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(54) **ATOMIZING ASSEMBLY AND ATOMIZER HAVING THE SAME**

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ENSEMBLE DE PULVÉRISATION ET PULVÉRISATEUR COMPRENANT CELUI-CI

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Description**BACKGROUND OF THE INVENTION****1. FIELD OF THE INVENTION**

[0001] The present invention relates to an atomizing assembly and an atomizer having the same, particularly to an atomizing assembly whose containing part and atomizing part can be press-fitted to or separated from each other, and an atomizer having the same.

2. DESCRIPTION OF THE PRIOR ART

[0002] Generally to speak, an oscillation type atomizer uses a nozzle plate and an oscillation plate to convert a liquid into tiny liquid droplets and spray them out. In a conventional oscillation type atomizer, the atomizing assembly and the atomizer body are fabricated integrally. Thus, the conventional oscillation type atomizer is likely to have malfunctions or current leakage caused by liquid infiltration while it is resupplied with liquid. Further, the user may experience inconvenience in replacing related parts.

[0003] Some conventional designs were proposed to solve the abovementioned problems, wherein the atomizing assembly and the atomizer body are fabricated into separate structures. In these improved designs, the joint regions of the atomizing assembly and the atomizer body are normally planar structures. While the atomizer is operating, oscillation converts the liquid into mist. However, oscillation force may also cause the liquid to overflow from the gap between the planar joint regions, which would waste the liquid and may damage the device. If the atomizing assembly and the atomizer body are joined with fixing elements or an adhesive, the fabrication cost thereof may increase.

US 6,543,701 B1, US 2005/0178847 A1 and US 2009/0134235 A1 disclose atomizing assemblies each having a containing part, atomizing part and an additional separate fixing element for detachably fixing the containing part and the atomizing part with each other.

SUMMARY OF THE INVENTION

[0004] In order to overcome the drawbacks of the conventional technology, the present invention proposes an atomizing assembly and an atomizer having the same, wherein the containing part and the atomizing part of the atomizing assembly have corresponding press-fit structures, whereby the containing part and the atomizing part are easy to assemble and disassemble, and whereby the containing part and the atomizing part can be closely press-fitted to each other without using any fixing elements, and whereby are avoided the problems of liquid waste and device damage caused by liquid leakage occurring in the conventional atomizing assembly.

[0005] One objective of the present invention is to pro-

vide an atomizing assembly, which comprises a containing part including a containing body defining a containing space for containing a liquid to be atomized; and an atomizing part including an atomizing mechanism and an atomizing electric-connection portion electrically connected with the atomizing mechanism, wherein the containing body has a recess with a first pattern, and wherein the atomizing mechanism has a second pattern corresponding to the first pattern, and wherein the atomizing mechanism is detachably installed in the recess of the containing body via press-fitting the second pattern to the first pattern of the recess.

[0006] In one embodiment, the first pattern is a convex pattern, and the second pattern is a concave pattern; the convex pattern matches the concave pattern.

[0007] In one embodiment, the first pattern is a concave pattern, and the second pattern is a convex pattern; the concave pattern matches the convex pattern.

[0008] In one embodiment, the first pattern and the second pattern are annular patterns.

[0009] In one embodiment, the atomizing assembly further comprises a fixing cover, whose shape is corresponding to the atomizing mechanism and the atomizing electric-connection portion, and which is used to cover the atomizing mechanism and the atomizing electric-connection portion and fix them to the containing body.

[0010] Another objective of the present invention is to provide an atomizer, which comprises the abovementioned atomizing assembly and a base seat, wherein the base seat includes a base electric-connection portion that is fabricated into a structure able to be electrically connected with the atomizing electric-connection portion.

[0011] Below, embodiments are described in detail in cooperation with the attached drawings to make easily understood the objectives, technical contents, characteristics and accomplishments of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

Fig. 1 is a diagram schematically showing an atomizing assembly according to one embodiment of the present invention;

Fig. 2a is an exploded view schematically showing an atomizing assembly according to one embodiment of the present invention;

Fig. 2b is an exploded view schematically showing an atomizing assembly according to another embodiment of the present invention;

Fig. 3 is a diagram schematically showing an atomizer according to one embodiment of the present invention; and

Fig. 4 is a diagram schematically showing a base seat of an atomizer according to one embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] Refer to Fig. 1. The atomizing assembly 10 of the present invention comprises a containing part 20 and an atomizing part 30. The containing part 20 includes a containing body 22 defining a containing space 24 for containing a liquid (not shown in the drawing) to be atomized. The containing body 22 has a recess 26 with a first pattern P1 (as shown in Fig. 2a and Fig. 2b), which will be described in detail hereinafter. The atomizing part 30 of the atomizing assembly 10 includes an atomizing mechanism 34 and an atomizing electric-connection portion 32 electrically connected with the atomizing mechanism 34. In one embodiment, the atomizing mechanism 34 is disposed corresponding to the recess 26 of the containing body 22.

[0014] Refer to Fig. 2a and Fig. 2b. The atomizing mechanism 34 has a second pattern P2 corresponding to the first pattern P1 of the recess 26. The atomizing mechanism 34 is detachably installed in the recess 26 of the containing body 22 via press-fitting the second pattern P2 to the first pattern P1 of the recess 26. In one embodiment, the first pattern P1 is a convex pattern, and the second pattern P2 is a concave pattern; the convex pattern is corresponding to the concave pattern and can be press-fitted to the concave pattern. In another embodiment, the first pattern P1 is a concave pattern, and the second pattern P2 is a convex pattern; the convex pattern is corresponding to the concave pattern and can be press-fitted to the concave pattern. It should be noted: the first pattern P1 and the second pattern P2, which are drawn to have annular shapes in the drawings, are only for exemplification. As long as the first pattern P1 and the second pattern P2 are corresponding to each other and can be press-fitted to each other, the present invention does not limit that the first pattern and the second pattern must have a specified shape.

[0015] In one embodiment, the atomizing assembly of the present invention further comprises a fixing cover 40, as shown in Fig. 3. The fixing cover 40 is corresponding to the atomizing part 30. In other words, the shape of the fixing cover 40 is corresponding to the shapes of the atomizing mechanism 34 and the atomizing electric-connection portion 32, and the fixing cover 40 is used to cover the atomizing mechanism 34 and the atomizing electric-connection portion 32 and fix them to the containing part 20. In one embodiment, an adhesive agent or fixing elements are applied between the fixing cover 40 and the atomizing part 30 to enhance the connection and leakage resistance thereof.

[0016] Refer to Fig. 3 and Fig. 4. The present invention also proposes an atomizer 1000, which further comprises a base seat 100 and the abovementioned atomizing assembly, which includes the containing part 20, the atomizing part 30 and the fixing cover 40. The base seat 100 includes a base electric-connection portion 110, which is fabricated into a structure able to be electrically connected with the atomizing electric-connection portion 32

of the atomizing part 30. The base electric-connection portion 110 can function as a power source or is electrically connected with a power source. Via the connection of the atomizing electric-connection portion 32 and the base electric-connection portion 110, the atomizing assembly 10 and the base seat 100 are assembled to form the atomizer 1000. In one embodiment, the atomizing electric-connection portion 32 is a group of pins; the atomizing assembly 10 is electrically connected with the base seat 100 in a pin-insertion way. According to requirement, the atomizer 1000 of the present invention can function as a sprayer of essence or perfume, a humidity modifier, a cosmetic moisturizer, or an applicator.

[0017] In conclusion, the present invention proposes an atomizing assembly, which comprises a containing part and an atomizing part respectively having a first pattern and a second pattern, wherein the first pattern and the second pattern are corresponding to each other and can be press-fitted to each other, whereby the containing part and the atomizing part can be detachably engaged with each other, and whereby the containing part and the atomizing part can be securely press-fitted to each other without using any fixing element. Nonetheless, as described above, an optional fixing cover can be used to cover the atomizing mechanism and the atomizing electric-connection portion and fix them to the containing body. Thus, the present invention can effectively avoid liquid leakage, and the present invention can increase the utilization efficiency of the liquid and decrease the malfunction rate of the device.

Claims

1. An atomizing assembly (10) comprising:
 - a containing part (20) including a containing body (22) defining a containing space (24) for containing a liquid to be atomized; and
 - an atomizing part (30) including an atomizing mechanism (34) and an atomizing electric-connection portion (32) electrically connected with said atomizing mechanism (34);

characterized by

 - a recess (26) being formed in said containing body (22), said recess (26) having formed a first pattern (P1) disposed on a bottom surface of said recess (26);
 - said atomizing mechanism (34) having a second pattern (P2) formed on an outer surface of the atomizing mechanism (34), the second pattern (P2) corresponding to said first pattern (P1);
 - wherein said second pattern (P2) of said atomizing mechanism (34) is press-fitted to said first pattern (P1) in said recess (26) to make said atomizing mechanism (34) detachably installed in said recess (26) of said containing body (22).

2. The atomizing assembly (10) according to claim 1, wherein said first pattern (P1) and said second pattern (P2) have multiple interlock structures corresponding to each other.
3. The atomizing assembly (10) according to any one of the previous claims, wherein said first pattern (P1) is a convex pattern, and said second pattern (P2) is a concave pattern, and wherein said convex pattern and said concave pattern are corresponding to each other.
4. The atomizing assembly (10) according to any one of the previous claims, wherein said first pattern (P1) is a concave pattern, and said second pattern (P2) is a convex pattern, and wherein said concave pattern and said convex pattern are corresponding to each other.
5. The atomizing assembly (10) according to any one of claims 3 to 4, wherein said first pattern (P1) has an annular shape, and said second pattern (P2) also has an annular shape.
6. The atomizing assembly (10) according to any one of the previous claims further comprising a fixing cover (40), whose shape is corresponding to said atomizing mechanism (34) and said atomizing electric-connection portion (32), and which is used to cover said atomizing mechanism (34) and said atomizing electric-connection portion (32) and fix said atomizing mechanism (34) and said atomizing electric-connection portion (32) to said containing part (20).
7. The atomizing assembly (10) according to any one of the previous claims, wherein the first pattern (P1) and the second pattern (P2) each include a plurality of concentric annular rings separated by annular gaps, the annular rings of each pattern (P1, P2) corresponding in size to the annular gaps in the other pattern (P2, P1), and the annular rings of largest radius being in the first pattern (P1) or in the second pattern (P2).
8. An atomizer (1000) comprising an atomizing assembly (10) according to any one of the previous claims and a base seat (100),

wherein said base seat (100) has a base electric-connection portion (110), and wherein said base electric-connection portion (32) is fabricated into a structure able to be electrically connected with said atomizing electric-connection portion (32).

Patentansprüche

1. Eine Zerstäubungsanordnung (10), umfassend
 - ein Behälterteil (20), das einen Behälterkörper (22) aufweist, der einen Behälterraum (24) zum Aufnehmen einer zu zerstäubenden Flüssigkeit definiert, und
 - ein Zerstäubungsteil (30), das einen Zerstäubungsmechanismus (34) und einen Zerstäubungsabschnitt (32) zur elektrischen Verbindung, der mit dem Zerstäubungsmechanismus (34) elektrisch verbunden ist, aufweist, **dadurch gekennzeichnet, dass**
 - eine Aussparung (26) im Behälterkörper (22) ausgebildet ist, wobei die Aussparung (26) ein erstes Muster (P1), das auf einer Bodenfläche der Aussparung (26) angeordnet ist, ausgebildet hat;
 - der Zerstäubungsmechanismus (34) ein zweites Muster (P2), das auf einer Außenfläche des Zerstäubungsmechanismus' (34) ausgebildet ist, aufweist, wobei das zweite Muster (P2) mit dem ersten Muster (P1) korrespondiert;
 - wobei das zweite Muster (P2) des Zerstäubungsmechanismus' (34) in der Aussparung (26) durch Presssitz am ersten Muster (P1) befestigt ist, um zu bewirken, dass der Zerstäubungsmechanismus (34) lösbar in der Aussparung (26) des Behälterkörpers (22) eingesetzt ist.
2. Die Zerstäubungsanordnung (10) nach Anspruch 1, wobei das erste Muster (P1) und das zweite Muster (P2) mehrere Verriegelungsstrukturen, die miteinander korrespondieren, aufweisen.
3. Die Zerstäubungsanordnung (10) nach einem der vorhergehenden Ansprüche, wobei das erste Muster (P1) ein konvexes Muster ist und das zweite Muster (P2) ein konkaves Muster ist, und wobei sich das konvexe Muster und das konkave Muster entsprechen.
4. Die Zerstäubungsanordnung (10) nach einem der vorhergehenden Ansprüche, wobei das erste Muster (P1) ein konkaves Muster ist und das zweite Muster (P2) ein konvexes Muster ist, und wobei sich das konkave Muster und das konvexe Muster entsprechen.
5. Die Zerstäubungsanordnung (10) nach einem der Ansprüche 3 bis 4, wobei das erste Muster (P1) eine Ringform aufweist und das zweite Muster (P2) ebenfalls eine Ringform aufweist.
6. Die Zerstäubungsanordnung (10) nach einem der vorhergehenden Ansprüche, ferner aufweisend eine

Befestigungsabdeckung (40), deren Form dem Zerstäubungsmechanismus (34) und dem Zerstäubungsabschnitt (32) zur elektrischen Verbindung entspricht und die verwendet wird, um den Zerstäubungsmechanismus (34) und den Zerstäubungsabschnitt (32) zur elektrischen Verbindung abzudecken und den Zerstäubungsmechanismus (34) und den Zerstäubungsabschnitt (32) zur elektrischen Verbindung am Behälterteil (20) zu befestigen.

7. Die Zerstäubungsanordnung (10) nach einem der vorhergehenden Ansprüche, wobei das erste Muster (P1) und das zweite Muster (P2) jeweils eine Vielzahl konzentrischer ringförmiger Ringe, die von ringförmigen Spalten getrennt sind, aufweisen, wobei die ringförmigen Ringe jedes Musters (P1, P2) größtmäßig den ringförmigen Spalten im anderen Muster (P2, P1) entsprechen und die ringförmigen Ringe mit dem größten Radius im ersten Muster (P1) oder im zweiten Muster (P2) sind.
8. Ein Zerstäuber (1000), der eine Zerstäubungsanordnung (10) nach einem der vorhergehenden Ansprüche und einen Basissitz (100) umfasst,

wobei der Basissitz (100) einen Basisabschnitt (110) zur elektrischen Verbindung aufweist, und wobei der Basisabschnitt (32) zur elektrischen Verbindung in eine Struktur hergestellt ist, die fähig ist, um mit dem Zerstäubungsabschnitt (32) zur elektrischen Verbindung elektrisch verbunden zu werden.

Revendications

1. Un ensemble de pulvérisation (10), comprenant

une partie de contenant (20) comprenant un corps de contenant (22) définissant un espace de contenant (24) pour contenir un liquide à être atomisé; et

une partie de pulvérisation (30) comprenant un mécanisme de pulvérisation (34) et une partie de pulvérisation de connexion électrique (32) connectée électriquement audit mécanisme de pulvérisation (34);

caractérisé en ce que

un évidement (26) est formé dans ledit corps de contenant (22), ledit évidement (26) ayant formé un premier motif (P1) disposé sur une surface inférieure dudit évidement (26);

ledit mécanisme de pulvérisation (34) a un second motif (P2) formé sur une surface extérieure du mécanisme de pulvérisation (34), le second motif (P2) correspondant audit premier motif (P1);

ledit second motif (P2) dudit mécanisme de pul-

vérisation (34) étant ajusté par pression audit premier motif (P1) dans ledit évidement (26) pour effectuer l'installation amovible dudit mécanisme de pulvérisation (34) dans ledit évidement (26) dudit corps de contenant (22).

2. L'ensemble de pulvérisation (10) selon la revendication 1, dans lequel ledit premier motif (P1) et ledit second motif (P2) ont des structures de verrouillage multiples correspondant les unes aux autres.

3. L'ensemble de pulvérisation (10) selon l'une des revendications précédentes, dans lequel ledit premier motif (P1) est un motif convexe et ledit second motif (P2) est un motif concave, et dans lequel ledit motif convexe et ledit motif concave correspondent l'un à l'autre.

4. L'ensemble de pulvérisation (10) selon l'une des revendications précédentes, dans lequel ledit premier motif (P1) est un motif concave et ledit second motif (P2) est un motif convexe, et dans lequel ledit motif concave et ledit motif convexe correspondent l'un à l'autre.

5. L'ensemble de pulvérisation (10) selon l'une des revendications 3 et 4, dans lequel ledit premier motif (P1) a une forme annulaire et ledit second motif (P2) a également une forme annulaire.

6. L'ensemble de pulvérisation (10) selon l'une des revendications précédentes, comprenant en outre un couvercle de fixation (40) dont la forme correspond audit mécanisme de pulvérisation (34) et à ladite partie de pulvérisation de connexion électrique (32) et qui est utilisé pour couvrir ledit mécanisme de pulvérisation (34) et ladite partie de pulvérisation de connexion électrique (32) et pour fixer ledit mécanisme de pulvérisation (34) et ladite partie de pulvérisation de connexion électrique (32) à ladite partie de contenant (20).

7. L'ensemble de pulvérisation (10) selon l'une des revendications précédentes, dans lequel le premier motif (P1) et le second motif (P2) comprennent chacun une pluralité de bagues annulaires concentriques séparées par des espaces annulaires, les bagues annulaires de chaque motif (P1, P2) correspondant, en ce qui concerne leur taille, aux espaces annulaires dans l'autre motif (P2, P1), et les bagues annulaires présentant le plus grand rayon étant dans le premier motif (P1) ou dans le second motif (P2).

8. Un pulvérisateur (1000) comprenant un ensemble de pulvérisation (10) selon l'une des revendications précédentes et un siège de base (100),

ledit siège de base (100) ayant une partie de

base de connexion électrique (110), et ladite partie de base de connexion électrique (32) étant réalisée sous forme d'une structure capable d'être connectée électriquement à ladite partie de pulvérisation de connexion électrique (32). 5

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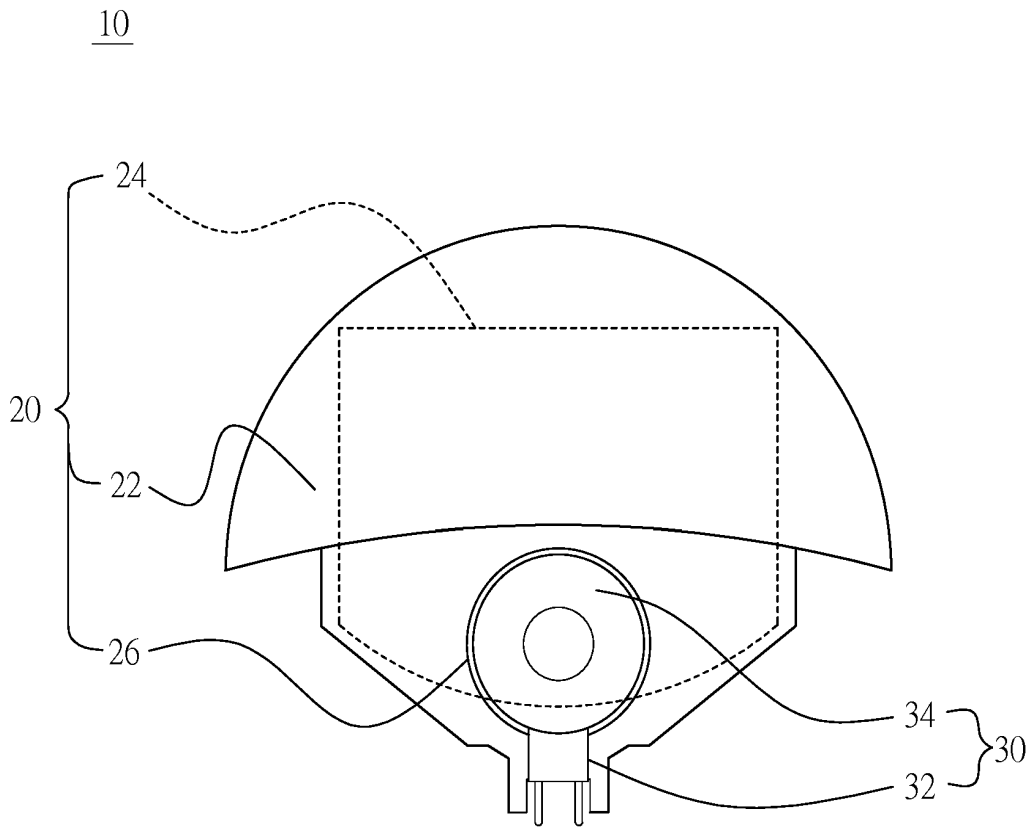


Fig. 1

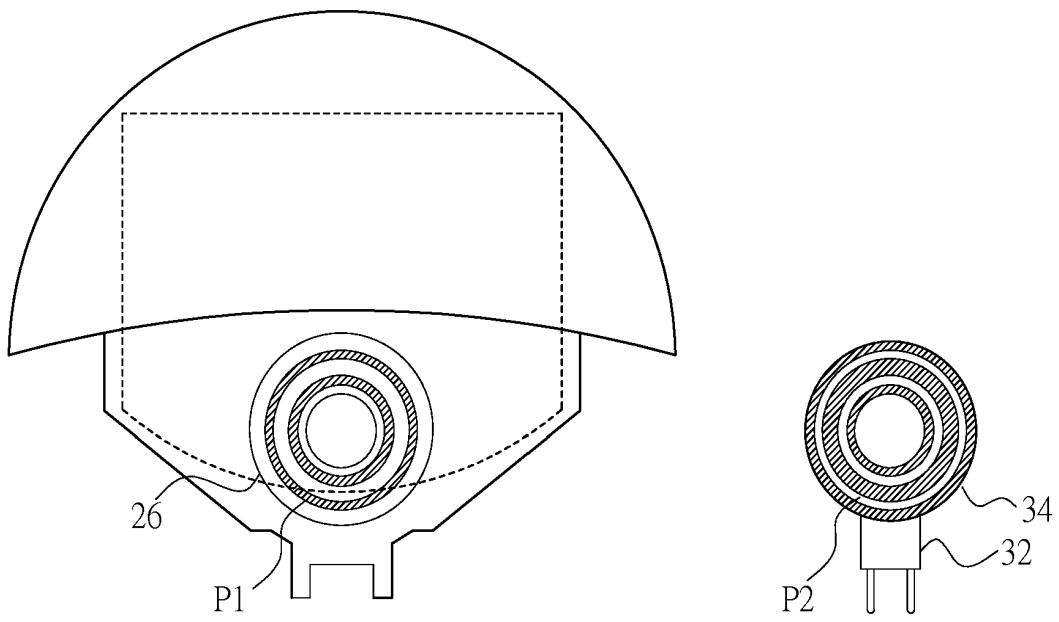


Fig. 2a

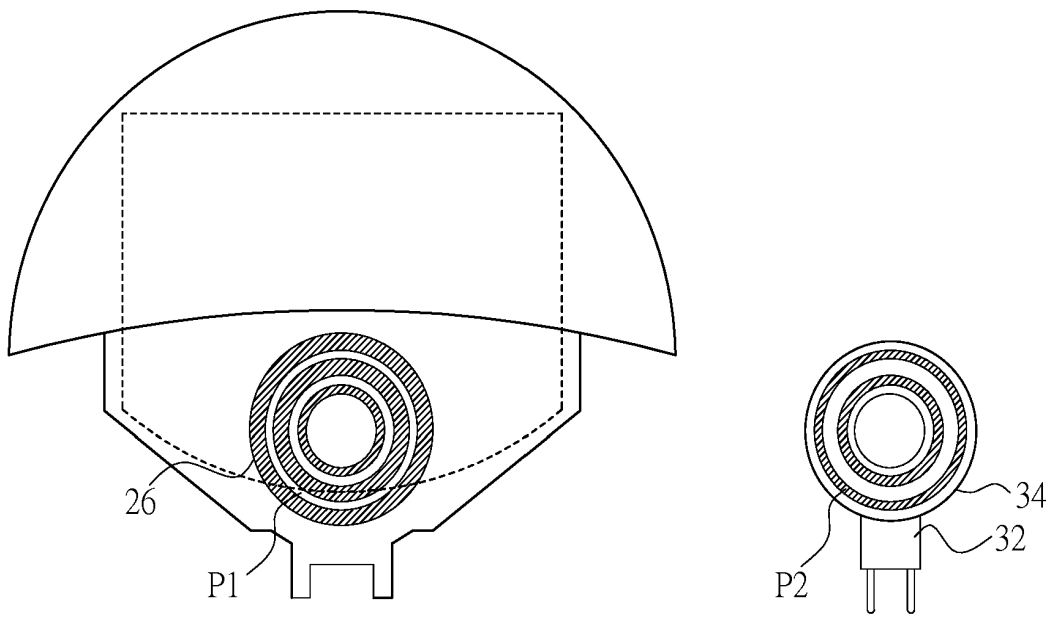


Fig. 2b

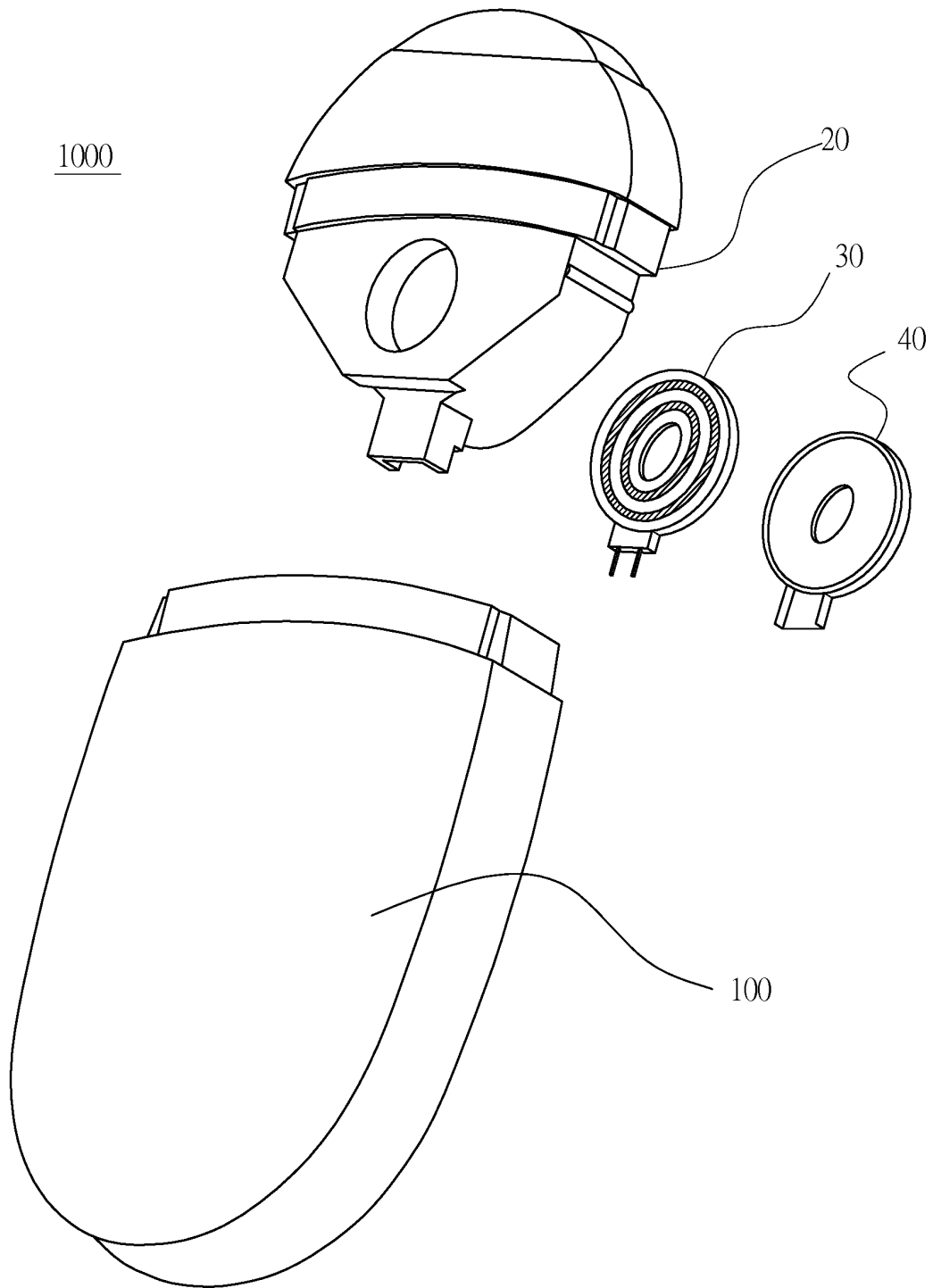


Fig. 3

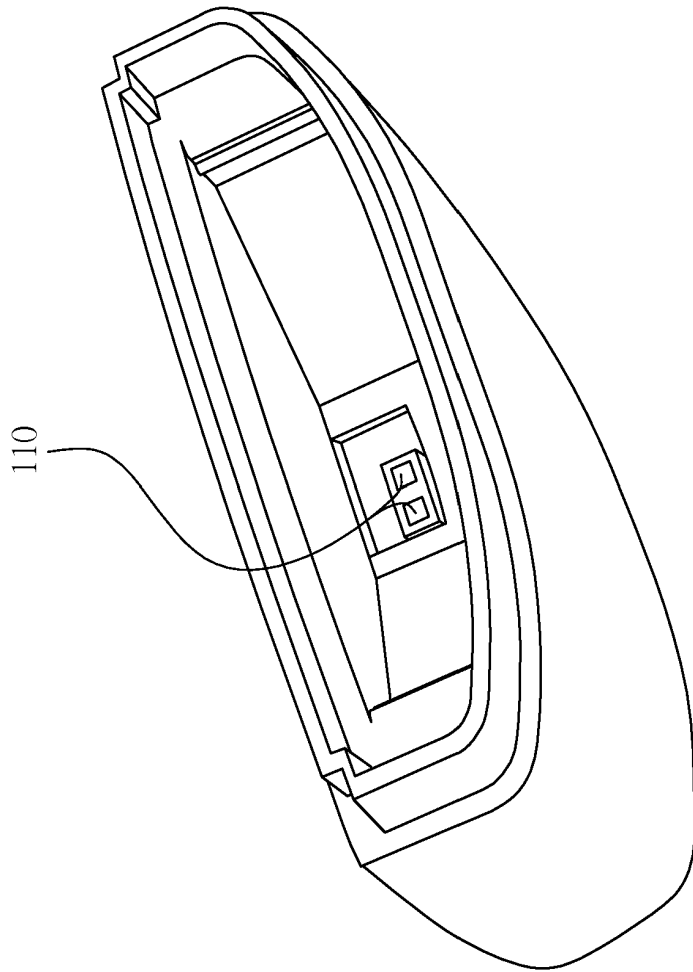


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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