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(54) GAS GENERATOR WITH QUICK-RELEASE JOINT AND ASSEMBLY METHOD THEREOF

(57) A gas generator with a quick-release joint (1) and an assembly method thereof are provided. The gas generator with a quick-release joint includes a gas generator body (11) and a quick-release joint (1). One end of the gas generator body has a gas discharge part (112) and a fixed convex column (113). The quick-release joint includes a socket member (121) and a fixing ring (122). The socket member is rotatably disposed on one end of the gas generator body and has an L-shaped groove (1211, 1212). The fixing ring (122) is rotatably positioned on the socket member; the fixing ring has a groove (1221) and a sliding surface, and the groove and the sliding surface (1222) of the fixing ring form an L-shaped groove opposite to the groove of the socket member. The present disclosure may achieve the effects of quick disassembly, simple structure, and double tightening or fixing through the above configuration.

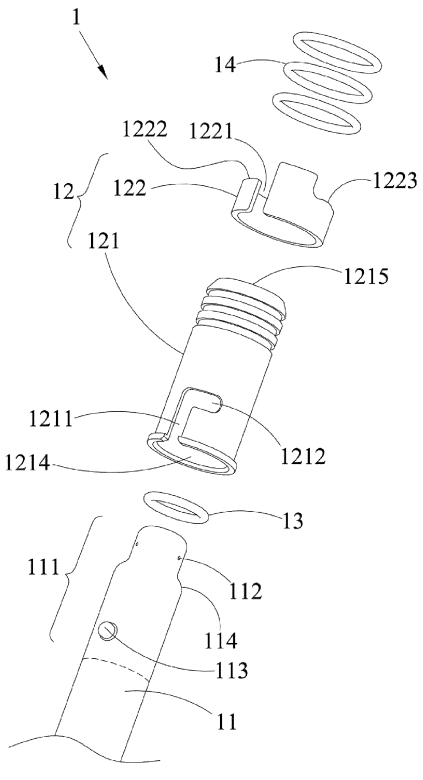

FIG. 1

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Description

CROSS-REFFERENCE TO RELATED APPLICATION

[0001] This application claims priority from Taiwan Patent Application No. 111122074, filed on June 14, 2022, in the Taiwan Intellectual Property Office, the content of which is hereby incorporated by reference in its entirety for all purposes.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The present disclosure relates to a technical field regarding an airbag gas generator, more particular to a gas generator with a quick-release joint and an assembly method thereof, which is suitable for being installed in an airbag of a personal protective apparatus that fills the airbag with gas to make it expand to achieve the effects of the quick release and easy deflation.

2. Description of the Related Art

[0003] Airbags are already standard equipment in vehicles. When a vehicle collision occurs, the gas generator inside the airbag can be instantly inflated within a very short period of time, so as to form a barrier layer with cushioning and protective functions, thereby protecting the safety of the driver and passengers. However, owing to the advantages of automobile gas generators such as fast speed, sufficient gas volume, small size, great safety, etc., many different industries are gradually using automobile gas generators as a power source for their products, such as personal protection, fire protection products, and the like.

[0004] In particular, in terms of personal protection, based on the product features of a gas generator, if used for personal protection purposes, a joint is required to connect the gas generator to its pouch to ensure that the generator does not separate from the pouch during operation due to recoil forces, allowing the system to maintain airtight to achieve pouch expansion and to keep the pouch full until the end of protection. Most of the general joints are connected to gas generators through screw threads. However, tightening through screw threads requires rotating the generator several times, so there is a possibility of loosening without final tightening. Moreover, the process of replacing the gas generator is time-consuming, and after repeated use or under the over-tightening condition, the joint may not be used to tighten the gas generator normally due to the damage to the screw threads. Furthermore, when the screw threads are severely damaged, the gas generator may be out of control, resulting in disengagement. Not only does it fail to protect personnel, but it may even cause unexpected injuries to them.

[0005] Accordingly, the inventor of the present disclosure has designed a gas generator with a quick-release joint and an assembly method thereof in an effort to tackle deficiencies in the prior art and further improve practical implementation in industries.

SUMMARY OF THE INVENTION

[0006] The present disclosure aims to provide a gas generator with a quick-release joint and an assembly method to solve the problems that can be encountered in the prior art.

[0007] Based on the above subjects, the present disclosure provides a gas generator with a quick-release joint, including a gas generator body and a quick-release joint. Wherein, one end of the gas generator body has an assembly part; the assembly part is a cylindrical shape, and the assembly part has a gas discharge part and a fixed convex column protruding from the gas generator body in a radial direction. Wherein, the quick-release joint includes a socket member and a fixing ring. the socket member is rotatably positioned on the assembly part; the socket member has a first groove and a rotational groove; the first groove is disposed along an axial direction of the socket member; one end of the first groove is connected to one end of the socket member sleeved on the assembly part; another end of the first groove is connected to one end of the rotational groove; the rotational groove is disposed along a first rotational direction, and another end of the rotational groove is a terminal end; the fixing ring is rotatably positioned on the socket member; the fixing ring has a second groove and a rotational sliding surface; one end of the second groove is connected to one end of the fixing ring sleeved on the socket member; another end of the second groove is connected to one end of the rotational sliding surface; the rotational sliding surface is disposed along a second rotational direction opposite to the first rotational direction, and another end of the rotational sliding surface is a terminal end; another end of the rotational sliding surface adjacent to the rotational sliding surface is provided with a fixed convex part with a raised disposition.

[0008] Preferably, when the quick-release joint is assembled with the gas generator body, the fixed convex column is positioned between the terminal end of the rotational groove and the terminal end of the rotational sliding surface and between the terminal end of the rotational sliding surface and the fixed convex part.

[0009] Preferably, the fixed convex part is an arc shape, the fixed convex part has a maximum protrusion height, one side of the rotational groove relative to the rotational sliding surface has a concession distance from the fixed convex part, and the concession distance is greater than the maximum protrusion height of the fixed convex part.

[0010] Preferably, the assembly part has a neck part tapered from a circular diameter, the neck part is provided with a first elastic ring, and one end of the socket member has an insertion hole into which the assembly part reach-

es; the insertion hole is provided with a stop part corresponding to a position of the first elastic ring, and a gap between the stop part and the neck part is smaller than a thickness or diameter of the first elastic ring.

[0011] Preferably, a position of the stop part relative to the neck part is provided with an oblique part.

[0012] Preferably, another end of the socket member is provided with a gas flow port; a circular diameter of the gas flow port is larger than that of the assembly part.

[0013] Preferably, a position corresponding to the gas discharge part in the gas flow port is provided with a buffer groove, and the buffer groove is recessed inward from an inner surface of the gas flow port.

[0014] Preferably, a junction of the buffer groove and the inner surface of the gas flow port is provided with a diversion part.

[0015] Preferably, an outer periphery of the socket member adjacent to another end of the socket member is provided with a plurality of second elastic rings at intervals.

[0016] Based on the above subjects, the present disclosure also provides an assembly method of a gas generator with a quick-release joint, applied to the gas generator with a quick-release joint according to the aforementioned description, including the following steps: aligning the fixed convex column with the first groove and the second groove and then disposing the quick-release joint on the assembly part; fixing rotational freedom of the quick-release joint and rotating the gas generator body along the first rotational direction to make the fixed convex column reach the terminal end of the rotational groove; fixing rotational freedom of the gas generator body and the socket member and rotating the fixing ring along the first rotational direction to make the fixed convex column reach a position of the fixed convex part; fixing rotational freedom of the fixing ring and rotating the gas generator body along the second rotational direction to make the fixed convex column pass over the fixed convex part; and rotating the gas generator body to make the fixed convex column reach the terminal end of the rotational groove.

[0017] The gas generator with a quick-release joint and the assembly method thereof may achieve the following beneficial effects.

1. The gas generator with a quick-release joint of the present disclosure may achieve the effect of rapid replacement through the predetermined groove configuration of the socket member and the fixing ring, as well as the configuration of the fixed convex column of the gas generator body; moreover, the effect of immediate deflation may also be achieved after use.

2. The gas generator with a quick-release joint of the present disclosure may achieve the effect of simple structure, small size, and lightweight through the configuration of the predetermined structure of the socket member and the fixing ring.

3. The gas generator with a quick-release joint of the present disclosure has double tightening or securing protection to prevent disengagement, which is not easily damaged, through the configuration of the predetermined structure of the socket member and the fixing ring.

[0018] The gas generator with a quick-release joint and the assembly method thereof may achieve the effect of higher safety by appropriately or effectively replacing old-type joints based on the aforementioned effects.

[0019] The technical features of the present disclosure are to be illustrated in detail below with specific embodiments and accompanying drawings to make a person with ordinary skills in the art effortlessly understand the purposes, technical features, and advantages of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The drawings required for the description of the embodiments of the present disclosure are to be briefly described below to illustrate more clearly the technical solutions of the embodiments of the present disclosure. It is obvious that the accompanying drawings described below are only some embodiments of the present disclosure. For a person with ordinary skills in the art, additional drawings can be obtained according to these drawings.

FIG. 1 is an exploded schematic diagram of the gas generator with a quick-release joint according to the present disclosure.

FIG. 2 is a cross-sectional schematic diagram of the gas generator with a quick-release joint according to the present disclosure.

FIG. 3 is a schematic diagram of the first assembly of the gas generator with a quick-release joint according to the present disclosure.

FIG. 4 is a schematic diagram of the second assembly of the gas generator with a quick-release joint according to the present disclosure.

FIG. 5 is a schematic diagram of the third assembly of the gas generator with a quick-release joint according to the present disclosure.

FIG. 6 is a schematic diagram of the fourth assembly of the gas generator with a quick-release joint according to the present disclosure.

FIG. 7 is a schematic diagram of the fifth assembly of the gas generator with a quick-release joint according to the present disclosure.

FIG. 8 is a schematic diagram of the complete assembly of the gas generator with a quick-release joint according to the present disclosure.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] The advantages, features, and technical methods of the present disclosure are to be explained in detail with reference to the exemplary embodiments and the figures for the purpose of being easier to be understood. Moreover, the present disclosure may be realized in different forms, and should not be construed as being limited to the embodiments set forth herein. Conversely, for a person with ordinary skills in the art, the embodiments provided shall make the present disclosure convey the scope more thoroughly, comprehensively, and completely. In addition, the present disclosure shall be defined only by the appended claims.

[0022] It should be noted that although the terms "first," "second," and the like may be used in the present disclosure to describe various elements, components, regions, sections, layers, and/or parts, these elements, components, regions, sections, layers and/or parts should not be limited by these terms. These terms are only used to distinguish one element, component, region, sections, layer, and/or part from another element, component, region, sections, layer, and/or part.

[0023] Unless otherwise defined, all terms (including technical and scientific terms) used in the present disclosure have the same meaning as those commonly understood by a person with ordinary skills in the art. It should be further understood that, unless explicitly defined herein, the terms such as those defined in commonly used dictionaries should be interpreted as having definitions consistent with their meaning in the context of the related art and the present disclosure, and should not be construed as idealized or overly formal.

[0024] Please refer to FIG. 1 and FIG. 2 together. FIG. 1 is an exploded schematic diagram of the gas generator with a quick-release joint according to the present disclosure. FIG. 2 is a cross-sectional schematic diagram of the gas generator with a quick-release joint according to the present disclosure. The gas generator with a quick-release joint 1 of the present disclosure may be applied to personal protection, fire protection products, household equipment, and the like; preferably, the gas generator with a quick-release joint 1 of the present disclosure is mainly applied to personal protective apparatus, such as helmets and protective clothes. As shown in the figure, the gas generator with a quick-release joint 1 of the present disclosure mainly includes a gas generator body 11 and a quick-release joint 12.

[0025] Wherein, the material of the bottle, the internal structure, and the contents contained therein of the gas generator body 11 may be technical means known or commonly used by a person with ordinary skills in the art, which is not to be described herein. One end of the gas generator body 11 has an assembly part 111. Wherein, the assembly part 111 is preferably a cylindrical shape, and the assembly part 111 has a gas discharge part 112 and a fixed convex column 113 protruding from the surface of the gas generator body 11 in a radial direction; preferably, the fixed convex column 113 may be a cylinder, an ellipsoid, or the like; alternatively, the fixed convex column 113 may be a column having a structure with rounded corners, oblique corners, and the like at special sections (corresponding to the position of the fixed convex part 1223 described below).

[0026] Wherein, the quick-release joint 12 includes a socket member 121 and a fixing ring 122. The socket member 121 may be made of general steel iron metal but may also be made of aluminum alloy to reduce the overall weight. The socket member 121 may be rotatably positioned or disposed on the assembly part 111 . The fixing ring 122 is made of general steel iron metal to ensure the characteristics of wear resistance and better rigidity. The fixing ring 122 is rotatably positioned on the socket member 121.

[0027] Further, the socket member 121 may be substantially a cylindrical or tubular shape to have an insertion hole 1214, so that the socket member 121 may be positioned or disposed on the assembly part 111 by using the insertion hole 1214. Wherein, the socket member 121 has a first groove 1211 and a rotational groove 1212. The first groove 1211 is disposed along an axial direction of the socket member 121; one end of the first groove 1211 is connected to one end of the socket member 121 sleeved on the assembly part 111, and another end of the first groove 1211 is connected to one end of the rotational groove 1212; that is, the first groove 1211 is extended and connected to the rotational groove 1212 from one end of the socket member 121 that is reached or inserted by the assembly part 111. Another end of the rotational groove 1212 is a terminal end. That is, the first groove 1211 and the rotational groove 1212 may form a limiting structure in an L shape (or "Γ" shape"). In so doing, when the socket member 121 is positioned or disposed on the assembly part 111 by using the insertion hole 1214, the fixed convex column 113 may enter the limiting structure (the first groove 1211 and the rotational groove 1212) of the socket member 121 through the first groove 1211.

[0028] It should be noted that the outer periphery of the socket member 121 adjacent to another end of the socket member 121 is provided with a plurality of second elastic rings 14 at intervals. In so doing, excellent air tightness is achieved between the gas generator with a quick-release joint 1 of the present disclosure and the airbag assembled or disposed.

[0029] In addition, the fixing ring 122 correspondingly has a second groove 1221 and a rotational sliding surface 1222. Wherein, one end of the second groove 1221 is connected to one end of the fixing ring 122 sleeved on the socket member 121; another end of the second groove 1221 is connected to one end of the rotational

sliding surface 1222, and another end of the rotational sliding surface 1222 is a terminal end. That is, the second groove 1221 and the rotational sliding surface 1222 may form a limiting structure in an L shape (or "¬" shape"). In so doing, when the fixing ring 122 is positioned or disposed on the combination of the socket member 121 and the assembly part 111, the fixed convex column 113 may enter into the limiting structure of the fixing ring 122 through the second groove 1221.

[0030] It should be noted that the rotational groove 1212 is disposed along the first rotational direction R1, whereas the rotational sliding surface 1222 is disposed along the second rotational direction R2 opposite to the first rotational direction R1. Furthermore, another end of the rotational sliding surface 1222 adjacent to the rotational sliding surface 1222 is provided with a fixed convex part 1223 with a raised disposition. That is, when the quick-release joint 12 is assembled with the gas generator body 11, the fixed convex column 113 is positioned between the terminal end of the rotational groove 1212 and the terminal end of the rotational sliding surface 1222 and between the terminal end of the rotational sliding surface 1222 and the fixed convex part 1223. In so doing, when the gas generator body 11 or the quick-release joint 12 is rotated to make the fixed convex column 113 pass over the fixed convex part 1223, the fixed convex part 1223 may limit the degree of freedom in the reverse displacement of the fixed convex part 113, so that the quick-release joint 12 may be stably disposed on the gas generator body 11.

[0031] On the other hand, the assembly part 111 has a neck part 114 tapered from a circular diameter, and the neck part 114 is provided with a first elastic ring 13; preferably, the first elastic ring 13 may be made of EPDM material to achieve the feature of excellent temperature resistance. Wherein, the insertion hole 1214 is provided with a stop part 12141 corresponding to the position of the first elastic ring 13, and a gap between the stop part 12141 and the neck part 114 is smaller than the thickness or circular diameter of the first elastic ring 13. It should be noted that the position of the stop part 12141 relative to the neck part 114 is provided with an oblique part 12142; that is, oblique part 12142 is disposed at the position where the stop part 12141 faces the first elastic ring 13. Through the configuration of the stop part 12141 and the predetermined structure of the first elastic ring 13, the stop part 12141, the oblique part 12142, and the neck part 114 may press and deform the first elastic ring 13 when the quick-release joint 12 is assembled with the gas generator body 11, thus filling or blocking the gap between the stop part 12141 and the neck part 114, so that excellent air tightness may be achieved between the gas generator with a quick-release joint 1 of the present disclosure and the airbag assembled or disposed.

[0032] Please refer to FIG. 8. It is worth mentioning that the fixed convex part 1223 is an arc shape or has a structure with rounded corners, circular arcs, bevels, and the like at both ends. Wherein, the fixed convex part 1223 has a maximum protrusion height H, which may be 0.4 mm to 0.8 mm, for example; the actual value thereof may be adjusted according to the actual application, which should not be regarded as a limitation. Wherein, one side of the rotational groove 1212 relative to the rotational sliding surface 1222 has a concession distance 1213 from the fixed convex part 1223, and the concession distance 1213 is greater than the maximum protrusion height H of the fixed convex part 1223. Because the first elastic ring 13 has an appropriate elastic restoring force, the first elastic ring 13 may also provide the ability to restore the position of the fixed convex column 113 at the time of the gas generator body 11 being displaced in an axial direction during the period when the fixed convex column 113 passes over the fixed convex part 1223. Furthermore, when the stop part 12141, the oblique part 12142, and the neck part 114 press the first elastic ring 13 to deform the first elastic ring 13, the elastic restoring force of the first elastic ring 13 may simultaneously provide the effects of the fixed convex column 113 being positioned between the terminal end of the rotational groove 1212 and the terminal end of the rotational sliding surface 1222 and between the terminal end of the rotational sliding surface 1222 and the fixed convex part 1223.

[0033] It should be noted that the oblique part 12142 also helps the smoothness of the up- and-down movement of the socket member 121 during assembly, so as to facilitate the user to assemble the socket member 121 to the assembly part 111.

[0034] What's more, another end of the socket member 121 (that is, the end opposite to the insertion end of the assembly part 111) has a gas flow port 1215, and the caliber of the gas flow port 1215 is larger than the circular diameter of the assembly part 111. Wherein, the position of the gas flow port 1215 corresponding to the gas discharge part 112 is provided with a buffer groove 12151, and the buffer groove 12151 is recessed inward from the inner surface of the gas flow port 1215; that is, the gas flow port 1215 and the buffer groove 12151 may be substantially or cross-sectionally formed into a convex-shaped structure. Preferably, a junction of the buffer groove 12151 and the inner surface of the gas flow port 1215 is provided with a diversion part 12152.

[0035] In so doing, the buffer groove 12151 may effectively mitigate the impact force of the gas generator when gas is discharged, avoiding the occurrence of rupture of the airbag caused by excessive impact force when gas is discharged. It is worth mentioning that in actual application, the caliber of the gas flow port 1215 may be adjusted to be larger than the circular diameter of the assembly part 111; that is, the size of the gap between the socket member 121 and the assembly part 111 after the buffer groove 12151 is adjusted when the gas flows out, so as to adjust the flow rate and flow volume of the gas.

[0036] Please refer to FIG. 1 and FIG. 2 together with FIG. 3 to FIG. 8. FIG. 3 to FIG. 8 are sequential schematic diagrams or assembly schematic diagrams when the

quick-release joint 12 is assembled to the gas generator body 11. The related steps of the assembly method of the gas generator with a quick-release joint are to be described below.

[0037] As shown in FIG. 3, the assembly part 111 of the gas generator body 11 is inserted into the quick-release joint 12, which means that the fixing ring 122 is rotated to align or overlap the first groove 1211 with the second groove 1221 and that the fixed convex column 113 is aligned with the first groove 1211 and the second groove 1221, followed by the assembly part 111 being inserted into the insertion hole 1214. Meanwhile, the fixed convex column 113 enters the first groove 1211 and the second groove 1221 at the same time. Next, as shown in FIG. 3 and FIG. 4, the user may first fix the rotational freedom of the quick-release joint 12 and rotate the gas generator body 11 along the first rotational direction R1 (or the user may rotate the socket member 121 and the gas generator body 11 relatively) to make the fixed convex column 113 reach the terminal end of the rotational groove 1212.

[0038] As shown in FIG. 5 and FIG. 6, the rotational freedoms of the gas generator body 11 and the socket member 121 are fixed, and the fixing ring 122 is rotated along the first rotational direction R1 (or the user may rotate the combination of the gas generator body 11 with the socket member 121 and the fixing ring 122 relatively) to make the fixed convex column 113 reach the position of the fixed convex part 1223. Then, as shown in FIG. 7, the rotational freedom of the fixing ring 122 is fixed, and the gas generator body 11 is rotated along the second rotational direction R2 to make the fixed convex column 113 pass over the fixed convex part 1223. As shown in FIG. 8, finally, the gas generator body 11 is rotated to make the fixed convex column 113 reach a terminal end of the rotational groove 1212. Meanwhile, the fixed convex column 113 is positioned between the terminal end of the rotational groove 1212 and the terminal end of the rotational sliding surface 1222 and between the terminal end of the rotational sliding surface 1222 and the fixed convex part 1223.

[0039] In so doing, the quick-release joint 12 and the gas generator body 11 may have double tightening or securing protection to prevent disengagement, which is not easily damaged, through the configuration of the predetermined structure of the socket member 121 and the fixing ring 122. It is worth mentioning that from the aforementioned description, the gas generator with a quick-release joint 1 of the present disclosure may be quickly assembled; certainly, the gas generator may also be quickly disassembled. Therefore, after the gas generator with a quick-release joint 1 of the present disclosure is operated to make the airbag inflated with gas for the protection of the user, relevant personnel may quickly disassemble the gas generator body 11 to make the gas in the airbag quickly discharged for the convenience of facilitating the follow-up procedures to the user, such as inspection or medical first aid, and the like.

[0040] The above description is merely illustrative rather than restrictive. Any equivalent modifications or alterations without departing from the spirit and scope of the present disclosure are intended to be included in the following claims.

Claims

1. A gas generator with a quick-release joint (1), comprising:

   a gas generator body (11), one end thereof having an assembly part (111), the assembly part (111) being a cylindrical shape, and the assembly part (111) having a gas discharge part (112) and a fixed convex column (113) protruding from the gas generator body (11) in a radial direction; and

   a quick-release joint (12) comprising a socket member (121) and a fixing ring (122), the socket member (121) being rotatably positioned on the assembly part (111), the socket member (121) having a first groove (1211) and a rotational groove (1212), the first groove (1211) being disposed along an axial direction of the socket member (121), one end of the first groove (1211) being connected to one end of the socket member (121) sleeved on the assembly part (111), another end of the first groove (1211) being connected to one end of the rotational groove (1212), the rotational groove (1212) being disposed along a first rotational direction (R1), and another end of the rotational groove (1212) being a terminal end; the fixing ring (122) being rotatably positioned on the socket member (121), the fixing ring (122) having a second groove (1221) and a rotational sliding surface (1222), one end of the second groove (1221) being connected to one end of the fixing ring (122) sleeved on the socket member (121), another end of the second groove (1221) being connected to one end of the rotational sliding surface (1222), the rotational sliding surface (1222) being disposed along a second rotational direction (R2) opposite to the first rotational direction (R1), and another end of the rotational sliding surface (1222) being a terminal end; another end of the rotational sliding surface (1222) adjacent to the rotational sliding surface (1222) being provided with a fixed convex part (1223) with a raised disposition.

2. The gas generator with a quick-release joint (1) according to claim 1, wherein when the quick-release joint (12) is assembled with the gas generator body (11), the fixed convex column (113) is positioned between the terminal end of the rotational groove

(1212) and the terminal end of the rotational sliding surface (1222) and between the terminal end of the rotational sliding surface (1222) and the fixed convex part (1223).

3. The gas generator with a quick-release joint (1) according to claim 1, wherein the fixed convex part (1223) is an arc shape, the fixed convex part (1223) has a maximum protrusion height (H), one side of the rotational groove (1212) relative to the rotational sliding surface (1222) has a concession distance (1213) from the fixed convex part (1223), and the concession distance (1213) is greater than the maximum protrusion height (H) of the fixed convex part (1223).

4. The gas generator with a quick-release joint (1) according to claim 1, wherein the assembly part (111) has a neck part (114) tapered from a circular diameter, the neck part (114) is provided with a first elastic ring (13), one end of the socket member (121) has an insertion hole (1214) into which the assembly part (111) reaches, the insertion hole (1214) is provided with a stop part (12141) corresponding to a position of the first elastic ring (13), and a gap between the stop part (12141) and the neck part (114) is smaller than a thickness or diameter of the first elastic ring (13).

5. The gas generator with a quick-release joint (1) according to claim 4, wherein a position of the stop part (12141) relative to the neck part (114) is provided with an oblique part (12142).

6. The gas generator with a quick-release joint (1) according to claim 4, wherein another end of the socket member (121) is provided with a gas flow port (1215), and a circular diameter of the gas flow port (1215) is larger than that of the assembly part (111).

7. The gas generator with a quick-release joint (1) according to claim 5, wherein another end of the socket member (121) is provided with a gas flow port (1215), and a circular diameter of the gas flow port (1215) is larger than that of the assembly part (111).

8. The gas generator with a quick-release joint (1) according to claim 6, wherein a position corresponding to the gas discharge part (112) in the gas flow port (1215) is provided with a buffer groove (12151), and the buffer groove (12151) is recessed inward from an inner surface of the gas flow port (1215).

9. The gas generator with a quick-release joint (1) according to claim 8, wherein a junction of the buffer groove (12151) and the inner surface of the gas flow port (1215) is provided with a diversion part (12152).

10. The gas generator with a quick-release joint (1) according to claim 1, wherein an outer periphery of the socket member (121) adjacent to another end of the socket member (121) is provided with a plurality of second elastic rings (14) at intervals.

11. An assembly method of a gas generator with a quick-release joint (1), applied to the gas generator with a quick-release joint (1) according to claim 1, the assembly method of the gas generator with a quick-release joint (1) comprises following steps:

aligning the fixed convex column (113) with the first groove (1211) and the second groove (1221) and then disposing the quick-release joint (12) on the assembly part (111);
fixing rotational freedom of the quick-release joint (12) and rotating the gas generator body (11) along the first rotational direction (R1) to make the fixed convex column (113) reach the terminal end of the rotational groove (1212);
fixing rotational freedom of the gas generator body (11) and the socket member (121) and rotating the fixing ring (122) along the first rotational direction (R1) to make the fixed convex column (113) reach a position of the fixed convex part (1223);
fixing rotational freedom of the fixing ring (122) and rotating the gas generator body (11) along the second rotational direction (R2) to make the fixed convex column (113) pass over the fixed convex part (1223); and
rotating the gas generator body (11) to make the fixed convex column (113) reach the terminal end of the rotational groove (1212).

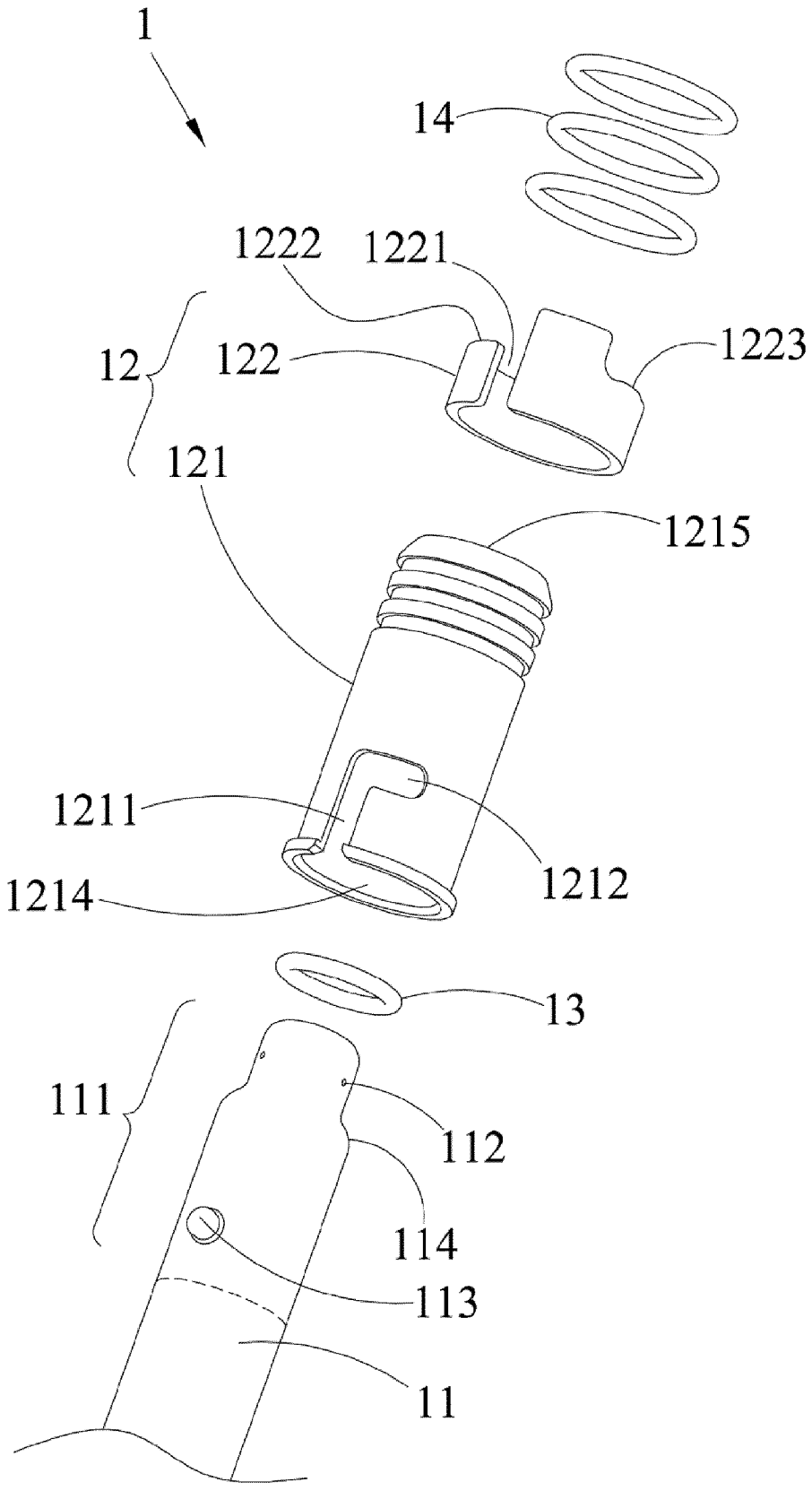
1
14
1222
1221
12
122
1223
121
1215
1211
1212
1214
13
111
112
114
113
11

FIG. 1

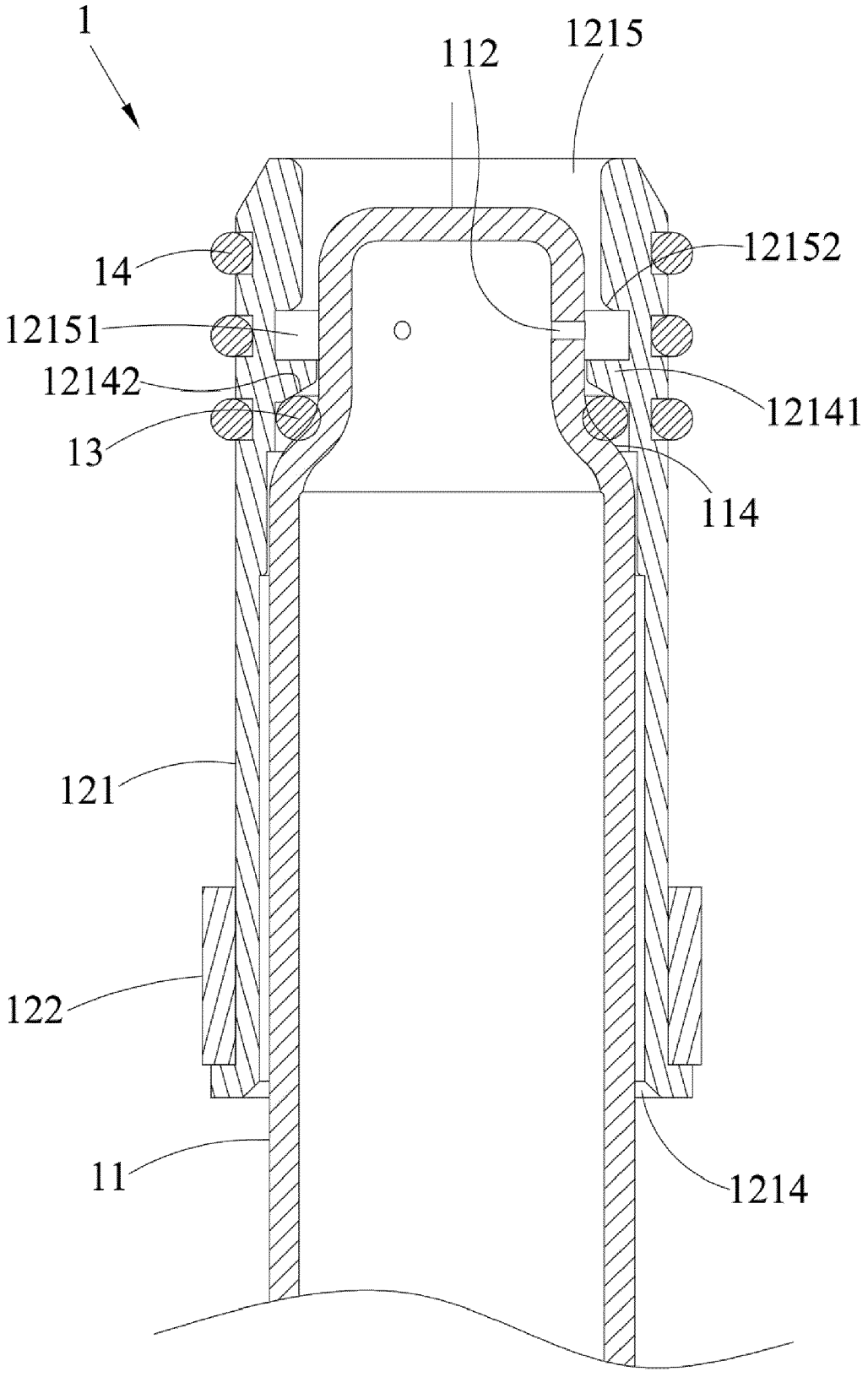

FIG. 2

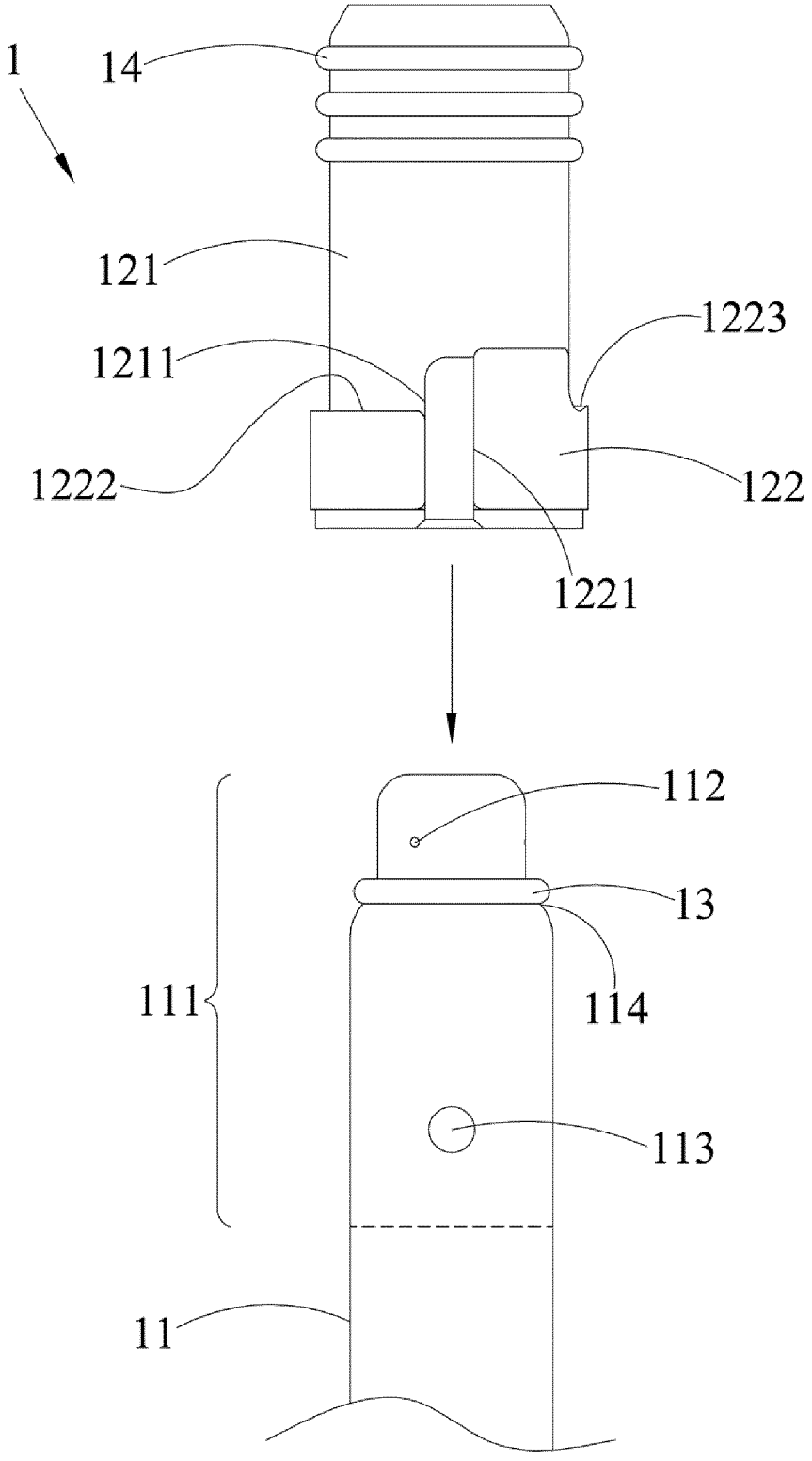

FIG. 3

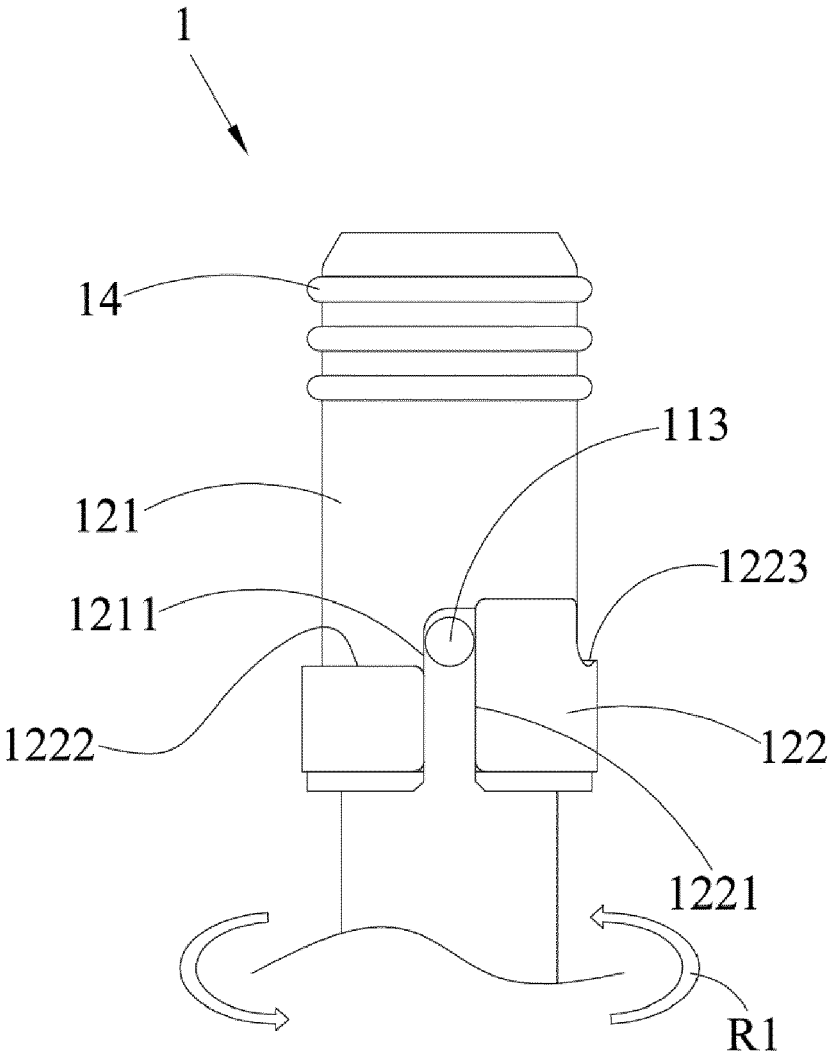

FIG. 4

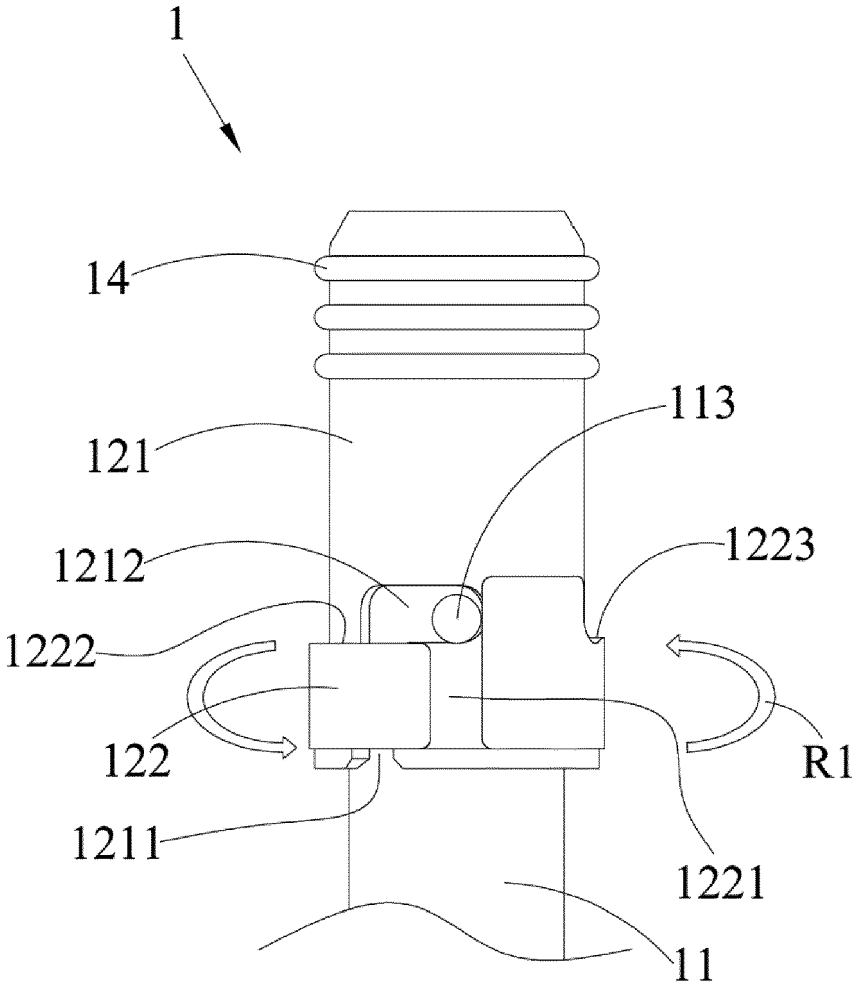

FIG. 5

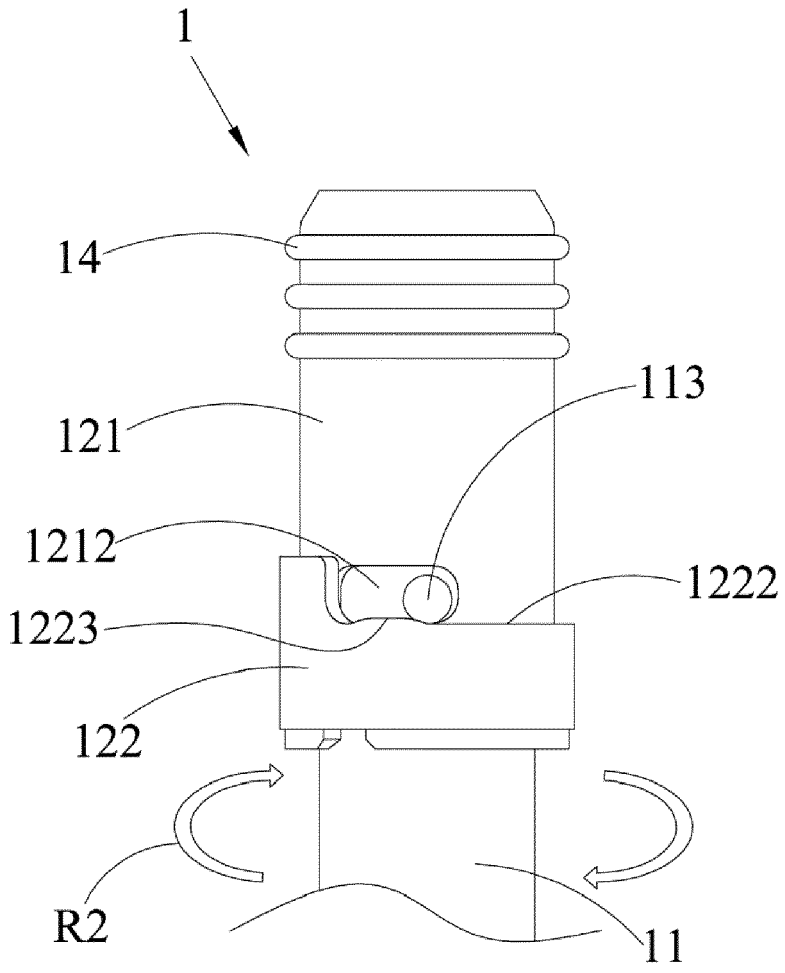

FIG. 6

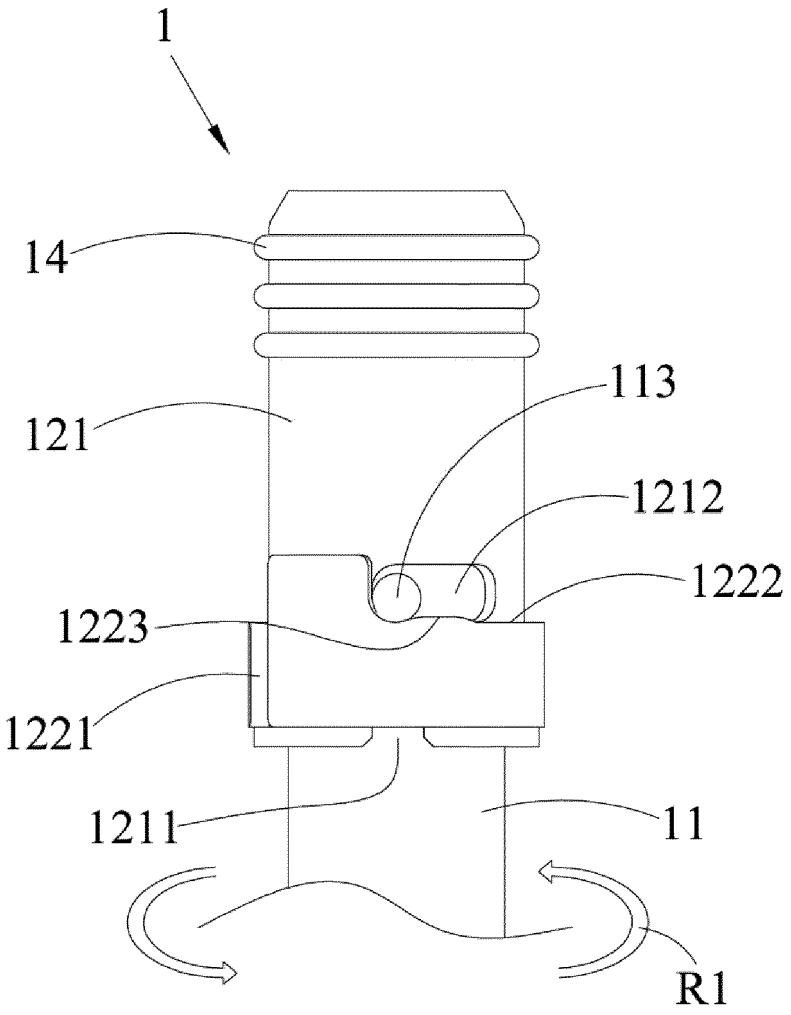

FIG. 7

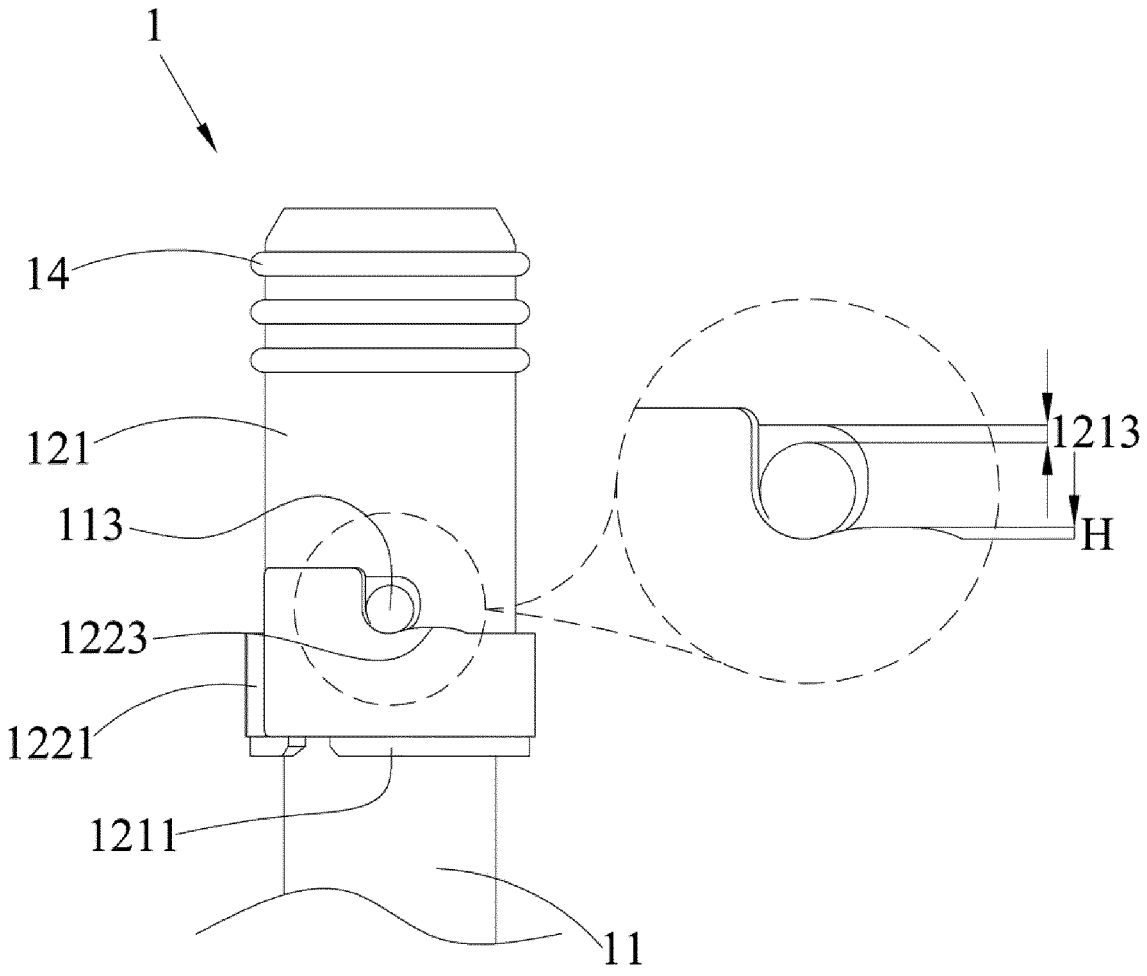

FIG. 8

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EUROPEAN SEARCH REPORT

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Place of search	Date of completion of the search	Examiner
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