the sliding piece 462 in the Z-direction whilst is slidable relative to the sliding piece 462 in the Y-direction. During revolving of the first rod 464 round the rotary shaft 421, its displacement in the Y-direction make it slide in the elongated sliding slot 465 and thus cannot drive the sliding piece 462 to move in the Y-direction, while its displacement in the Z-direction drives the sliding piece 462 to do reciprocating movement in the Z-direction. Thereby, rotation of the first motor 42 is converted into reciprocating liner motion of the sliding piece 462 in the Z-direction.

[0053] In this embodiment, the distal end of the first connecting arm 441a defines a first slot 441d therein, and the distal end of the second connecting arm 443a defines a second slot 443d therein. A second rod 466 extends outwardly from the sliding piece 462 along the X-direction, and is movably engaged into the first slot 441d and the second slot 443d, thereby the sliding piece 462 can drive the distal ends of the first and second connecting arms 441a, 443a to do reciprocating movement synchronously in the Z-direction. The first and second slots 441d, 443d may be strip-shaped in an extension direction of the first and second connecting arms 441a, 443a, thereby the second rod 466 having more movement allowance in the first and second slots 441d, 443d.

[0054] In this embodiment, the sliding piece 462 is movably connected to the inner shell 20b by a fifth pivot 467 which extends along the Z-direction. The fifth pivot 467 movably extends into the sliding piece 462, thereby guiding movement of the sliding piece 462 in the Z-direction. Preferably, each end of the sliding piece 462 in the Y-direction is provided with one fifth pivot 467, thus a movement of the sliding piece 462 in the Z-direction can be more stable, and accordingly swinging of the swinging ends 441c, 443c, 445c, 447c of the swinging unit 44 driven by the second rod 466 of the sliding piece 462 can be more consistent and powerful. That is to say, the stimulation intensity of each massage portion 24 of the sex toy 100 is more consistent and the overall stimulation effect is better.

[0055] As shown in FIG. 5 and FIG. 6, the second stimulation module 50 further includes at least one vibration member, such as a second motor 52, preferably a vibration motor. The second motor 52 is set in the massage portions 24 of the shell 20, and located adjacent to distal ends of the massage portions 24. The second motor 52 is configured for generating high-frequency vibration to the male genitalia in the stimulation chamber 28. Preferably, there are several second motors 52, and each second motor 52 is set in one of the massage portions 24. During in use, the first stimulation module 40 or the second stimulation module 50 may be started separately, or the first stimulation module 40 and the second stimulation module 50 may be started at the same time.

[0056] As shown in FIG. 10a and FIG. 10b, the third

stimulation module 60 includes a third motor 62 with an rotary shaft 621, a third eccentric wheel 64 connected to the rotary shaft 621 of the third motor 62, and a swinging rod 66 connected to the third eccentric wheel 64. The third eccentric wheel 64 has a third rod 641 extending out from an outer periphery thereof, and the third rod 641 is parallel to the rotary shaft 621 of the third motor 62. The swinging rod 66 is generally perpendicular to the third rod 641, with one end thereof being rotatably mounted around the third rod 641 and another end thereof embedded into the main portion 22 of the shell 20, specifically embedded into a part of the main portion 22 corresponding to second inner chamber 261 between the fixed portions 26.

[0057] Preferably, a head 661 with a diameter larger than other portions of the swinging rod 66 is formed at the another end of the swinging rod 66 embedded into the main portion 22, improving a stability of the connection between the swinging rod 66 and the main portion 22. Preferably, for facilitating the movement of the swinging rod 66, the part of the main portion 22 corresponding to the head 661 of the swinging rod 66 is configured only with the soft outer shell 20a, i.e., without the hard inner shell 20b, as shown in FIG. 3 and FIG. 4.

[0058] Referring also to FIG. 3 and FIG. 4, the rotary shaft 621 of the third motor 62 and the third rod 641 of the third eccentric wheel 64 both extend along the X-direction, and the swinging rod 66 extends along the Z-direction. During operation, rotation of the third motor 62 is converted into revolving of the swinging rod 66 about the rotary shaft 621, and then converted into reciprocating movement of the swinging rod 66 and the part of the main portion 22 adjacent to the head 661 of the swinging rod 66 in the Z-direction since the swinging rod 66 is limited to move in the X-direction and Y-direction for the engagement with the shell 20. At the same time, a relative rotation is generated between the swinging rod 66 and the third rod 641. That is, the third stimulation module 60 provides reciprocating motion in the Z-direction to drum the male genitalia in the stimulation chamber 28.

[0059] The first and third stimulation modules 40, 60 provide stimulation to different parts of the male genitalia in different manners and thus can achieve better stimulation effects. It should be understood that the third stimulation module 60 may be started separately, or may be used with the first stimulation module 40 at the same time. For enhance user comfort, the massage portions 24 of the shell 20, which forms the first inner chamber 241, the fixed portions, which forms the second inner chamber 261, are configured only with the soft outer shell 20a, i.e., without the hard inner shell 20b.

[0060] Referring to FIG. 6 and FIG. 7 again, a battery 80, preferably a rechargeable battery, is arranged in the main portion 22 of the shell 20 for supplying electric power to electric components, such as the first, second and third motors 42, 52, 62, of the sex toy 100. Further, a control circuit board 82 is mounted in the shell 20 and electrically connected to the first, second and third mo-

tors 42, 52, 62 for controlling their operation according to user's instructions, such as controlling the vibration frequency of the second motor 52, controlling the rotary speed of the first and third motors 42, 62, and etc. Control buttons 84, such as mechanical buttons or touch buttons, may be provided on the outer shell 20a for input the user's instructions.

[0061] FIG. 11 illustrates a sex toy 100w according to a second embodiment of the present application. The sex toy of this embodiment is similar to the previous embodiment, for the same components, please refer to the description of the previous embodiments. The present embodiment differs from the first embodiment mainly in the shape of the fixed portion 26w. Specifically, in this embodiment, the fixed portion 26w is cylindrical-shaped. The cylindrical fixed portion 26w defines a second inner chamber 261w of round cylindrical. One end of the fixed portion 26w adjacent to the massage portions 24w is opened and the other end away from the massage portions 24w is closed.

[0062] During use, the cylindrical fixed portion 26w may tightly wrap around the male penis, especially a glans of the penis, thereby further improving the stimulation effect of the sex toy 100w. It should be understood that, in other embodiments, the end of the fixed portion 26w away from the massage portions 24w may also be opened, and thus the glans of the penis may extend out of the cylindrical fixed portion 26w.

[0063] Referring to FIGS. 12 to 17, a sex toy 100r according to a third embodiment of the present application is shown. The sex toy 100r includes a shell 20r configured with at least two massage portions 24r, a first stimulation module 40r, and a second stimulation module 50r. A stimulation chamber 28r is defined between the at least two massage portions 24r for accommodating a male penis therein.

[0064] The first stimulation module 40r includes at least two sliding rods, such as a first sliding rod 241r and a second sliding rod 242r, arranged on opposite sides and extending into the at least two massage portions 24r of the shell 20r, respectively. A drive mechanism 41r, such as a motor, is in torque-transmission connection with the first sliding rod 241r and the second sliding rod 242r, for driving the first sliding rod 241r and the second sliding rod 242r to slide towards or away from each other, thereby changing a radial size of the stimulation chamber 28r at a position corresponding to the massage portions 24r. The number of the massage portions 24r/sliding rods 241r, 242r may be two, three, four, or more, and more massage portions 24r have a larger contact area for the penis located in the stimulation chamber 28r, which can provide a sufficient stimulation and massage effect, and improve the user experience of the product.

[0065] It should be noted that, in this disclosure, the longitudinal direction refers to the extension direction of the stimulation chamber 28r, i.e., the insertion direction of the male penis into the stimulation chamber 28r, and a

radial direction refers to the direction perpendicular to the extension direction of the stimulation chamber 28r.

[0066] On the one hand, the structure of the sex toy 100r provides more personalised and comfortable stimulating massage experience with a simple and compact structure.

[0067] On the other hand, the sliding rods 241r, 242r can provide a more comprehensive stimulating massage effect on the male penis located in the stimulation chamber 28r, further improving the using experience of the product.

[0068] Referring to FIG. 14, FIG. 16, and FIG. 17, the first stimulation module 40r further includes a sliding member 420r driven by a rotary shaft 4121r of the drive mechanism 41r. The rotary shaft 4121r drives the sliding member 420r to move along the longitudinal direction when rotating. Each of the first sliding rod 241r and the second sliding rod 242r includes at least one slider 13r slidably engaged with the sliding member 420r such that the sliding member 420r drives the first sliding rod 241r and the second sliding rod 242r to slide in the radial direction when the sliding member 420r moves in the longitudinal direction.

[0069] That is to say, the first stimulation module 40r can transform rotational movement into linear movement, and the rotation of the rotary shaft 4121r of the first stimulation module 40r can drive the sliding member 420r to slide along the longitudinal direction of stimulation chamber 28r. Through the slidable engagement between the sliding member 420r and the sliders 13r of the sliding rods 241r, 242r, the sliders 13r are driven to slide along the radial direction perpendicular to the longitudinal direction, thereby driving the first sliding rod 241r and the second sliding rod 242r to slide along the radial direction, towards or away from each other.

[0070] In one embodiment, referring to FIG. 14, FIG. 16 and FIG. 17, the first stimulation module 40r further includes a transmission mechanism 43r, and the transmission mechanism 43r includes a rotary member 431r extending along the longitudinal direction and a second sliding block 432r cooperating with the rotary member 431r. The rotary member 431r is connected to and rotates along with the rotary shaft 4121r. The outer circumferential face of the rotary member 431r has a second sliding groove 431ra provided thereof. One end of the second sliding block 432r is slidably engaged inside the second sliding groove 431ra, and the other end of the second sliding block 432r is fixed to the sliding member 420r. The sliding member 420r together with the second sliding block 432r is allowed to slide in the longitudinal direction but prevented from rotation along with the rotary member 431r. Thus, the rotation of the rotary member 431r drives the second sliding block 432r engaged in the second sliding groove 431ra to slide linearly along the longitudinal direction, thereby driving the sliding member 420r fixed with the second sliding block 432r to slide linearly along the longitudinal direction.

[0071] In some embodiments, the second sliding block

432r and the sliding member 420r may be integrally formed as one piece.

[0072] Specifically, in one embodiment, the transmission mechanism 43r further includes a fixed member 433r fixed inside the shell 20. The fixed member 433r is used to prevent the sliding member 420r from rotating with the rotary member 431r. For example, the fixed member 433r may have a first sliding groove 4331r which extends along the longitudinal direction, and the sliding member 420r has a first sliding block 422r being slidably engaged into the first sliding groove 4331r. Preferably, the first sliding groove 4331r and the first sliding block 422r are configured in form-fitting in the circumferential direction, such that relative rotation between the sliding member 420r and the fixed member 433r is prevented.

[0073] The other end of the second sliding block 432r may be fixedly connected to the first sliding block 422r. Or, the second sliding block 432r and the first sliding block 422r may be integrally formed as one piece.

[0074] The present disclosure does not limit the way to convert the rotation into linear motion. As an example, the sliding member 420r of the first stimulation module 40r may be driven to move linearly by a screw-rod mechanism, which includes a screw-rod being in threaded connection with the sliding member 420r.

[0075] Alternatively, it is possible to use a cam mechanism to achieve torque transmission, in which the sliding member 420r may be configured as a driven part that is driven by a cam. The sliding member 420r is driven to perform a linear movement through the rotation of the cam. The specific shape of the cam can be adapted to control the movement track of the sliding member 420r.

[0076] Alternatively, it is also possible to use a gear rack mechanism to achieve torque transmission, in which the rotation of the gear can drive a meshed rack to move linearly. In particular, the rotation of the gear may be converted into the linear motion of the rack through the meshing of gear teeth and the rack. In that case, it only requires a fixed connection between the rack and the sliding member 420r, the linear motion of the sliding member 420r can be achieved. Furthermore, known crank slider mechanism and other transmission mechanisms may also be used, which will not be described in detail here.

[0077] In the present disclosure, the slider 13r is slidably engaged with the sliding member 420r, but the manner how to drive the slider 13r to slide in the radial direction when the sliding member 420r is sliding along the longitudinal direction is not particularly limited.

[0078] Exemplarily, in one embodiment, the sliding member 420r is provided with a wedge, and the slider 13r has a sloping surface engageable with the wedge. When the sliding member 420r slides along the longitudinal direction, the wedge urges the slider 13r to push the slider 13r to slide along the radial direction through the engagement with the sloping surface.

[0079] In some embodiments, the slidable engagement between the sliding member 420r and each slider

13r is achieved via cooperating of a slot 421ra or 421rb and a protrusion 131r. In the embodiment shown in FIG. 17, the slots 421ra, 421rb are formed on the sliding member 420r, and the protrusion 131r is formed on each slider 13r. The protrusions 131r of the sliders 13r of the first and second sliding rods 241r, 242r are slidably inserted into the slots 421ra, 421rb, respectively. The positions of the slots 421ra, 421rb and the protrusion 131r are not limited. That is, in other case, the sliding member 420r may be configured with the protrusions 131r, and the sliders 13r may be provided with corresponding slots 421ra, 421rb. When the sliding member 420r moves in the longitudinal direction, the protrusion 131r slides in the slot 421ra, 421rb, so as to drive the slider 13r to move in the radial direction.

[0080] Specifically, a portion of the sliding member 420r adjacent to the first sliding rod 241r and the second sliding rod 242r is substantially a plate-like structure, and the first slot 421ra and the second slot 421rb are both formed in the plate-like structure.

[0081] The first slot 421ra and the second slot 421rb are both elongated. Referring to FIG. 16, FIG. 17, and FIG. 22, the first slot 421ra and the second slot 421rb are both inclined relative to the longitudinal direction. The protrusions 131r on the sliders 13r of the first sliding rod 241r and the second sliding rod 242r are both configured as elongated posts and are inserted in the first slot 421ra and the second slot 421rb, respectively. Since both the first slot 421ra and the second slot 421rb are inclined relative to the longitudinal direction, the sliders 13r of the first sliding rod 241r and the second sliding rod 242r are guided to move in the radial direction, thereby achieving radially sliding of the first sliding rod 241r and the second sliding rod 242r.

[0082] In some embodiments, the first slot 421ra and the second slot 421rb extend gradually close to each other along the longitudinal direction away from the first sliding rod 241r and the second sliding rod 242r. In some embodiments, the first slot 421ra and the second slot 421rb extend gradually away from each other along the longitudinal direction away from the first sliding rod 241r and the second sliding rod 242r. That is, the radial distance between the first slot 421ra and the second slot 421rb gradually decreases or increases in the longitudinal direction.

[0083] In other embodiment, the extension direction of the first slot 421ra may be parallel to the longitudinal direction, and the extension direction of the second slot 421rb is inclined at an angle relative to the extension direction of the first slot 421ra. Alternatively, the extension direction of the second slot 421rb may be parallel to the longitudinal direction, while the extension direction of the first slot 421ra is inclined at an angle relative to the extension direction of the first slot 421ra. In this case, one of the first sliding rod 241r and second sliding rod 242r corresponding to the inclined slot is driven to move in the radial direction, and the other one of the first sliding rod 241r and second sliding rod 242r will not move in the

radial direction.

[0084] In other embodiment, one of the first sliding rod 241r and second sliding rod 242r may be fixed inside the shell 20r, and the other one of the first sliding rod 241r and second sliding rod 242r may be driven by the sliding member 420r.

[0085] Further, in some embodiments, referring to FIG. 16, FIG. 17, and FIG. 22, the first slot 421ra and the second slot 421rb both are inclined to the longitudinal direction, the first slot 421ra and the second slot 421rb in whole are arranged in V-shape or truncated V-shape. Accordingly, an angle is defined between the first slot 421ra and the second slot 421rb. The range of the angle is not particularly limited, but may be set greater than 0 degree and less than 180 degrees as required. For example, the angle may be 30 degrees, 60 degrees, 90 degrees, 120 degrees, 150 degrees, and so on. In case of V-shape arrangement, first axial ends of the first slot 421ra and second slot 421rb may be close to or intersect with each other; and second axial ends of the first slot 421ra and second slot 421rb are far away from each other.

[0086] In some embodiments, referring to FIG. 13 and FIG. 14, the drive mechanism 41r includes a first motor 441r and a gear assembly 412r in torque transmission connection with a rotating shaft 411ra of the first motor 441r. The rotary shaft 4121r is configured as an output end of the gear assembly 412r. The gear assembly 412r is able to adjust the output speed of the rotary shaft 4121r and increase the output torque, which is able to improve the control precision of the sex toy 100r and slow down the work load of the first motor 441r, thereby achieving more stable stimulation to the male penis, ensuring the reliability of the sex toy and the users' product experience.

[0087] In some embodiments, referring to FIG. 12 to FIG. 17, the sex toy 100r is entirely constructed as a claw-like structure. The shell 20r includes an inner shell 20rb. The at least two sliding rods 241r, 242r are disposed on two sides of the shell 20r, respectively. One end of each of the sliding rods 241r, 242r is slidably connected to the shell 20r, and distal ends of the first sliding rod 241r and the second sliding rod 242r extend out of the inner shell 20rb and extend towards each other. Preferably, the distal ends of the first sliding rod 241r and the second sliding rod 242r are curved towards each other. The at least two massage portions 24r and the base of the shell 20r enclose the stimulation chamber 28r. Specifically, the inner shell 20rb includes a top case 20rc and a bottom case 20rd connected together, for example, by snapping-fit. The inner shell 20rb defines a mounting cavity 21 therein, and the first stimulation module 40r is disposed in the mounting cavity 21 of the shell 20r.

[0088] In some embodiments, referring to FIG. 16, FIG. 17 and FIG. 22, the sex toy 100r further includes a guide member 3r, the guide member 3r is fixedly disposed in the inner shell 20rb for guiding sliding of the slider 13r in the radial direction. The guide member 3r has a guide slot 3ra

for receiving the slider 13r. The guide slot 3ra extends substantially in the radial direction. The shell 20r include, but are not limited to, hard plastics such as polypropylene (PP), polyvinyl chloride (PVC), polycarbonate (PC), etc.. Thus, it provides structural support for the components received therein.

[0089] The guide slot 3ra extending substantially in the radial direction means that the extension direction of the guide slot 3ra and the radial direction may be the same or have a slight angle. The range of the angle is not particularly limited, preferably may be 0-20 degrees, for example, 0 degrees, 10 degrees, 20 degrees, and so on. Exemplarily, in an embodiment, the guide slot 3ra extend through two opposite sides of the guide member 3r in the radial direction, and the slider 13r is slidably inserted in the guide slot 3ra and thus is slidable along the radial direction. Slot walls of the guide slot 3ra in the longitudinal direction prevent the slider 13r from moving in the longitudinal direction. The guide member 3r increases the stability of the sliders 13r when sliding in the radial direction.

[0090] Referring to FIGs. 12 to 17, the shell 20r further includes an outer shell 20ra coated on the inner shell 20rb. The outer shell 20ra may be formed by injection molding and configured as a one-piece component. The outer shell 20ra is configured with the at least two massage portions 24r for accommodating the sliding rods 241r, 242r.

[0091] In some embodiments, referring to FIG. 15 to FIG. 17, the second stimulation module 50r includes at least one vibration member, such as a vibration motor 52r. The number of vibration motors 52r may be one, two or more. Each of massage portions 24r may be equipped with a second stimulation module 50r, or only one second stimulation module 50r is disposed in one of the massage portions 24r. Alternatively, it is also possible to provide a plurality of second motors 52r in one of the massage portions 24r. The number and position of the vibration motors 52r is not specifically limited herein. The vibration motor 52r includes but is not limited to be an eccentric vibration motor, a linear vibration motor, an electromagnetic vibration motor, and the like.

[0092] In some embodiments, the massage portions 24r include soft materials disposed at least on a side thereof facing the stimulation chamber 28r. Wherein the soft materials include, but are not limited to, silicone that is non-toxic and antibacterial and has good chemical stability. Due to the soft materials having soft and skin-friendly properties, the massage portions 24r contacts the male penis in the stimulation chamber 28r through the soft materials, this reduce friction and improve the product's comfort.

[0093] In some embodiments, the first sliding rod 241r includes a first support end 241ra and the second sliding rod 242r includes a second support end 242ra. The first support end 241ra and the second support end 242ra extend into the massage portions 24r.

[0094] In this embodiment, the at least two sliding rods

241r, 242r include two first sliding rods 241r arranged at one side of the stimulation chamber 28r and two second sliding rods 242r arranged at the other side of the stimulation chamber 28r. The two first sliding rods 241r are arranged spaced from each other and connected together by a first beam 241rc at bottom ends. The two first sliding rods 241r are connected to a common slider 13r through the first beam 241rc. The two second sliding rods 242r are arranged spaced from each other and connected together by a second beam 242rc at bottom ends. The two second sliding rods 242r are connected to a common slider 13r through the second beam 242rc.

[0095] Referring to FIG. 17a, a sex toy 100s according to a fourth embodiment of the present disclosure is shown. the distal ends of the massage portions 24r may be connected together by a flexible member 93r. The flexible member 93r includes but is not limited to a stretchable and soft silicone or the like. The flexible member 93r can further improve the wrapping effect of the stimulation chamber 28r of the sex toy 100r, and thus improves user experience.

[0096] Referring to FIG. 18 to FIG. 23, a sex toy 100s according to a fifth embodiment of the present disclosure is shown. The sex toy 100s includes a shell 20s including at least two massage portions 24s, and a first stimulation module 40s. The first stimulation module 40s includes a first sliding rod 241s and a second sliding rod 242s respectively arranged on opposite sides and extending into the at least two massage portions 24s of the shell 20s, for driving the first sliding rod 241s and the second sliding rod 242s to slide towards or away from each other. Detail constructions of the first stimulation module 40s may refer to the embodiment of FIGs. 12-17, which will not repeated here.

[0097] The shell 20s includes an outer tube 20sa and an inner tube 20sb disposed inside of the outer tube 20sa. The at least two massage portions 24s are defined to be parts of the inner tube 20sb corresponding to the at least two sliding bars 241s, 242s. The inner tube 20sb is hollow and defines a stimulation chamber 100sa therein for receiving a male penis. In this embodiment, the stimulation chamber 100sa is cylindrical. An accommodating chamber 100sb is formed between the outer tube 20sa and the inner tube 20sb. The at least two massage portions 24s are defined to be parts of the inner tube 20sb corresponding to the at least two sliding bars 241s, 242s. In some embodiments, the at least two massage portions 24s may be integrally formed with the inner tube 20sb. In some embodiments, the inner tube 20sb may serve as the massage portions 24s, and the first and second sliding rods 241s, 242s may attach to the inner tube 20sb directly.

[0098] Exemplarily, the outer tube 20sa is substantially a hollow cylindrical structure. The inner tube 20sb is entirely made of soft materials, such as silicone. The accommodating chamber 100sb between the outer tube 20sa and the inner tube 20sb is used to place the first, second sliding rods 241s, 242s and etc.. The first sliding

rod 241s and the second sliding rod 242s are respectively disposed on opposite radial sides of the inner tube 20sb.

[0099] Similar to the second embodiment, the first sliding rod 241s and the second sliding rod 242s in the present embodiment can slide towards or away from each other. When the first and second sliding rods 241s, 242s slides towards each other, they press the inner tube 20sb inwardly, so as to narrow the radial size of the stimulation chamber 100sa and pinch the male penis received therein.

[0100] In some embodiments, referring to FIG. 20, one longitudinal or axial end of the inner tube 20sb is open for inserting of the penis therein and the other longitudinal or axial end is closed.

[0101] In some embodiments, referring to FIG. 20, the inner tube 20sb is a one-piece component. The integrally molded inner tube 20sb has better integrity, higher sealing, better product consistency and aesthetics, and is beneficial to product sales and user experience.

[0102] In some embodiments, the internal structure of the inner tube 20sb is more complex, for example, the inner tube 20sb is configured with inconsistent wall thicknesses, axial bending, and etc. In this case, the inner tube 20sb may be formed by connecting of several ring sections together, which may facilitate the processing and manufacturing of the product, and reduce the cost of the production of the inner tube 20sb.

[0103] In some embodiments, referring to FIG. 16 and FIG. 23, the sex toy 100s further includes a battery 80s and a control circuit board 82s. The control circuit board 82s is electrically connected to the first stimulation module 40s. The battery 80s is electrically connected to both the control circuit board 82s and the first stimulation module 40s, so that the user can perform control operations such as switching ON, switching OFF, and regulating the mode, in particular, the speed of the first stimulation module 40s by means of the control buttons 84s on the control circuit board 82s. The battery 80s is used to supply power to the control circuit board 82s and the first stimulation module 40s. The battery 80s may be a removable battery 80s for easy replacement by the user; the battery 80s may also be a rechargeable battery 80s fixedly disposed within the sex toy 100s.

[0104] In some embodiments, referring to FIG. 18 to FIG. 23, the battery 80s and the control circuit board 82s are received in the accommodating chamber 100sb. The battery 80s is disposed on the side of the first stimulation module 40s away from the massage portions 24s, and the control circuit board 82s is disposed on the longitudinal side of the inner tube 20sb.

[0105] Referring to FIG. 24 to FIG. 30, a sex toy 100h according to a sixth embodiment of the present application is shown. The sex toy 100h includes a shell 20h and a stimulation assembly mounted in the shell 20h.

[0106] The shell 20h includes a main portion 22h, a plurality of massage portions 24h, and a rotary portion 28h. As shown in FIG. 26 and FIG. 29, the shell 20h is configured as a double-layer structure, and includes a

flexible outer shell 201h and a hard inner shell 202h inside the outer shell 201h, wherein the massage portions 24h and rotary portion 28h are configured as a single-layer structure, preferably constructed as a part of the flexible outer shell 201h, thereby having a soft touch and a certain elastic buffering effect, making the user feel more comfortable.

[0107] Similar to the first embodiment, the massage portions 24h are configured as elongated and curved columns, extending from two opposite sides of the main portion 22h, respectively. Cooperatively, the massage portions 24h define a first inner chamber 241h.

[0108] In this embodiment, the rotary portion 28h is generally cylindrical-shaped, and arranged at an axial end of and spaced from the massage portions 24h. An inner end of the rotary portion 28h close to the massage portions 24h is open, and an outer end of the rotary portion 28h away from the massage portions 24h is closed. A second inner chamber 281h is defined in the rotary portion 28h, and communicates with the first inner chamber 241h through the open inner end of the rotary portion 28h. The first inner chamber 241h and the second inner chamber 281h cooperatively form a stimulation chamber for receiving the male genitalia therein.

[0109] During use, the male genitalia extends through the first inner chamber 241h between the massage portions 24h into the second inner chamber 281h inside the rotary portion 28h, with a glans penis being enveloped by the closed end of the rotary portion 28h, which is more comfortable.

[0110] Referring to FIG. 29 and FIG. 30, the stimulation assembly includes a first stimulation module 40h configured for driving the massage portions 24h to swing, so as to pinch a rear end of the male genitalia, and a third stimulation module 70h configured for driving the rotary portion 28h to rotate, so as to rub against a front end of the male genitalia. Thus, the massage portions 24h function as a first stimulation part and the rotary portion 28h function as a second stimulation part, acting on the male genitalia in different ways, thereby providing a better sexual experience.

[0111] As shown in FIGs. 31-33, the first stimulation module 40h includes a first motor 42h, a swinging unit 44h and a first transmission unit 46h connected between the first motor 42h and the swinging unit 44h.

[0112] The swinging unit 44h includes a first swinging bar 441h and a second swinging bar 443h which are substantially arranged symmetric to each other. The first swinging bar 441h is rotatably mounted in the shell 20h by a first pivot 442h, and the second swinging bar 443h is rotatably mounted in the shell 20h by a second pivot 444h. Each of the first and second swinging bars 441h, 443h includes a swinging arm with a distal end being configured as a swinging end 4412h, 4432h and engaged into the massage portions 24h and a connecting arm with a distal end defining a slot 4414h, 4434h for connecting the swinging unit 44h to the first transmission unit 46h.

[0113] The first transmission unit 46h includes a fixed

member 47h, a rotary member 48h, and a sliding member 49h that cooperate with each other, converting rotation of the first motor 42h into reciprocating linear movement of the sliding member 49h.

[0114] The fixed member 47h is fixedly installed in the shell 20h, for example, fixedly connected to a motor housing of the first motor 42h by screws and the like. The fixed member 47h is provided with a first sliding groove 471h which extends along the X-direction.

[0115] The rotary member 48h is connected to a rotary shaft 421h of the first motor 42h, and rotates about an axis extending in the X-direction under the action of the first motor 42h. The rotary member 48h and the rotary shaft 421h may be fixed in the circumferential direction through shape fitting and the like, so as to rotate synchronously. The rotary member 48h is provided with a second sliding groove 481h, which extends spirally in a circumferential direction of the rotary member 48h.

[0116] The sliding member 49h includes a first sliding block 491h and a second sliding block 492h, wherein the first sliding block 491h is slidably engaged into the first sliding groove 471h of the fixed member 47h and the second sliding block 492h is slidably engaged in the second sliding groove 481h of the rotary member 48h. Through the cooperation of the first sliding block 491h and first sliding groove 471h and the cooperation of the second sliding block 492h and second sliding groove 481h, rotation of the first motor 42h is converted into the reciprocating movement of the sliding member 49h in the X-direction.

[0117] In the illustrated embodiment, the rotary member 48h is designed as a rotating shaft and is fixedly coupled onto the rotary shaft 421h of the first motor 42h. The fixed member 47h is cylindrical-shaped and mounted around the rotary member 48h. The sliding member 49h is cylindrical-shaped and mounted around the fixed member 47h. The first sliding block 491h protrudes inwardly from the sliding member 49h into the first sliding groove 471h of the fixed member 47h, and the second sliding block 492h extends through the first sliding groove 471h into the second sliding groove 481h of the rotary member 48h.

[0118] The second sliding block 492h is preferably an arc-shaped sheet that can adapt to the shape of a groove wall of the second sliding groove 481h. In this embodiment, the second sliding block 492h is formed separately and then fixedly connected to the first sliding block 491h, facilitating assembly of the sliding member 49h to the rotary member 48h. In some embodiments, the second sliding block 492h and the first sliding block 491h may be integrally formed as one piece.

[0119] Referring to FIG. 33 and FIG. 35, the second sliding groove 481h includes a first spiral segments 483h and a second spiral segment 485h which are arranged symmetrically. The first spiral segment 483h extends clockwise from a first proximal end A1 to a first distal end B1, and the second spiral segment 485h extends counterclockwise from the first proximal end A1 to the first

distal end B1. The first proximal end A1 and the first distal end B1 are spaced apart by a certain distance in the axial direction of the rotary member 48h.

[0120] During sliding of the second sliding block 492h along the second sliding groove 481h from the first proximal end A1 to the first distal end B1, the sliding member 49h moves away from the fixed member 47h along the X-direction. During sliding of the second sliding block 492h along the second sliding groove 481h from the first distal end B1 to the first proximal end A1, the sliding member 49h moves towards the fixed member 47h along the X-direction. Thus, rotation of the rotary member 48h causes the sliding member 49h to do reciprocating liner motion in the X-direction.

[0121] In the illustrated embodiment, the first proximal end A1 and the first distal end B1 of the second sliding groove 481h are located on a same generatrix of the rotary member 48h, and a span of the first spiral segment 483h or the second spiral segment 485h is an entire circle in the circumferential direction. In some embodiments, the first proximal end A1 and the first distal end B1 may be located on opposite sides of the rotary member 48h, i.e., half a circle apart in the circumferential direction. In this case, the span of the first spiral segment 483h or the second spiral segment 485h in the circumferential direction may be half a circle.

[0122] In some embodiments, the second sliding groove 481h may be formed on the rotary shaft 421h of the first motor 42h. In this case, the rotary member 48h may be omitted, or a part of the rotary shaft 421h with the second sliding groove 481h may be regarded as the rotary member 48h.

[0123] The fixed member 47h, rotary member 48h, and sliding member 49h cooperate with each other to form the first transmission unit 46h, which converts the rotation of the first motor 42h into the reciprocating liner motion of the sliding member 49h.

[0124] In this embodiment, the sliding member 49h is provided with two transmission rods 495h, wherein each transmission rod 495h is engaged into the slot 4414h of one of the first and second swinging bars 441h, 443h. The transmission rod 495h is inclined to the X-direction in which the first and second pivots 442h, 444h extend and the sliding member 49h moves. Due to the inclined arrangement of the transmission rod 495h, the movement of the transmission rod 495h along with the sliding member 49h in the X-direction causes the distal end of the connecting arm of the swinging bar 441h, 443h to be lifted or pressed down.

[0125] As a result, the swinging ends 4412h, 4432h of the first and second swinging bars 441h, 443h are driven to swing towards or away from each other with their corresponding pivots 442h, 444h as the rotary center, which in turn drives the massage portions 24h to swing towards or away from each other. In this embodiment, the slot 4414h in the distal end of the connecting arm of the swinging bar 441h, 442h is generally U-shaped, facilitating moving and rotating of the transmission rod 495h in

the slot 4414h.

[0126] In this embodiment, a sliding frame 497h is set on the first motor 42h and the first transmission unit 46h, and connected to the sliding member 49h of the first transmission unit 46h. Specifically, the sliding member 49h is provided with two connecting rods 498h at two opposite sides thereof, respectively, and the sliding frame 497h is provided with two apertures 499h. Each connecting rod 498h engages into one corresponding aperture 499h to fix the sliding frame 497h to the sliding member 49h in the X-direction. The two transmission rods 495h are provided on the sliding frame 497h, located at an end of the sliding frame 497h away from the apertures 499h, facilitating the connection of the swinging unit 46h.

[0127] In other embodiments, the connecting rod 498h may be formed on the sliding frame 497h, and the aperture 499h may be defined in the sliding frame 497h. In other embodiments, the sliding frame 497h and the sliding member 49h may be fixed together in the X-direction by screws, snap-fitting, bonding, and etc. In other embodiments, the transmission rod 495h may be directly formed on the sliding member 49h, thereby omitting the sliding frame 497h.

[0128] In this embodiment, as shown in FIG. 28, a second stimulation module 50h includes at least one vibration member 52h, such as two vibration motors, which are provided in the massage portions 24h, so that the massage portions 24h can vibrate at high frequency during swinging, further enhancing its stimulation effect to the male genitalia.

[0129] As shown in FIGs. 34-35, the third stimulation module 70h includes a driving motor, a rotary shell 74h mounted around the rotary portion 28h, and a second transmission unit 76h connected between the rotary shell 74h and the driving motor. In this embodiment, the first motor 42h further serves as the driving motor of the third stimulation module 70h. That is, the massage portions 24h and the rotary portion 28h are driven by the same component, i.e., the first motor 42h.

[0130] The rotary shell 74h is made of hard materials, such as plastic, metal, and etc. A hardness of the rotary shell 74h is higher than that of the rotary portion 28h, so as to support the rotary portion 28h and transfer the torque of the first motor 42h to the rotary portion 28h more effectively. Preferably, the rotary portion 28h is integrally formed inside the rotary shell 74h by over-molding, so that the rotary shell 74h and the rotary portion 28h can be driven to rotate synchronously.

[0131] The second transmission unit 76h may be a gear transmission unit, which includes multiple gears that mesh with each other. One of the gears serves as an input wheel 761h and is connected to a rotary shaft 421h of the first motor 42h. Another gear serves as an output wheel 763h and is connected to the rotary shell 74h. The input wheel 761h and the output wheel 763h may be meshed with each other directly, or one or more intermediate gears 756h may be provided between the

input wheel 761h and the output wheel 763h.

[0132] In this embodiment, a shaft seat 741h extends outwards from the rotary shell 74h, and a central shaft 764h of the output wheel 763h of the second transmission unit 76h is inserted into the shaft seat 741h to drive the rotary shell 74h and the rotary portion 28h to rotate.

[0133] Through the second transmission unit 76h, not only power can be transmitted over a long distance between the first motor 42h and the rotary portion 28h, but a direction of power transmission may also be changed, facilitating the arrangement of the first motor 42h. In other embodiments, the second transmission unit 76h may be a pulley transmission unit, a worm gear transmission unit, or a combination of multiple transmission units, as long as it can drive the rotary portion 28h to rotate.

[0134] In this embodiment, the input wheel 761h of the second transmission unit 76h is connected to a transmission rod 487h extending from the rotary member 48h. That is, the input wheel 761h is connected to the first motor 42h through the rotary member 48h. In some embodiments, the input wheel 761h may be directly connected to the rotary shaft 421h of the first motor 42h. In addition, the rotary shell 74h may be connected to the rotary member 48h or the rotary shaft 421h of the first motor 42h directly, omitting the second transmission unit 76h.

[0135] In some embodiments, referring to FIG. 26, a vibration motor 53h may be embedded in the rotary portion 28h, so that the rotary portion 28h can vibrate at high frequency during rotation, further enhancing its stimulation effect to the male genitalia.

[0136] As shown in FIG. 26, in this embodiment, the shell 20h in whole is generally L-shaped. The massage portions 24h is provided on an upper side of a transverse part of the shell 20h, and the rotary portion 28h is provided on an inner side of a longitudinal part of the shell 20h. Preferably, an inner wall of the rotary portion 28h, which surrounds the second inner chamber 281h, is provided with a plurality of protrusions 283h, such as convex points, convex bulges, convex columns, convex strips, and etc., for enhancing the stimulation effect on the male genitalia. It should be understood that inner walls of the massage portions 24h surrounding the first inner chamber 241h may also be provided with protrusions.

[0137] Referring to FIGs. 36-38, a sex toy 100i according to a seventh embodiment of the present application is shown. The sex toy 100i includes a shell 20i and a stimulation assembly mounted in the shell 20i.

[0138] Similar to the second embodiment, the shell 20i includes a main portion 22i, a plurality of massage portions 24i extending from two opposite sides of the main portion 22i, respectively, and a rotary portion 28i provided at an axial end of and spaced from the massage portions 24i. Cooperatively, the massage portions 24i define a first inner chamber 241i. A second inner chamber 281i is defined in the rotary portion 28i and communicates with the first inner chamber 241i. The first inner chamber 241i and the second inner chamber 281i cooperatively form

an stimulation chamber for receiving the male genitalia therein.

[0139] The stimulation assembly includes a first stimulation module 40i configured for driving the massage portions 24i to swing and a third stimulation module 70i configured for driving the rotary portion 28i to rotate.

[0140] The first stimulation module 40i includes a first motor 42i, a swinging unit 44i and a first transmission unit 46i connected between the first motor 42i and the swinging unit 44i. The swinging unit 44i includes a first swinging bar 441i being rotatably mounted into the shell 20i by a first pivot 442i and a second swinging bar 443i being rotatably mounted into the shell 20i by a second pivot 444i. Each of the first and second swinging bars 441i, 443i includes a swinging arm with a distal end being configured as a swinging end 4412i, 4432i and engaged into the massage portions 24i and a connecting arm with a distal end defining a slot 4414i, 4434i for connecting the swinging unit 44i to the first transmission unit 46i.

[0141] The first transmission unit 46i includes a first eccentric wheel 461i and a sliding piece 462i. The first eccentric wheel 461i is connected to a rotary shaft 421i of the first motor 42i. The sliding piece 462i defines an elongated sliding slot 465i therein, which is strip-shaped and elongated in the Y-direction. A first rod 464i extends outwardly from a periphery of the first eccentric wheel 461i along the X-direction, and slidably engages into the elongated sliding slot 465i. A second rod 466i extends outwardly from the sliding piece 462i along the X-direction, and is movably and rotatably engaged into the slots 4414i, 4434i of the first and second swinging bars 441i, 443i.

[0142] The third stimulation module 70i includes a driving motor, a rotary shell 74i mounted around the rotary portion 28i, and a second transmission unit 76i connected between the rotary shell 74i and the driving motor. Similar to the second embodiment, the first motor 42i serves as the driving motor of the third stimulation module 70i.

[0143] The second transmission unit 76i includes an input wheel 761i connected to the first motor 42i in a transmission way, an output wheel 763i connected to the rotary shell 74i, and several intermediate gears 765i provided between the input wheel 761i and the output wheel 763i. In this embodiment, the input wheel 761i is mounted around and fixed to the first eccentric wheel 461i of the first stimulation module 40i. The intermediate gears 765i are arranged at two end sides of the first motor 42i and connected by an elongated rod 767i.

[0144] During operation, the first motor 42i drives the first rod 464i to revolve round the rotary shaft 421i, the sliding piece 462i is thus driven to do reciprocating movement in the Z-direction, which in turn drive the first and second swinging bars 441i, 443i to swing about the corresponding pivots 442i, 444i, respectively. Accordingly, the massage portions 24i are driven to swing towards or away from each other. At the same time, the first motor 42i drives the rotary shell 74i to rotate through the

third stimulation module 70i therebetween, which in turn makes the rotary portion 28i rotate therewith. Thus, the massage portions 24i and the rotary portion 28i simultaneously act on the male genitalia in different ways, providing a better sexual experience for the users.

[0145] Referring to FIG. 39 to FIG. 41, a sex toy 100j according to an eighth embodiment of the present application is shown. The sex toy 100j includes a shell 20j and a stimulation assembly mounted in the shell 20j.

[0146] Similar to the second and third embodiments, the shell 20j includes a main portion 22j, a plurality of massage portions 24j provided at two opposite sides of the main portion 22j and a rotary portion 28j provided at an axial end of the massage portions 24j. The stimulation assembly includes a first stimulation module 40j configured for driving the massage portions 24j to swing and a third stimulation module 70j configured for driving the rotary portion 28j to rotate.

[0147] In this embodiment, the first stimulation module 40j includes a first motor 42j, a swinging unit 44j and a first transmission unit 46j connected between the first motor 42j and the swinging unit 44j. The first transmission unit 46j includes a first eccentric wheel 461j and a sliding piece 462j cooperating with the first eccentric wheel 461j, which is similar to the first transmission unit 46i in the third embodiment (referring to FIG. 38), and details will not be repeated here.

[0148] The swinging unit 44j includes a first swinging bar 441j and a second swinging bar 443j which are substantially arranged symmetric to each other. Each of the first and second swinging bars 441j, 443j includes a swinging arm with a distal end being configured as a swinging end 4412j, 4432j and engaged into the massage portions 24j and a connecting arm with a distal end defining a slot 4414j, 4434j for connecting the swinging unit 44j to the first transmission unit 46j.

[0149] The third stimulation module 70j includes a driving motor 72j, a rotary shell 74j mounted around the rotary portion 28j, and a second transmission unit 76j connected between the rotary shell 74j and the driving motor 72j. The second transmission unit 76j includes a plurality of gears meshed with each other. That is, the massage portions 24j and the rotary portion 28j are driven by the first motor 42j and the driving motor 72j, respectively. A connection between the rotary portion 28j and the driving motor 72j may be simplified.

[0150] Further, the motion of the massage portions 24j or the rotary portion 28j can be controlled separately. Specifically, the massage portions 24j may be driven to swing while the rotary portion 28j remains stationary; or, the rotary portion 28j may be driven to rotate while the massage portions 24j remain stationary. It should be understood that the first motor 42j may be started to drive the massage portions 24j to swing, and at the same time, the driving motor 72j may be started to drive the rotary portion 28j to rotate. Therefore, the sex toy 100j of this embodiment is more convenient to use.

[0151] Referring to FIG. 42 to FIG. 46, a sex toy 100k

according to a ninth embodiment of the present application is shown. The sex toy 100k includes a shell 20k and a stimulation assembly mounted in the shell 20k.

[0152] The shell 20k includes a main portion 22k, a plurality of massage portions 24k provided at two opposite sides of the main portion 22k, respectively, and a rotary portion 28k provided at an axial end of and spaced from the massage portions 24k. In this embodiment, the rotary portion 28k is cylindrical-shaped with two axial ends thereof being open. Thus, the male genitalia may extend through a first inner chamber 241k between the massage portions 24k into a second inner chamber 281k in the rotary portion 28k, or extend through the second inner chamber 281k in the rotary portion 28k into the first inner chamber 241k between the massage portions 24k.

[0153] The stimulation assembly includes a first stimulation module 40k configured for driving the massage portions 24k to swing and a third stimulation module 70k configured for driving the rotary portion 28k to rotate and slide. The first stimulation module 40k is generally the same as the first stimulation module 40h in the second embodiment (referring to FIGs. 31-33), which will not be described again here.

[0154] In this embodiment, the third stimulation module 70k includes a driving motor, a rotary shell 74k mounted around the rotary portion 28k, and a second transmission unit 76k connected between the rotary shell 74k and the driving motor. Preferably, the first motor 42k of the first stimulation module 40k serves as the driving motor of the third stimulation module 70k.

[0155] The second transmission unit 76k includes an input wheel 761k connected to the first motor 42k in a transmission way, such as through a rotary member 48k of the first stimulation module 40k, an output wheel 763k mounted around the rotary shell 74k, and one or more intermediate gears 765k provided between the input wheel 761k and the output wheel 763k.

[0156] A third sliding groove 743k is formed on an outer wall of the rotary shell 74k. The third sliding groove 743k extends spirally in the circumferential direction of the rotary shell 74k. A fixed pin 79k is provided inside the shell 20k, preferably fixed to an inner shell 202k. The fixed pin 79k is slidably engaged into the third sliding groove 743k of the rotary shell 74k. When the rotary shell 74k is driven to rotate, the fixed pin 79k slides along the third sliding groove 743k, causing the rotary shell 74k as well as the rotary portion 28k to move back and forth in the X-direction, further enhancing its stimulation effect.

[0157] The third sliding groove 743k is configured to be symmetrical, including two spiral segments extending in opposite directions from a second proximal end A2 to a second distal end B2. In this embodiment, the second proximal end A2 and the second distal end B2 are spaced apart by a certain distance in the axial direction. A span of each spiral segment of the third sliding groove 743k in the circumferential direction is half a circle.

[0158] During sliding of the fixed pin 79k along the third sliding groove 743k from the second proximal end A2 to

the second distal end B2, the rotary portion 28k slides towards the massage portions 24k along the X-direction. During sliding of the fixed pin 79k along the third sliding groove 743k from the second distal end B2 to the second proximal end A2, the rotary portion 28k slides away from the massage portions 24k along the X-direction.

[0159] In this embodiment, the outer wall of rotary shell 74k is further provided with a guide groove 745k extending along the X-direction. An inner wall of the output wheel 763k is protruded with a guide block 769k, which is slidably engaged into the guide groove 745k, so that the linear reciprocating motion of the rotary portion 28k in the X-direction is smooth and stable. The guide groove 745k/guide block 769k may be multiple, evenly spaced in the circumferential direction of the rotary shell 74k/output wheel 763k. In some embodiments, the guide block may be provided on the outer wall of the rotary shell 74k, and correspondingly the guide groove may be provided on the inner wall of the output wheel 763k.

[0160] FIG. 47 to FIG. 49 shows a sex toy according to a tenth embodiment of the present application. In this embodiment the sex toy 100m includes a shell 20m and a stimulation assembly mounted in the shell 20m.

[0161] Similar to the fifth embodiment, the shell 20k includes a main portion 22m, a plurality of massage portions 24m provided at two opposite sides of the main portion 22m, respectively, and a rotary portion 28m with two axial ends thereof being open provided at an axial end of the massage portions 24m. The stimulation assembly includes a first stimulation module 40m configured for driving the massage portions 24m to swing and a third stimulation module 70m configured for driving the rotary portion 28m to rotate and slide.

[0162] The first stimulation module 40m includes a first motor 42m, a swinging unit 44m and a first transmission unit 46m connected between the first motor 42m and the swinging unit 44m. The first transmission unit 46m includes a first eccentric wheel 461m and a sliding piece 462m cooperating with the first eccentric wheel 461m, which is similar to the first transmission unit 46i in the third embodiment (referring to FIG. 38), and details will not be repeated here.

[0163] The third stimulation module 70m includes a driving motor, a rotary shell 74m mounted around the rotary portion 28m, and a second transmission unit 76m connected between the rotary shell 74m and the driving motor. Preferably, the first motor 42m of the first stimulation module 40m serves as the driving motor of the third stimulation module 70m.

[0164] In this embodiment, the second transmission unit 76m includes input wheel 761m mounted around and fixed to the first eccentric wheel 461m of the first transmission unit 46m, an output wheel 763m mounted around the rotary portion 28m, and intermediate gears 765m provided between the input wheel 761m and output wheel 763m. The intermediate gears 765m are arranged at two end sides of the first motor 42m and connected by an elongated rod 767m.

[0165] The rotary shell 74m is configured with a spiral-shaped third sliding groove 743m extending in the circumferential and a guide groove 745m extending in the X-direction. A fixed pin 79m is provided inside the shell 20m and slidably engaged into the third sliding groove 743m. Cooperation of the fixed pin 79m and the third sliding groove 743m makes the rotary shell 74m and the rotary portion 28m be able to move in the X-direction during rotation. A guide block 769m is provided on an inner wall of the output wheel 763m of the second transmission unit 76m and slidably engaged into the guide groove 745m. Cooperation of the guide block 769m and the guide groove 745m makes the movement of the rotary shell 74m and the rotary portion 28m in the X-direction be smooth and stable.

[0166] Referring to FIG. 50 to FIG. 57, a sex toy according an eleventh embodiment of the present application is shown. In this embodiment, the sex toy 100t includes a shell 20t and a stimulation assembly mounted in the shell 20t.

[0167] As shown in FIG. 52 and FIG. 53, the shell 20t, preferably, is a double-layer structure, and includes an outer shell 20ta and an inner shell 20tb being integrally fixed inside the outer shell 20ta. The inner shell 20tb may be made of hard materials, such as plastic, metal and etc., which has a relatively high strength and thus provides support for the stimulation modules 50t, 40t mounted inside the shell 20t. The outer shell 20ta may be made of flexible materials, such as silicone, rubber and etc., for directly contacting a part of the human body which needs to be stimulated, so that the present sex toy 100t in whole has high strength and comfortable use experience.

[0168] In a specific embodiment, firstly, the inner shell 20tb is assembled with components to be installed inside the shell 20t, such as the stimulation assembly and etc.; and then, the outer shell 20ta is formed around the inner shell 20tb through over-molding, achieving good sealing effect for the components inside the shell 20t. The outer shell 20ta is integral and play a waterproof and dustproof role, facilitating cleaning and storage of the sex toy 100t.

[0169] In this embodiment, the shell 20t includes a main portion 22t, a second massage portion 26t and a plurality of first massage portions 24t. The main portion 22t is configured as a double-layer structure, providing support for the stimulation assembly and etc. The first massage portions 24t extend integrally and outwardly from the outer shell 20ta of the main portion 22t, and the second massage portion 26t is surrounded by and connected to inner ends of the first massage portions 24t integrally. A chamber 28t is formed among the first massage portions 24t for accommodating a part of the human body (such as the breasts) that needs to be stimulated therein. Preferably, the chamber 28t has a size decreased gradually and inwardly. That is, the chamber 28t has the maximum size at its open side.

[0170] In this embodiment, the second massage portion 26t is dome-like, and the first massage portion 24t is

sheet-like. In whole, the first and second massage portions 24t, 26t are configured like a flower, wherein the second massage portion 26t is configured as a flower core, and the first massage portions 24t are configured as flowers petals. Outer ends of the first massage portions 24t extend slightly away from each other, and thus the chamber 28t is generally bowl-shaped, which can fit the shape of the breasts of the human body better. Specifically, a depth "d" of the chamber 28t may be 3-300mm, and the diameter "D" of the chamber 28t at its open side may be 10-200mm.

[0171] In this embodiment, the first massage portions 24t are set evenly along a circumferential direction, and symmetrical relative to the second massage portion 26t. Specifically, the first massage portions 24t are spaced from each other in the circumferential direction, and a gap 29t is defined between each two neighboring first massage portions 24t. Thus, the first massage portions 24t will not interfere with each other during operation. Accordingly, swinging amplitude of the first massage portions 24t may be greater and stimulation to the human body may be stronger. It should be understood that the first massage portions 24t may be set unsymmetrically, and/or, may be formed with different sizes or shapes.

[0172] In this embodiment, the second massage portion 26t of the shell 20t is configured as a vibration portion, and the first massage portions 24t of the shell 20t are configured as swinging portions. That is, the shell 20t is configured with two different massage portions for generating two different kinds of motions. Correspondingly, the stimulation assembly includes a second stimulation module 50t configured for driving the second massage portion 26t to vibrate and a first stimulation module 40t configured for driving the first massage portions 24t to swing relative to the second massage portion 26t.

[0173] As shown in FIG. 52 and FIG. 53, the second stimulation module 50t includes at least one vibration member, such as a vibration motor, which is embedded in the second massage portion 26t of the shell 20t for generating high-frequency vibration to the part of the human body accommodated inside the chamber 28t. When the present the sex toy 100t is used to stimulate the breasts, the vibration motor of the second stimulation module 50t drives the second massage portion 26t to stimulate the nipples, obtaining a better stimulation effect.

[0174] As shown in FIG. 54 and FIG. 55, the first stimulation module 40t includes a gearbox 42t, a swinging unit 44t, and a first transmission unit 46t connected between the gearbox 42t and the swinging unit 44t.

[0175] Referring to FIG. 56, the gearbox 42t includes a rotary motor 421t and a reduction gear unit 423t connected to the rotary motor 421t. The rotary motor 421t serves as a driving component of the first stimulation module 40t and has an output shaft 422t rotating at high-speed. The reduction gear unit 423t includes a gear housing 425t and a plurality of gears 427t arranged in the gear housing 425t. The gears 427t mesh with each

other, and a reduction ratio of the whole gearbox 42t can be determined according to the gear ratios between the meshed gears 427t of the reduction gear unit 423t. In an embodiment, the reduction ratio of the gearbox 42t is not less than 4:1 and not more than 100:1.

[0176] The reduction gear unit 423t has an output shaft 429t, wherein the output shaft 429t serves as an output shaft of the gearbox 42. Under the reduction effect of the reduction gear unit 423t, a speed of the output shaft 429t does not exceed 1000 rpm.

[0177] The first transmission unit 46t is configured for converting rotation of output shaft 429t of the gearbox 42t into reciprocating linear movement. In this embodiment, the first transmission unit 46 includes an eccentric wheel 461t and a sliding piece 462t.

[0178] The eccentric wheel 461t is connected to the output shaft 429t at a central portion thereof. In this embodiment, the eccentric wheel 461t defines a central hole 463t for inserting of the output shaft 429t therein. The central hole 463t is non-circular shaped, such as D-shaped, and a cross section of the output shaft 429t has a shape matching with that of the central hole 463t. After inserting of the output shaft 429t into the central hole 463t, a relative rotation therebetween is limited for shape fitting, thereby the eccentric wheel 461t can rotate along with the output shaft 429t of the gearbox 42t.

[0179] An eccentric rod 464t is set eccentrically on the eccentric wheel 461t and extends towards the sliding piece 462t. Generally, the eccentric rod 464t is parallel to the output shaft 429t of the gearbox 42t. In this embodiment, as shown in FIG. 54, the eccentric rod 464t and the output shaft 429t both extends along X-direction. During rotation of the eccentric wheel 461t along with the output shaft 429t, the eccentric rod 464t revolves round the output shaft 429t in YZ plane. In other words, under the driving of the gearbox 34t, the eccentric rod 464t generates displacements in both Y-direction and Z-direction.

[0180] The sliding piece 462t defines an elongated sliding slot 465t therein, which is generally strip-shaped and elongated in a direction perpendicular to the eccentric rod 464t, such as the Y-direction. The eccentric rod 464t engages into the elongated sliding slot 465t, and is fixed relative to the sliding piece 462t in the Z-direction whilst is slidable relative to the sliding piece 462t in the Y-direction. During revolving of the eccentric rod 464t round the output shaft 429t, its displacement in the Y-direction makes it slide relative to the sliding piece 462t along the elongated sliding slot 465t, while its displacement in the Z-direction drives the sliding piece 462t to move along with it in the Z-direction.

[0181] By means of the cooperation of the eccentric rod 464t of the eccentric wheel 461t and the elongated sliding slot 465t of the sliding piece 462t, rotation of the gearbox 42t is converted into reciprocating linear motion of the sliding piece 462t in the Z-direction.

[0182] The swinging unit 44 includes multiple swinging

bars 441t arranged around the sliding piece 462t. Each of the swinging bars 441t is rotatably connected to the shell 20t, preferably the inner shell 20tb, by a first pivot 442t. In this embodiment, the swinging bar 441t is generally sheet-like and elongated in the Z-direction. One end of the swinging bar 441t, preferably an end away from the first pivot 442t, is configured as a swinging end 443t and extends into one of the first massage portions 24t of the shell 20t; and, another end of the swinging bar 441t, preferably an end adjacent to the first pivot 442t, is configured as a connecting end 444t and connected to the sliding piece 462t.

[0183] The first pivots 442t extend perpendicular to the Z-direction, wherein some of the first pivots 442t extend along the X-direction, and some of the first pivots 442t extend along the Y-direction. When the sliding piece 462t moves in the Z-direction, the swinging bars 441t are driven to swing about the first pivots 442t, respectively. That is, the swinging bars 441t swing in the XZ plane or YZ-plane. The swinging ends 443t of all of the swinging bars 441t swing towards or away from each other synchronously, achieving an occlusion action to knead the part of the human body entering the chamber 28t and covered by the swinging bars 441t.

[0184] Further, a sliding frame 48t is provided inside the shell 20t for rotatably connecting the swinging bars 441t to the sliding member 463t. In this embodiment, the sliding frame 48t is generally constructed as a polygon structure with a number of lateral edges the same as the number of the swinging bars 441t/first massage portions 24t. The connecting end 444t of each swinging bar 441t is rotatably connected to a lateral edge of the sliding frame 48t by a second pivot 481t. Each second pivot 481t is set to be generally parallel to a corresponding first pivot 442t for the same swinging bar 441t.

[0185] The sliding frame 48t may be formed separately and then assembled to the sliding piece 462t, or, may be integrally formed with the sliding piece 462t as one piece, as long as the sliding frame 48t can move together with the sliding piece 462t. In this embodiment, the second pivot 481t is integrally formed with the sliding frame 48t as one piece, and a U-shaped groove 445 is defined in the connecting end 444t of the swinging bar 441t for facilitating assembly of the second pivot 481t and the swinging bar 441t. It should be understood that, in other embodiment, the second pivot 481t may be formed separately and then assembly to the sliding frame 48t and/or swinging bar 441t.

[0186] In this embodiment, as shown in FIG. 54, the sliding frame 48t is generally square-shaped, and four swinging bars 441t are provided to connect four lateral edges of the sliding frame 48t, respectively. Correspondingly, the shell 20t includes four first massage portions 24t arranged around the second massage portion 26t for accommodating the swinging ends 443t of the four swinging bars 441t therein, respectively. It should be noted that the number of the second massage portions and/or swinging bars are not limited to be four as the

above embodiment.

[0187] FIG. 57 shows a first stimulation module 40ta of a sex toy according to an alternative embodiment. In this embodiment, the first stimulation module 40ta includes three swinging bars 441t connected to the first transmission unit 46 by a sliding frame 48ta which is generally hexagonal-shaped. Preferably, the sex toy may have 3-8 swinging bars 441t, such as five or six swinging bars 441t. Correspondingly, there may be 3-8 first massage portions 24t. The sliding frame 48t may be configured with a number of lateral edges the same or larger than that of the swinging bars 441t/ first massage portions 24t.

[0188] During operation, the sliding piece 462t and the sliding frame 48t move together in the Z-direction under the driving of the gearbox 42, and in turn drives the swinging bars 441t to swing about the first pivots 442t relative to the shell 20t, and swing about the second pivots 481t relative to the sliding frame 48t at the same time, thereby the swinging ends 443t and the first massage portions 24t swinging towards or away from the second massage portion 26t to knead the human body, which is similar to a pinch motion of the human hand, providing a more comfortable sexual stimulation, and thus the users are more likely to reach orgasm with the help of the present sex toy 100t.

[0189] In this embodiment, the first pivot 442t is adjacent to the connecting end 444t and away from the swinging end 443t of the swinging bar 441t, so that the swinging end 443t of the swinging bar 441t rotates about the first pivot 442t can get a greater swing amplitude even if a swinging angle of the swinging bar 441t rotating about the second pivot 481t is small. Accordingly, the first massage portions 24t driven by the swinging bars 441t can provide an enhanced stimulation to the human body.

[0190] Referring to FIG. 52 and FIG. 53 again, a control circuit board 82 is mounted in the shell 20t and electrically connected to the rotary motor 421t and the vibration motor of the second stimulation module 50t for controlling their operation according to user's instructions, such as controlling the vibration frequency of the vibration motor of the second stimulation module 50t, controlling the rotary speed of the rotary motor 42t, and etc. Control buttons 84t, such as mechanical buttons or touch buttons, may be provided on the outer shell 20ta for input the user's instructions. Further, a battery 80t, preferably a rechargeable battery, is arranged in the main portion 22t of the shell 20t and electrically connected to electric components, such as the rotary motor 421t, the vibration motor of the second stimulation module 50t, and etc., through the control circuit board 82t for supplying electric power.

[0191] During operation, the first stimulation module 40t may be started separately to achieve a stimulation effect to the human body, such as the breasts, through swinging of the first massage portions 24t; or, the second stimulation module 50t may be started separately to achieve a stimulation effect to the human body through the high-frequency vibration of the second massage

portion 26t; or, the first and second stimulation modules 40t, 50t may be started at the same time to provide a multi-stimulation effect to the human body. For enhance user comfort, the first massage portions 24t and the second massage portion 26t of the shell 20t are constructed as a soft single-layer structure, i.e., without the hard inner shell 24t.

[0192] For the above sex toy 100t, the chamber 28t is formed among several first massage portions 24t to accommodate a part of the human body, such as the breasts, and the first massage portions 24t swing towards or away from the second stimulation module 50t to pinch the part of the human body inside the chamber 28t, which is more suitable for women, particularly for stimulating the breasts of the women. It should be understood that stimulating the breasts may not enhance the sexual experience during sexual lift, but also play a role in treating breast diseases in healthcare. In addition, such sex toy may also be used for man, such as stimulating the glans penis.

[0193] Furthermore, it should be noted that the massage portions of the sex toy are not limited to be shaped as a flower petal as the forgoing embodiments. In other embodiments, the massage portion may be shaped as a finger, claw and etc. A sex toy 100' provided in a twelfth embodiment of the present application is shown in FIG. 58. The massage portions 26' of the shell 20' are shaped as fingers and arranged around the vibration portion 24'. In this case, gaps 29' between neighboring massage portions 26' are much wider.

[0194] Moreover, the massage portions are not limited to be separated from each other. A sex toy 100" provided in a thirteenth embodiment of the present application is shown in FIG. 59. Several massage portions 26" are arranged around a vibration portion 24b", and a connecting portion 27" is formed between each two neighboring massage portions 26" of the shell 20". Preferably, the connecting portions 27" are flexible and curved, which will not affect the swinging motion of the massage portions 26".

[0195] When the massage portions 26" covers on the breasts during use, a sealed space with negative pressure may be formed between the massage portions 26" and the human body, which further improves the stimulation effect of the present sex toy 100". For improve the flexibility and reliability, the connecting portion 27" are integrally formed with the massage portions 26" by soft silicone, wherein a thickness of the connecting portion 27" is much less than that of the massage portion 26".

[0196] FIGs. 60-70 show a sex toy according to a fourteenth embodiment of the present application. In this embodiment, the sex toy 100p includes a shell 20p and a stimulation assembly mounted in the shell 20p.

[0197] As shown in FIG. 60, the shell 20p includes a main portion 22p, a second massage portion 26p and a plurality of first massage portions 24p arranged around the second massage portion 26p. Similar to the first embodiment, shell 20p is configured with two layers,

i.e., an inner hard layer and an outer flexible layer, at the main portion 22p, and is configured with a single layer at the second massage portion 26p and the first massage portions 24p. Preferably, the second massage portion 26p and the first massage portions 24p are integrally formed with the outer flexible layer of the main portion 22p.

[0198] The second massage portion 26p is generally column-shaped with a distal end being configured like a dome, and each first massage portion 24p is curved and sheet-like. In this embodiment, neighboring first massage portions 24p are connected with each other, so that a chamber 28p formed among the first massage portions 24p is generally enclosed in the circumferential direction, which can better wrap around the breasts of the user during use. Preferably, a connecting position of two neighboring first massage portions 24p is generally V-shaped, facilitating the swinging of the first massage portions 24p.

[0199] Referring to FIG. 62 and FIG. 66, the stimulation assembly includes a third stimulation module 30p, such as a vibration motor provided inside the second massage portion 26p of the shell 20p for driving the second massage portion 26p to vibrate; a first stimulation module 40p for driving the first massage portions 24p to swing towards or away from the second massage portion 26p; and a second stimulation module 50p for driving the second massage portion 26p to rotate.

[0200] Referring also to FIG. 67 to FIG. 68, the first stimulation module 40p includes a gearbox 42p, a swinging unit 44p, and a first transmission unit 46p connected between the gearbox 42p and the swinging unit 44p.

[0201] The first transmission unit 46p is configured for converting rotation of the gearbox 42p into reciprocating linear movement. As shown in FIG. 67, the first transmission unit 46p includes a fixed member 72p, a rotary member 74p, and a sliding member 76p that cooperate with each other, wherein the rotary member 74p is connected to an output shaft 429p of the gearbox 42p in a transmission way. Preferably, a steering gear unit 43p is provided between the output shaft 429p and the rotary member 74p for changing a direction of power transmission, thereby facilitating the arrangement of the gearbox 42p.

[0202] The steering gear unit 43p may be consisted of two bevel gears, achieving a change of 90 degrees in the direction of power transmission. As shown in FIG. 67, the gearbox 42p is arranged with the output shaft 429p thereof extending along the X-direction, while an output shaft 431p of the steering gear unit 43p extends along the Z-direction. In other embodiments, the output shaft 431p of the steering gear unit 43p may be inclined to the output shaft 429p of the gearbox 42p. In other embodiments, the rotary member 74p may be connected to the output shaft 429p of the gearbox 42p directly, thereby omitting the steering gear unit 43p.

[0203] The fixed member 72p is fixedly mounted in the shell 20p, a first sliding groove 721p which extends along

the Z-direction is defined in the fixed member 72p. The rotary member 74p is rotatably mounted inside the shell 20p, a second sliding groove 741p which extends spirally in the circumferential direction is defined in the rotary member 74p. The sliding member 76p cooperates with the first sliding groove 721p and second sliding groove 741p simultaneously, converting the rotation of the rotary member 74p into reciprocating linear motion of the sliding member 76p in the Z-direction.

[0204] In this embodiment, a mounting seat 78p is provided inside the shell 20p, particularly inside an inner shell 201p, for accommodating the steering gear unit 43p, the fixed member 72p, the rotary member 74p, and the sliding member 76p therein. Two latching holes 781p are defined in the mounting seat 78p, and two latching tabs 723p extend radially and outwards from the fixed member 72p and engage into the latching holes 781p, respectively, thereby fixedly connecting the fixed member 72p into the mounting seat 78p. In other embodiments, the latching tabs may be provided on the mounting seat 78p, and the latching holes may be defined in the fixed member 72p.

[0205] The fixed member 72p is hollow, cylindrical-shaped, the rotary member 74p is configured as a rotary shaft and rotatably mounted inside the fixed member 72p, and the sliding member 76p is configured as a hollow sleeve and slidably mounted around the fixed member 72p. In this embodiment, the output shaft 431p of the steering gear unit 43p extends into the fixed member 72p to connect an end (such as a bottom end) of the rotary member 74p. The rotary member 74p and the output shaft 431p may be fixed in the circumferential direction by shape-fitting, snap-fitting, and etc. During operation, the rotary member 74p is driven to rotate along with the output shaft 431p about a rotary axis extending along the Z-direction.

[0206] Referring to FIG. 63, FIG. 68 and FIG. 69, a first sliding portion 761p protrudes inwardly and radially from the sliding member 76p, being slidably engaged into the first sliding groove 721p, and a second sliding portion 763p protrudes inwardly and radially from the first sliding portion 761p, being slidably engaged into the second sliding groove 741p. The first sliding groove 721p extends through a circumferential wall of the fixed member 72p in the radial direction, so that the second sliding portion 763p can extend through the first sliding groove 721p into the second sliding groove 741p. Preferably, the second sliding groove 741p is axisymmetric about the rotary axis of the rotary member 74p.

[0207] During operation, the rotary member 74p is driven to rotate about its rotary axis (i.e., a central axis of the rotary member 74p), the second sliding portion 763p engaged in the second sliding groove 741p of the rotary member 74p makes the sliding member 76p has a tendency to rotate about the rotary axis. However, the first sliding portion 761p engaged in the first sliding groove 721p of the fixed member 72p makes the sliding member 76p can not rotate. Therefore, the first sliding portion

761p slides along the first sliding groove 721p and the second sliding portion 763p slides along the second sliding groove 741p, making the sliding member 76p move up and down in the Z-direction.

[0208] In this embodiment, the first sliding portion 761p and the second sliding portion 763p are formed separately and then assembled onto the sliding member 76p, facilitating assembly of the fixed member 72p, the rotary member 74p, and the sliding member 76p. In other embodiments, the first sliding portion 761p and/or second sliding portion 763p may be integrally formed with the sliding member 76p, and, the first sliding portion 761p and second sliding portion 763p may be integrally formed as one piece.

[0209] The swinging unit 44p includes a plurality of swinging bars 441p being rotatably connected to a fixed frame 448p by a plurality of first pivots 442p, respectively, wherein the fixed frame 448p is fixed inside an inner shell 201p. In this embodiment, the swinging bar 441p is generally sheet-like and elongated. One end of the swinging bar 441p, preferably an end away from the first pivot 442p, is configured as a swinging end 443p and extends into one of the first massage portions 24p of the shell 20p; and, another end of the swinging bar 441p, preferably an end adjacent to the first pivot 442p, is configured as a connecting end 444p for connecting the sliding member 76p.

[0210] In this embodiment, an aperture 449p is defined in a central portion of the fixed frame 448p, the first and second sliding portions 761p, 763p is provided at an end (such as a bottom end) of the sliding member 76p, and another end (such as a top end) of the sliding member 76p extends into the aperture 449p of the fixed frame 448p. Referring also to FIG. 65, a plurality of straight grooves 765p is defined in an outer circumferential wall of the top end of the sliding member 76p, and the connecting ends 444p of the swinging bars 441p are rotatably engaged into the straight grooves 765p, respectively.

[0211] During operation, the sliding member 76p is driven to move in the Z-direction by the gearbox 42p, which in turn drives the connecting ends 444p of the swinging bars 441p to move in the Z-direction simultaneously, the connecting end 444p thus rotates in the straight groove 765p and accordingly the whole swinging bar 441p rotates about the first pivots 442p, finally making the swinging ends 443p and the first massage portions 24p with the swinging ends 443p inserted therein swing towards or away from each other, so as to knead the human body in the chamber 28p, which is similar to a pinch motion of the human hand, providing a more comfortable sexual stimulation.

[0212] Referring to FIGs. 67-68, the second stimulation module 50p includes a driving rod 52p, a rotary component 54p, and a driving component such as a rotary motor, a gearbox and the like.

[0213] The driving rod 52p includes a first end portion 521p with a first central axis X1 and a second end portion 523p with a second central axis X2. The first central axis

X1 extends along the Z-direction, and the second central axis X2 is inclined relative to the first central axis X1. An angle, preferably, an obtuse angle α , is defined between the first central axis X1 and second central axis X2. The first end portion 521p is connected to the driving component in a transmission way, and the second end portion 523p is engaged into the rotary component 54p. Preferably, a flange 525p is formed at a distal end of the second end portion 525p for preventing the second end portion 525p from detaching from the rotary component 54p.

[0214] In this embodiment, the rotary component 54p is configured as a rigid, hollow structure, and the third stimulation module 30p is accommodated inside the rotary component 54p. As shown in FIG. 63, the second massage portion 26p defines a cavity 241p therein, the rotary component 54p and the third stimulation module 30p are fixed in the cavity 241p. Preferably, a central axis of the second massage portion 26p is collinear with the second central axis X2 of the second end portion 523p and inclined to the first central axis X1 of the first end portion 521p. During operation, the first end portion 521p of the driving rod 52p is driven to rotate about the first central axis X1, and the second end portion 523p of the driving rod 52p is thus rotate round the first central axis X1, which in turn drives the second massage portion 26p and the vibration motor of the third stimulation module 30p to rotate round the first axis X1.

[0215] Referring to FIG. 63 and FIG. 67, the first end portion 521p of the driving rod 52p is connected to the output shaft 429p of the gearbox 42p through the rotary member 74p. That is, the gearbox 42p further serves as the driving component of the second stimulation module 50p. Specifically, the first end portion 521p of the driving rod 52p extends into the sliding member 76p, and defines an axial hole 527p therein. A connecting rod 743p extends from another end (such as a top end) of the rotary member 74p, through the fixed member 72p and into the sliding member 76p. The connecting rod 743p is inserted into the axial hole 527p, so as to connect the driving rod 52p to the rotary member 74p.

[0216] In other embodiment, the driving rod 52p may be connected to the output shaft 429p of the gearbox 42p in other ways, such as by a shaft coupling device; or, the driving rod 52p may be connected to the output shaft 429p of the gearbox 42p directly. In other embodiments, another gearbox may be provided to drive the driving rod 52p to rotate, so that rotation of the second massage portion 26p may be controlled separately. The second massage portion 26p of this embodiment can not only stimulate the breasts through high-frequency vibration caused by the third stimulation module 30p, but also knead the breasts through rotation caused by the second stimulation module 50p, further enhancing its stimulation effect.

[0217] In other embodiments, as shown in FIG. 62, another vibration motor 27p may be provided inside one, or some or all of the first massage portion 24p for further improving the stimulation effect of the first mas-

sage portions 24p. Preferably, the vibration motor 27p is provided at a position adjacent to the outer end of the first massage portion 24p, preferably adjacent to the swinging end 443p of the swinging bars 441p, so that the vibration can be transferred to the human body more efficiently.

[0218] FIGs. 71-74 show a sex toy according to a fifteenth embodiment of the present application. In this embodiment, the sex toy 100q includes a shell 20q and a stimulation assembly mounted in the shell 20q.

[0219] The shell 20q includes a main portion 22q, a second massage portion 26q and two first massage portions 24q. The second massage portion 26q is configured as a tongue, and the first massage portions 24q are arranged at two opposite sides of the second massage portion 26q. A chamber 28q is defined between the first massage portions 24q, and the second massage portion 26q extends partly beyond the chamber 28q. In this embodiment, the two first massage portions 24q are connected with each other in a circumferential direction, and in whole are configured as a month. Preferably, connecting positions of the two first massage portions 24q are generally V-shaped.

[0220] As shown in FIG. 73, in this embodiment, the stimulation assembly includes a third stimulation module 30q, such as a vibration motor provided inside the second massage portion 26q of the shell 20q for driving the second massage portion 26q to vibrate; a first stimulation module 40q for driving the first massage portions 24q to swing towards or away from the second massage portion 26q; and a second stimulation module 50q for driving the second massage portion 26q to swing.

[0221] As shown in FIG. 74, the first stimulation module 40q includes a gearbox 42q, a swinging unit 44q, and a first transmission unit 46q connected between the gearbox 42q and the swinging unit 44q for converting rotation of the gearbox 42q into reciprocating linear movement.

[0222] The first transmission unit 46q includes a fixed member 72q defining a first sliding groove 721q therein, a rotary member 74q defining a second sliding groove 741q therein, and a sliding member 76q with a first sliding portion 761q being slidably engaged into the first sliding groove 721q and a second sliding portion 763q being slidably engaged into the second sliding groove 741q (referring to FIG. 72). The first sliding groove 721q of the fixed member 72q is elongated in the Z-direction, and the second sliding groove 741q of the rotary member 74q extends spirally in the circumferential direction.

[0223] In this embodiment, through holes 729q are defined at an end (such as a bottom end) of the fixed member 72q, and fixing members, such as screws, extend through the through holes 729q to fix the fixed member 72q in the shell 20q, such as fix to a gear housing 425q of the gearbox 42q. The rotary member 74q is configured as a rotary shaft, being rotatably mounted in the fixed member 72q and connected to an output shaft 429q of the gearbox 42q in a transmission way. The sliding member 76q is configured as a hollow sleeve, and mounted around the fixed member 72q. Two con-

necting rods 769q extend radially and outwardly from the sliding member 76q.

[0224] The swinging unit 44q includes two swinging bars 441q arranged at two opposite sides of the sliding member 76q, respectively. Each swinging bar 441q is rotatably connected to the shell 20q, particularly an inner shell 201q, by a first pivot 442q, wherein the first pivot 442q is parallel to the connecting rod 769q. An end of the swinging bar 441q away from the first pivot 442q is configured as a swinging end 443q and extends into one of the first massage portions 24q of the shell 20q; and, another end of the swinging bar 441q adjacent to the first pivot 442q is configured as a connecting end 444q for connecting the sliding member 76q.

[0225] In this embodiment, the connecting end 444q of each swinging bar 441q defines an elongated slot 445q therein. Each connecting rod 769q is movably and rotatably engaged into the elongated slot 445q of one corresponding swinging bar 441q, thereby the sliding member 76q can drive the connecting ends 444q of the swinging bars 441q to do reciprocating movement in the Z-direction synchronously, which in turn drives the swinging bars 441q to rotate about the corresponding first pivots 442q in opposite directions, respectively; and finally drives the swinging ends 443q and the first massage portions 24q to swing towards or away from the second massage portion 26q.

[0226] As shown in FIG. 74, the second stimulation module 50q includes a driving rod 56q, a swinging component 58q and a driving component such as a rotary motor, a gearbox and the like. The driving rod 56q is connected to the driving component in a transmission way, and is driven to rotate about a rotary axis which extends along the Z-direction. An eccentric rod 562q is set eccentrically on the driving rod 56q and extends towards the swinging component 58q. The swinging component 58q defines an elongated groove 581q for receiving the eccentric rod 562q, wherein the elongated groove 581q extends in a direction (such as the Y-direction) perpendicular to the rotary axis of the driving rod 56q.

[0227] The swinging component 58q is rotatably connected to the shell 20q by a third pivot 583q, wherein the third pivot 583q extends along the Y-direction, parallel to and spaced from the elongated groove 581q. During operation, the eccentric rod 562q is driven to revolve round the rotary axis of the driving rod 56q, its displacement in the Y-direction makes it slide relative to the swinging component 58q along the elongated groove 581q, while its displacement in the X-direction drives the swinging component 58q to move along with it in the X-direction, thereby making the swinging component 58q and the second massage portion 26q swing about the third pivot 583q in the XZ-plane.

[0228] As shown in FIG. 72, the second massage portion 26q defines a cavity 261q for receiving the swinging component 58q therein. Preferably, two support arms 203q extend from the inner shell 201q into the cavity 261q

for support two ends of the third pivot 583q, respectively. Preferably, the swinging component 58q has an upper portion being embedded inside the second massage portion 26q, and a lower portion on which third pivot 583q and the elongated groove 581q are provided accommodated in the cavity 261q. The driving rod 56q extends into the cavity 261q, and the eccentric rod 562q is slidably inserted in the elongated groove 581q of the swinging component 58q.

[0229] Preferably, the swinging component 58q is made of hard materials, and the third stimulation module 30q is mounted in the swinging component 58q, and thus can swing together with the swinging component 58q and the second massage portion 26q. Therefore, the second massage portion 26q can not only stimulate the human body through high-frequency vibration caused by the third stimulation module 30q, but also knead the human body through swinging caused by the second stimulation module 50q, further enhancing the stimulation effect of the second massage portion 26q.

[0230] In this embodiment, the driving rod 56q is integrally formed on a top end of the rotary member 74q, and the gearbox 42q further serves as the driving component of the second stimulation module 50q. In other embodiments, the driving rod 56q may be formed separately and then connected to the gearbox 42q directly or indirectly. In other embodiments, another gearbox may be provided to drive the driving rod 56q to rotate, thereby the swinging motion of the second massage portion 26q can be controlled separately.

[0231] Finally, it should be noted that: the above merely describes preferred embodiments of the present application without intention to limit the scope of the present application. Although the present application has been described in detail with reference to the foregoing embodiments, for those skilled in the art, the technical solutions described in the foregoing embodiments can still be modified, or some of the technical features can be equally replaced. Any modifications, equivalent replacements, improvements, and etc. made within the spirit and principle of the present application should be within the scope of the present application.

Claims

1. A sex toy, comprising:

a shell comprising at least two massage portions, a first inner chamber being defined between the at least two massage portions for accommodating a sexual sensitive portion of a human body; and

a first stimulation module mounted in the shell and configured to drive the at least two massage portions to move towards or away from each other, thereby changing a radial dimension of the first inner chamber at a position correspond-

- ing to the at least two massage portions.
2. The sex toy according to claim 1, wherein the at least two massage portions are arranged opposite to each other, the first inner chamber is configured for accommodating a male penis.
 3. The sex toy according to claim 2, further comprising a vibration member arranged in or between the at least two massage portions.
 4. The sex toy according to claim 2, wherein sex toy further has an additional feature a) or b):
 - a) the first stimulation module comprises at least two swinging bars rotatably connected to the shell, respectively, and each of the at least two swinging bars comprises a swinging end extending into one of the at least two massage portions;
 - b) the first stimulation module comprises at least two sliding bars slidably connected to the shell, respectively, and each of the at least two sliding bars comprises a support end extending into one of the at least two massage portions.
 5. The sex toy according to claim 4, wherein the sex toy further has an additional feature c) or d):
 - c) the shell further comprises a sliding portion arranged at an end side of the at least two massage portions, the sliding portion defines a second inner chamber therein, the first inner chamber and the second inner chamber communicate with each other and cooperatively defined a stimulation chamber for receiving the male penis; and a plurality of protrusions is provided on an inner wall of the sliding portion;
 - d) the shell further comprises a rotary portion arranged at an end side of the at least two massage portions, the rotary portion defines a second inner chamber therein, and the first inner chamber and the second inner chamber communicate with each other and cooperatively defined a stimulation chamber for receiving the male penis.
 6. The sex toy according to claim 5, wherein in case that the sex toy has the additional feature d), the sex toy further has an additional feature e) or f) or g):
 - e) the rotary portion is slidable relative to the at least two massage portions;
 - f) a plurality of protrusions is provided on an inner wall of the rotary portion;
 - g) the first stimulation module further comprises a first motor, a first transmission unit connected between the first motor and the at least two
- swinging bars or sliding bars, and a second transmission unit connected between the first motor and the rotary portion.
7. The sex toy according to claim 6, wherein in case that the sex toy has the additional feature g), the sex toy further has an additional feature h):
 - h) the first transmission unit comprises a fixed member defining a first sliding groove extending along an axial direction, a rotary member defining a second sliding groove extending spirally in a circumferential direction, and a sliding member with a first sliding block engaged into the first sliding groove and a second sliding block engaged into the second sliding groove; and the second transmission unit is connected between the rotary member and the rotary portion.
 8. The sex toy according to claim 7, wherein a third sliding groove is defined in the rotary portion and extends spirally in a circumferential direction of the rotary portion, and a fixed pin is fixed inside the shell and engages into the third sliding groove.
 9. The sex toy according to claim 4, wherein the first stimulation module further comprises a first motor and a first transmission unit connected between the first motor and the at least two swinging bars or sliding bars, and the transmission unit is configured to convert a rotational motion of the first motor into a linear reciprocating motion.
 10. The sex toy according to claim 9, wherein the sex toy has the additional feature i) or j):
 - i) the first transmission unit comprises a first eccentric wheel and a sliding piece cooperating with the eccentric wheel, the sliding piece defines an elongated sliding slot therein, and a first rod extends from an outer periphery of the eccentric wheel and slidably engages into the elongated sliding slot;
 - j) the first transmission unit comprises the first transmission unit comprises a fixed member defining a first sliding groove extending along an axial direction, a rotary member defining a second sliding groove extending spirally in a circumferential direction, and a sliding member with a first sliding block engaged into the first sliding groove and a second sliding block engaged into the second sliding groove.
 11. The sex toy according to claim 2, wherein the sex toy further has an additional feature k) or l):
 - k) the shell further comprises a fixed portion arranged at an end side of the at least two massage portions, the fixed portion defines a

second inner chamber therein, and the first inner chamber and the second inner chamber communicate with each other and cooperatively define a stimulation chamber for receiving the male penis;

l) the shell comprises an inner tube and an outer tube mounted around the inner tube, the first inner chamber is defined by the inner tube, and parts of the inner tube corresponding to the first stimulation module function as the at least two massage portions.

12. The sex toy according to claim 1, wherein the shell further comprises a second massage portion and a second stimulation module, the at least two first massage portions extend from a periphery of and are arranged around the second massage portion, the first stimulation module is configured for driving the at least two first massage portions to move towards or away from the second massage portion; and the second stimulation module is mounted in the shell and configured for driving the second massage portion to vibrate and/or rotate and/or swing.
13. The sex toy according to claim 12, wherein the sex toy has the additional feature m) or n) or o) or p):

m) the at least two first massage portions cooperatively define a chamber for accommodating a breast;

n) the second stimulation module comprises a vibration motor mounted in the second massage portion;

o) the second stimulation module comprises a driving component and a driving rod, the driving rod comprises a first end portion and a second end portion inclined relative to the first end portion, the first end portion is connected to the driving component in a transmission way, and the second end portion is inserted into the second massage portion;

p) the second stimulation module comprises a motor, a driving rod and a swinging component, the swinging component is embed in the second massage portion and defines an elongated groove, one end of the driving rod is connected to the driving component in a transmission way, and an eccentric rod extends from another end of the driving rod and engages into the elongated groove.

14. The sex toy according to claim 13, wherein in case that the sex toy has the additional feature o) or p), the sex toy further has an additional feature q): the first stimulation module further comprises a gearbox, a first transmission unit and a swinging unit rotatably connected to the shell, the swinging unit

comprises swinging ends extending into the at least two first massage portions, the first transmission unit is connected between the gearbox and the swinging unit, and the gearbox functions as the driving component; and

15. The sex toy according to claim 14, wherein the first transmission unit comprises a fixed member defining a first sliding groove extending along an axial direction, a rotary member defining a second sliding groove extending spirally in a circumferential direction, and a sliding member with a first sliding block engaged into the first sliding groove and a second sliding block engaged into the second sliding groove; and the driving rod is connected to the gearbox through the rotary member.

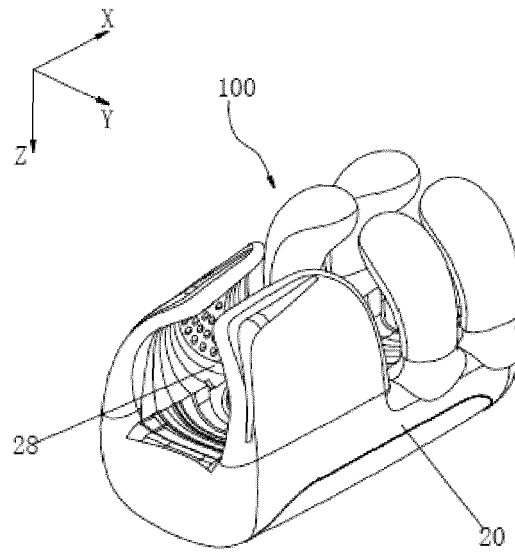


FIG. 1

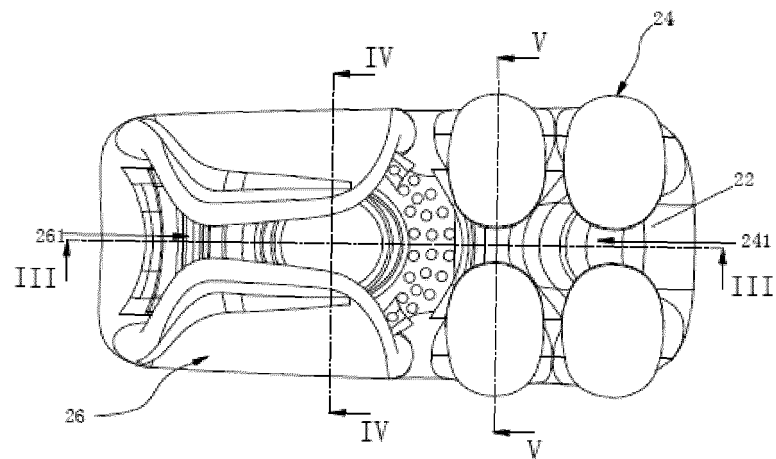


FIG. 2

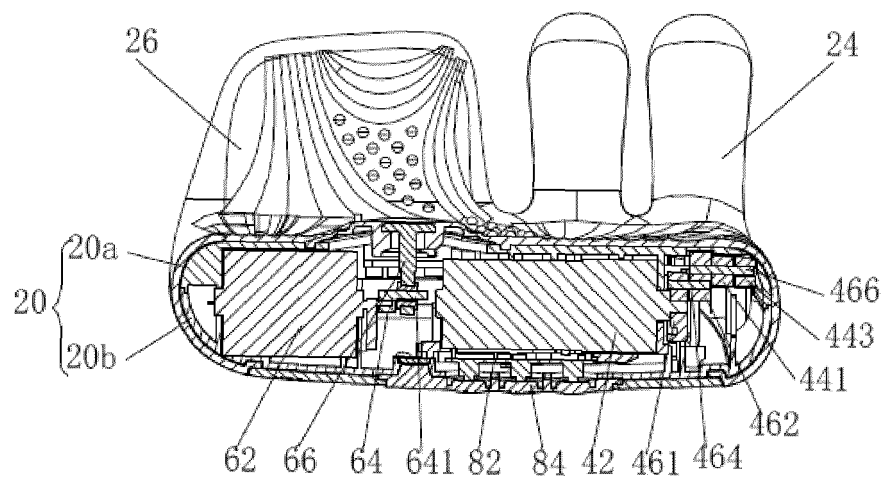


FIG. 3

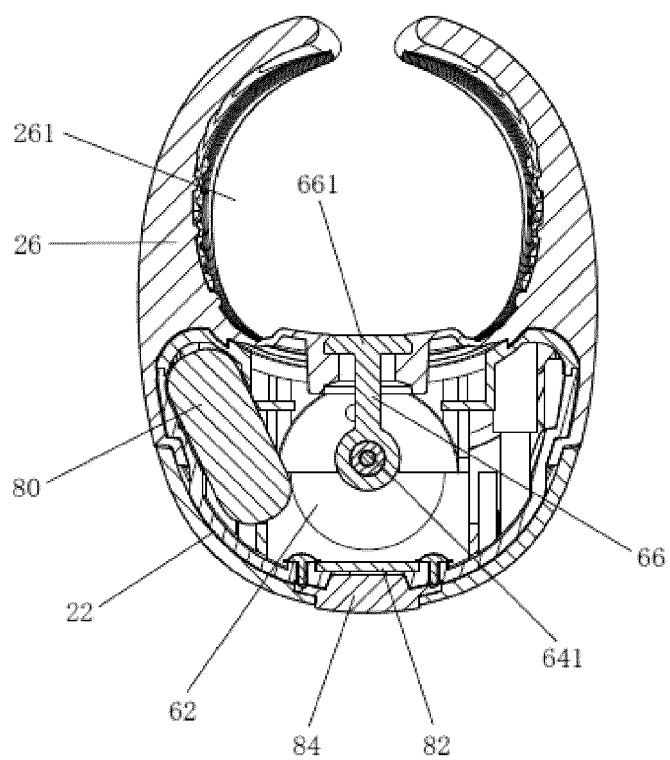


FIG. 4

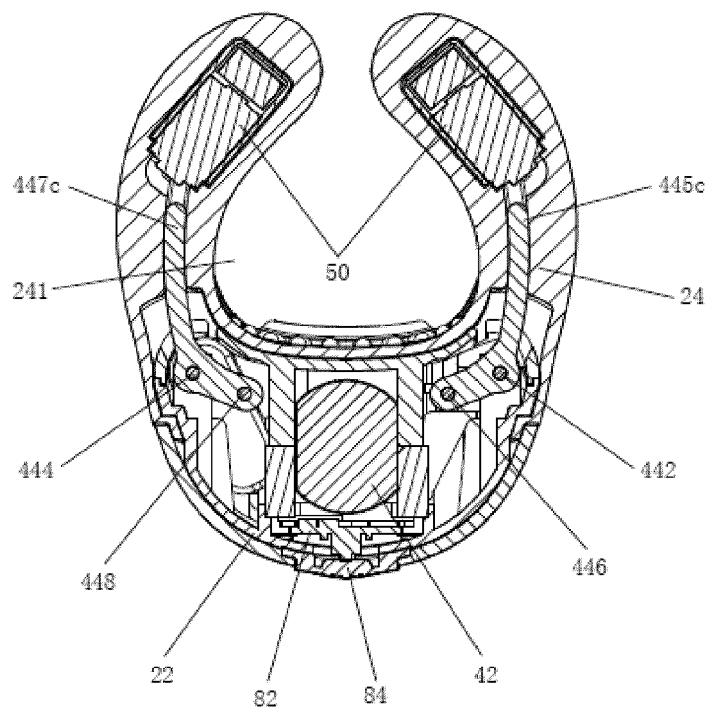


FIG. 5

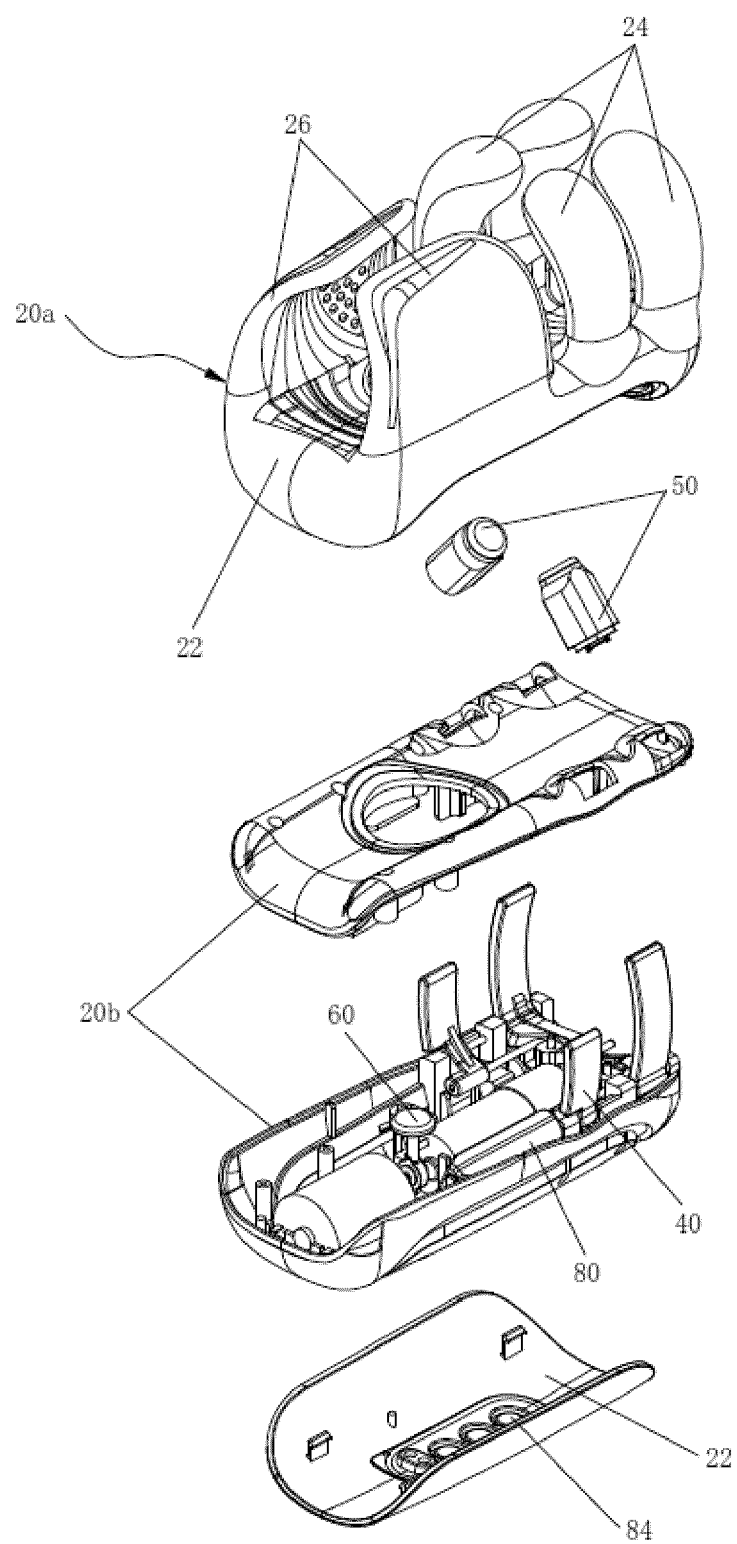


FIG. 6

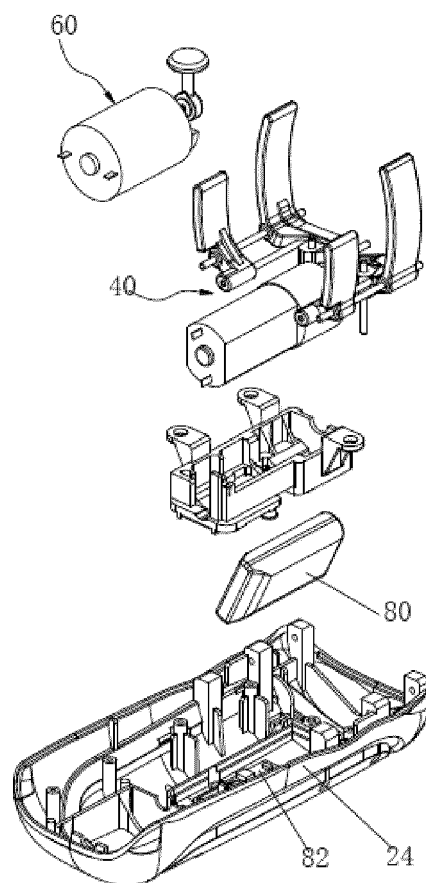


FIG. 7

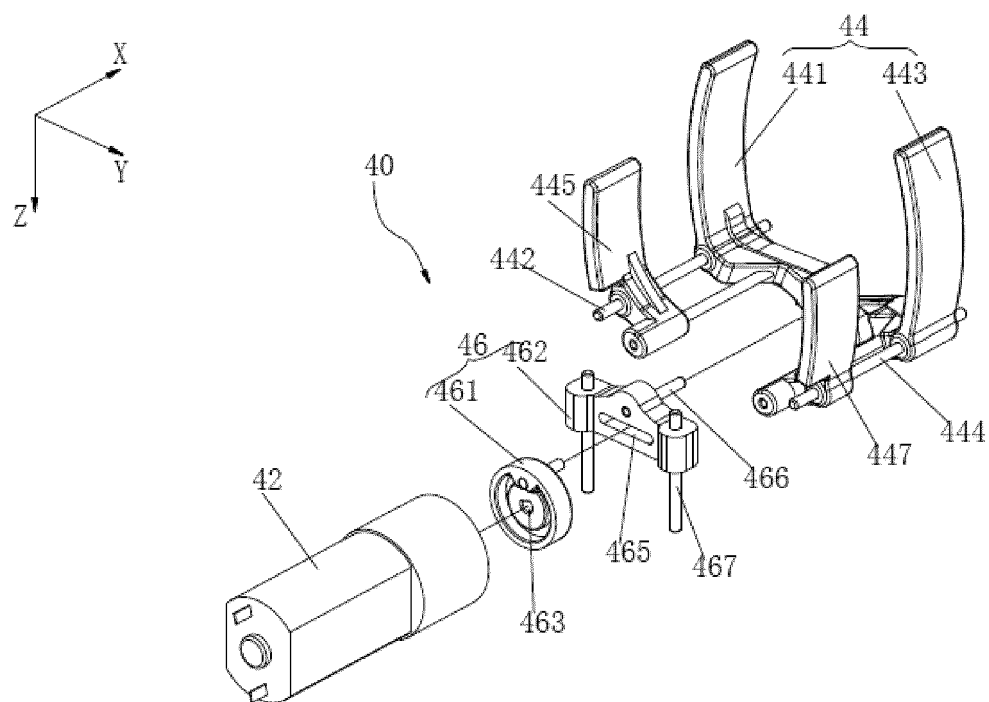


FIG. 8a

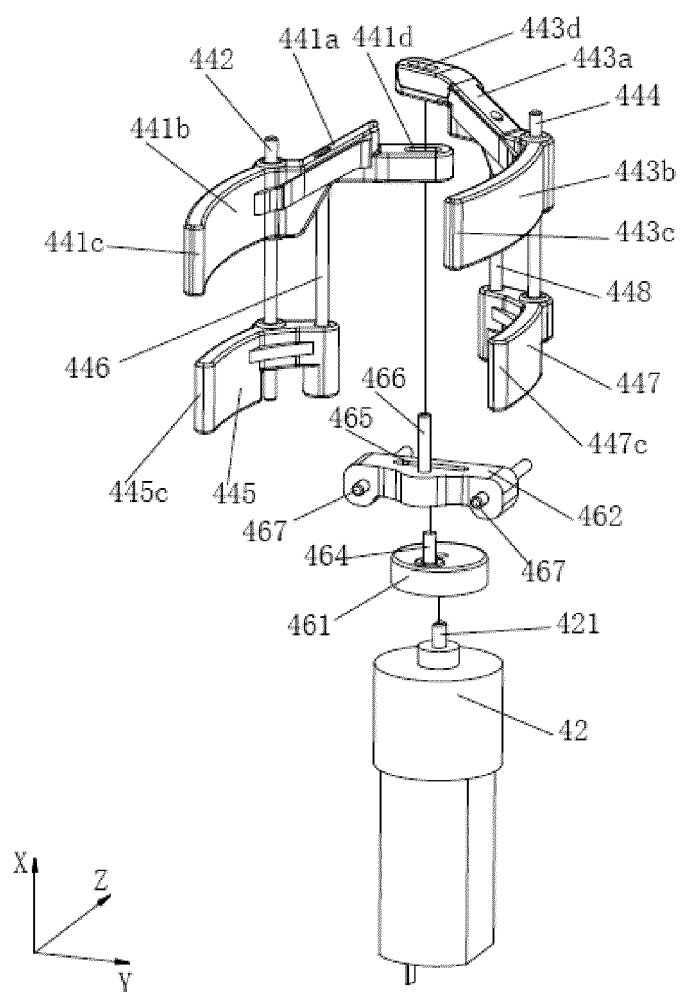


FIG. 8b

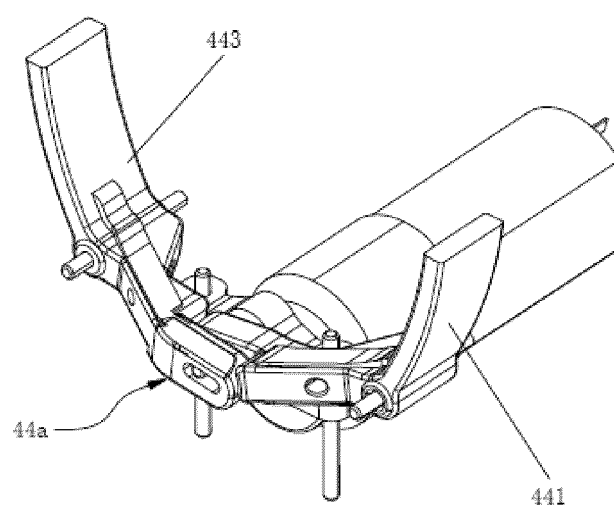


FIG. 9a

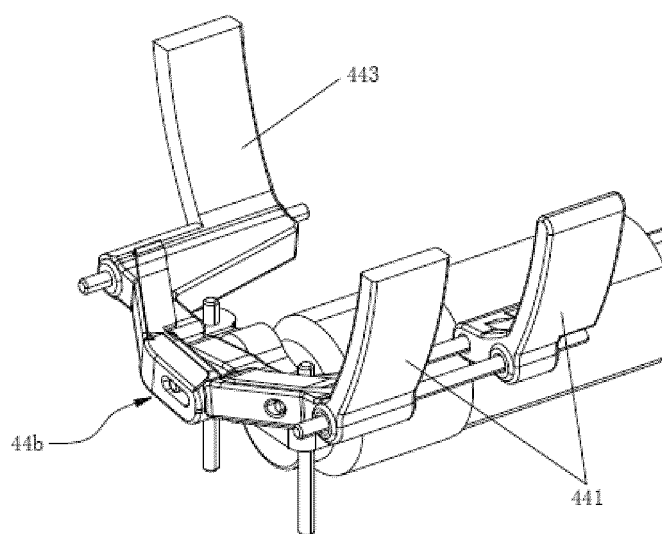


FIG. 9b

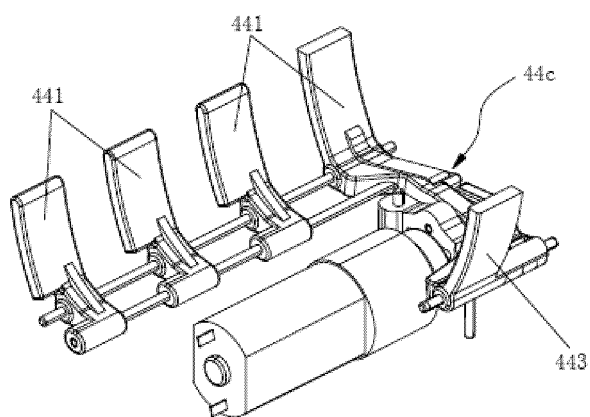


FIG. 9c

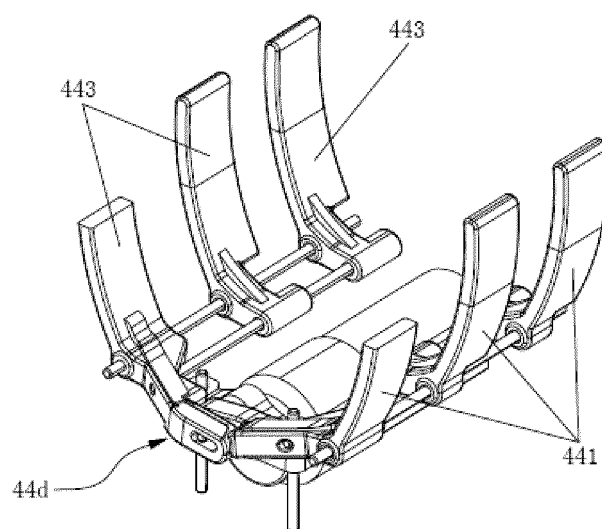


FIG. 9d

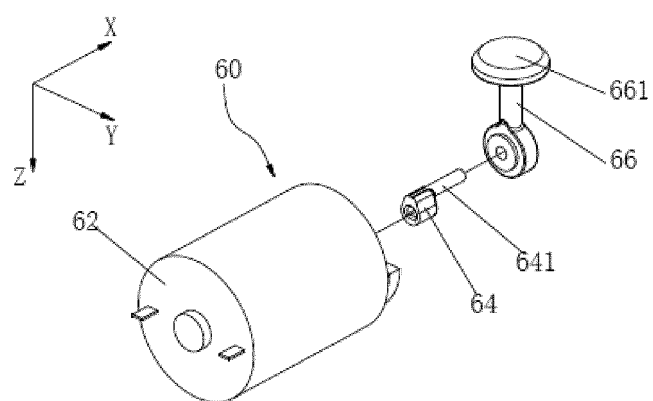


FIG. 10a

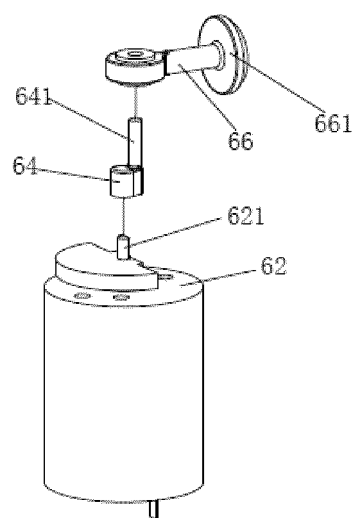


FIG. 10b

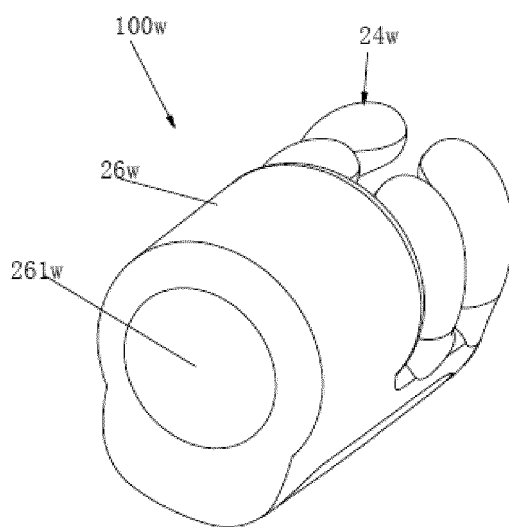


FIG. 11

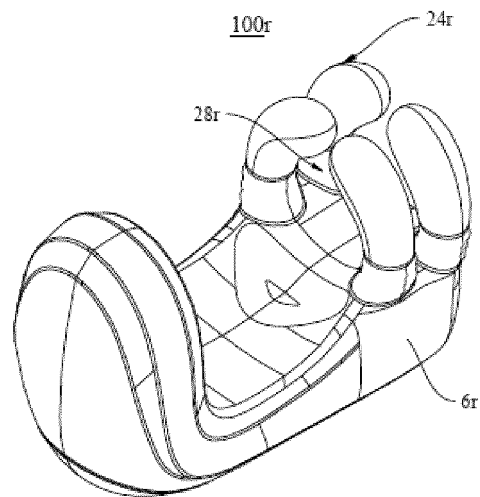


FIG. 12

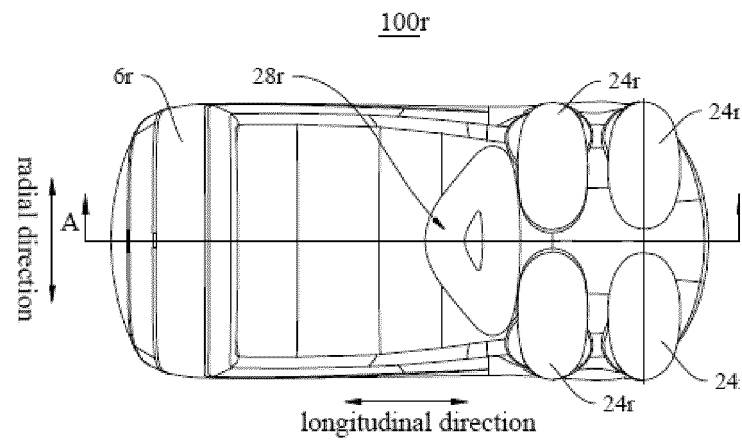


FIG. 13

A - A

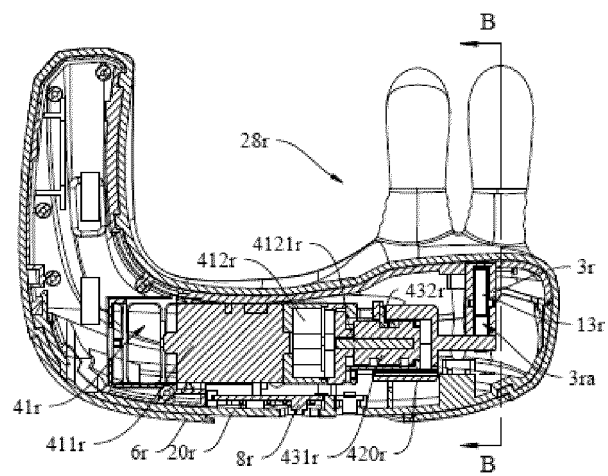


FIG. 14

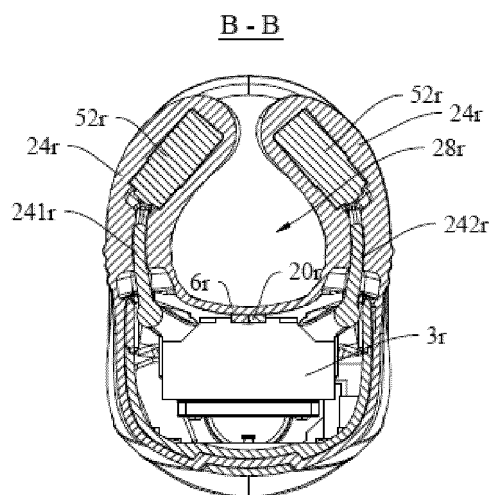


FIG. 15

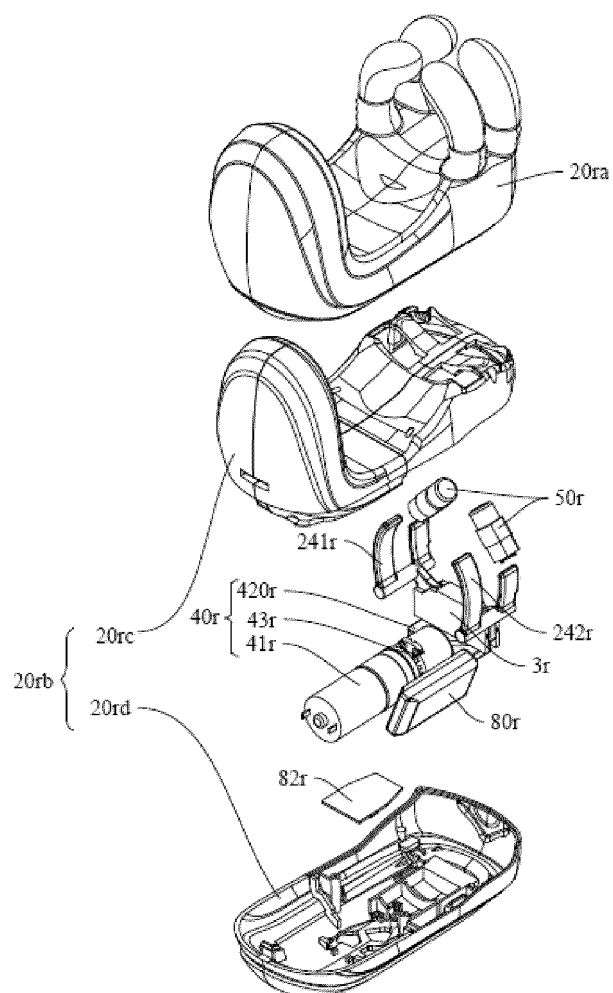


FIG. 16

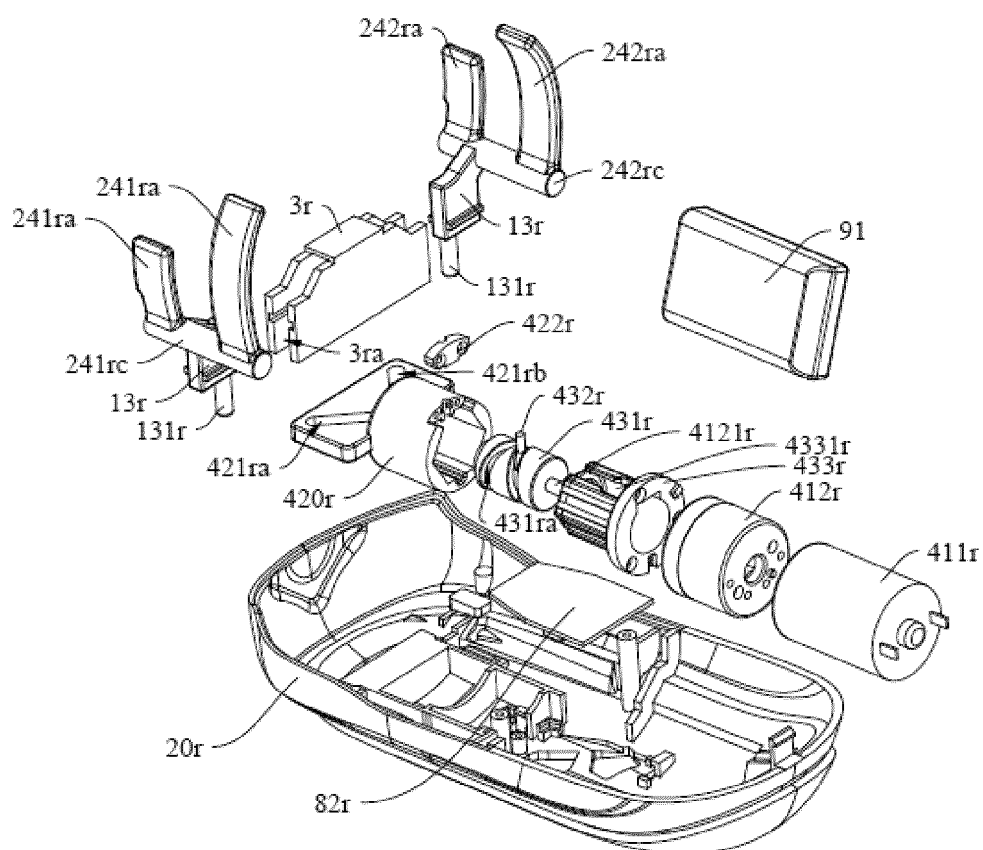


FIG. 17

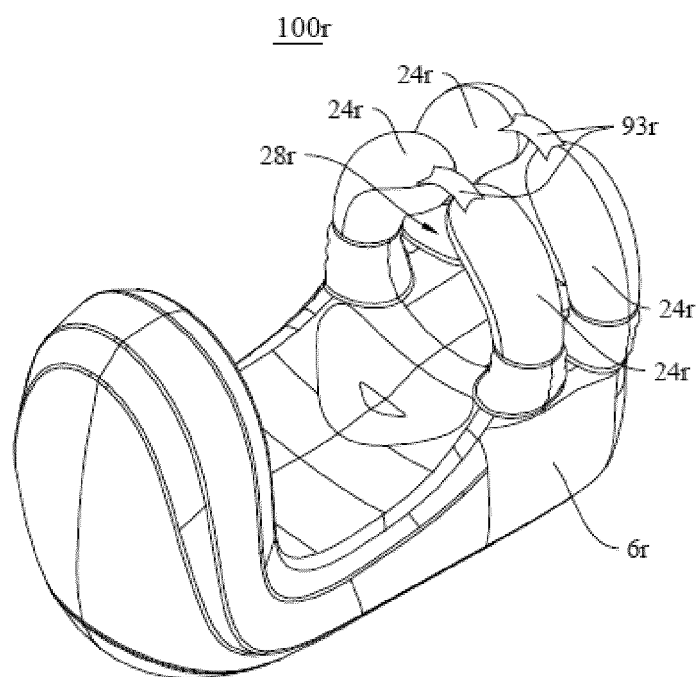


FIG. 17a

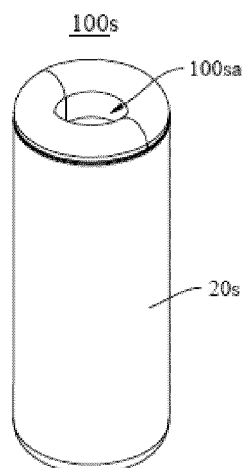


FIG. 18

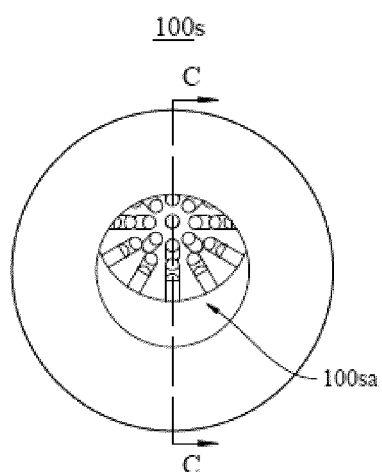


FIG. 19

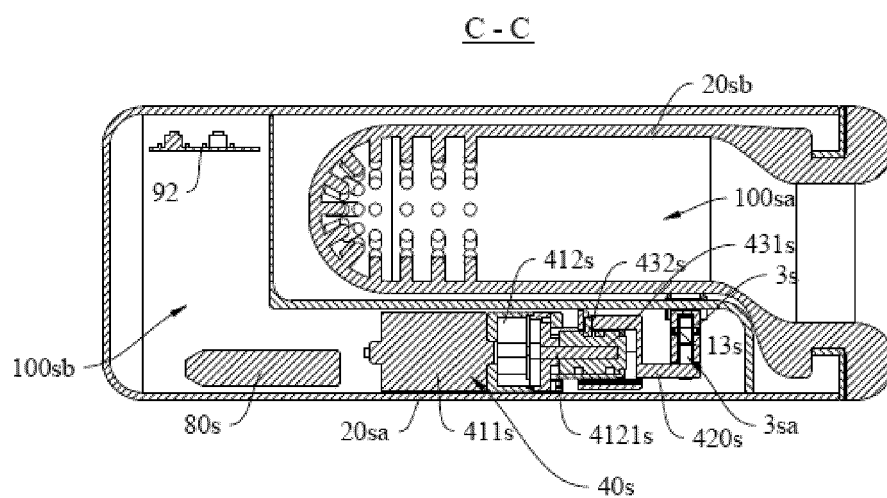


FIG. 20

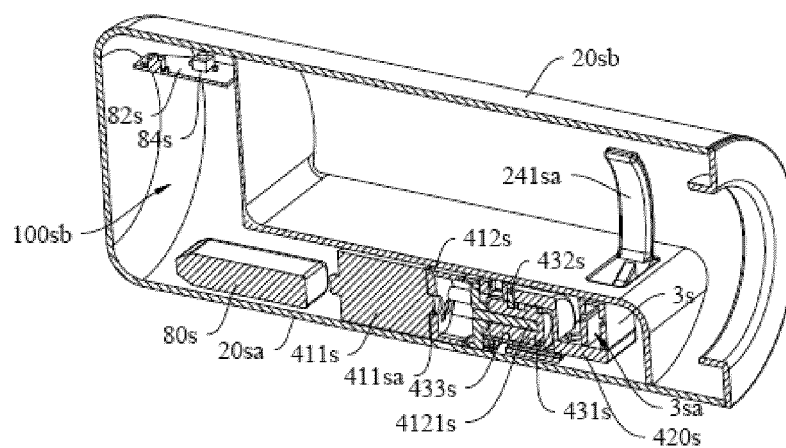


FIG. 21

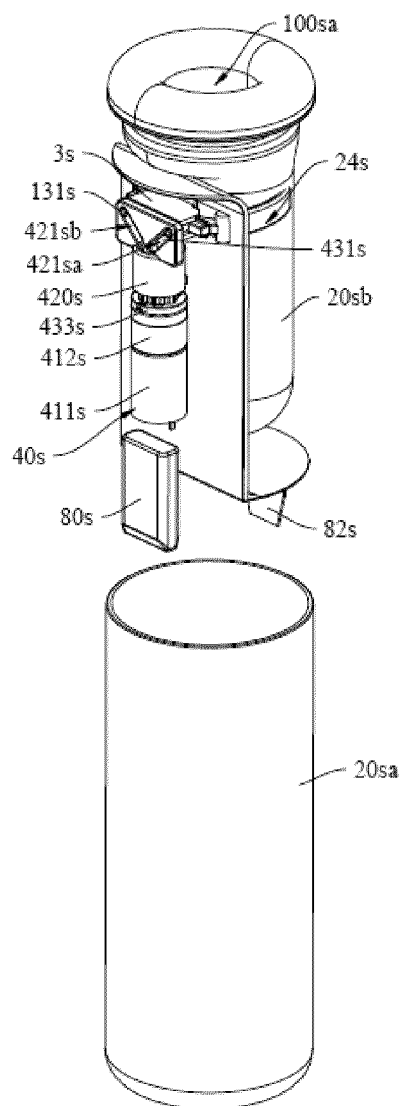


FIG. 22

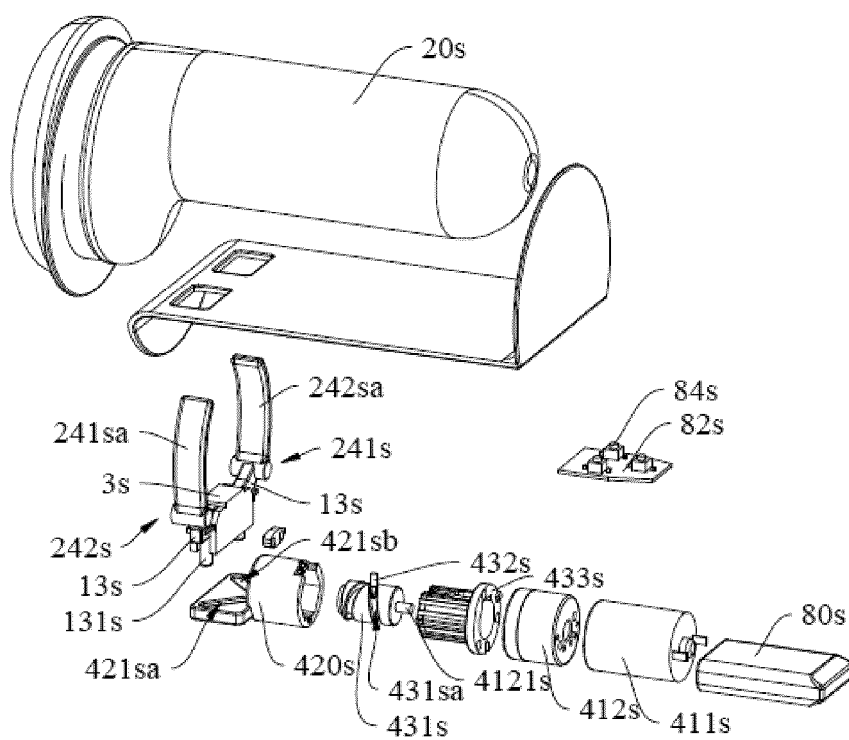


FIG. 23

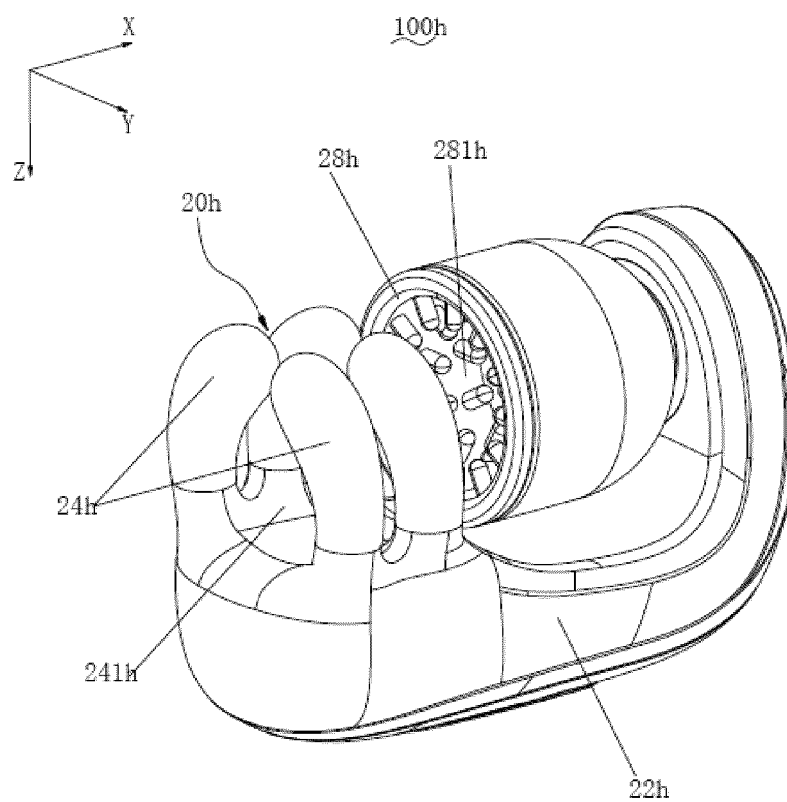


FIG. 24

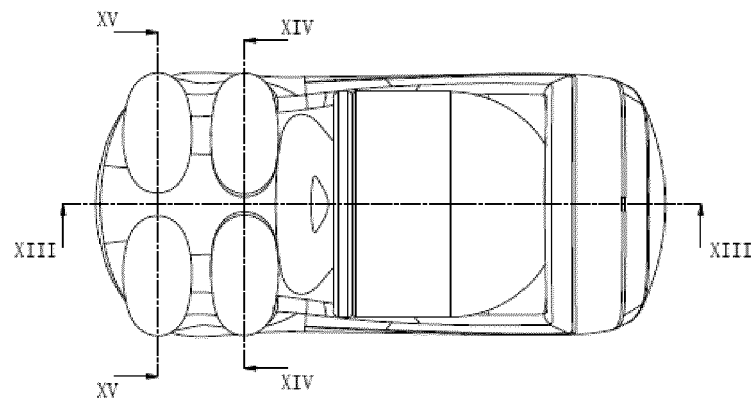


FIG. 25

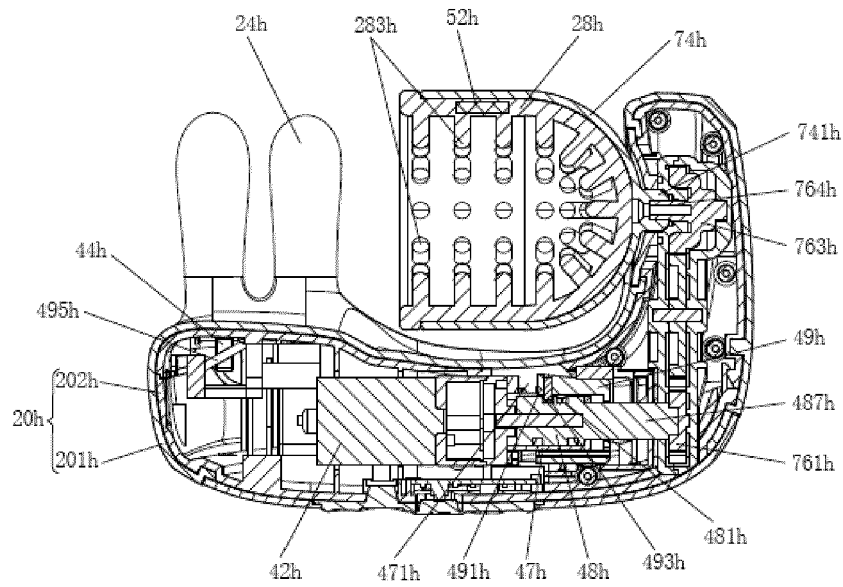


FIG. 26

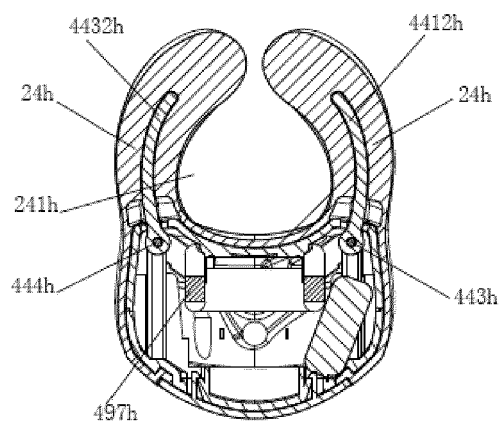


FIG. 27

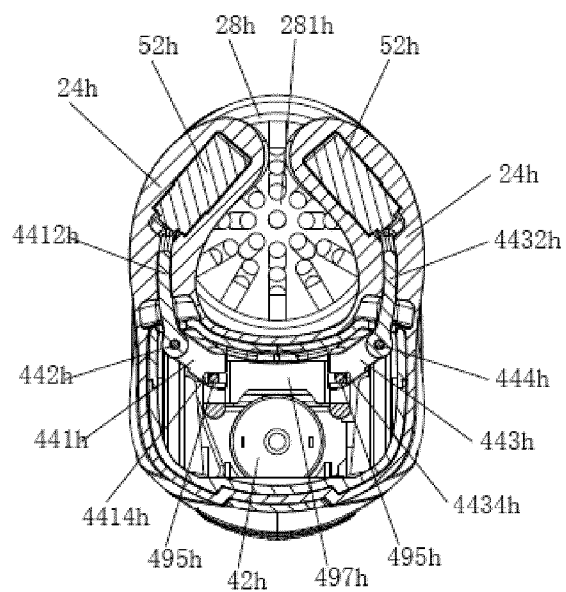


FIG. 28

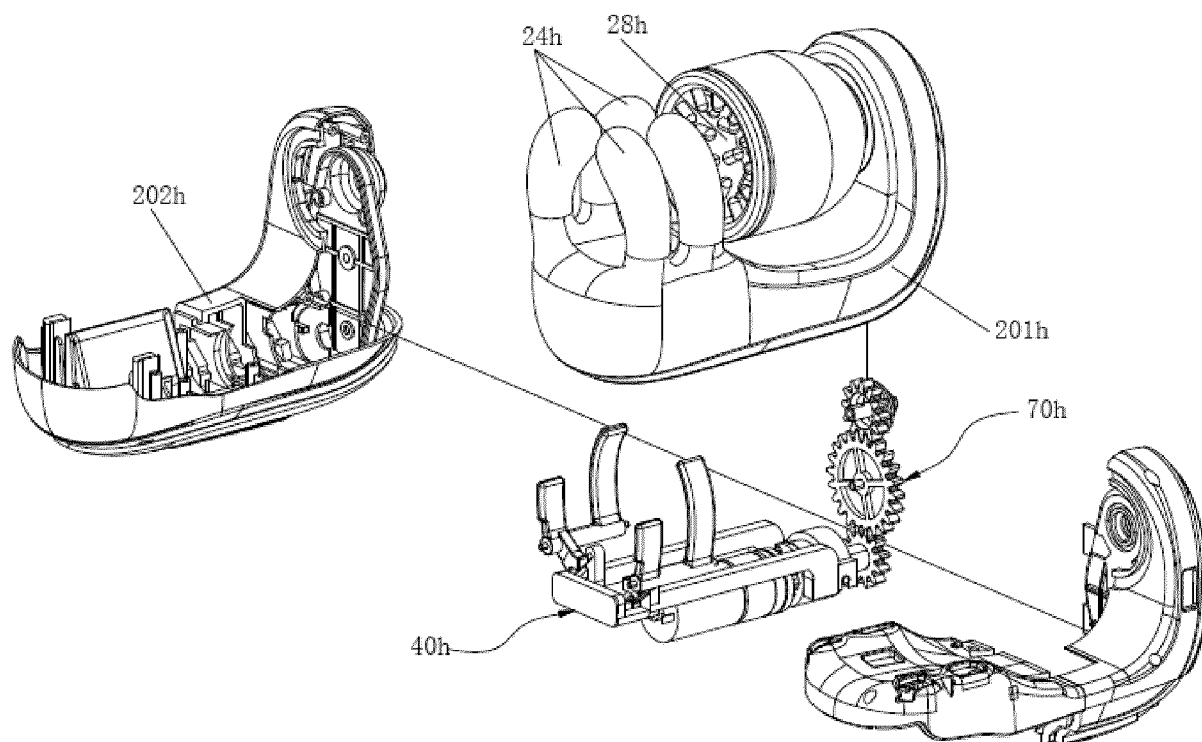


FIG. 29

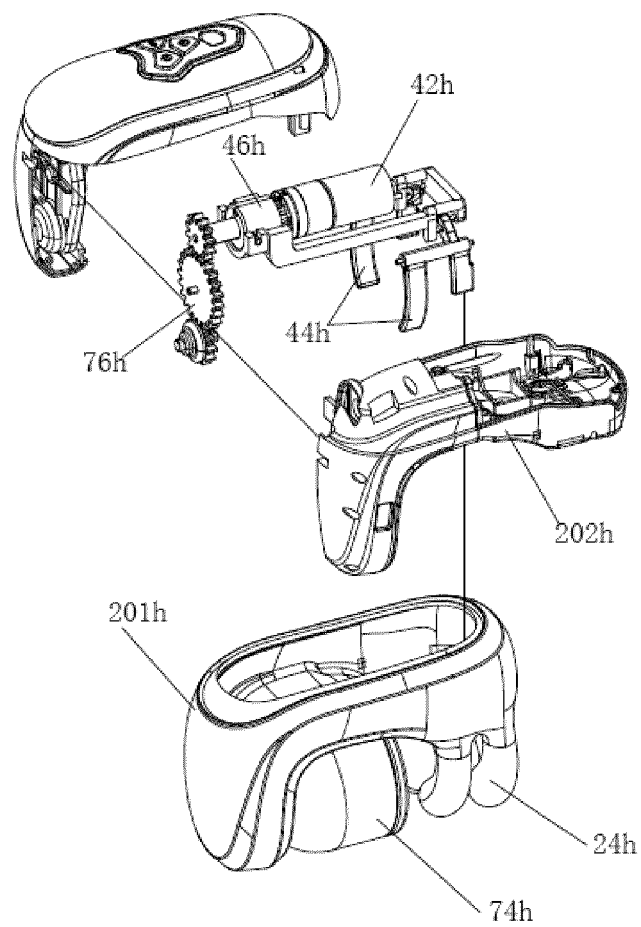


FIG. 30

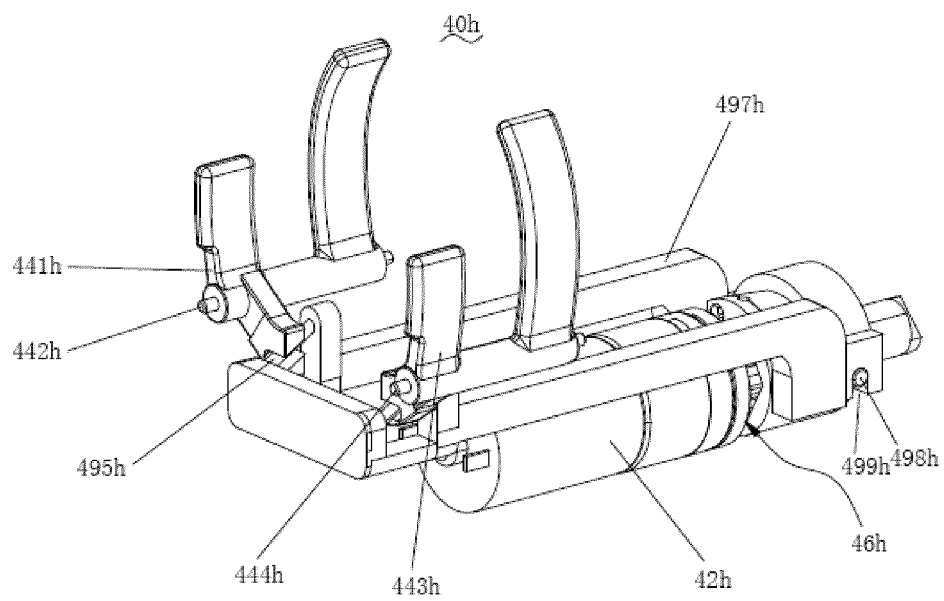


FIG. 31

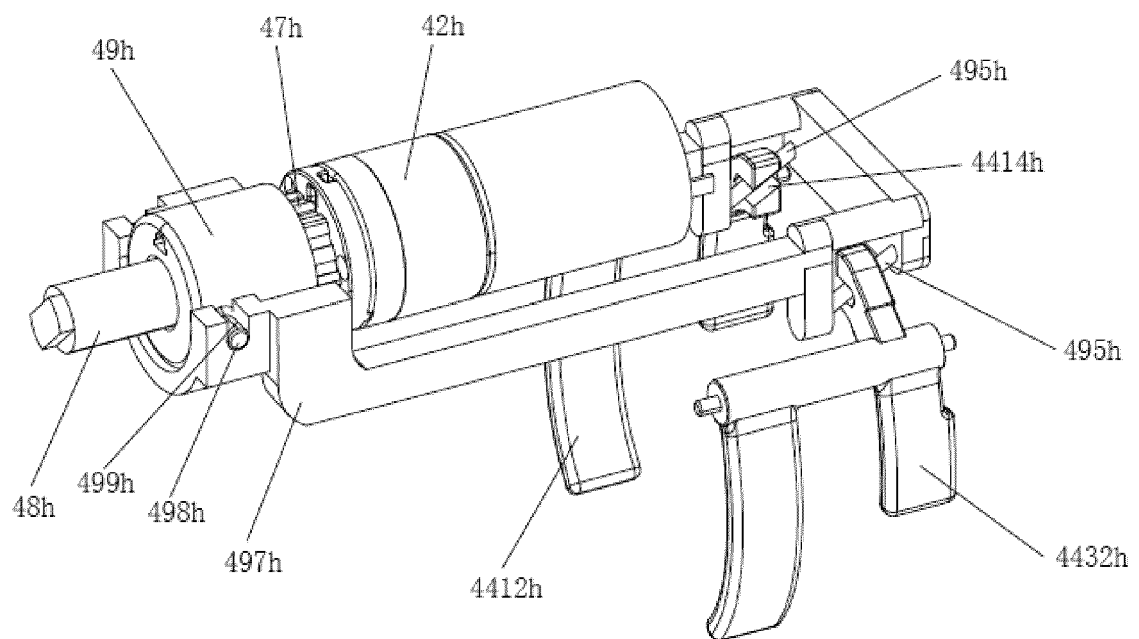


FIG. 32

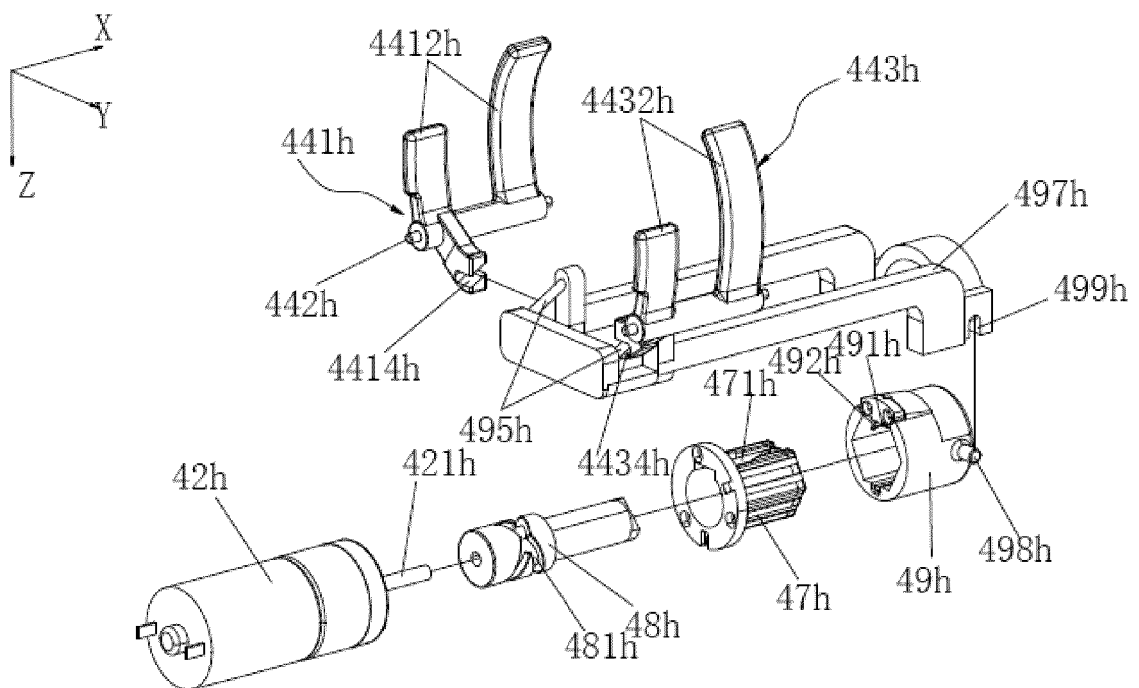


FIG. 33

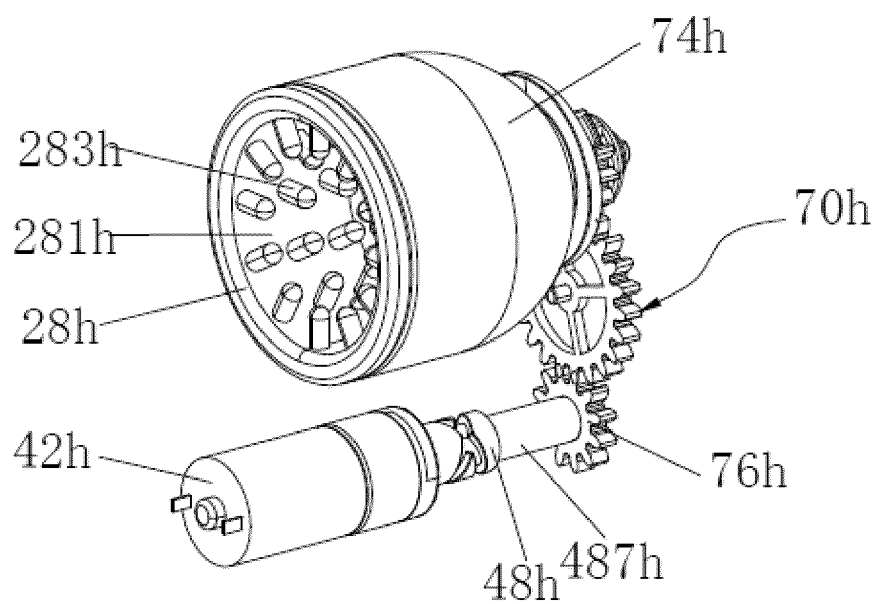


FIG. 34

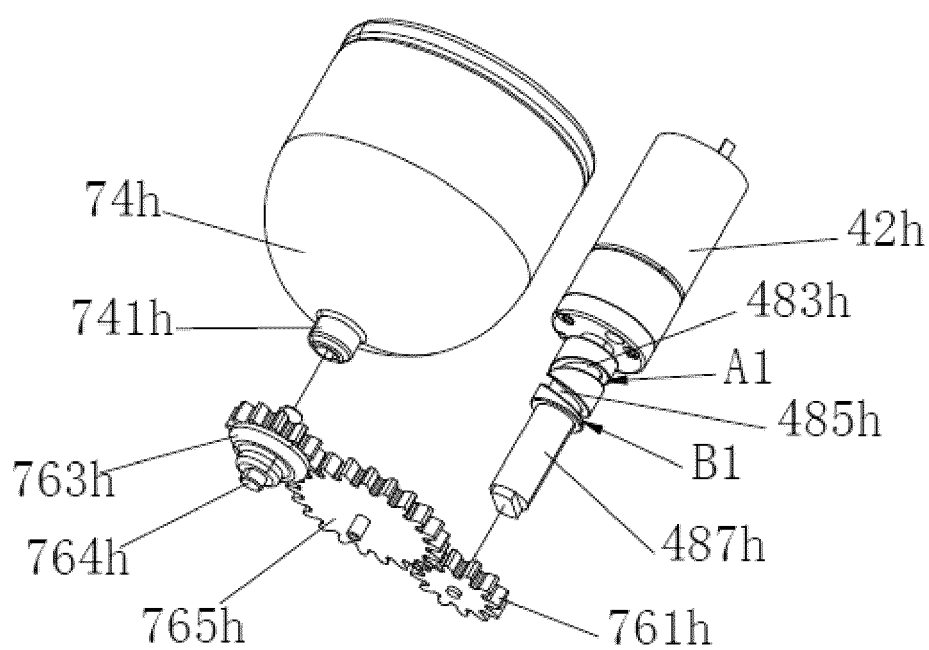


FIG. 35

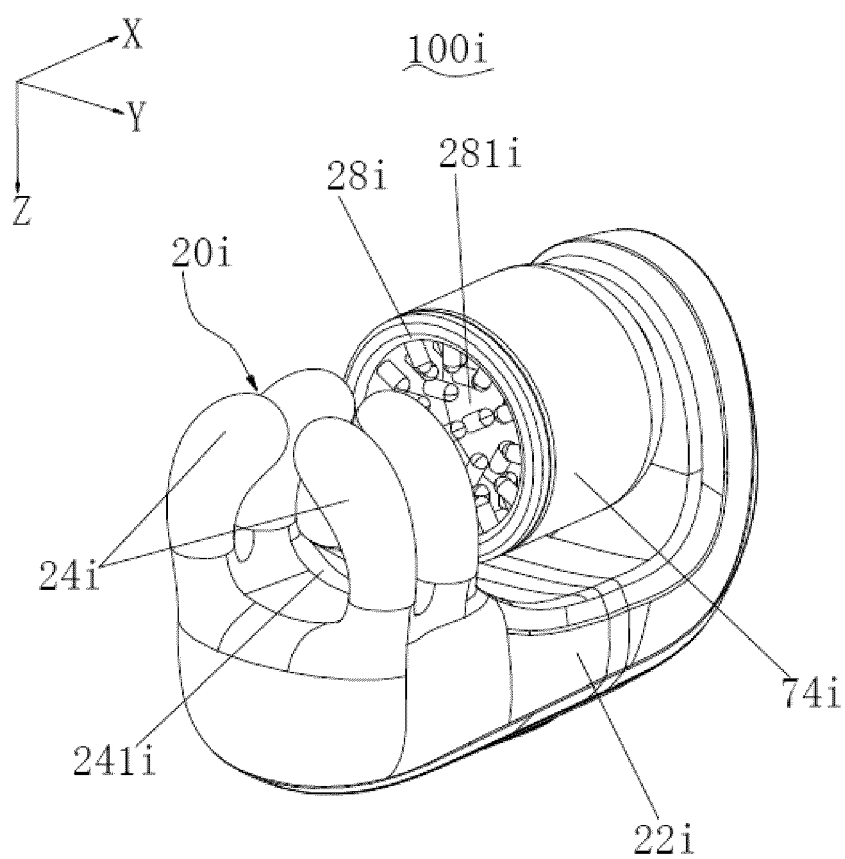


FIG. 36

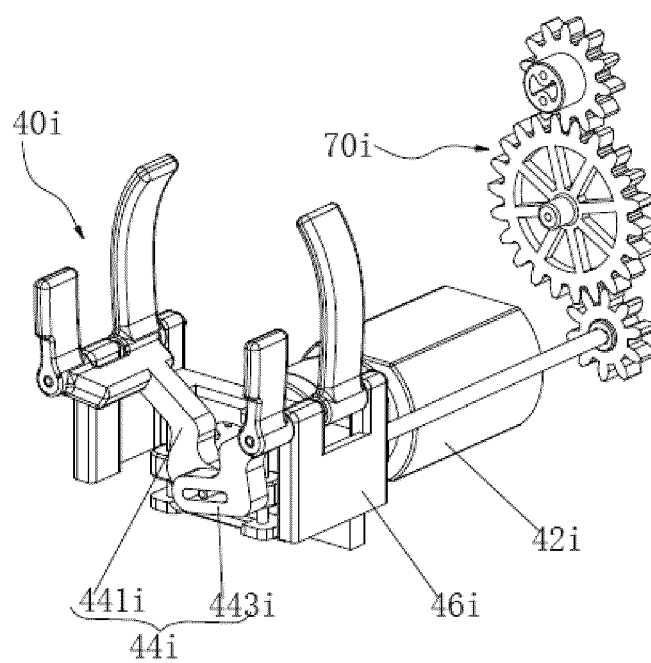


FIG. 37

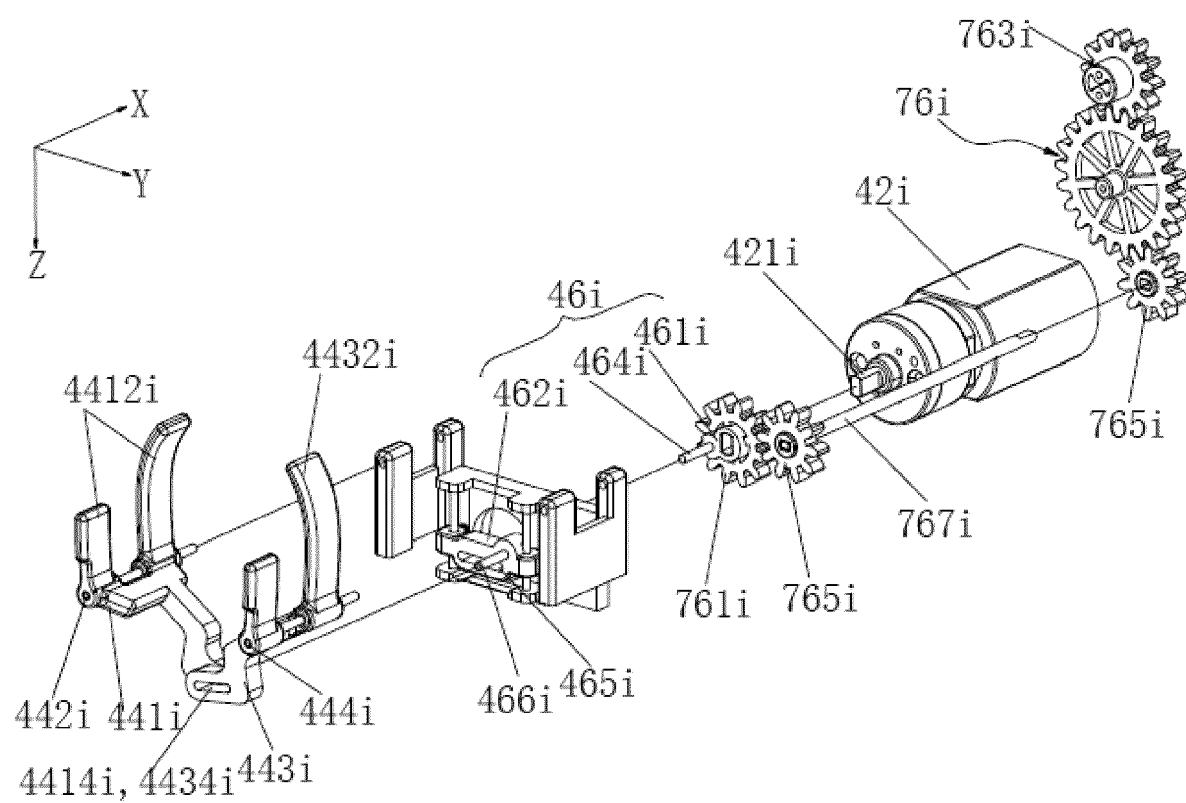


FIG. 38

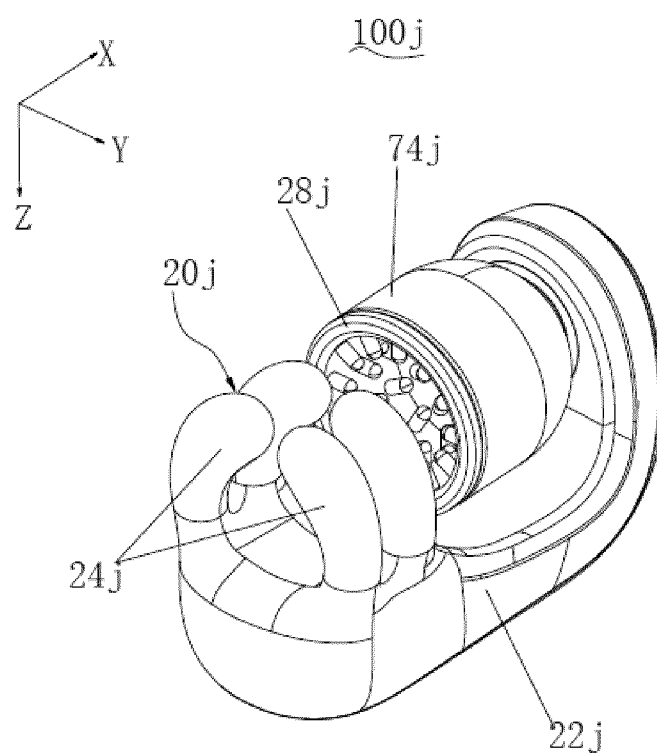


FIG. 39

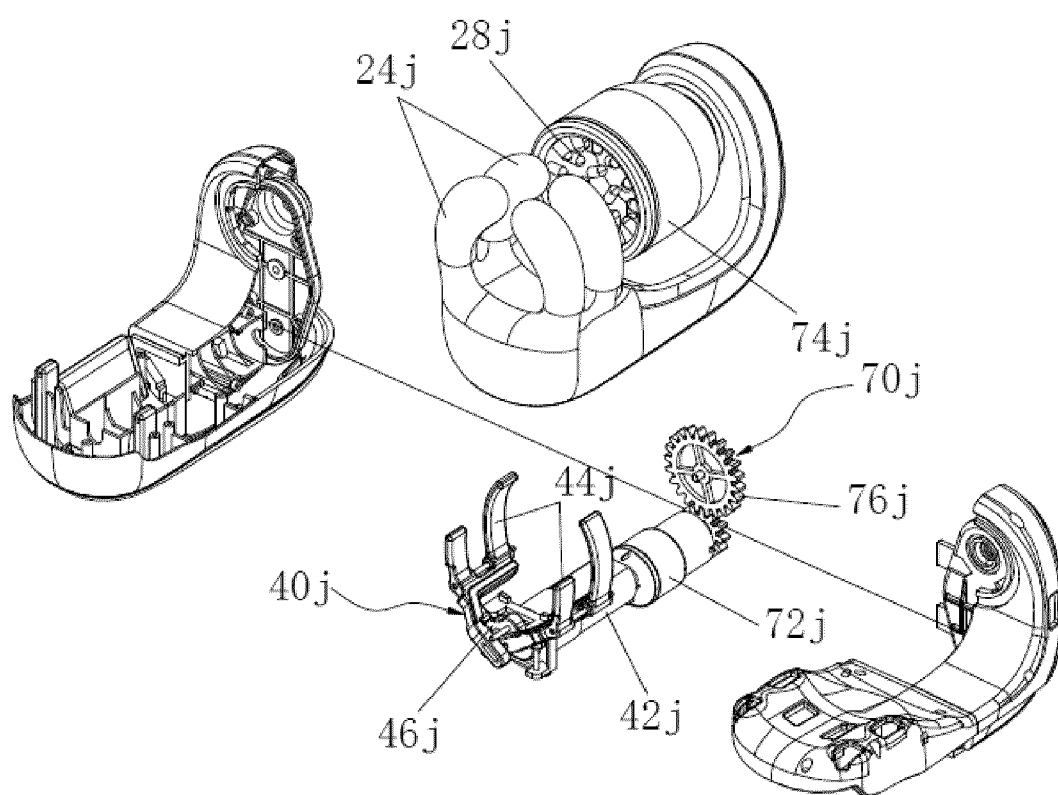


FIG. 40

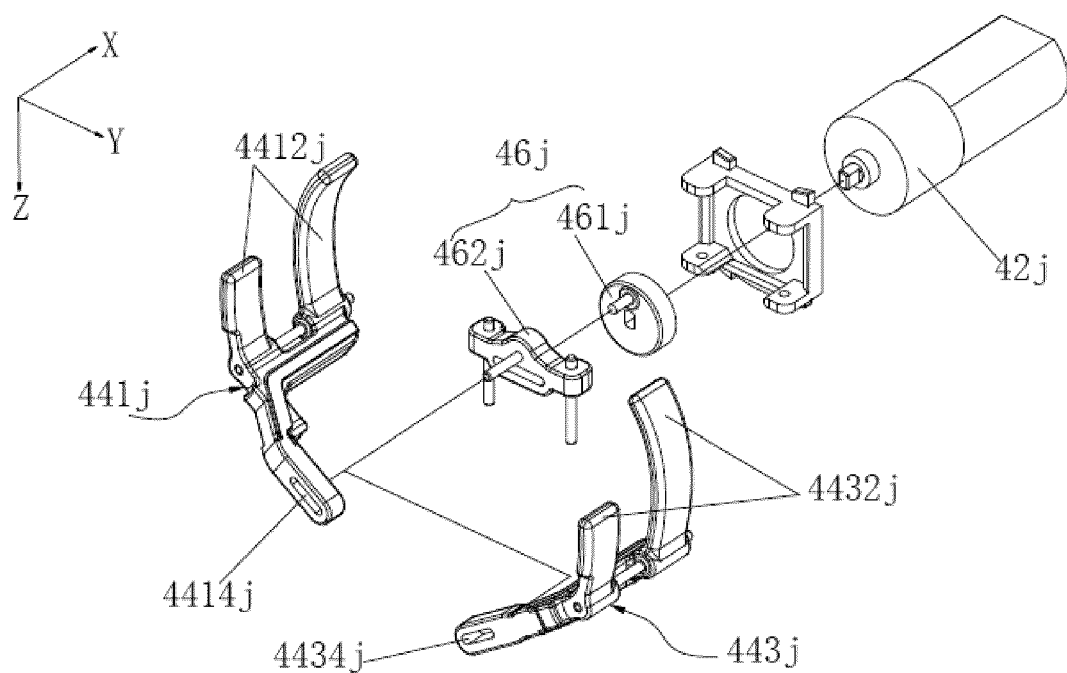


FIG. 41

100k

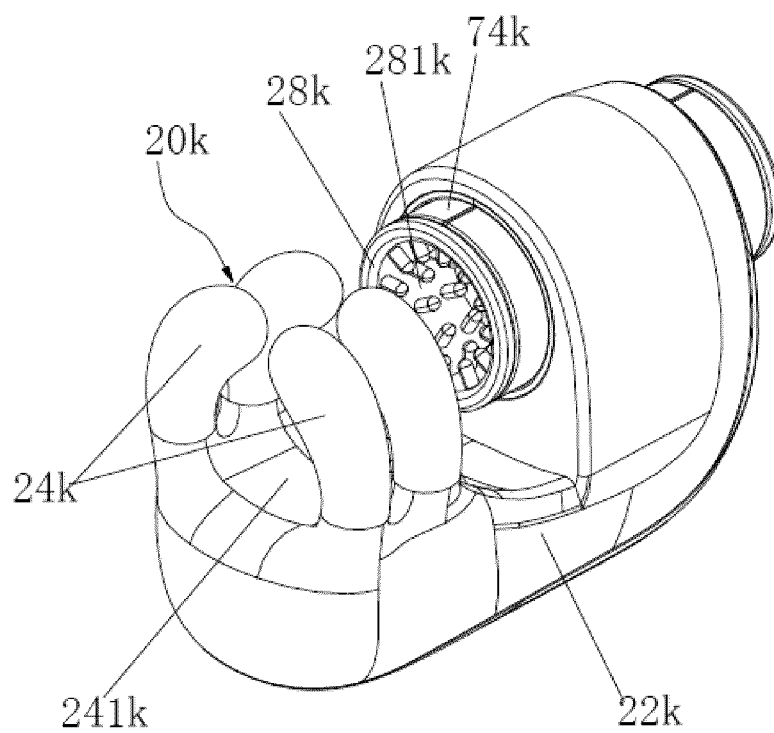


FIG. 42

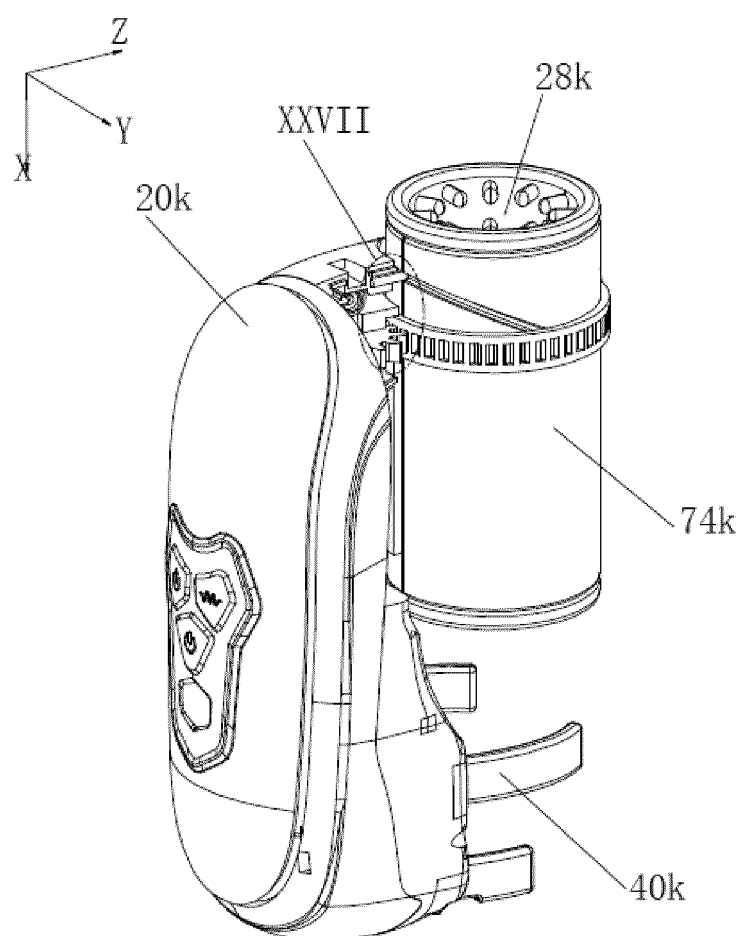


FIG. 43

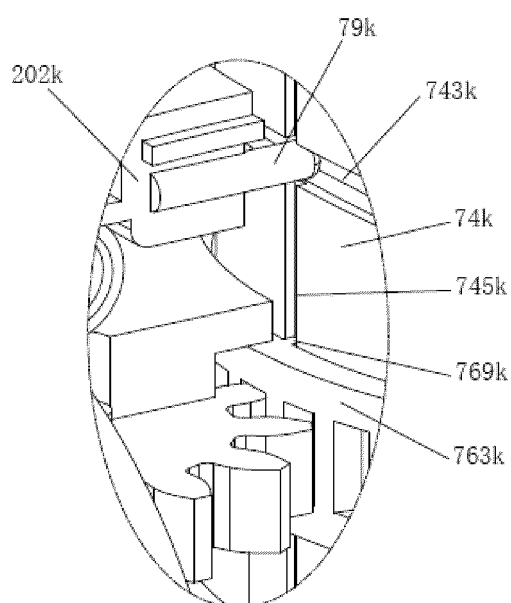


FIG. 44

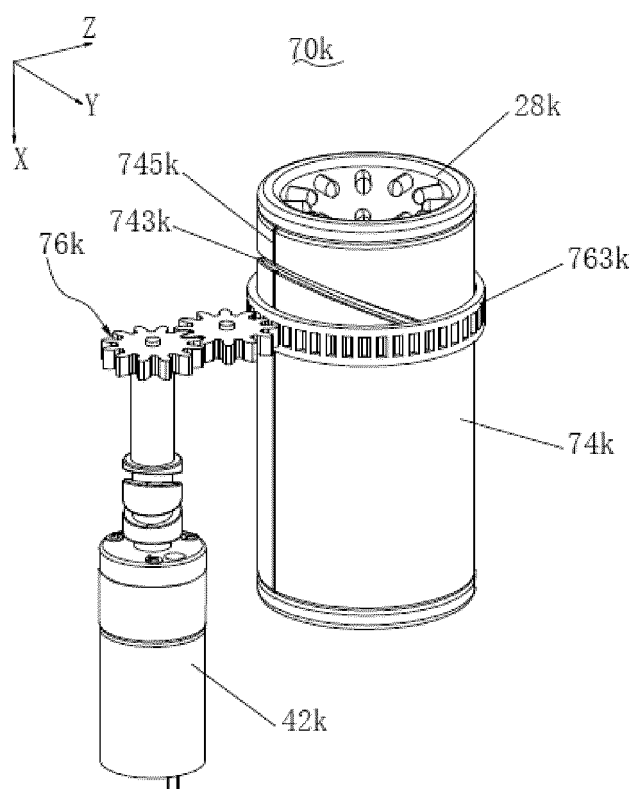


FIG. 45

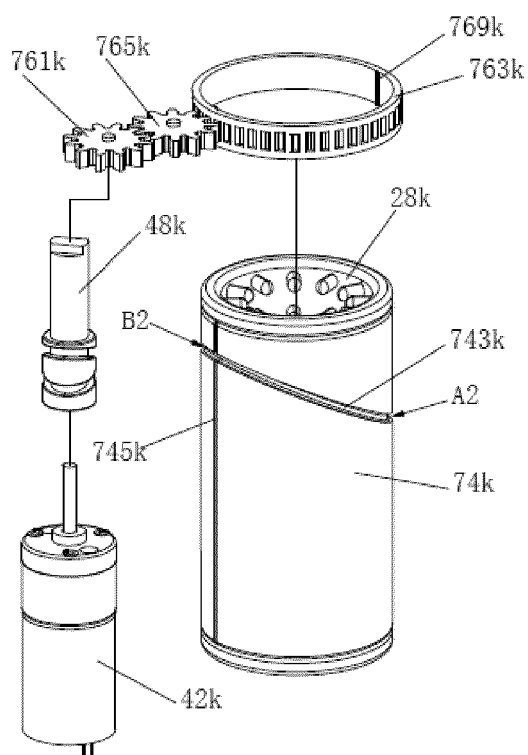


FIG. 46

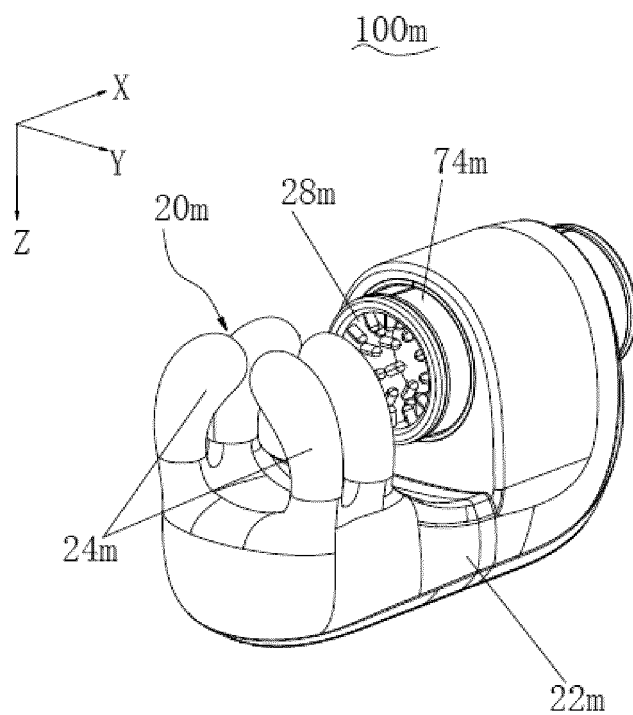


FIG. 47

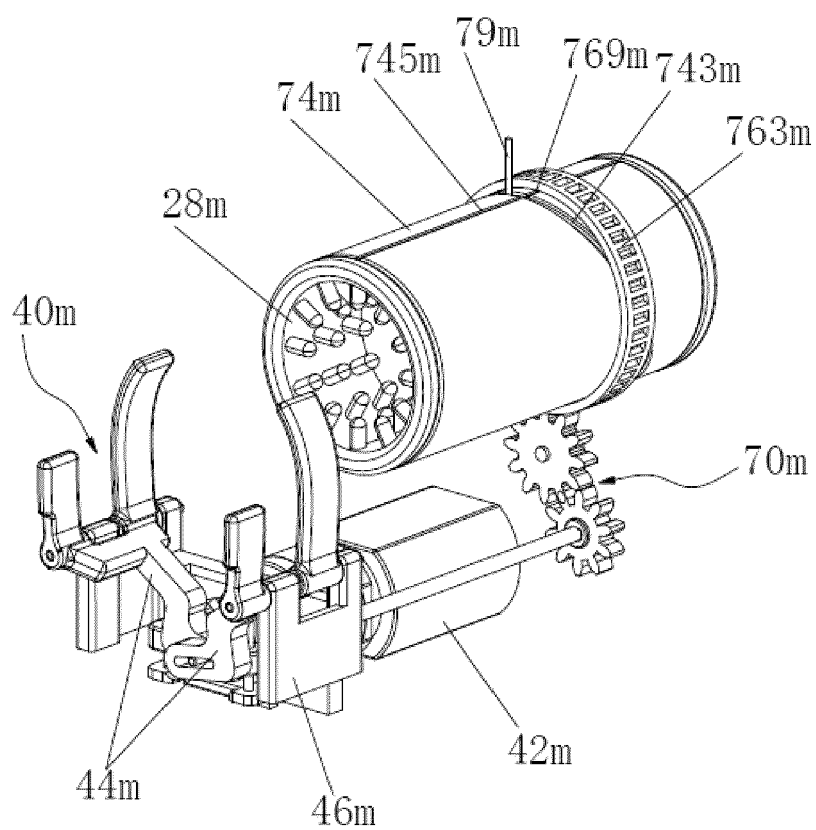


FIG. 48

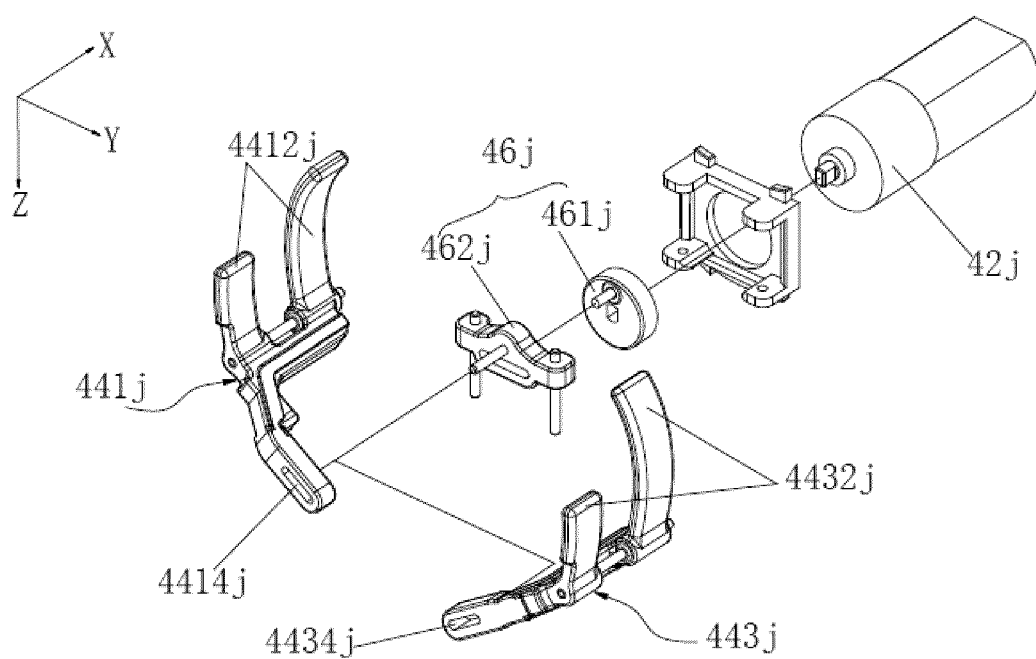


FIG. 49

100t

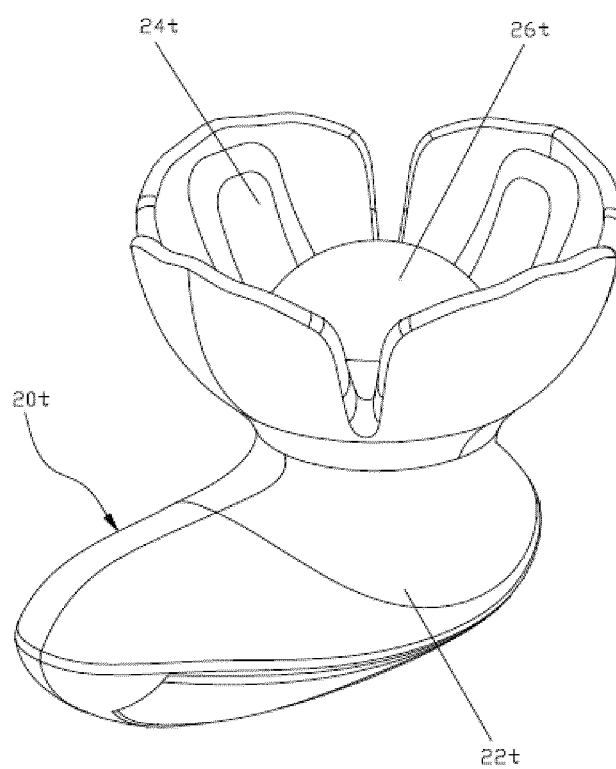


FIG. 50

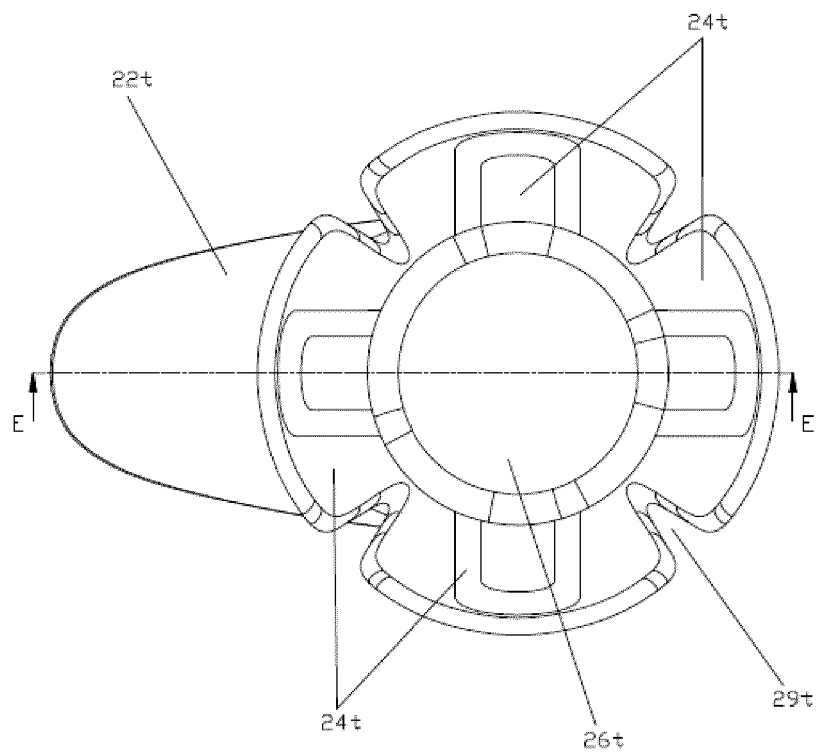


FIG. 51

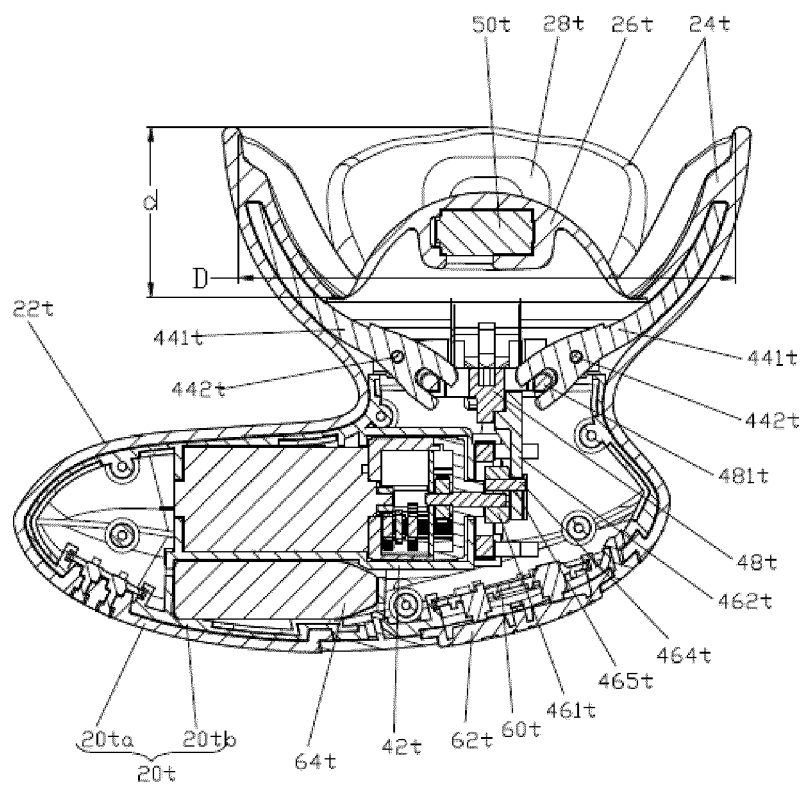


FIG. 52

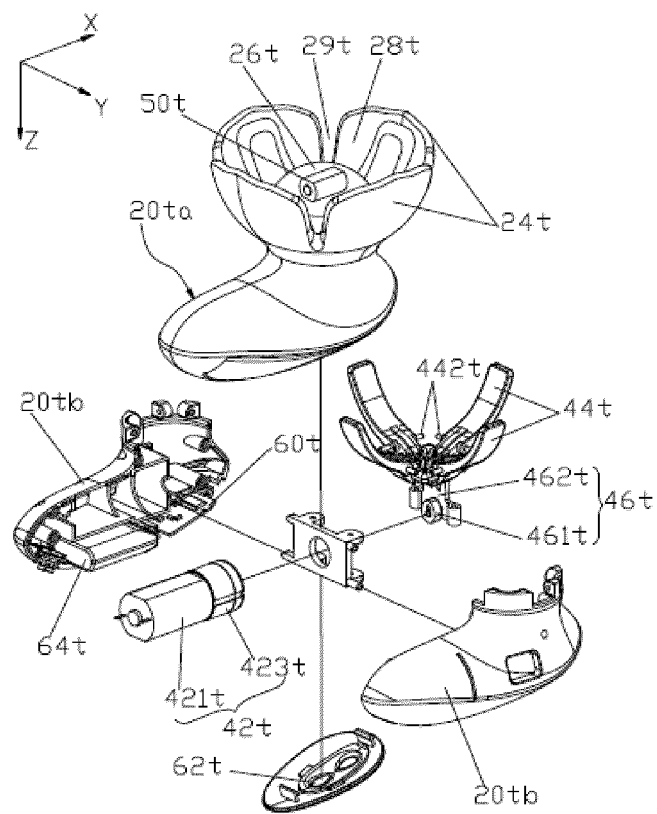


FIG. 53

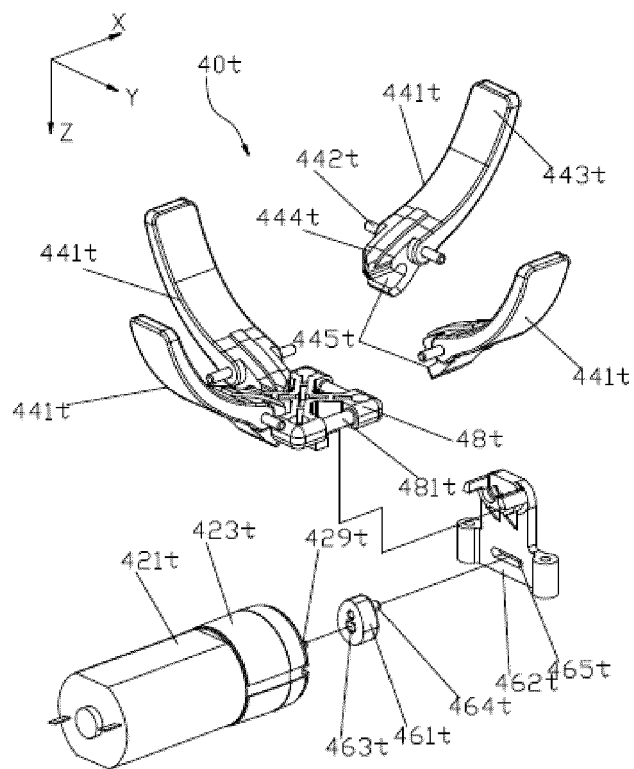


FIG. 54

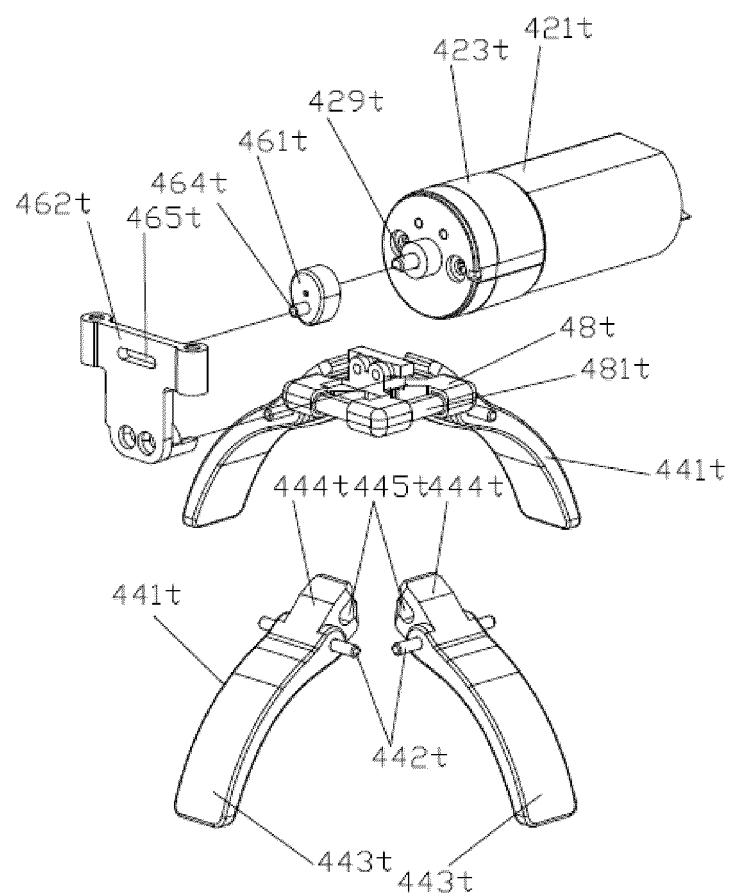


FIG. 55

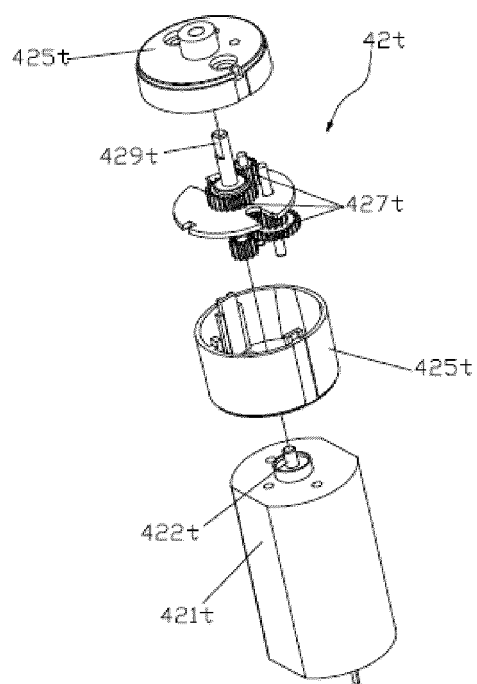


FIG. 56

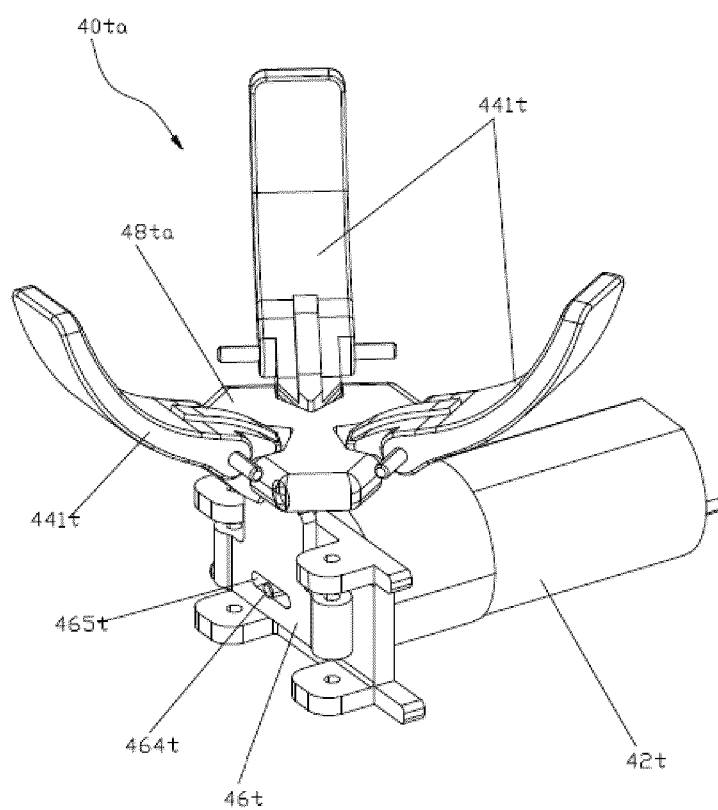


FIG. 57

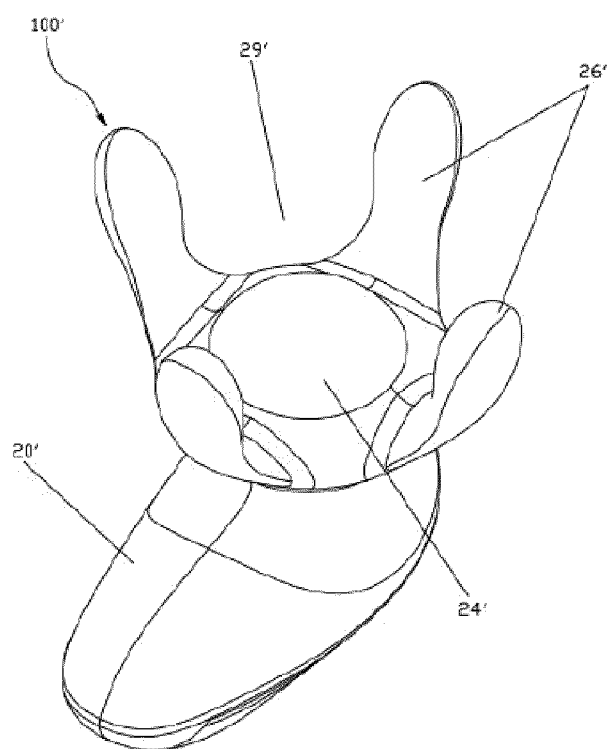


FIG. 58

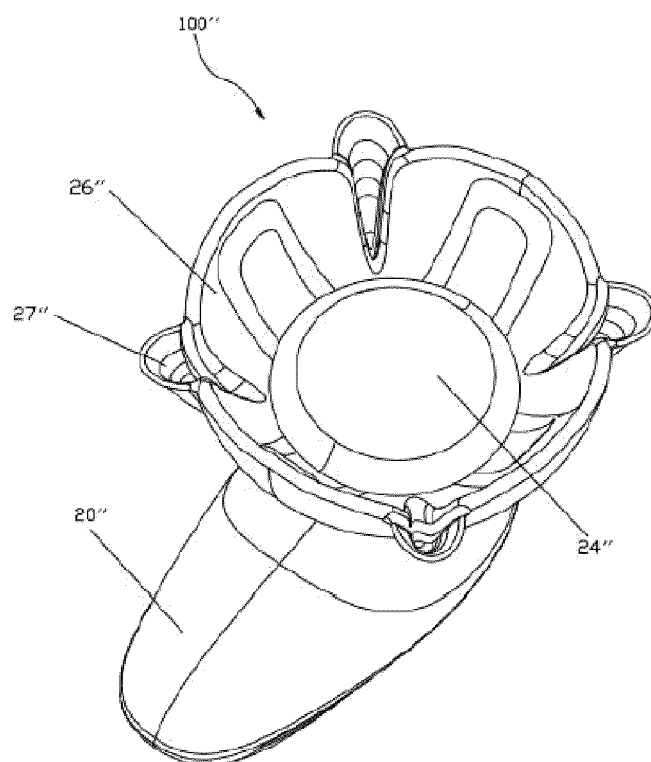


FIG. 59

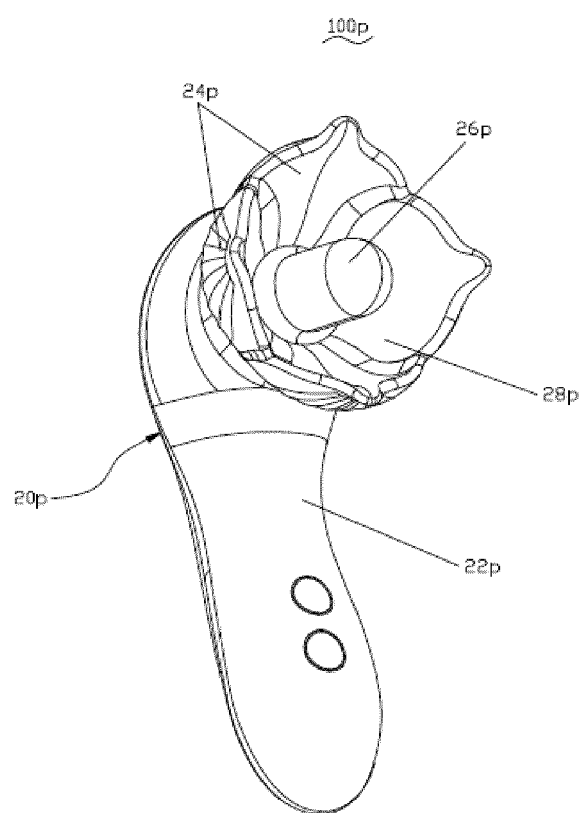


FIG. 60

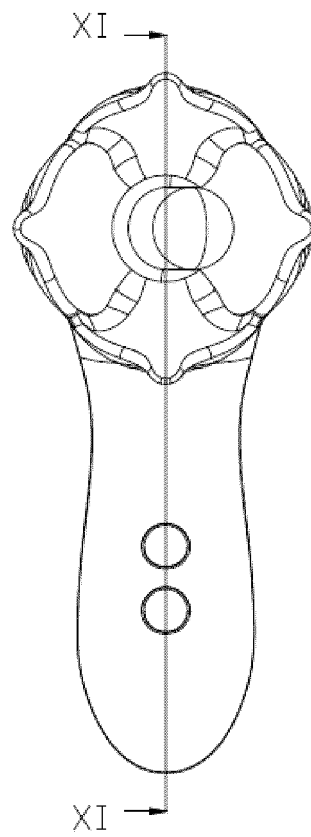


FIG. 61

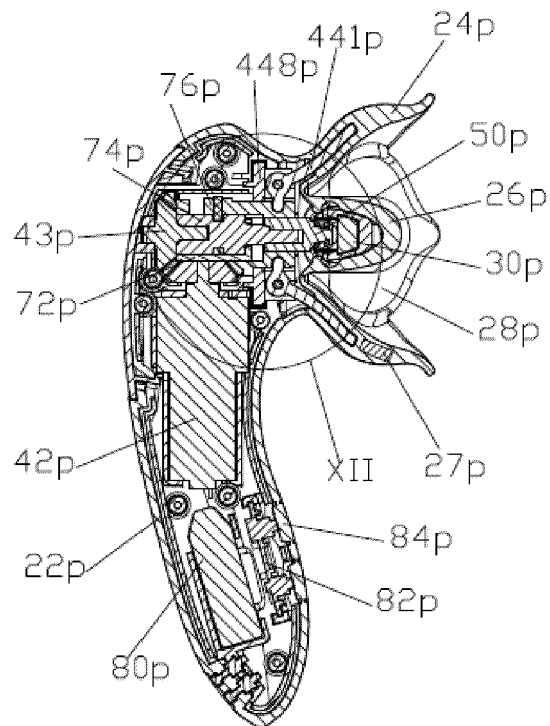


FIG. 62

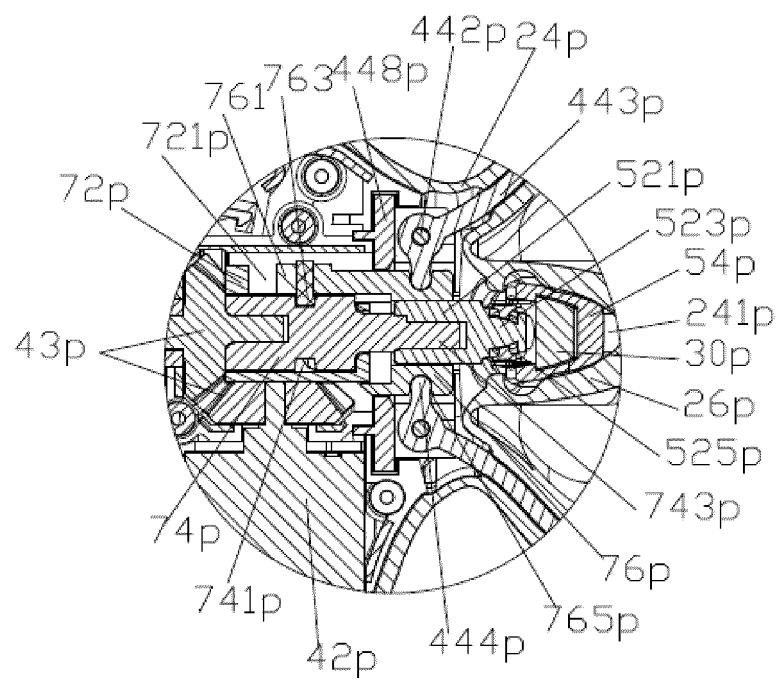


FIG. 63

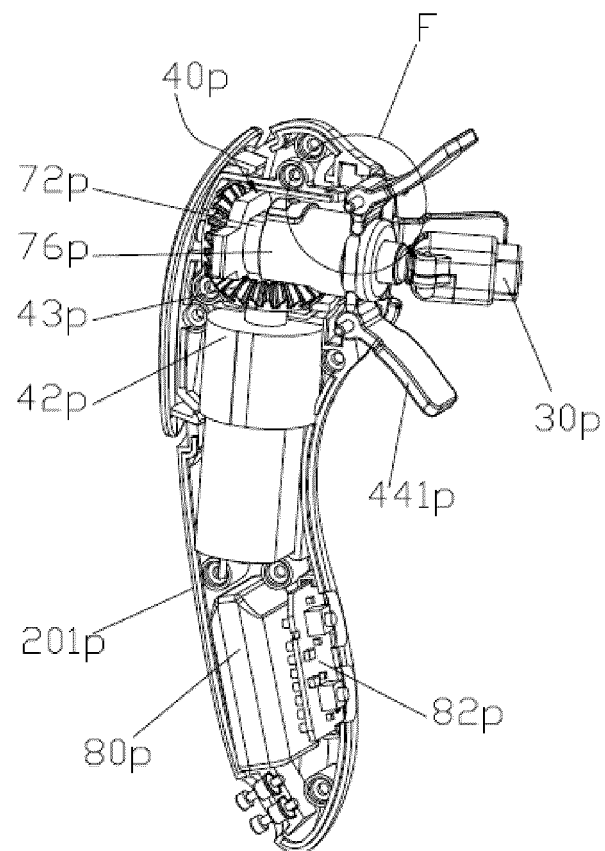


FIG. 64

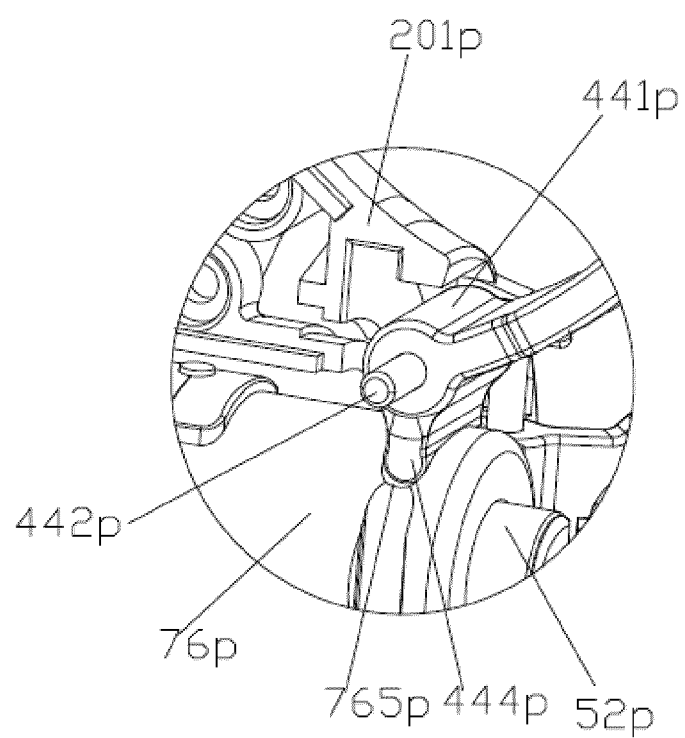


FIG. 65

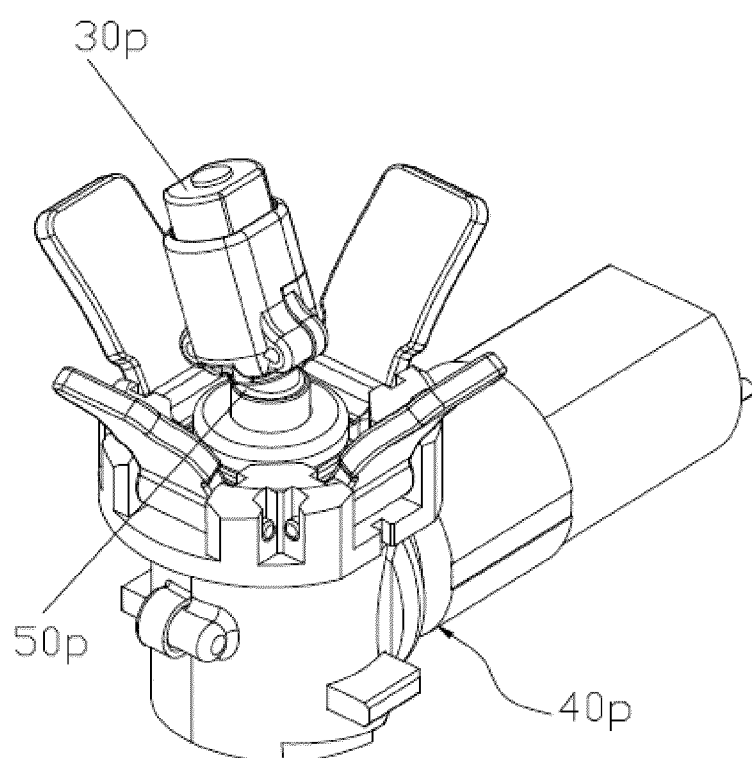


FIG. 66

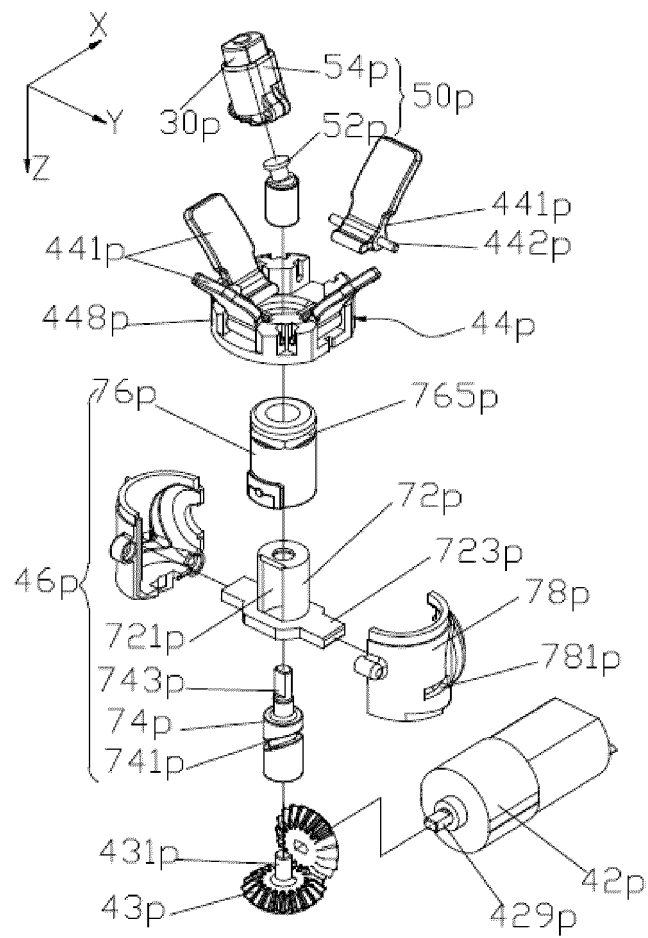


FIG. 67

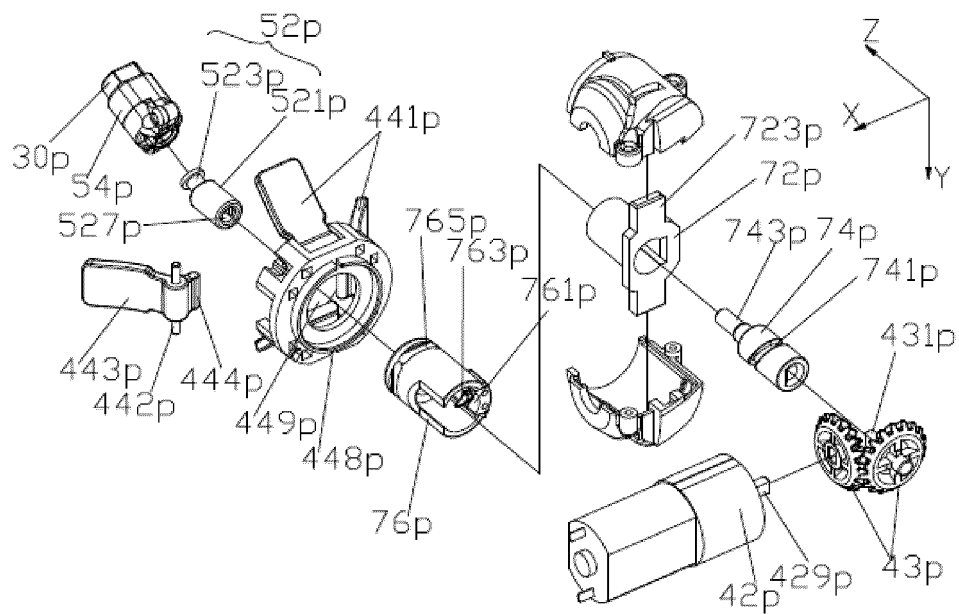


FIG. 68

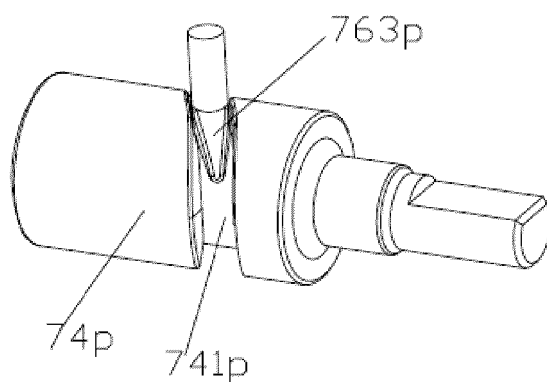


FIG. 69

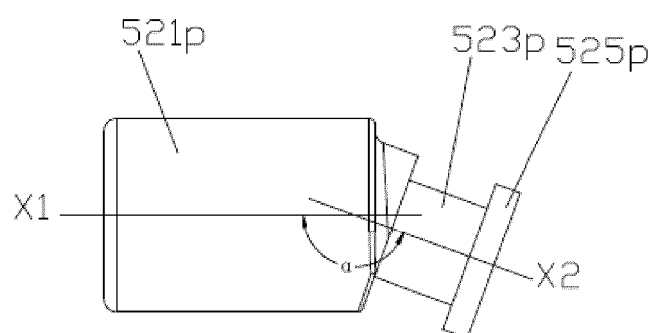


FIG. 70

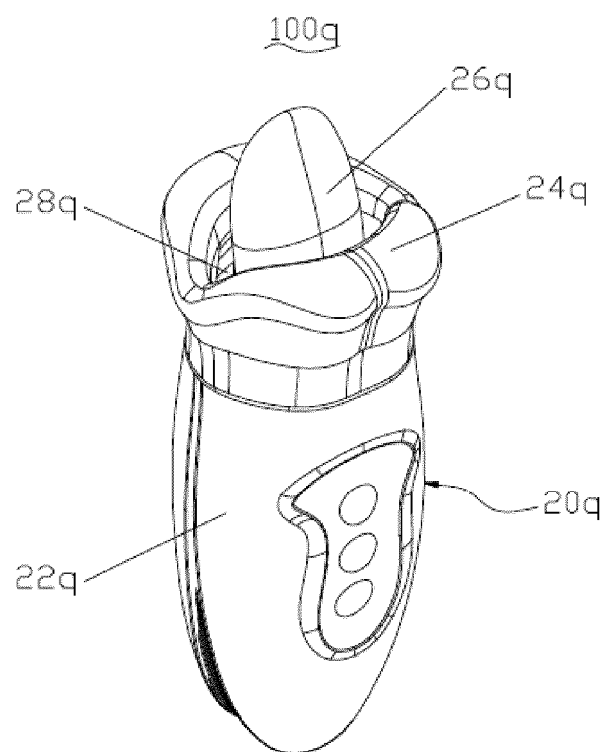


FIG. 71

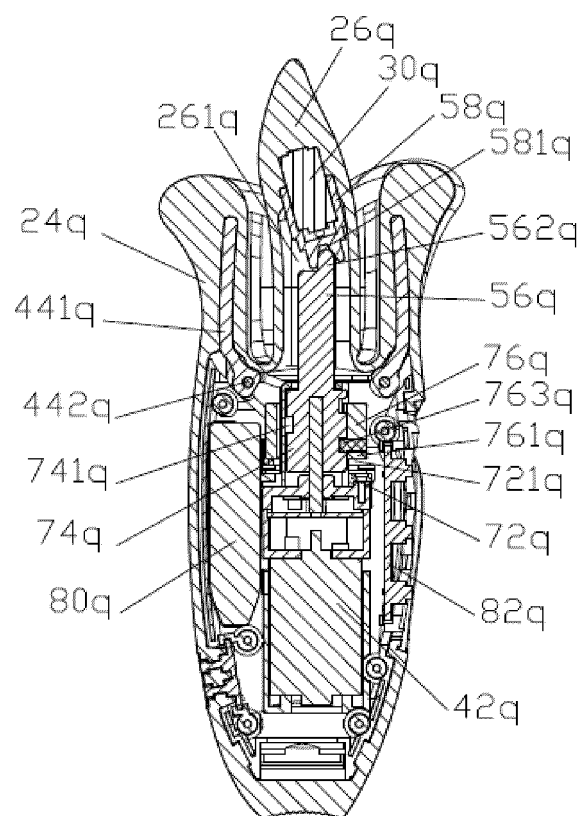


FIG. 72

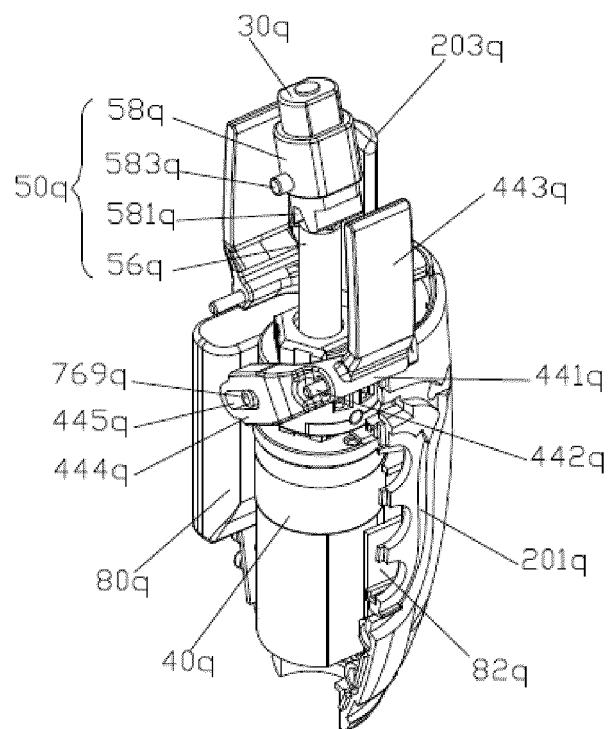


FIG. 73

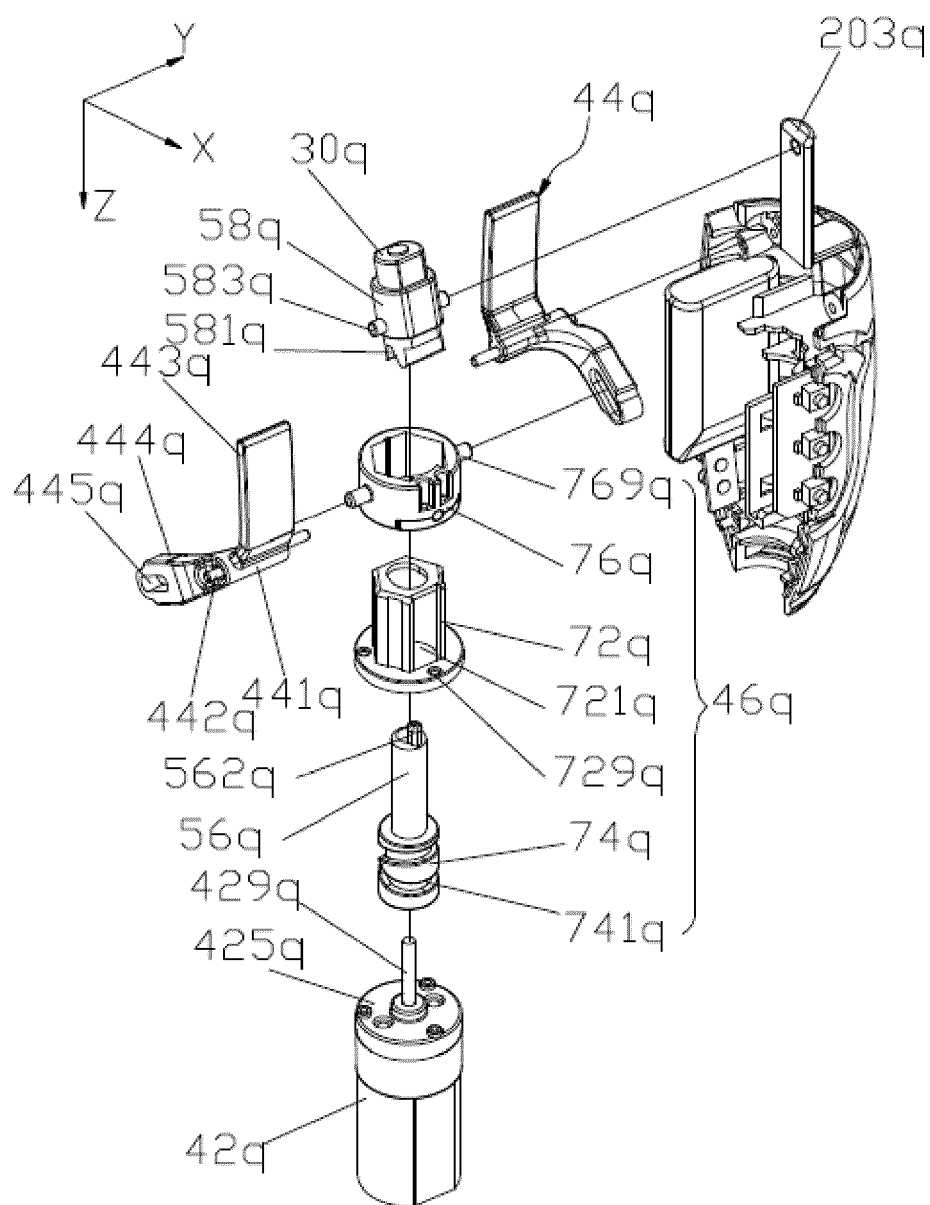


FIG. 74