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(54) **FLOATING ROTATION STRUCTURE, PERSONAL NURSING DEVICE, AND MASSAGER**

SCHWIMMENDE DREHSTRUKTUR, PERSÖNLICHE PFLEGEVORRICHTUNG UND MASSAGEGERÄT

STRUCTURE DE ROTATION FLOTTANTE, DISPOSITIF DE NURSAGE PERSONNEL ET APPAREIL DE MASSAGE

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Description

TECHNICAL FIELD

[0001] The present application relates to the technical field of nursing massage, and more specifically, relates to a floating rotating structure, a personal care device and a massager.

BACKGROUND

[0002] In daily life, commonly used personal care devices, such as shavers, having the blade head directly in contact with the human face. Therefore, the movement of the blade head directly affects the user experience. In the current shaver structure, when the blade head moves on the surface of the skin, there is a blunt resistance between the blade head and the skin. It is completely dependent on the human hand grip to adjust the shaving strength. When the blade head is in tight contact with the skin, the human hand press the blade head loosely, otherwise, press it tightly. During the whole shaving process, the hands are in a tense state. After the shaving is completed, there may be soreness and the experience is extremely poor. Similarly, in commonly used massager, such as facial massager and neck massager, the massager head also directly contacts the face or neck, and the contact tension is also adjusted by the user's pressing force. Although a relaxing massage on my face or neck is performed, the hands were sore. Therefore, a comfortable and flexible transmission structure is urgently needed to improve such products and the self-adaptation ability between the shaving blade head or massager head and the skin, improving user experience. EP0757613B1 discloses an electric shaver featuring high adaptability to the contour to be shaved, in which, at least one shaving head is supported by a flexible member connected to a housing. The flexible member has a peripheral rim that engages a seat formed in a ring that is detachably connected to the housing.

TECHNICAL PROBLEM

[0003] The purpose of the embodiments of the present application lies in: in the first aspect, a floating rotating structure is provided to solve the technical problems in the prior art that the personal care device or the massager has low flexibility in use and poor user experience.

[0004] In the second aspect, a personal care device is provided to solve the technical problems in the prior art that the personal care device is not flexible in use and poor user experience.

[0005] In the third aspect, a massager is provided to solve the technical problems in the prior art that the massager is not flexible in use and has poor user experience.

SUMMARY

[0006] To solve the above technical problems, the technical solution adopted in the present application embodiment is:

In the first aspect, a floating rotating structure is provided, characterized in that, the floating rotating structure comprises: a first hinge, a second hinge, and an elastic member.

[0007] The first hinge has a penetrating first matching groove.

[0008] A top of the second hinge has a matching portion placed in the first matching groove, and a limiting structure provided between the first matching groove and the matching portion to prevent relative rotation is separable along the central axis of the first matching groove, the matching portion is provided with a first central hole that penetrates to the bottom of the second hinge.

[0009] An elastic member penetrates the first matching groove and the first central hole of the second hinge, and the two ends of the elastic member can be respectively pressed against the two external components connected to the first hinge and the second hinge respectively.

[0010] In the second aspect, a personal care device is provided, which comprises a body and a cutting unit provided on the body, and the cutting unit comprises the above-floating rotating structure.

[0011] In the third aspect, a massager is provided, which comprises a massager body and a massager head unit provided on the massager body, and the massager head unit comprises the above floating rotating structure.

BENEFICIAL EFFECT

[0012] Compared with the prior art, the beneficial effect of the floating rotating structure provided in the embodiments of the present application is that the first hinge and the second hinge are in a matching state through the first matching groove and the matching portion, and when the limiting structure is not provided, the first hinge and the second hinge can rotate relative to each other. In this way, the two external components connected to the first hinge and the second hinge will rotate relative to each other after being turned on, which is inconvenient for actual operation; therefore, it is necessary to arrange a limiting structure in the two matching positions, that is, between the first hinge and the second hinge, but when a fixed limiting structure is arranged to keep the relative position between the first hinge and the second hinge unchanged, the first hinge and the second hinge cannot be rotated, so that the flexibility of the two external components connected by the first hinge and the second hinge is deteriorated and the use experience is poor. In the embodiment of present application, an elastic member is arranged between the first hinge and the second hinge, the limiting structure is separated in the axial direction of the first matching groove by pressing the first hinge, and the separated limiting structure is matched by

the elastic restoring force of the elastic member. In this way, according to different external forces, the limiting structure is continuously separated and matched alternately during use, so that the first hinge and the second hinge can rotate or be relatively static, and in the process of separation and matching, through the extension and contraction of the elastic member the floating in the extension and contraction direction is realized. When this floating rotating structure is applied to the product, the user can get a good experience.

[0013] The beneficial effect of the personal care device provided by the embodiment of the present application + is that the personal care device adopts the above-mentioned floating rotating structure to enable users to obtain a good use experience.

[0014] The beneficial effect of the massager provided by the embodiment of the present application is that the massager adopts the above-mentioned floating rotating structure to enable the user to obtain a good use experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] In order to more clearly describe the technical solution in the embodiments of the present application, the following will briefly introduce the drawings that need to be used in the embodiment or the prior art description. Obviously, the drawings in the following description are only some embodiments of the present application, for those of ordinary skill in the art, other drawings can be obtained from these drawings without creative work.

FIG. 1 is a schematic diagram of the shaver structure provided by the first embodiment of the present application;

FIG. 2 is a side view of the cutting unit of the shaver provided by the first embodiment of the present application;

FIG. 3 is a longitudinal sectional view of the cutting unit of the shaver provided by the first embodiment of the present application;

FIG. 4 is a schematic diagram of the first hinge in the floating rotating structure of the shaver provided by the first embodiment of the present application;

FIG. 5 is a schematic diagram of the second hinge in the floating rotating structure of the shaver provided by the first embodiment of the present application;

FIG. 6 is an exploded schematic diagram of the floating rotating structure in the shaver provided by the first embodiment of the present application;

FIG. 7 is a top view of the assembly of the first hinge and the second hinge in the floating rotating structure of the shaver provided by the first embodiment of the present application after being assembled;

FIG. 9 is a schematic diagram of a supporting member in a floating rotating structure of the shaver provided in the first embodiment of the present application;

FIG. 10 is a schematic diagram of the hinge cover in the floating rotating structure of the shaver provided by the first embodiment of the present application;

FIG. 11 is an exploded schematic view of the hinge cover and the housing in the floating rotating structure of the shaver provided by the first embodiment of the present application before assembly;

FIG. 12 is a top view of the assembly of the hinge cover and the housing in the floating rotating structure of the shaver provided by the first embodiment of the present application;

FIG. 13 is an exploded schematic diagram of the cutting unit in the shaver provided by the first embodiment of the present application;

FIG. 14 is an enlarged view of A in FIG. 11;

FIG. 15 is an exploded schematic diagram of the cutting unit in the shaver provided by the second embodiment of the present application;

FIG. 16 is a longitudinal sectional view of the cutting unit in the shaver provided by the second embodiment of the present application;

FIG. 17 is a schematic diagram of a facial massager provided in the third embodiment of the present application;

FIG. 18 is a partial cross-sectional view of the massager head in the facial massager provided by the third embodiment of the present application;

[0016] Among them, the reference in the figures:

100-body; 110-massager body; 120-massager head unit; 121-massager head; 200-cutting unit; 210-flexible bracket; 211-ring flange; 220-limiting structure; 300-supporting member; 310-mounting post; 320-step surface; 330-second central hole; 340-second annular protrusion; 350-annular groove; 400-shaving unit; 410-housing; 411-mounting hole; 412-stopper; 413-positioning post; 414-groove; 415-limiting block; 420-cover plate; 430-bracket; 440-blade head assembly; 500-first hinge; 510-first matching groove; 511-second limiting plane; 512-positioning block; 513-second connecting hole; 514-annular flange; 515-first avoiding groove; 516-semi-circular positioning hole; 517-first spherical arc surface; 518-first plane; 600-second hinge; 610-matching portion; 611-first limiting plane; 612-second plane; 620-second matching groove; 621-first central hole; 622-first connecting hole; 630-connecting portion; 640-positioning boss; 641-semi-circular hole; 650-concavity; 700-hinge cover; 710-first annular protrusion; 720-block; 730-second avoiding groove; 800-elastic member; 900-connector.

DETAILED DESCRIPTION

[0017] The embodiments of the present application are described in detail below. Examples of the embodiments

are shown in the accompanying drawings, wherein the same or similar reference numerals represent the same or similar elements or elements with the same or similar functions. The embodiments described below with reference to the accompanying drawings are exemplary, and are intended to explain the application, but should not be understood as a limitation to the application.

[0018] It should be noted that when a component is referred to as being "fixed to" or "installed " on another component, it can be directly on the other component or indirectly on the other component. When a component is said to be "connected to" another component, it can be directly connected to the other component or indirectly connected to the other component.

[0019] In the description of this application, it should be understood that the orientation or positional relationship indicated by the terms of "length", "width", "upper", "lower", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "inner", "outer", etc. are based on the orientation or positional relationship shown in the drawings, and are only for the convenience of describing the application and simplifying the description. And it does not indicate or imply that the pointed device or element must have a specific orientation, be constructed and operated in a specific orientation, and therefore cannot be understood as a limitation to the present application.

[0020] In addition, the terms of "first" and "second" are only used for descriptive purposes, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Thus, the features limited with "first" and "second" may explicitly or implicitly include one or more of these features. In the description of the present application, "a plurality of" means two or two more, unless otherwise specifically defined.

[0021] A floating rotating structure provided by an embodiment of the present application includes a first hinge with a first matching groove penetrating through the first hinge; a second hinge with a matching portion placed in the first matching groove on the top, a limiting structure provided between the first matching groove and the matching portion can prevent relative rotation and can be separated along the central axis of the first matching groove, the matching portion is provided with a first central hole that penetrates to the bottom of the second hinge; an elastic member penetrates the first central hole of the first matching groove and the second hinge, the two ends of the elastic member can be pressed against the two external components connected to the first hinge and the second hinge respectively.

[0022] In the embodiment of the present application, the first hinge and the second hinge are in a matching state through the first matching groove and the matching portion, and when the limiting structure is not provided, the first hinge and the second hinge can rotate relative to each other. In this way, the two external components connected to the first hinge and the second hinge will

rotate relative to each other after being turned on, which is inconvenient for actual operation; therefore, it is necessary to arrange a limiting structure in the two matching positions, that is, between the first hinge and the second hinge, but when a fixed limiting structure is arranged to keep the relative position between the first hinge and the second hinge unchanged, the first hinge and the second hinge cannot be rotated, so that the flexibility of the two external components connected by the first hinge and the second hinge is deteriorated and the use experience is poor. In the embodiment of present application, an elastic member is arranged between the first hinge and the second hinge, the limiting structure is separated in the axial direction of the first matching groove by pressing the first hinge, and the separated limiting structure is matched by the elastic restoring force of the elastic member. In this way, according to different external forces, the limiting structure is continuously separated and matched alternately during use, so that the first hinge and the second hinge can rotate or be relatively static, and in the process of separation and matching, through the extension and contraction of the elastic member the floating in the extension and contraction direction is realized. When this floating rotating structure is applied to the product, the user can get a good experience.

[0023] The floating rotating structure provided in this embodiment has the above-mentioned rotating and floating effect, which can contact the skin surface well, and has a good self-adaptive effect with the skin surface. Therefore, it can be widely used in various personal care devices or massagers. Specifically, the personal care device can be a shaver, hair clipper, epilator, etc. These products include a body and a cutting unit arranged on the body to perform related care functions. The above-mentioned floating rotating structure can be used in the cutting unit. The massager can be a facial massager, a facial beauty instrument, a head massager, a neck massager, etc. These massager products include a massager body and a massager head unit on the massager body. The massager head unit can be applied to the above floating rotating structure.

[0024] In practical applications, the floating rotating structure can be implemented by different embodiments. The following describes the floating rotating structure in detail in combination with specific products.

Embodiment 1

[0025] Referring to FIGs 1 to 3, the personal care device provided by the first embodiment of the present application is a shaver. Specifically, the shaver includes a body 100 and a cutting unit 200 provided on the body 100. Wherein, the cutting unit 200 includes a supporting member 300, a shaving unit 400 disposed above the supporting member 300, a first hinge 500 disposed in the shaving unit 400, a second hinge 600 matched with the first hinge 500, and an elastic member 800. The top end of the second hinge 600 is matched with the first hinge

500 and an anti-rotation limiting structure 220 between the top end of the second hinge 600 and the first hinge 500, and the bottom end of the second hinge 600 is fixedly connected to the supporting member 300. Specifically, the first hinge 500 has a first matching groove 510, the first matching groove 510 has a first spherical arc surface 517, the center of the first spherical arc surface 517 is O, the first matching groove 510 has a central axis L, and the bottom of the first matching groove 510 penetrates the first hinge 500, that is, the first hinge 500 is hollow.

[0026] The top of the second hinge 600 has a matching portion 610 placed in the first matching groove 510, the matching portion 610 has a spherical shape, and the outer wall of the matching portion 610 matches the arc of the first spherical arc surface 517. Thus, when the matching portion 610 is placed in the first matching groove 510, the outer wall surface of the matching portion 610 can better fit the first spherical arc surface 517. A limiting structure 220 is provided between the matching portion 610 and the first matching groove 510 to prevent relative rotation. A second matching groove 620 is provided in the matching portion 610, and the bottom of the second matching groove 620 is provided with a first central hole 621 that penetrates to the bottom of the second hinge 600. The bottom of the second hinge 600 penetrates the first hinge 500 and is fixed in the supporting member 300, so that the second hinge 600 is fixedly connected to the supporting member 300 as a whole.

[0027] Furthermore, in this embodiment, the shaving unit 400 includes a housing 410 and a hinge cover 700. The housing 410 has a three-lobed shape as a whole with a mounting hole 411 in the center. The first hinge 500 is fixed at the mounting hole 411 through the hinge cover 700, and the second hinge 600 matched with the first hinge 500 protrudes from the mounting hole 411 and is connected to the supporting member 300. The top end of the elastic member 800 abuts against the hinge cover 700. In this embodiment, the first hinge 500 is fixed at the mounting hole 411 through the hinge cover 700. In other embodiments, the hinge cover 700 may also be omitted, and the first hinge 500 may be fixed at the mounting hole 411 by the structural design of the first hinge 500 or other parts.

[0028] The elastic member 800 passes through the first central hole 621, the second matching groove 620 and the first matching groove 510 of the second hinge 600, and the top end of the elastic member 800 abuts against the bottom of the hinge cover 700, and the bottom end of the elastic member 800 abuts against the top of the supporting member 300.

[0029] In the non-working state, the elastic force of the elastic member 800 pushes the hinge cover 700 and the supporting member 300 to both ends along the central axis L respectively, so that the first hinge 500 fixedly connected to the hinge cover 700 and the second hinge 600 fixedly connected to the supporting member 300 are more closely abut by spherical arc surface.

[0030] When the shaver is working, when the shaving

unit 400 is in contact with the face and is squeezed by the force of the face, the shaving unit 400 drives the hinge cover 700 to move downward and squeeze the elastic member 800, and at the same time the first hinge 500 also moves downward. When the applied downward force is greater than of elastic force the elastic member 800, the elastic member 800 is compressed. During this process, the anti-rotation limiting structure 220 between the first hinge 500 and the second hinge 600 is separated so that the hinge cover 700 and the shaving unit 400 can rotate around the O center of the first spherical arc surface 517 with the first hinge 500, so that the shaving unit 400 can rotate within 360°. During the rotation, the elastic member 800 is a flexible connection between the shaving unit 400 and the supporting member 300, making the 360° rotation of the shaving unit 400 smoother; and when the shaving unit 400 acts on the different parts of the face, the external force acting on the shaver changes. When the external force applied to the shaving unit 400 decreases, that is, when the external force is less than the elastic force of the elastic member 800, the elastic member 800 elastically returns to push the hinge cover 700, the first hinge 500 and the shaving unit 400 upward, the limiting structure 220 between the first hinge 500 and the second hinge 600 is re-coordinated to prevent the relative rotation of the first hinge 500 and the second hinge 600. During this process, the shaving unit 400 floats up and down along the central axis L, which can better adapt to changes in the facial curve and avoid the hard contact with the face, which brings users a more comfortable shaving experience.

[0031] Furthermore, in order to facilitate the restriction between the first hinge 500 and the second hinge 600 not to rotate with each other, and also to facilitate the separation of the first hinge 500 and the second hinge 600, the limiting structure 220 does not block the rotation of the first hinge 500. In this embodiment, the limiting structure 220 is designed simply and ingeniously, which prevents rotation in the circumferential direction without affecting the separation in the axial direction.

[0032] Specifically, referring to FIGS. 4 to 8, the limiting structure 220 includes a first limiting plane 611 arranged on the outer wall of the matching portion 610 and a second limiting plane 511 arranged in the first matching groove 510 and attached to the first limiting plane 611. Since the outer wall surfaces of the first spherical arc surface 517 and the matching portion 610 are spherical arc surfaces, they can rotate without friction or resistance when they are directly matched, and the first limiting plane 611 and the second limiting plane 511 are arranged to fit on the plane, when the first hinge 500 and the matching the portions 610 rotate with each other, the first limiting plane 611 and the second limiting plane 511 are unable to rotate due to the friction force between the two planes, thereby realizing the limitation of movement in the circumferential direction. At the same time, the two planes are attached in the axial direction without hindering the upward or downward movement of the first hinge

500. In other embodiments, the limiting structure may also include a limiting hole provided on the first matching groove and a limiting block, the limiting block is provided on the outer surface of the matching portion and can extend into the limiting hole. Similarly, it is possible to realize separation on the axis of the first matching groove and mutual rotation after separation by the matching of the limiting hole and the limiting block. Of course, the positions of the limiting hole and the limiting block can also be interchanged, that is, the limiting structure includes a limiting block provided in the first matching groove and a limiting hole provided on the outer surface of the matching portion for the limiting block to extend.

[0033] Specifically, the first limiting plane 611 can be regarded as a plane formed by longitudinal cutting the outer wall surface of the matching portion 610. Since the first spherical arc surface 517 is a curved surface, in order to facilitate the arrangement of the second limiting plane 511, a positioning block 512 is provided in the first matching groove 510, and the second limiting plane 511 is arranged inside the positioning block 512 toward the center of the first matching groove 510. In this embodiment, the positioning block 512 has a cubic block structure, and the second limiting plane 511 is the inner surface of the cube.

[0034] In this embodiment, there are three first limiting planes 611, and the three first limiting planes 611 are evenly distributed on the outer wall of the matching portion 610; there are three second limiting planes 511, and the three second limiting planes 511 are evenly arranged in the first matching groove 510. Through the three groups of plane attachment, the first hinge 500 and second hinge 600 can be well limited. Moreover, since the top surface of the cubic positioning block 512 is also flat, a triangular arrangement is formed between the three positioning blocks 512, and the top surfaces of the three positioning blocks 512 form a stable supporting surface for supporting the hinge cover 700 more reliably. Of course, the number of the first limiting plane 611 and the second limiting plane 511 can also be one, two, or four, or more.

[0035] In this embodiment, when the second hinge 600 and the supporting member 300 are fixedly connected as a whole, the second hinge 600 and the supporting member 300 are assembled and fixed through the connector 900. Through the assembly of the connector 900, the fixed connection between the second hinge 600 and the supporting member 300 is detachable, which is convenient for disassembly and maintenance, and also convenient for assembly during production. Of course, under the premise that the second hinge 600 and the supporting member 300 are reliably connected, in other embodiments, other detachable fixed connection methods, such as a snap connection, can also be used.

[0036] Specifically, the second matching groove 620 of the matching portion 610 of the second hinge 600 is provided with a first connecting hole 622, and the first matching groove 510 attached to the matching portion

610 is provided with a second connecting hole 513 corresponding to the first connecting hole 622. The connector 900 is specifically a screw. A mounting post 310 is provided in the supporting member 300, and a screw hole (not labeled in the figure) is provided in the mounting post 310. The screws pass through the first connecting hole 622 and the second connecting hole 513 and are screwed into the screw holes of the mounting post 310. The second hinge 600 is fixed by screwing, which is simple in structure, easy to process and assemble.

[0037] As shown in FIG 9, the supporting member 300 is generally cylindrical, the top of the supporting member 300 has a step surface 320 with an inward concavity. The step surface 320 is provided with a second central hole 330 through the supporting member 300, and the mounting post 310 is provided on the step surface 320. In this way, the depth of the step surface 320 recessed fills the height of the mounting post 310 to prevent the mounting post 310 from protruding from the top surface of the supporting member 300 and occupy more space or form a connection gap.

[0038] Furthermore, the number of the first connecting holes 622 is three, the number of the second connecting hole 513 is three, the number of the mounting post 310 is three, and the number of the connector 900 is three. The three connectors 900 are arranged in a triangular shape to make the second hinge 600 and the supporting member 300 more stable. Moreover, for the second hinge 600, the number of the first limiting plane 611 and the first connecting hole 622 provided on the second hinge 600 is both three. The first connecting hole 622 and the first limiting plane 611 are alternately arranged at intervals, that is, one first connecting hole 622 is arranged between the two first limiting planes 611, a first limiting plane 611 is arranged between the two first connecting holes 622.

[0039] In this embodiment, the top of the second hinge 600 is a matching portion 610, and the bottom of the second hinge 600 has a connecting portion 630, and the connecting portion 630 is specifically a cylindrical structure. The diameter of the cylinder is slightly larger than the bottom diameter of the matching portion 610. Since the inner wall surface of the second spherical arc surface in the ball head gradually increases from bottom to top, the diameter of the cylinder is designed to be slightly larger than the bottom diameter of the matching portion 610. In this way, on the one hand, the compactness of the second hinge 600 parts is maintained, on the other hand, it also enables the connector 900 to pass through the connecting portion 630 when passing through the matching portion 610 through the first connecting hole 622, so that the matching portion 610 and the connecting portion 630 of the second hinge 600 are connected as a whole through the connector 900, so that the instability caused by the condition that only the matching portion 610 is connected to the supporting member 300 and being separated from the connecting portion 630 will be avoided. Specifically, a positioning structure for

limiting the connector 900 is provided on the connecting portion 630 corresponding to the first connecting hole 622.

[0040] Specifically, as shown in FIG. 5, the positioning structure includes a positioning boss 640 provided on the outer wall of the connecting portion 630 for the connector 900 to pass through, and a concavity 650 provided under the positioning boss 640 along a height direction of the connecting portion 630 for accommodating the connector 900. In this embodiment, a semi-circular hole 641 is provided on the positioning boss 640 for the connector 900 to pass through, or a circular hole may be provided, or the positioning boss 640 is directly designed as a positioning ring for the connector 900 to pass through.

[0041] In this embodiment, the elastic member 800 is preferably a spring. The spring is pre-compressed between the hinge cover 700 and the supporting member 300. The installation structure of the spring is shown in FIG. 3 and FIG. 9, the bottom center of the hinge cover 700 extends around the central hole to form a first annular protrusion 710. At the same time, a second annular protrusion 340 is provided on the step surface 320 of the supporting member 300 and at the edge of the second central hole 330. The top of the spring is sleeved on the first annular protrusion 710, and the bottom of the spring is sleeved on the second annular protrusion 340. In other embodiments, the bottom of the hinge cover 700 and the step surface 320 of the supporting member 300 may also be provided with recessed holes respectively, and the two ends of the spring are provided in the recessed holes respectively.

[0042] In other embodiments, the spring can also be replaced by other retractable and resettable elastic components, such as shrapnel.

[0043] Referring to FIGS 11-13, the shaving unit 400 further includes a cover plate 420 arranged on the housing 410, a bracket 430 arranged on the cover plate 420, and at least one blade head assembly 440 arranged on the bracket 430 (in this embodiment, there are three blade head assemblies 440), and a transmission structure (not shown in the figure) provided in the enclosed space of housing 410 and cover plate 420 for driving the blade head assembly 440.

[0044] Referring to FIGS 4 again, the edge of the first matching groove 510 of the first hinge 500 extends outward to form an annular flange 514. During installation, the annular flange 514 is stacked on the edge of the mounting hole 411. The edge of the mounting hole 411 is provided with at least one stopper 412. At least one first avoiding groove 515 is provided on the annular flange 514 corresponding to a position of the at least one stopper 412. The hinge cover 700 covers in the first matching groove 510, and the edge of the hinge cover 700 protrudes outward at least one block 720 that can be locked at the at least one stopper 412. In this way, the hinge cover 700 is fixed on the housing 410 through the at least one block 720 and the at least one stopper 412. At the same time, the hinge cover 700 is covered on the first

hinge 500, so that the first hinge 500 is limited between the housing 410 and the hinge cover 700, making the first hinge 500, housing 410 and the hinge cover 700 is connected as a whole.

[0045] When the first hinge 500 is installed, for quick positioning, the edge of the mounting hole 411 is further provided with at least one positioning post 413, and the circular flange 514 is provided with a semi-circular positioning hole 516 for at least one positioning post 413 to be inserted when the circular flange 514 rotates. The positioning post 413 and the semi-circular positioning hole 516 not only play a positioning role, but also play a supporting and positioning role for the internal transmission structure of the housing 410.

[0046] Furthermore, referring to FIGS 14, the position of stopper 412 is higher than the edge of mounting hole 411. In this way, the gap between stopper 412 and the edge of mounting hole 411 forms a groove 414 that can be locked when the block 720 rotates horizontally. A limiting block 415 is provided on one side of groove 414. When the block 720 rotates at a certain angle in groove 414, stops at limiting block 415 and does not continue to rotate. At this time, the hinge cover 700 is installed in place. At the same time, in order to facilitate the rotation of hinge cover 700, the second avoiding groove 730 are arranged on the edge of hinge cover 700 to avoid stopper 412. The block 720 is arranged at the second avoiding groove 730. In this way, when installing, the first hinge cover 700 is covered on the first hinge 500, specifically, placing the hinge cover 700 on the top surface of the three positioning blocks 512, and placing the second avoiding groove 730 at place corresponding to the block 720, and then rotate the hinge cover 700 to make the block 720 rotate into the groove 414 until it stops at the limiting block 415 to complete the installation of the hinge cover 700. At this time, the groove 414 limits the block 720 in the direction of the central axis L, and the limiting block 415 and the second avoiding groove 730 limit the rotation angle of the block 720 in the circumferential direction.

[0047] Preferably, in this embodiment, there are three stoppers 412, the three stoppers 412 are evenly distributed on the edge of the mounting hole 411, the number of the positioning post 413 is also three, and the three positioning posts 413 and three stopper 412 are alternately spaced and evenly distributed on the edge of the mounting hole 411. That is, a stopper 412 is arranged between two positioning posts 413, and a positioning post 413 is arranged between the two stoppers 412. Such an alternately arranged structure makes the fixing of the first hinge 500 more stable and reliable.

[0048] In this embodiment, the hinge cover 700 is fixed in a detachable manner of screwing and snapping in as described above. In other embodiments, the hinge cover 700 may also be fixed by screw fixing, glue bonding, or ultrasonic welding.

[0049] Referring to FIGS 3, 9 and 13 again, in this embodiment, the floating rotating structure further includes

a flexible bracket 210. The flexible bracket 210 is wrapped around the outside of the second hinge 600. That is, the flexible bracket 210 has a hollow cylindrical structure, and the second hinge 600 is located in the hollow structure of the flexible bracket 210. Specifically, the top of the flexible bracket 210 also extends outward to form a ring flange 211, the ring flange 211 is placed on the edge of the mounting hole 411, the circular flange 514 of the first hinge 500 is pressed on the ring flange 211, and the top outer wall of the supporting member 300 is provided with a ring groove 350, and the bottom sleeve of the flexible bracket 210 is arranged on the supporting member annular groove 350 to realize the fixation of the top and bottom of the flexible bracket 210. The flexible bracket 210 is arranged to shield the exposed part between the housing 410 and the supporting member 300, improving the appearance of the shaver, protecting the internal components, and supporting the shaving unit 400 to a certain extent.

Embodiment 2

[0050] Referring to FIGS 15 and 16, the floating rotating structure provided in the second embodiment of the present application is substantially the same as the floating rotating structure in the first embodiment, except that the shape of the first matching groove 510 and the matching portion 610 are different. Specifically, in this embodiment, the first matching groove 510 has a first plane 518, the first plane extends horizontally inward along the bottom edge of the first matching groove 510, and the surface of the matching portion 610 has a second plane 612 that matches the first plane 518. The second plane 612 is the bottom plane of the matching portion 610. When the matching portion 610 of the second hinge 600 extends into the first matching groove 510 of the first hinge 500, the second plane 612 of the matching portion 610 overlaps with the first plane 518 in the first matching groove 510. When the limiting structure 220 is separated, the second plane 612 and the first plane 518 can rotate with each other, thereby the relative rotation between the first hinge 500 and the second hinge 600 can also be realized, and the requirement of the shaving unit 400 to rotate within a range of 360° in the first embodiment can also be realized.

[0051] Other structures not listed in this embodiment are basically the same as those in Embodiment 1, and will not be repeated here.

Embodiment 3

[0052] Referring to FIGS 17 and 18, the massager provided in the third embodiment of the present application is a facial massager. Specifically, the facial massager includes a graspable massager body 110 and a massager head unit 120 of the massager body 110. The massager head unit 120 includes the massager head 121 and the above-mentioned floating rotating structure.

Wherein, the floating rotating structure is the same as the first embodiment, the difference is that the housing in the shaving unit 400 in the first embodiment is the massager head 120 in this embodiment, that is, the first hinge 500 and the hinge cover 700 are fixed as a whole with the massager head 120, and in this embodiment, the cover plate 420, bracket 430, blade head assembly 440, etc. are not required. Of course, the massager head 121 also requires a power mechanism and a transmission structure for high-speed rotation, and the power mechanism and transmission structure are the same as those in the existing massager structure, and will not be repeated here. It should be noted that in this embodiment, the first hinge 500 and the second hinge 600 can also adopt the structure as in the second embodiment.

[0053] By arrangement of the above-mentioned floating rotating structure on the massager head 121 and the massager body 110, when the massager head 121 is massaged on the face, the massage position of the face is different, and the external force acting on the massager head 121 changes when the external force applied to the massager head unit 120. When the external force is smaller than the elastic force of the elastic member 800, the elastic member 800 elastically returns to push the hinge cover 700 upwards, the first hinge 500 and the massager head unit 120 move upwards, and the limiting structure 220 between the first hinge 500 and the second hinge 600 rematches to prevent the relative rotation of the first hinge 500 and the second hinge 600. During this process, the massager head unit 120 floats up and down along the central axis L, which can better adapt to changes in the facial curve and avoid hard contact with the face, thereby bringing users a more comfortable massage experience.

[0054] The above are only preferable embodiments of the present application and are not used to limit the present application. For those skilled in the art, the present application can have various modifications and changes.

Claims

1. A floating rotating structure, comprising:

a first hinge (500), wherein the first hinge (500) has a penetrating first matching groove (510);
a second hinge (600), wherein a top of the second hinge (600) has a matching portion (610) placed in the first matching groove (510), a limiting structure (220) provided between the first matching groove (510) and the matching portion (610) for preventing relative rotation is separable along a central axis of the first matching groove (510), and the matching portion (610) is provided with a first central hole (621) that penetrates to a bottom of the second hinge (600);

- and
 an elastic member (800), wherein the elastic member (800) penetrates the first matching groove (510) and the first central hole (621) of the second hinge (600), and two ends of the elastic member (800) are configured to be pressed against two external components connected to the first hinge (500) and the second hinge (600) respectively.
2. The floating rotating structure according to claim 1, wherein the limiting structure (220) comprises: a first limiting plane (611) arranged on an outer surface of the matching portion (610), and a second limiting plane (511) arranged in the first matching groove (510) and attached to the first limiting plane (611).
 3. The floating rotating structure according to claim 2, wherein a positioning block (512) is provided in the first matching groove (510), and the second limiting plane (511) is arranged inside the positioning block (512) and faces a center of the first matching groove (510).
 4. The floating rotating structure according to claim 1, wherein
 the limiting structure (220) comprises a limiting hole provided on the first matching groove (510) and a limiting block provided on an outer surface of the matching portion (610) and extending into the limiting hole;
 or alternatively, the limiting structure (220) includes a limiting block provided in the first matching groove (510) and a limiting hole provided on the outer surface of the matching portion (610) for the limiting block to extend into.
 5. The floating rotating structure according to claim 1, wherein
 the first matching groove (510) has a first spherical arc surface (517), and the matching portion (610) surface has a second spherical arc surface matching with the first spherical arc surface (517);
 or alternatively, the first matching groove (510) has a first plane (518), and the surface of the matching portion (610) has a second plane (612) matching the first plane (518).
 6. The floating rotating structure according to claim 1, wherein one of the two external components is a housing (410), the housing (410) has a mounting hole (411), and the first hinge (500) is fixed to the mounting hole (411) through a hinge cover (700), and a top end of the elastic member (800) abuts against the hinge cover (700).
 7. The floating rotating structure according to claim 1 or 6, wherein the other one of two external components is a supporting member (300), and the bottom of the second hinge (600) extends through the first hinge (500) and is installed in the supporting member (300), and a bottom end of the elastic member (800) abuts against the supporting member (300).
 8. The floating rotating structure according to claim 7, wherein the second hinge (600) is fixedly connected to the supporting member (300) through a connector (900).
 9. The floating rotating structure according to claim 8, wherein a second matching groove (620) is provided on the matching portion (610), at least one penetrating first connecting hole (622) is provided on a wall of the second matching groove (620), and at least one penetrating second connecting hole (513) corresponding to the first connecting hole (622) is provided on a wall of the first matching groove (510), a mounting post (310) is provided in the supporting member (300), and the connector (900) is screws penetrating the first connecting hole (622) and the second connecting hole (513) into the mounting post (310).
 10. The floating rotating structure according to claim 9, wherein the bottom of the second hinge (600) has a connecting portion (630), and a positioning structure for limiting the connector (900) is provided on the connecting portion (630) corresponding to the first connecting hole (622).
 11. The floating rotating structure according to claim 10, wherein the positioning structure comprises:
 a positioning boss (640), provided on an outer wall of the connecting portion (630) for the connector (900) to pass through, and
 a concavity (650), located below the positioning boss (640), arranged in a height direction of the connection portion (630) and used to accommodate the connector (900).
 12. The floating rotating structure according to claim 9, wherein a top of the supporting member (300) has a step surface (320) with an inward concavity, and a second central hole (330) that penetrates the supporting member (300) is provided on the step surface (320), and the mounting post (310) is provided on the step surface (320), an annular protrusion (340) is provided on the step surface (320) and at an edge of the second central hole (330), and the bottom end of the elastic member (800) is sleeved on the annular protrusion (340).
 13. The floating rotating structure according to claim 6,

wherein an edge of the mounting hole (411) is provided with at least one stopper (412), an edge of the first matching groove (510) extends outward to form an annular flange (514), and the annular flange (514) is arranged on the edge of the mounting hole (411), the annular flange (514) is provided with at least one first avoiding groove (515) corresponding to the at least one stopper (412), the hinge cover (700) covers in the first matching groove (510), and an edge of the hinge cover (700) is provided with at least one block (720) configured to stop at the at least one stopper (412).

14. The floating rotating structure according to claim 13, wherein a groove (414) locked when the at least one block (720) rotates horizontally, is provided between each of the at least one stopper (412) and the edge of the mounting hole (411), and one side of the groove is provided with a limiting block (415) that resists the at least one block (720), the edge of the hinge cover (700) is provided with at least one second avoiding groove (730) configured to avoid the at least one stopper (412), and the at least one block (720) is provided in the at least one second avoiding groove (730).
15. The floating rotating structure according to claim 13 or 14, wherein a plurality of stoppers (412) are provided, and the plurality of stoppers (412) are evenly distributed on the edge of the mounting hole (411); and a plurality of blocks (720) are provided, and the plurality of the blocks (720) are evenly distributed on the edge of the hinge cover (700).
16. The floating rotating structure of claim 13, wherein the edge of the mounting hole (411) is further provided with at least one positioning post (413), and the annular flange (514) is provided with at least one semi-circular positioning hole (516) for at least one positioning post (413) to snap into when the annular flange (514) rotates.
17. The floating rotating structure according to claim 16, wherein a plurality of positioning posts (413) are provided; and the plurality of stoppers (412), the plurality of positioning posts (413) and the plurality of stoppers (412) are alternately spaced and evenly distributed on the edge of the mounting hole (411).
18. The floating rotating structure according to claim 1, further comprising a flexible bracket (210) wrapped around the second hinge (600), wherein a top of the flexible bracket (210) is mounted on a bottom of one of the two external components, and a bottom of the flexible bracket (210) is sleeved on an outer wall of the other one of the two external components.
19. A personal care device, comprising a body (100) and

a cutting unit (200) arranged on the body (100), wherein the cutting unit (200) comprises the floating rotating structure according to any one of claims 1-18.

20. A massager, comprising a massager body (110) and a massager head unit (120) arranged on the massager body (110), wherein the massager head unit (120) comprises the floating rotating structure according to any one of claims 1-18.

Patentansprüche

1. Frei bewegliche Drehstruktur, umfassend:

ein erstes Gelenk (500), wobei das erste Gelenk (500) eine durchdringende erste passende Nut (510) aufweist;

ein zweites Gelenk (600), wobei ein Oberteil des zweiten Gelenks (600) einen passenden Abschnitt (610), der in der ersten passenden Nut (510) platziert ist, aufweist, wobei eine einschränkende Struktur (220), die zwischen der ersten passenden Nut (510) und dem passenden Abschnitt (610) zum Verhindern einer relativen Drehung bereitgestellt ist, entlang einer Mittelachse von der ersten passenden Nut (510) trennbar ist und der passende Abschnitt (610) mit einem ersten zentralen Loch (621), das zu einem Unterteil des zweiten Gelenks (600) durchdringt, bereitgestellt ist; und

ein elastisches Element (800), wobei das elastische Element (800) die erste passende Nut (510) und das erste zentrale Loch (621) des zweiten Gelenks (600) durchdringt und zwei Enden des elastischen Elements (800) dazu konfiguriert sind, gegen zwei externe Komponenten, die mit dem ersten Gelenk (500) bzw. dem zweiten Gelenk (600) verbunden sind, zu drücken.

2. Frei bewegliche Drehstruktur nach Anspruch 1, wobei die einschränkende Struktur (220) Folgendes umfasst: eine erste einschränkende Ebene (611), die auf einer äußeren Oberfläche des passenden Abschnitts (610) angeordnet ist, und eine zweite einschränkende Ebene (511), die in der ersten passenden Nut (510) angeordnet und an der ersten einschränkenden Ebene (611) befestigt ist.
3. Frei bewegliche Drehstruktur nach Anspruch 2, wobei ein Positionierungsblock (512) in der ersten passenden Nut (510) bereitgestellt ist und die zweite einschränkende Ebene (511) innerhalb des Positionierungsblocks (512) angeordnet und einer Mitte der ersten passenden Nut (510) zugewandt ist.

4. Frei bewegliche Drehstruktur nach Anspruch 1, wobei

die einschränkende Struktur (220) ein einschränkendes Loch, das an der ersten passenden Nut (510) bereitgestellt ist, und einen einschränkenden Block, der an einer äußeren Oberfläche des passenden Abschnitts (610) bereitgestellt ist und sich in das einschränkende Loch erstreckt, umfasst;
oder alternativ, wobei die einschränkende Struktur (220) einen einschränkenden Block, der in der ersten passenden Nut (510) bereitgestellt ist, und ein einschränkendes Loch, das an der äußeren Oberfläche des passenden Abschnitts (610) bereitgestellt ist, in das sich in der einschränkende Block erstreckt, beinhaltet.

5. Frei bewegliche Drehstruktur nach Anspruch 1, wobei

die erste passende Nut (510) eine erste kreisbogenförmige Oberfläche (517) aufweist und die Oberfläche des passenden Abschnitts (610) eine zweite kreisbogenförmige Oberfläche, die zu der ersten kreisbogenförmigen Oberfläche (517) passt, aufweist;
oder, alternativ, wobei die erste passende Nut (510) eine erste Ebene (518) aufweist und die Oberfläche des passenden Abschnitts (610) eine zweite Ebene (612), die zu der ersten Ebene (518) passt, aufweist.

6. Frei bewegliche Drehstruktur nach Anspruch 1, wobei eine der beiden externen Komponenten ein Gehäuse (410) ist, das Gehäuse (410) ein Montageloch (411) aufweist und das erste Gelenk (500) durch eine Gelenkabdeckung (700) an dem Montageloch (411) befestigt ist und ein oberes Ende des elastischen Elements (800) an die Gelenkabdeckung (700) anstößt.

7. Frei bewegliche Drehstruktur nach Anspruch 1 oder 6, wobei die andere der beiden externen Komponenten ein Stützelement (300) ist und das Unterteil des zweiten Gelenks (600) sich durch das erste Gelenk (500) hindurch erstreckt und in dem Stützelement (300) installiert ist und ein unteres Ende des elastischen Elements (800) an das Stützelement (300) anstößt.

8. Frei bewegliche Drehstruktur nach Anspruch 7, wobei das zweite Gelenk (600) über ein Verbindungsstück (900) fest mit dem Stützelement (300) verbunden ist.

9. Frei bewegliche Drehstruktur nach Anspruch 8, wobei eine zweite passende Nut (620) an dem passen-

den Abschnitt (610) bereitgestellt ist, mindestens ein durchdringendes erstes Verbindungsloch (622) an einer Wand der zweiten passenden Nut (620) bereitgestellt ist und mindestens ein durchdringendes zweites Verbindungsloch (513), das dem ersten Verbindungsloch (622) entspricht, an einer Wand der ersten passenden Nut (510) bereitgestellt ist, wobei ein Montagestift (310) an dem Stützelement (300) bereitgestellt ist und es sich bei dem Verbindungsstück (900) um Schrauben, die durch das erste Verbindungsloch (622) und das zweite Verbindungsloch (513) in den Montagestift (310) dringen, handelt.

10. Frei bewegliche Drehstruktur nach Anspruch 9, wobei das Unterteil des zweiten Gelenks (600) einen Verbindungsabschnitt (630) aufweist und eine Positionierungsstruktur zum Einschränken des Verbindungsstücks (900) an dem Verbindungsabschnitt (630), der dem ersten Verbindungsloch (622) entspricht, bereitgestellt ist.

11. Frei bewegliche Drehstruktur nach Anspruch 10, wobei die Positionierungsstruktur Folgendes umfasst:

einen Positionierungsansatz (640), bereitgestellt an einer Außenwand des Verbindungsabschnitts (630), damit das Verbindungsstück (900) hindurchtreten kann, und eine Höhlung (650), die sich unter dem Positionierungsansatz (640) befindet, die in einer Höhenrichtung des Verbindungsabschnitts (630) angeordnet ist und die verwendet wird, um das Verbindungsstück (900) aufzunehmen.

12. Frei bewegliche Drehstruktur nach Anspruch 9, wobei ein Oberteil des Stützelements (300) eine gestufte Oberfläche (320) mit einer nach innen weisenden Höhlung aufweist und ein zweites zentrales Loch (330), das das Stützelement (300) durchdringt, an der gestuften Oberfläche (320) bereitgestellt ist und der Montagestift (310) auf der gestuften Oberfläche (320) bereitgestellt ist, wobei ein ringförmiger Vorsprung (340) an der gestuften Oberfläche (320) und an einer Kante des zweiten zentralen Lochs (330) bereitgestellt ist und das untere Ende des elastischen Elements (800) mit dem ringförmigen Vorsprung (340) druckverbunden ist.

13. Frei bewegliche Drehstruktur nach Anspruch 6, wobei eine Kante des Montagelochs (411) mit mindestens einem Stopper (412) bereitgestellt ist, eine Kante der ersten passenden Nut (510) sich nach außen erstreckt, um einen ringförmigen Flansch (514) zu bilden, und der ringförmige Flansch (514) an der Kante des Montagelochs (411) angeordnet ist, wobei der ringförmige Flansch (514) mit mindestens einer ersten Vermeidungsnut (515), die dem mindestens einen Stopper (412) entspricht, bereitge-

stellt ist, wobei die Gelenkabdeckung (700) in der ersten passenden Nut (510) abdeckt und eine Kante der Gelenkabdeckung (700) mit mindestens einem Block (720), der dazu konfiguriert ist, an dem mindestens einen Stopper (412) zu stoppen, bereitgestellt ist.

14. Frei bewegliche Drehstruktur nach Anspruch 13, wobei eine Nut (414), die verriegelt ist, wenn sich der mindestens eine Block (720) horizontal dreht, zwischen jedem des mindestens einen Stoppers (412) und der Kante des Montagelochs (411) bereitgestellt ist und eine Seite der Nut mit einem einschränken den Block (415), der dem mindestens einen Block (720) widersteht, bereitgestellt ist, wobei die Kante der Gelenkabdeckung (700) mit mindestens einer zweiten Vermeidungsnut (730), die dazu konfiguriert ist, den mindestens einen Stopper (412) zu vermeiden, bereitgestellt ist und der mindestens eine Block (720) in der mindestens einen zweiten Vermeidungsnut (730) bereitgestellt ist.
15. Frei bewegliche Drehstruktur nach Anspruch 13 oder 14, wobei eine Vielzahl von Stoppern (412) bereitgestellt ist und die Vielzahl der Stopper (412) gleichmäßig an der Kante des Montagelochs (411) verteilt ist; und eine Vielzahl von Blöcken (720) bereitgestellt ist und die Vielzahl der Blöcke (720) gleichmäßig an der Kante der Gelenkabdeckung (700) verteilt ist.
16. Frei bewegliche Drehstruktur nach Anspruch 13, wobei die Kante des Montagelochs (411) ferner mit mindestens einem Positionierungsstift (413) bereitgestellt ist und der ringförmige Flansch (514) mit mindestens einem halbkreisförmigen Positionierungsl Loch (516) bereitgestellt ist, in das mindestens ein Positionierungsstift (413) einrastet, wenn der ringförmige Flansch (514) sich dreht.
17. Frei bewegliche Drehstruktur nach Anspruch 16, wobei eine Vielzahl von Positionierungsstiften (413) bereitgestellt ist; und die Vielzahl von Stoppern (412), die Vielzahl von Positionierungsstiften (413) und die Vielzahl von Stoppern (412) abwechselnd beabstandet und gleichmäßig auf der Kante des Montagelochs (411) verteilt sind.
18. Frei bewegliche Drehstruktur nach Anspruch 1, ferner umfassend eine flexible Halterung (210), die um das zweite Gelenk (600) gewickelt ist, wobei ein Oberteil der flexiblen Halterung (210) an ein Unterteil einer der zwei externen Komponenten montiert ist und ein Unterteil der flexiblen Halterung (210) mit einer Außenwand der anderen der zwei externen Komponenten druckverbunden ist.
19. Körperpflegevorrichtung, umfassend einen Körper

(100) und eine Schneideeinheit (200), die auf dem Körper (100) angeordnet ist, wobei die Schneideeinheit (200) die frei bewegliche Drehstruktur nach einem der Ansprüche 1-18 umfasst.

20. Massagegerät, umfassend einen Massagegerätkörper (110) und eine Massagegerätkopf einheit (120), die auf dem Massagegerätkörper (110) angeordnet ist, wobei die Massagegerätkopf einheit (120) die frei bewegliche Drehstruktur nach einem der Ansprüche 1-18 umfasst.

Revendications

1. Structure rotative flottante, comprenant :

une première charnière (500), dans laquelle la première charnière (500) a une première rainure correspondante pénétrante (510) ;

une seconde charnière (600), dans laquelle une partie supérieure de la seconde charnière (600) a une partie correspondante (610) placée dans la première rainure correspondante (510), une structure de limitation (220) prévue entre la première rainure correspondante (510) et la partie correspondante (610) destinée à empêcher une rotation relative peut être séparée le long d'un axe central de la première rainure correspondante (510), et la partie correspondante (610) est dotée d'un premier trou central (621) qui pénètre jusqu'à une partie inférieure de la seconde charnière (600) ; et

un élément élastique (800), dans laquelle l'élément élastique (800) pénètre dans la première rainure correspondante (510) et le premier trou central (621) de la seconde charnière (600), et deux extrémités de l'élément élastique (800) sont configurées pour être pressées contre deux composants externes reliés respectivement à la première charnière (500) et à la seconde charnière (600).

2. Structure rotative flottante selon la revendication 1, dans laquelle la structure de limitation (220) comprend : un premier plan de limitation (611) agencé sur une surface extérieure de la partie correspondante (610), et un second plan de limitation (511) agencé dans la première rainure correspondante (510) et attaché au premier plan de limitation (611) .
3. Structure rotative flottante selon la revendication 2, dans laquelle un bloc de positionnement (512) est prévu dans la première rainure correspondante (510), et le second plan de limitation (511) est agencé à l'intérieur du bloc de positionnement (512) et fait face à un centre de la première rainure correspondante (510).

4. Structure rotative flottante selon la revendication 1, dans laquelle

la structure de limitation (220) comprend un trou de limitation prévu sur la première rainure correspondante (510) et un bloc de limitation prévu sur une surface extérieure de la partie correspondante (610) et s'étendant dans le trou de limitation ;

ou en variante, la structure de limitation (220) comporte un bloc de limitation prévu dans la première rainure correspondante (510) et un trou de limitation prévu sur la surface extérieure de la partie correspondante (610) pour que le bloc de limitation puisse s'y étendre.

5. Structure rotative flottante selon la revendication 1, dans laquelle

la première rainure correspondante (510) a une première surface d'arc sphérique (517), et la surface de partie correspondante (610) a une seconde surface d'arc sphérique correspondant à la première surface d'arc sphérique (517) ;

ou en variante, la première rainure correspondante (510) a un premier plan (518), et la surface de la partie correspondante (610) a un second plan (612) correspondant au premier plan (518) .

6. Structure rotative flottante selon la revendication 1, dans laquelle l'un des deux composants externes est un boîtier (410), le boîtier (410) a un trou de montage (411), et la première charnière (500) est fixée au trou de montage (411) à travers un couvercle de charnière (700), et une extrémité supérieure de l'élément élastique (800) vient en butée contre le couvercle de charnière (700).

7. Structure rotative flottante selon la revendication 1 ou 6, dans laquelle l'autre des deux composants externes est un élément de soutien (300), et la partie inférieure de la seconde charnière (600) s'étend à travers la première charnière (500) et est installée dans l'élément de soutien (300), et une extrémité inférieure de l'élément élastique (800) vient en butée contre l'élément de soutien (300).

8. Structure rotative flottante selon la revendication 7, dans laquelle la seconde charnière (600) est reliée de manière fixe à l'élément de soutien (300) par l'intermédiaire d'un raccord (900).

9. Structure rotative flottante selon la revendication 8, dans laquelle une seconde rainure correspondante (620) est prévue sur la partie correspondante (610), au moins un premier trou de raccordement pénétrant (622) est prévu sur une paroi de la seconde rainure

correspondante (620), et au moins un second trou de raccordement pénétrant (513) correspondant au premier trou de raccordement (622) est prévu sur une paroi de la première rainure correspondante (510), une tige de montage (310) est prévue dans l'élément de soutien (300), et le raccord (900) est constitué de vis pénétrant dans le premier trou de raccordement (622) et le second trou de raccordement (513) dans la tige de montage (310) .

10. Structure rotative flottante selon la revendication 9, dans laquelle la partie inférieure de la seconde charnière (600) a une partie de raccordement (630), et une structure de positionnement pour limiter le raccord (900) est prévue sur la partie de raccordement (630) correspondant au premier trou de raccordement (622).

11. Structure rotative flottante selon la revendication 10, dans laquelle la structure de positionnement comprend :

un bossage de positionnement (640), prévu sur une paroi extérieure de la partie de raccordement (630) pour que le raccord (900) puisse passer à travers, et

une concavité (650), située en dessous du bossage de positionnement (640), agencée dans une direction de hauteur de la partie de raccordement (630) et utilisée pour recevoir le raccord (900).

12. Structure rotative flottante selon la revendication 9, dans laquelle une partie supérieure de l'élément de soutien (300) a une surface étagée (320) avec une concavité vers l'intérieur, et un second trou central (330) qui pénètre dans l'élément de soutien (300) est prévu sur la surface étagée (320), et la tige de montage (310) est prévue sur la surface étagée (320), une saillie annulaire (340) est prévue sur la surface étagée (320) et au niveau d'un bord du second trou central (330), et l'extrémité inférieure de l'élément élastique (800) est emmanchée sur la saillie annulaire (340).

13. Structure rotative flottante selon la revendication 6, dans laquelle un bord du trou de montage (411) est doté d'au moins une butée (412), un bord de la première rainure correspondante (510) s'étend vers l'extérieur pour former une bride annulaire (514) et la bride annulaire (514) est agencée sur le bord du trou de montage (411), la bride annulaire (514) est dotée d'au moins une première rainure d'évitement (515) correspondant à l'au moins une butée (412), le couvercle de charnière (700) recouvre la première rainure correspondante (510), et un bord du couvercle de charnière (700) est doté d'au moins un bloc (720) configuré pour s'arrêter au niveau de l'au

moins une butée (412).

14. Structure rotative flottante selon la revendication 13, dans laquelle une rainure (414) verrouillée lorsque l'au moins un bloc (720) tourne horizontalement, est prévue entre chacun de l'au moins une butée (412) et du bord du trou de montage (411), et un côté de la rainure est doté d'un bloc de limitation (415) qui résiste à l'au moins un bloc (720), le bord du couvercle de charnière (700) est doté d'au moins une seconde rainure d'évitement (730) configurée pour éviter l'au moins une butée (412), et l'au moins un bloc (720) est prévu dans l'au moins une seconde rainure d'évitement (730). 5 10 15
15. Structure rotative flottante selon la revendication 13 ou 14, dans laquelle une pluralité de butées (412) sont prévues, et la pluralité de butées (412) sont réparties uniformément sur le bord du trou de montage (411) ; et une pluralité de blocs (720) sont prévus, et la pluralité de blocs (720) sont répartis uniformément sur le bord du couvercle de charnière (700). 20
16. Structure rotative flottante selon la revendication 13, dans laquelle le bord du trou de montage (411) est en outre doté d'au moins une tige de positionnement (413), et la bride annulaire (514) est dotée d'au moins un trou de positionnement semi-circulaire (516) pour qu'au moins une tige de positionnement (413) puisse s'enclencher lorsque la bride annulaire (514) tourne. 25 30
17. Structure rotative flottante selon la revendication 16, dans laquelle une pluralité de tiges de positionnement (413) sont prévues ; et la pluralité de butées (412), la pluralité de tiges de positionnement (413) et la pluralité de butées (412) sont alternativement espacées et réparties uniformément sur le bord du trou de montage (411). 35
18. Structure rotative flottante selon la revendication 1, comprenant en outre un support flexible (210) enroulé autour de la seconde charnière (600), dans laquelle une partie supérieure du support flexible (210) est montée sur une partie inférieure de l'un des deux composants externes, et une partie inférieure du support flexible (210) est emmanchée sur une paroi extérieure de l'autre des deux composants externes. 40 45
19. Dispositif de soin personnel, comprenant un corps (100) et une unité de coupe (200) agencée sur le corps (100), dans lequel l'unité de coupe (200) comprend la structure rotative flottante selon l'une quelconque des revendications 1 à 18. 50 55
20. Appareil de massage, comprenant un corps d'appareil de massage (110) et une unité de tête de massage (120) agencée sur le corps d'appareil de mas-

sage (110), dans lequel l'unité de tête de massage (120) comprend la structure rotative flottante selon l'une quelconque des revendications 1 à 18.

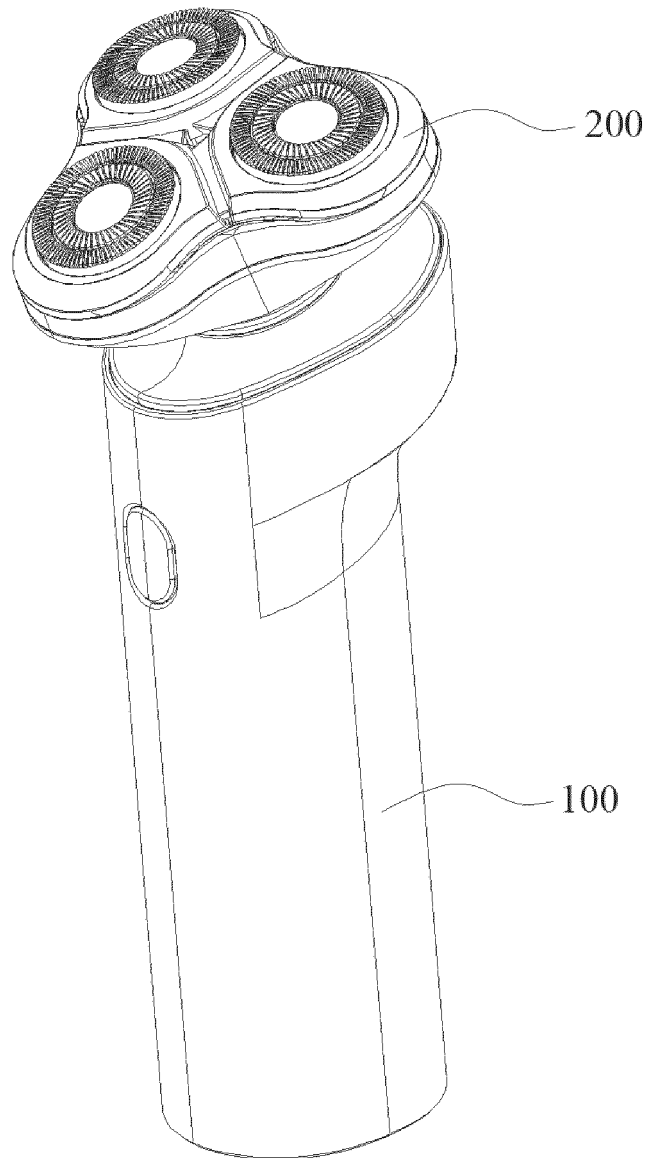
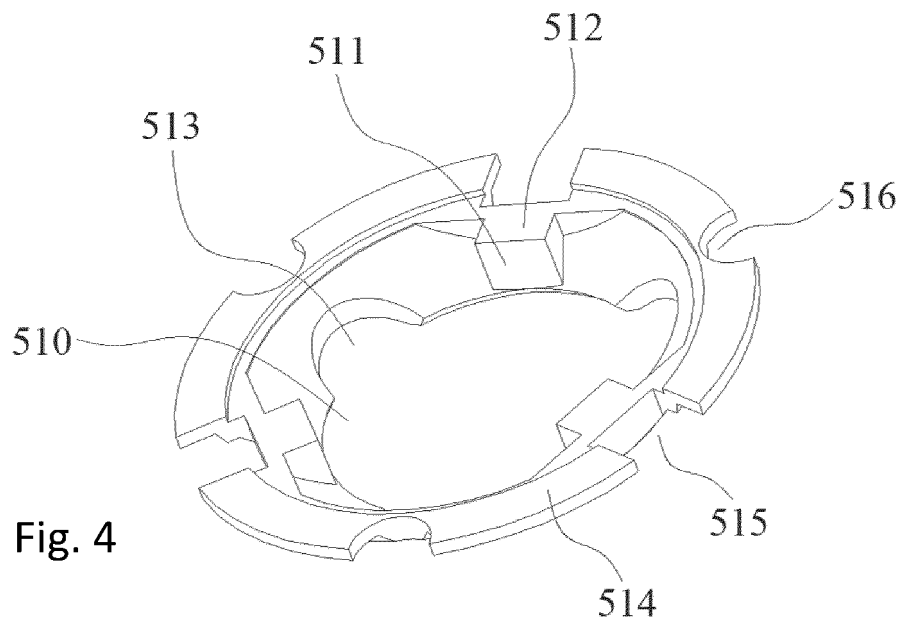
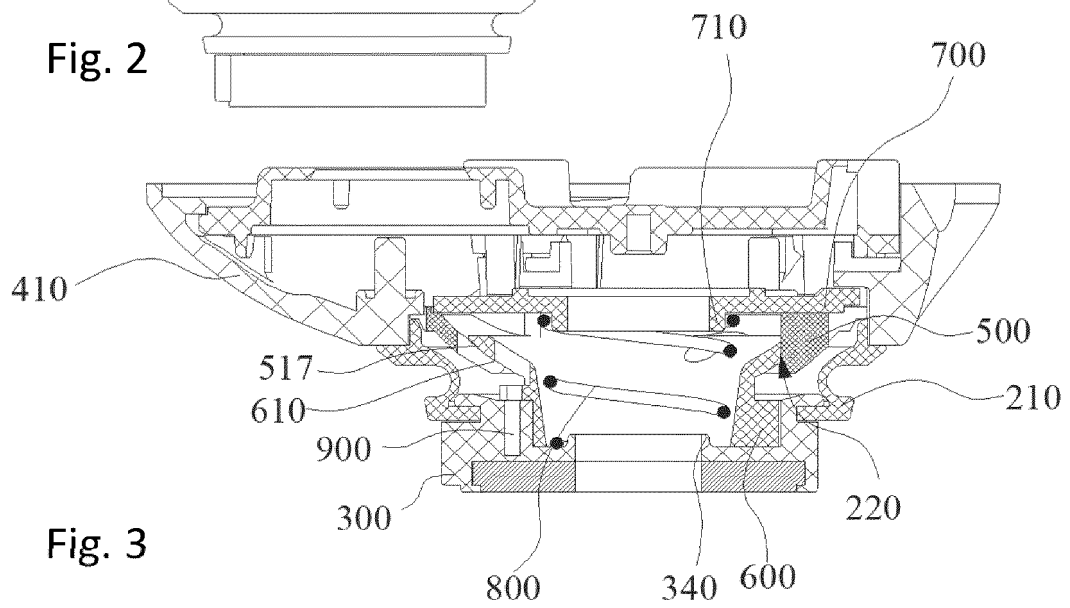
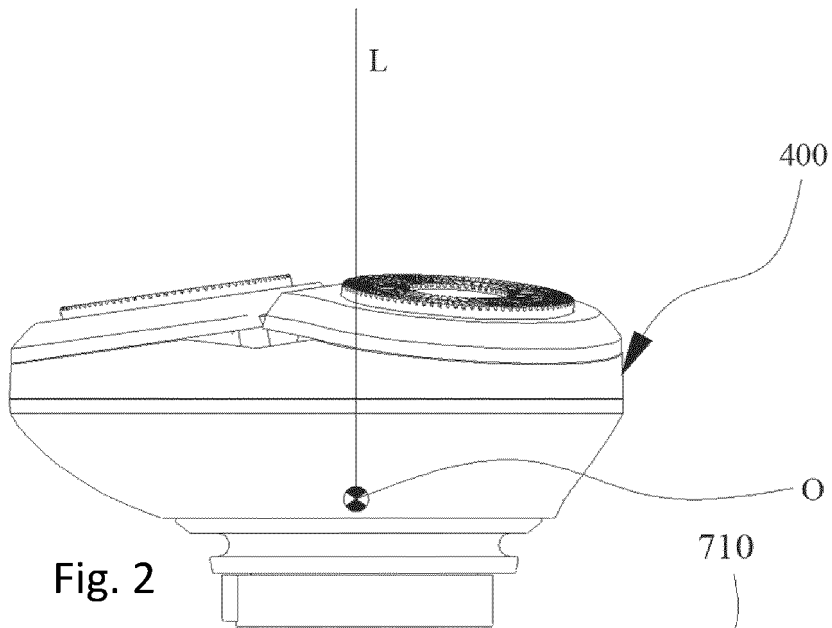
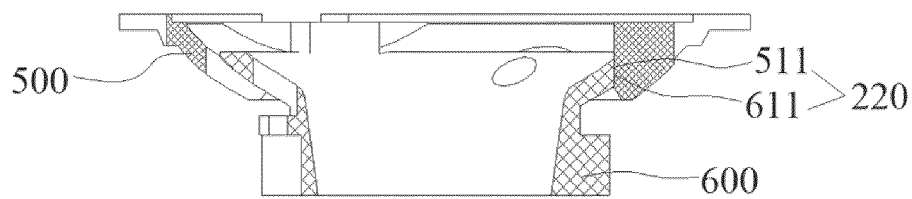
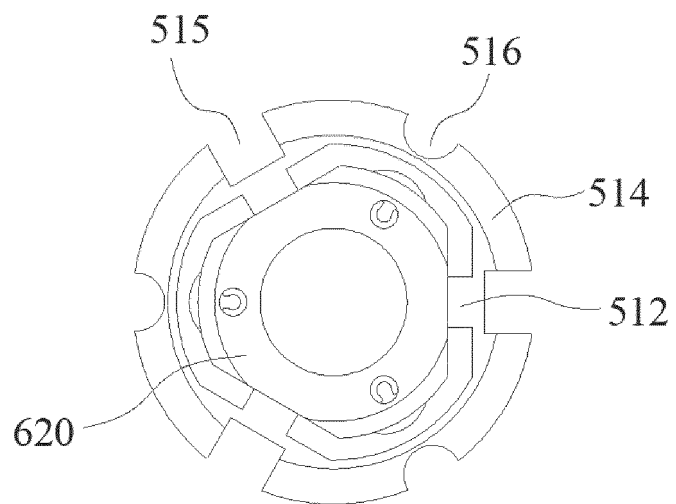
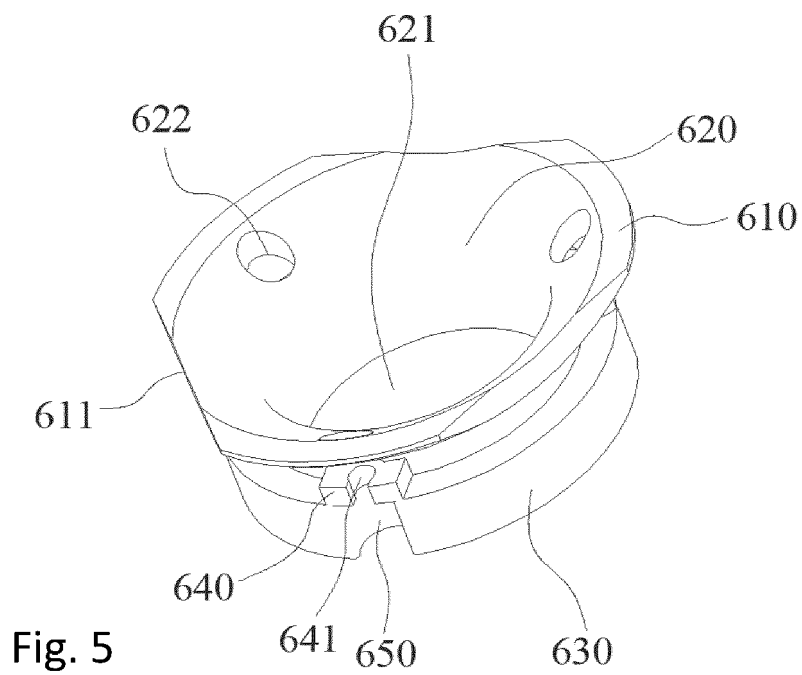


Fig. 1





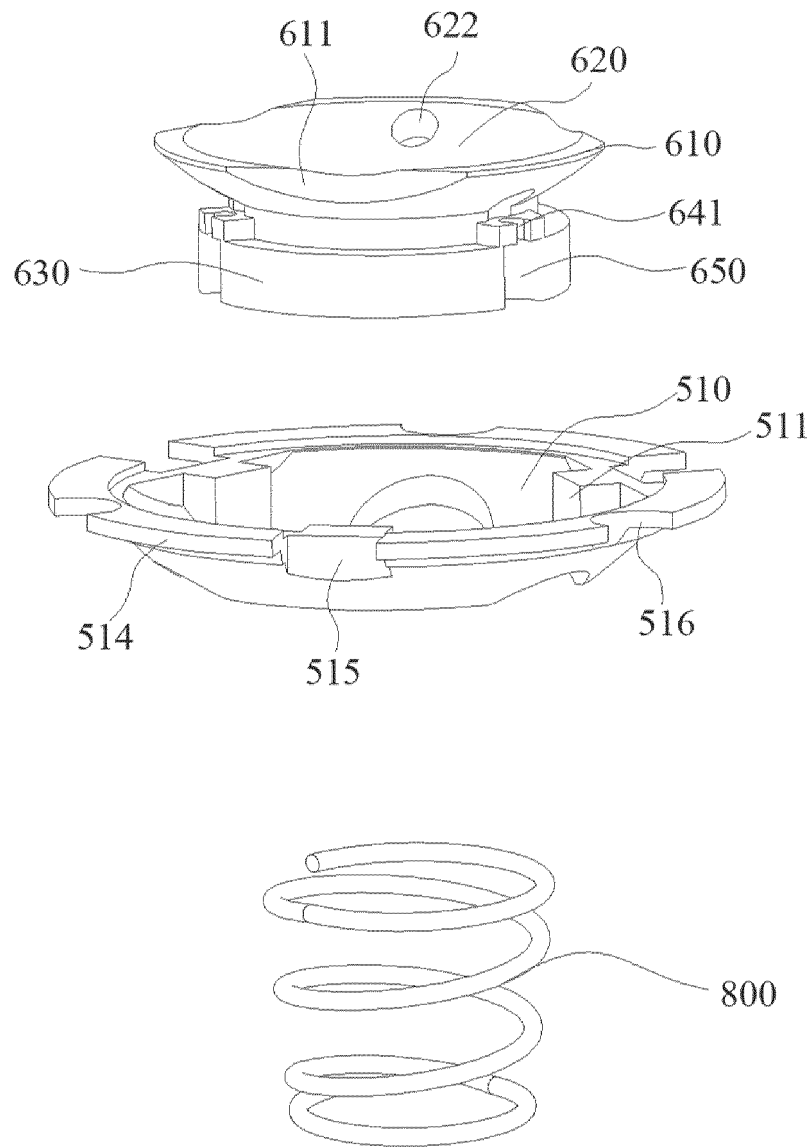
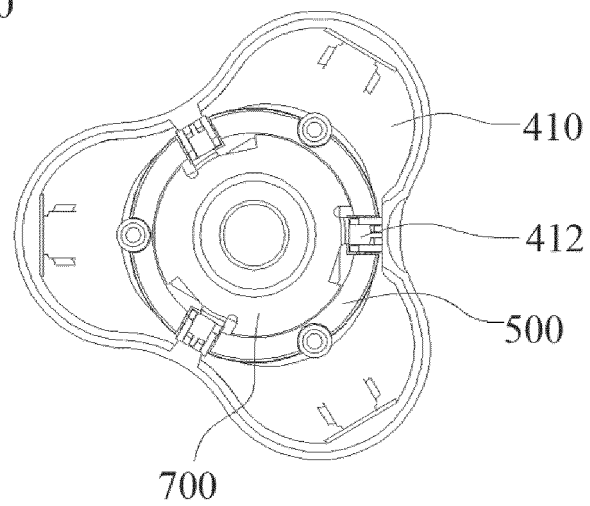
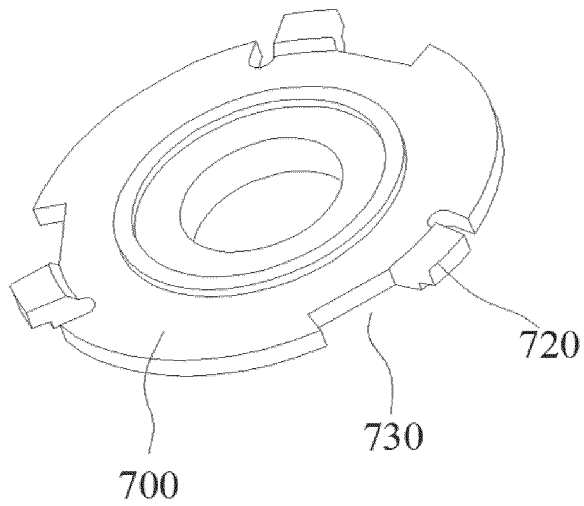
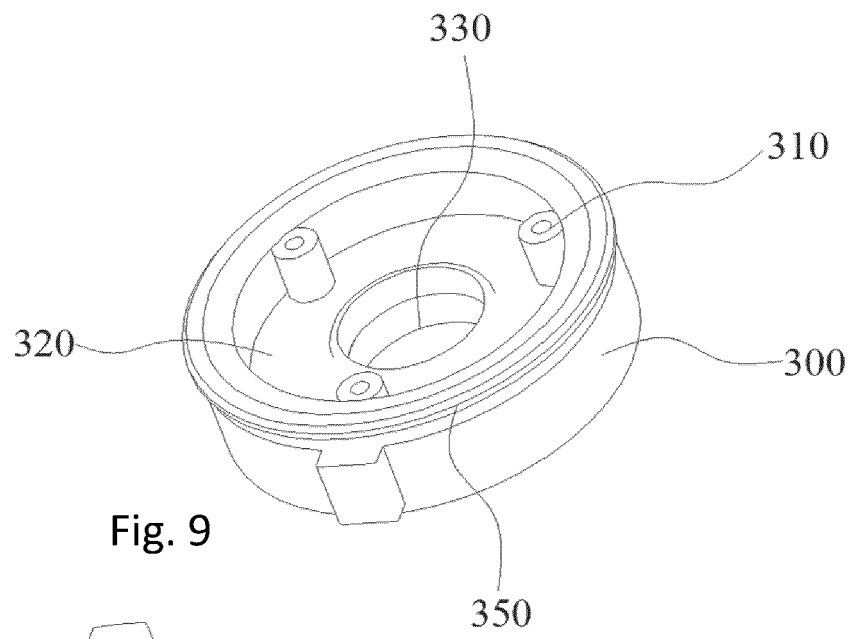


Fig. 6



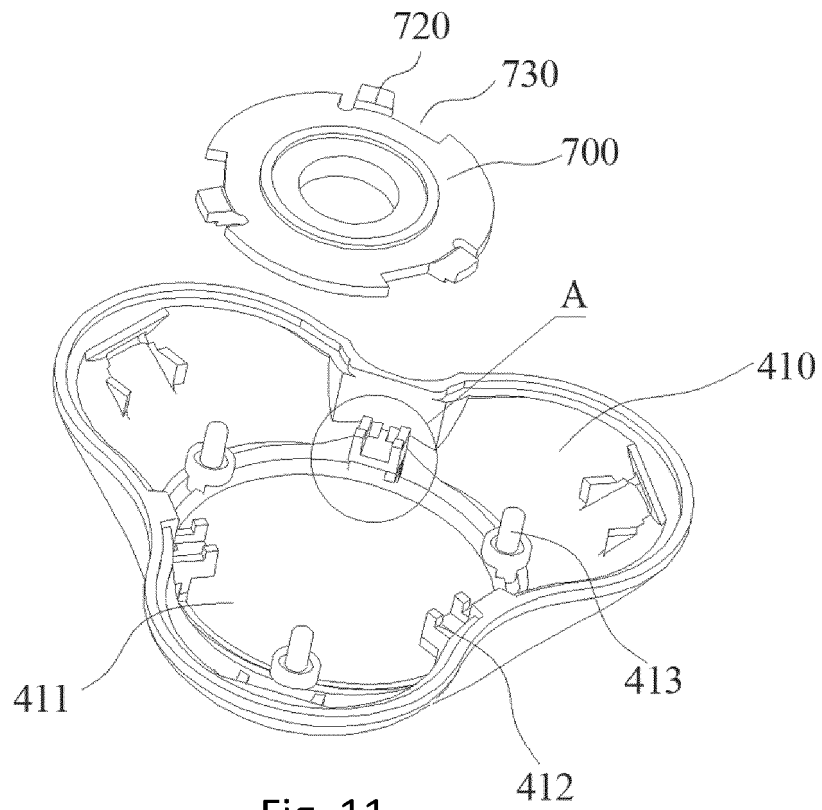


Fig. 11

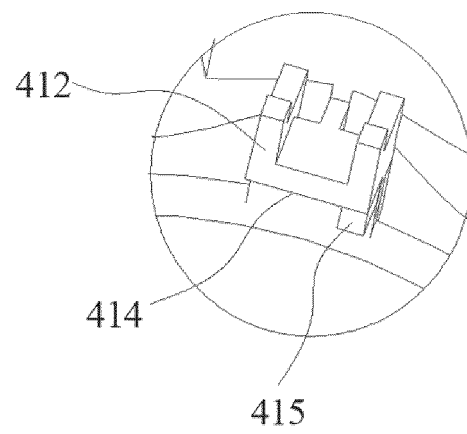


Fig. 14

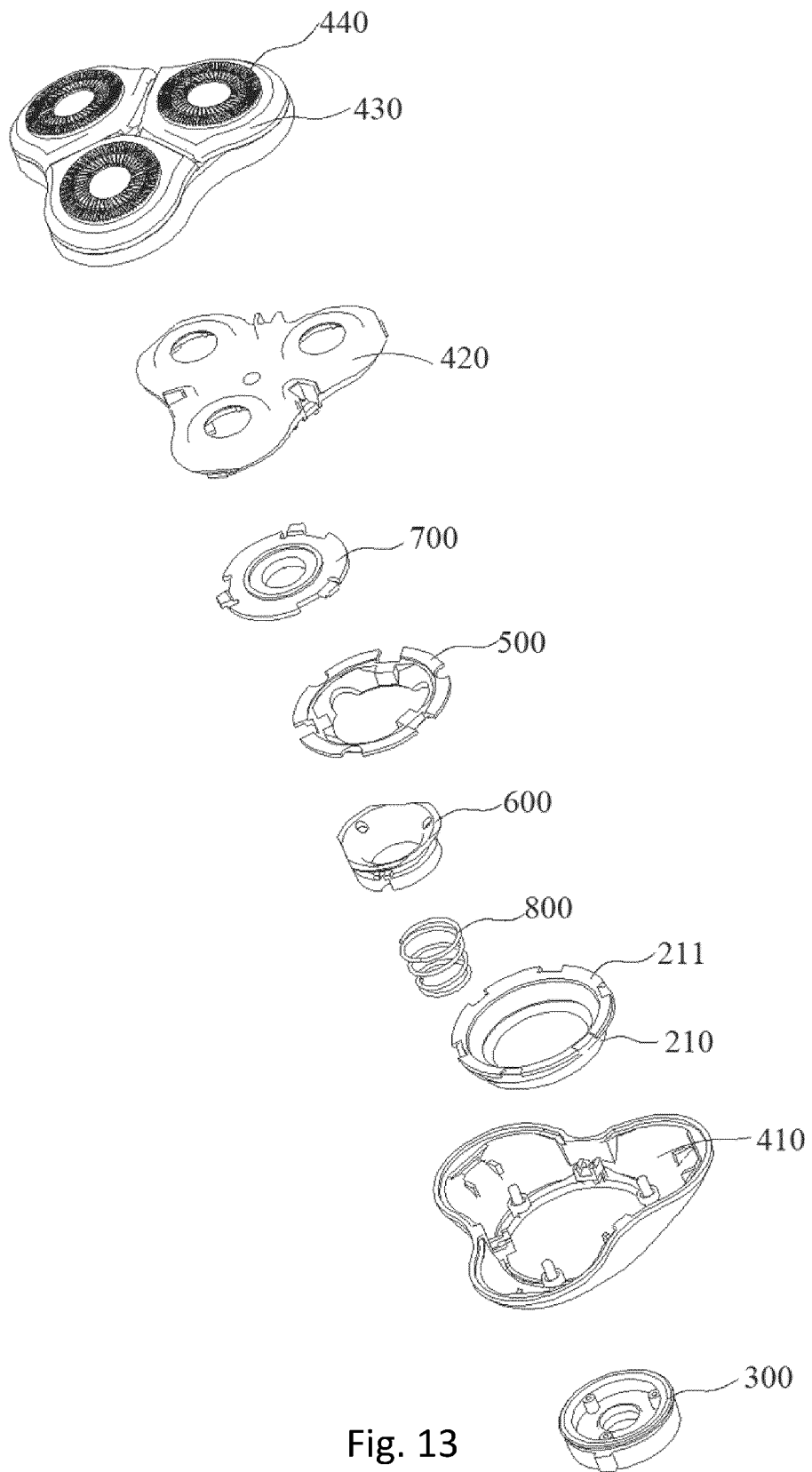


Fig. 13

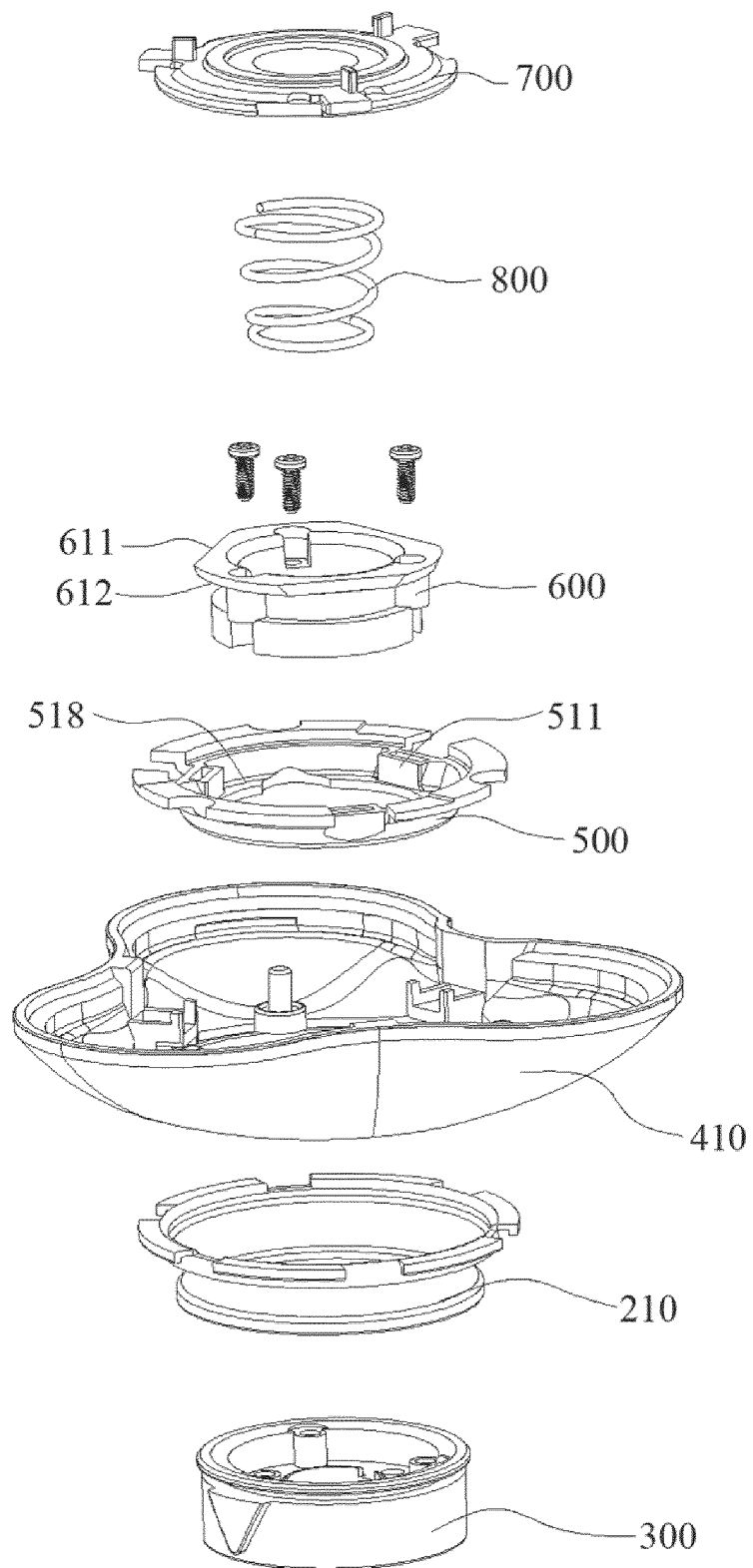


Fig. 15

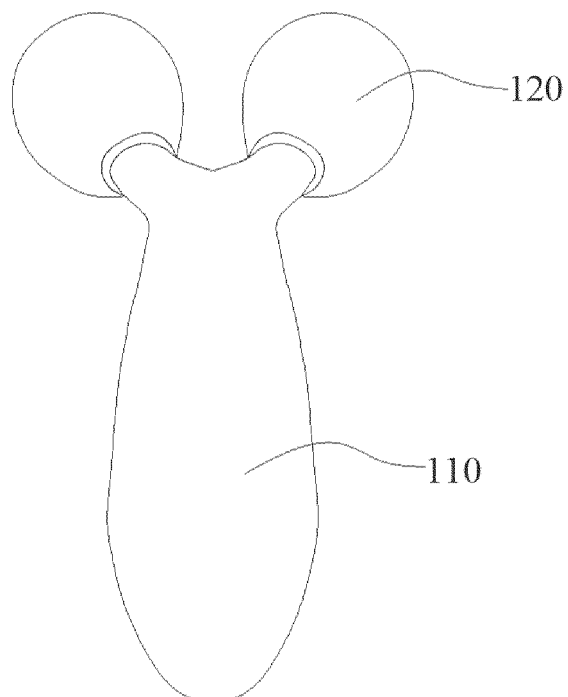
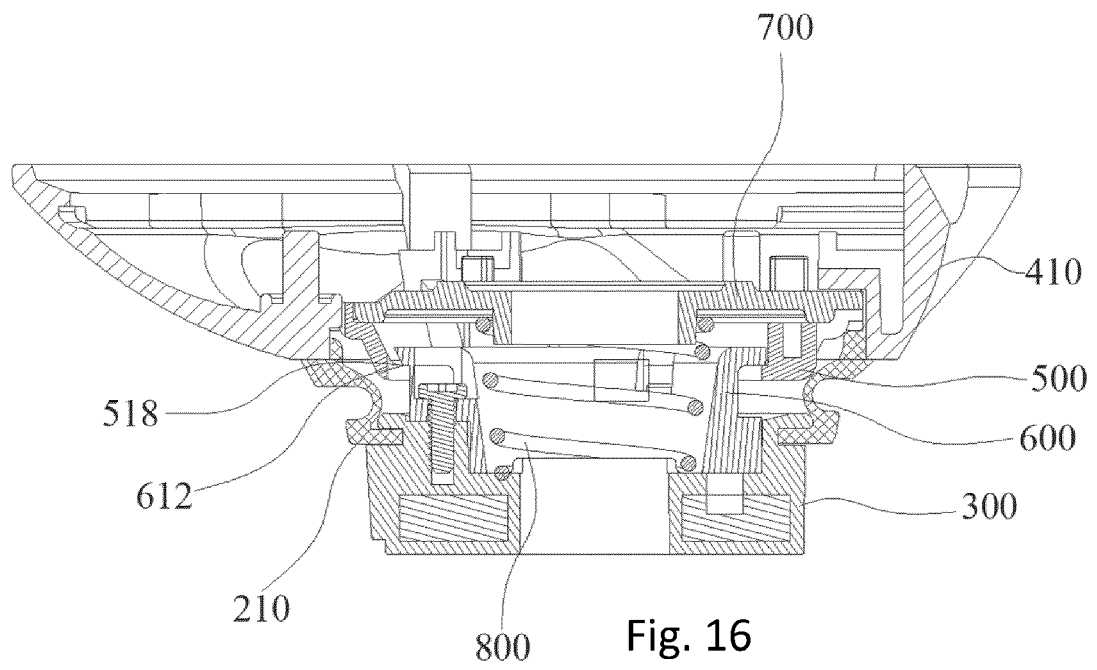


Fig. 17

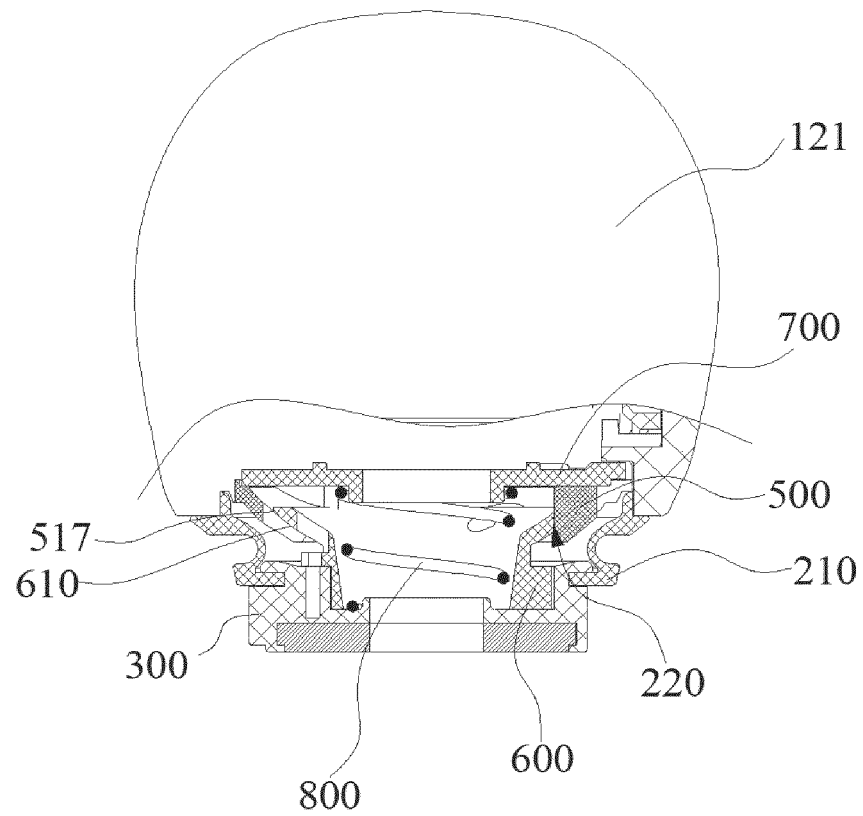


Fig. 18

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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