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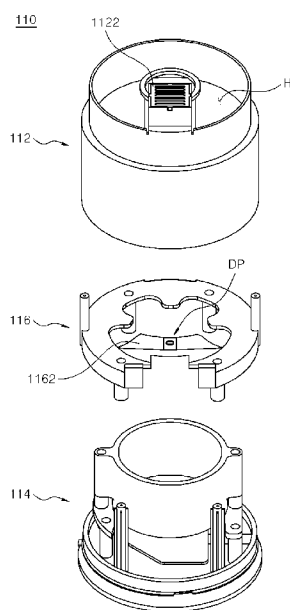


FIG. 4

(57) Abstract: The present disclosure relates to a smart diffuser. The smart diffuser of the present disclosure includes a frame configured to define a diffusing position, a container mounted on the frame and including a space configured to mount a plurality of oil cartridges therein, and a driving unit configured to drive the container. The driving unit drives the container so as to cause a cartridge selected by a user among the plurality of oil cartridges to enter the diffusing position.

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SMART DIFFUSER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to and all of advantages of Korean Pat. App. No. 10-2018-0105407, filed on 04 September 2018, the contents of which is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present disclosure relates to a smart diffuser, and more particularly, to a smart diffuser including a plurality of oil cartridges.

Description of the Prior Art

[0003] A diffuser generally utilizes aroma oil in a manner of gently emitting a fragrance indoors using a lid made of wood sticks.

[0004] In recent years, diffusers, which take the form of an electronic product so as to more actively induce fragrance emission, have also become available.

[0005] For example, there is a fragrance emission device having a structure in which a device capable of supplying air into the fragrance emission device is provided and the air is blown toward a container containing the aroma oil, thereby emitting a fragrance. Japanese Patent No. 6330680 (entitled, "Fragrance Emission Device") discloses this structure.

[0006] Most conventional diffusers including the device disclosed in the above prior art document are provided with a single aroma oil container in a single diffuser. Therefore, when it is desired to use a different fragrance, there is an inconvenience in that the oil container mounted in the diffuser must be replaced with an oil container containing another fragrance.

[0007] It may also be possible to remove the oil container that is being used and to replace the oil container with a new one. Storing the existing oil container safely for future reuse also causes the inconvenience of the user.

[0008] Recently, as interest in indoor interiors and pleasant environment creation has increased, the needs of consumers who want to choose different fragrances depending on time and space have been increasing. However, the needs cannot be met only with the existing single oil container system. This is because, in the modern society, there is a need to create indoor atmospheres with different fragrances several times a day or periodically.

[0009] The inventor of the present disclosure has studied for a long time to solve these problems, and after trial and error, has come to complete the present disclosure.

SUMMARY OF THE INVENTION

[0010] Embodiments of the present disclosure provide a smart diffuser capable of more efficiently providing a selected fragrance to a user by including a plurality of oil containers therein in an optimal form.

[0011] Other aspects of the disclosure that are not described herein will be further considered based on the following detailed description and within the scope which can be easily deduced from the effects of the present disclosure.

[0012] A smart diffuser according to an embodiment of the present disclosure includes a frame configured to define a diffusing position, a container mounted on the frame and including a space configured to mount a plurality of oil cartridges therein, and a driving unit configured to drive the container. The driving unit may drive the container so as to cause a cartridge selected by a user among the plurality of oil cartridges to enter the diffusing position.

[0013] The container may include a plurality of partitioned space portions, and the oil cartridges may be fixed in two or more of the space portions, respectively.

[0014] The frame may include an upper frame, which is located directly above the diffusing position and comprises a fan so as to draw out a fragrance from the oil cartridge, which has entered the diffusing position.

[0015] The frame may further include a lower frame located at a side opposite a lid unit, and the driving unit may be placed above the lower frame.

[0016] The frame may further include a guide unit disposed between the upper frame and the lower frame, and the guide unit may be provided with a hill portion configured to press the oil cartridge entering the diffusing position.

[0017] The diffusing position may be defined at the uppermost portion of the hill portion.

[0018] The oil cartridge may be switched from an OFF state to an ON state, in which an upper portion of the oil cartridge is opened, by external pressing so that the fragrance can be drawn out, and the oil cartridge, which has entered to the diffusing position, may be pressed upward by the hill portion so as to be switched from the OFF state to the ON state.

[0019] The container may be rotatably mounted on the frame, and the driving unit may rotate the container so as to cause the selected cartridge to enter the diffusing position.

[0020] According to the present disclosure, it is possible to provide a smart diffuser capable of more efficiently providing a selected fragrance to a user by including a plurality of oil containers therein in an optimal form.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The above and other aspects, features and advantages of the present disclosure will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0022] FIG. 1 is a perspective view of a smart diffuser according to an embodiment of the present disclosure;

[0023] FIG. 2 is a view illustrating a state of the smart diffuser according to the embodiment of the present disclosure during the operation thereof;

[0024] FIG. 3 is an exploded view of the smart diffuser according to the embodiment of the present disclosure;

[0025] FIG. 4 is an exploded view of a frame of the smart diffuser according to the embodiment of the present disclosure;

[0026] FIGS. 5A and 5B are perspective views of a container of the smart diffuser according to the embodiment of the present disclosure which is viewed from different sides, in which FIG. 5A is a top side perspective view and FIG. 5B is a bottom side perspective view;

[0027] FIG. 6A is a front view when a groove space portion is disposed at a diffusing position, according to an embodiment of the present disclosure, and

[0028] FIG. 6B is a cross-sectional view of FIG. 6A, illustrating the state in which a cross section is applied only to a container portion for convenience of explanation; and

[0029] FIG. 7A is a plan view when the groove space portion is disposed at the diffusing position, according to an embodiment of the present disclosure, FIG. 7B is a plan view when a first space portion is disposed at the diffusing position, and FIG. 7C is a plan view when a second space portion is disposed at the diffusing position.

[0030] It is to be understood that the appended drawings illustrate embodiments of the present disclosure and the scope of the present disclosure is not limited by the drawings.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

[0031] Hereinafter, the most preferred embodiment of the present invention will be described. In the drawings, thickness and intervals are presented for convenience of explanation and may be exaggerated compared to actual physical thicknesses. In describing the present disclosure, a description of known configurations irrelevant to the gist of the present description may be omitted. It should be noted that in adding reference numerals to the constituent elements of respective drawings, even if the constituent elements are illustrated on different drawings, the same constituent elements will be denoted by the same numerals if possible.

[0032] FIG. 1 is a perspective view of a smart diffuser 100 according to an embodiment of the present disclosure.

[0033] In addition, FIG. 2 is a view illustrating the smart diffuser 100 according to the embodiment of the present disclosure during the operation thereof.

[0034] Referring to FIGS. 1 and 2, the smart diffuser 100 according to an embodiment of the present disclosure (hereinafter, also referred to as a “diffuser” for convenience of description) has a structure in which a lid unit 150 located at the upper portion thereof is opened for fragrance emission (diffusing).

[0035] That is, when not in use, the lid unit 150 enters a cover unit 140 so as to form a closed structure (see FIG. 1) of the entire diffuser. When in use, the lid unit 150 is lifted up to the upper side of the cover unit 140 so as to form an open structure (see FIG. 2) of the entire diffuser.

[0036] An open space O created as the lid portion 150 is moved up is illustrated in FIG. 2. Through the open space O, the fragrance of an aroma oil located in the diffuser is capable of being diffused to the outside (i.e., into the interior space). The aroma oil may be contained in an oil cartridge.

[0037] The inner structure of the diffuser 100 will be described in more detail.

[0038] FIG. 3 is an exploded view of the smart diffuser 100 according to the embodiment of the present disclosure.

[0039] Referring to FIG. 3, the diffuser 100 may include a frame 110, a container 120, and a driving unit 130, and may include the above-described cover unit 140 and lid unit 150.

[0040] First, the frame 110 forms the overall skeleton of the diffuser 100. The frame 110 is capable of determining the overall appearance of the diffuser.

[0041] The diffuser 100 has a substantially cylindrical shape, and the frame 110 also has a cylindrical skeletal structure.

[0042] This frame 110 defines a diffusing position DP, as described below. When one of the plurality of oil cartridges is located at the diffusing position DP, diffusing is performed from the corresponding oil cartridge.

[0043] Respective oil cartridges may contain oils having different fragrances.

[0044] Next, the container 120 is rotatably mounted on the frame 110 and has a space for mounting the plurality of oil cartridges therein. It may have a hollow structure.

[0045] As illustrated in the drawing, the container 120 includes a plurality of partitioned space portions, and the plurality of oil cartridges may be fixedly mounted in respective space portions.

[0046] The drawing illustrates five radially partitioned space portions. In addition, four oil cartridges provided in four of the space portions are illustrated.

[0047] When one of the four oil cartridges selected by the user enters the diffusing position DP according to the rotation of the container 120, fragrance emission is performed from the corresponding oil cartridge.

[0048] The present disclosure is not limited to the number of partitioned space portions or the number of oil cartridges, and fewer or more space portions and oil cartridges may be provided as needed.

[0049] The rotation of the container 120 is performed by the driving unit 130. The driving unit 130 rotates the container 120. The rotating direction may be clockwise or counterclockwise.

[0050] In order to rotate the container 120, the driving unit may include a motor capable of applying rotational force. For example, the driving unit may include a bevel-gear-type motor.

[0051] In addition, the driving unit may also be involved in the open structure of the diffuser 100 described above. That is, the driving unit may move the lid unit 150 upward so as to switch the diffuser 100 from the closed state to the open state.

[0052] In order to move the lid unit 150 upward, the driving unit may include a motor that enables upward and downward driving. For example, the driving unit may include a worm-gear-type or rack-and-pinion-type motor.

[0053] Although two motors may be included so as to perform both the operation of rotating the container 120 and the operation of moving the lid portion upward and downward as described above, the present disclosure is not limited thereto. Various other methods for switching a rotational motion performed using an external power source into a rotational motion or a linear motion in another axial direction may be applied.

[0054] FIG. 4 is an exploded view of the frame 110 of the smart diffuser 100 according to the embodiment of the present disclosure.

[0055] Referring to FIG. 4, the frame 110 may include an upper frame 112, a lower frame 114, and a guide unit 116.

[0056] The diffusing position DP is defined in the guide unit 116.

[0057] In FIG. 3 described above, the diffusing position DP is not illustrated because it is covered by a portion of the upper frame 112, but in FIG. 4, which is an exploded view thereof, the diffusing position DP is illustrated.

[0058] The diffusing position DP is approximately located at the middle height of the frame 110. When any one of the oil cartridges is positioned at the diffusing position DP due to the rotation of the container 120, the fragrance of the corresponding oil cartridges is diffused. Details of the operation in which the diffusing is performed by the interaction between the guide unit 116 and the cartridge positioned at the diffusing position DP will be described later.

[0059] Continuously referring to FIG. 4, the upper frame 112 has a space H configured to accommodate the container 120 therein. In the upper frame 112, a space is provided in which the container 120 is capable of performing a rotational motion and an up-and-down motion. The rotational motion is associated with causing a selected fragrance to move to the diffusing position DP, and the up-and-down motion is associated with the open/closed structure of the diffuser 100.

[0060] The upper frame 112 is provided with a fan 1122. The fan 1122 is positioned directly above the diffusing position DP so as to draw out the fragrance of the oil cartridge which has entered the diffusing position DP. The fan 1122 may be a blower or the like. For example, a rotating blade is provided inside the fan 1122, and the rotating blade is rotated in a direction creating wind from the inside to the outside, so that the fragrance can be drawn out to the outside of the diffuser 100.

[0061] The lower frame 114 is disposed on a side opposite the lid unit 150, and the driving unit 130 is disposed thereon. The lower frame 114 provides an inner space for mounting the driving unit therein.

[0062] The lower frame 114 serves to support the entire load of the diffuser 100.

[0063] The guide unit 116 is disposed between the upper frame 112 and the lower frame 114.

[0064] The guide unit 116 is provided with a hill portion 1162 so as to press an oil cartridge, which enters the diffusing position DP, upwards.

[0065] A diffusing position DP is defined on the hill portion 1162.

[0066] The hill portion 1162 has an upwardly bulged shape approximately above the upper plane of the guide unit 116. The hill portion 1162 usually has the shape of a hill, the height of which is the highest at the middle portion thereof and is lowered toward the opposite sides thereof. Thus, the diffusing position DP may be defined at the highest portion of the hill

portion 1162. That is, the diffusing position DP may be defined at the uppermost portion of the hill portion 1162.

[0067] FIGS. 5A and 5B are perspective views of the container 120 of the smart diffuser 100 according to the embodiment of the disclosure, which is viewed from different sides. FIG. 5A is a top side perspective view, and FIG. 5B is a bottom side perspective view.

[0068] Referring to FIGS. 5A and 5B, the container 120 includes a plurality of radially partitioned space portions SH, S1, S2, S3, and S4.

[0069] Partition walls W may be disposed in order to partition the space portions SH, S1, S2, S3, and S4. As shown in the drawing, five partition walls W may be provided in order to form five space portions SH, S1, S2, S3, and S4. The present disclosure is not limited to the number.

[0070] A rotation shaft of the container 120 is disposed at the middle of the space portions (that is, at the radial center of the space portions), and the driving unit is fixedly inserted into the middle of the space portions so as to rotate the container 120 along the rotation shaft.

[0071] A plurality of oil cartridges CA1, CA2, CA3, and CA4 are mounted in at least two of the space portions SH, S1, S2, S3, and S4. As illustrated in the drawing, four cartridges may be mounted in four of the five space portions S1, S2, S3, and S4.

[0072] The space portions SH, S1, S2, S3, and S4 may be referred to as a groove space portion SH, a first space portion S1, a second space portion S2, a third space portion S3, and a fourth space portion S4, respectively. In addition, the oil cartridges CA1, CA2, CA3, and CA4 may be referred to as a first cartridge CA1, a second cartridge CA2, a third cartridge CA3, and a fourth cartridge CA4.

[0073] The first cartridge CA1 is mounted in the first space S1, the second cartridge CA2 is mounted in the second space S2, the third cartridge CA3 is mounted in the third space S3, and the fourth cartridge CA4 is mounted in the fourth space S4.

[0074] Cases 121, 122, 123, and 124 may be further included in order to mount the respective cartridges CA1, CA2, CA3, and CA4 therein. The respective cases 121, 122, 123, and 124 are referred to as a first case 121, a second case 122, a third case 123, and a fourth case 124. The first cartridge CA1 is accommodated in the first case 121. The second cartridge CA2 is accommodated in the second case 122. The third cartridge CA3 is accommodated in the third case 123. Further, the fourth cartridge CA4 is accommodated in the fourth case 124.

[0075] An oil cartridge is not mounted in the groove space portion SH. As will be described later, this is to ensure that when the diffuser 100 is not used (that is, when the power is turned off), no cartridge is placed at the diffusing position DP since, when an oil cartridge is in the

OFF state and then enters the diffusing position DP, the oil cartridge is switched to an ON state in a manner of being pressed upward through the hill portion 1162. The OFF state of a cartridge means a state in which the oil contained in the cartridge is sealed such that the fragrance of the oil contained therein does not leak to the outside, and the ON state of a cartridge means a state in which the oil contained in the cartridge is opened such that the fragrance of the oil contained therein can be drawn out to the outside.

[0076] That is, when the fragrance emission of the first cartridge CA1 is required, the first space portion S1 is disposed at the diffusing position DP, when the fragrance emission of the second cartridge CA2 is required, the second space portion S2 is disposed at the diffusing position DP, when the fragrance emission of the third cartridge CA3 is required, the third space portion S3 is disposed at the diffusing position DP, and when the fragrance emission of the fourth cartridge CA4 is required, the fourth space portion S4 is disposed at the diffusing position DP. In addition, when the power is turned off, the groove space portion SH is disposed at the diffusing position DP.

[0077] Further referring to FIG. 5B, the cases 121, 122, 123, and 124 accommodating the respective cartridges are provided with respective protrusions B1, B2, B3, and B4 that protrude downward through the lower surface B of the container 120. The cartridges CA1, CA2, CA3, and CA4 may be accommodated in these cases 121, 122, 123, and 124.

[0078] As a result, because a protrusion is pressed when entering the hill portion HL, the cartridge accommodated in the corresponding case is also capable of being pressed upward, and when the protrusion escapes from the hill portion HL due to an elastic force, the pressure is capable of being released.

[0079] That is, when entering the hill portion HL, the protrusion of the case is pushed upward (the cartridge housed in the corresponding case is also pushed upward) while moving up along the hill portion HL, and when getting out of the hill portion HL, the protrusion of the case returns to the original state thereof (the cartridge contained in the corresponding case also returns to the original state thereof) while moving down along the hill portion.

[0080] Hereinafter, with reference to FIGS. 6 to 7, a process of pressing each cartridge during the entrance of the cartridge into the diffusing position DP will be described in detail.

[0081] FIG. 6A is a front view when the groove space portion SH is disposed at the diffusing position DP according to an embodiment of the present disclosure.

[0082] In FIG. 6A, for the sake of a detailed description, the guide unit 116, the container 120 including the cartridges, and a portion of the drive unit 130 for rotating the container 120 are illustrated together.

[0083] FIG. 6B is a cross-sectional view of FIG. 6A, illustrating the state in which a cross section is applied only to the container 120 for convenience of explanation.

[0084] FIG. 7A is a plan view when the groove space portion SH is disposed at the diffusing position DP according to an embodiment of the present disclosure, FIG. 7B is a plan view when the first space portion S1 is disposed at the diffusing position DP, and FIG. 7C is a plan view when the second space portion S2 is disposed at the diffusing position DP.

[0085] FIGS. 7A to 7C illustrate the rotating operation of the container 120 relative to the fixed guide unit 116 in detail.

[0086] First, referring to FIGS. 6A, 6B, and 7A, when the groove space portion SH is disposed at the diffusing position DP, no cartridge is in the ON state. That is, all the cartridges are in the OFF state. For example, FIG. 7A illustrates a situation that may correspond to the state in which the diffuser 100 is powered off. Alternatively, it may be the intermediate state of a process of rotation from the fourth space portion S4 to the first space portion S1 (when rotating in a direction R) or the intermediate state of a process of rotation from the first space portion S1 to the fourth space portion S4 (when rotating in a direction opposite the direction R).

[0087] In the OFF state, since the oil cartridges are in the hermetically closed state, the fragrances in the oil cartridges may be held therein without being emitted.

[0088] Next, as the user selects the fragrance of the first cartridge CA1, the first space portion S1 is disposed at the diffusing position DP. The situation is illustrated in FIG. 7B.

[0089] That is, the container 120 is rotated in the direction R by the driving unit 130, and the first cartridge CA1 accommodated in the first space portion S1 enters the diffusing position DP.

[0090] When the first space portion S1 enters the diffusing position DP (that is, when the first cartridge CA1 enters the diffusing position DP) as the container 120 is rotated, the protrusion B1 in the first case 121 accommodating the first cartridge CA1 is pressed upward by the hill portion 1162. At this time, the first cartridge CA1 is also pressed upward.

[0091] When the first cartridge CA1 is pressed upward, the first cartridge CA1 is capable of being switched from the OFF state to the ON state through the following process.

[0092] Specifically, when the protrusion B1 of the first case 121 moves up along the hill portion 1162 according to the rotation of the container 120, the cap CP of the first cartridge CA1 accommodated in the first case 121 also moves upward. At this time, the header HD of the first cartridge CA1, which is in a fixed state relative to the protrusion B1 of the first case 121 and the cap CP of the first cartridge CA1, is opened at the upper portion thereof due to the upward movement of the cap CP, thereby being switched to the ON state, in which the fragrance inside the cartridge can be emitted to the outside. That is, the upper portion of the header HD may be in the form of an opening, which is blocked by the cap CP and is opened by the upward movement of the cap CP. This is similar to the process in which the introduction opening of a container 120 containing an oil is blocked by the cap CP and is then opened as the cap CP is moved upward. The upper end T may also be held stationary together with the header HD. The upper end T may be involved in stopping the cap CP, which is moved upward. A spring SP is an element that is compressed when the protrusion B1 is moved upward.

[0093] Subsequently, as the user selects the fragrance of the second cartridge CA2, the second space portion S2 is disposed at the diffusing position DP. This situation is illustrated in FIG. 7C.

[0094] That is, the container 120 is further rotated in the direction R by the driving unit 130, and the second cartridge CA2 accommodated in the second space portion S2 enters the diffusing position DP.

[0095] As described above, when the second space portion S2 enters the diffusing position DP (i.e., when the second cartridge CA2 enters the diffusing position DP) according to the rotation of the container 120, the protrusion B2 of the second case 122 is pressed by the hill portion 1162. Thus, the cap CP of the second cartridge CA2 is moved upward and the header HD of the second cartridge CA2 is relatively fixed, so that the second cartridge CA2 in the OFF state can be switched to the ON state.

[0096] At the same time, since the first space portion S1 moves out of the diffusing position DP according to the rotation of the container 120 (i.e., the first cartridge CA1 moves out of the diffusing position DP), the protrusion B1 of the first case 121 (i.e., the first cartridge CA1) is released from the pressed state. When the pressed state is released, the first cartridge CA1 in the ON state is switched to the OFF state by the process opposite the above-described pressing process. That is, the protrusion B1 returns to the original state thereof by getting out of the hill portion 1162, which has pushed the protrusion B1 upward, and thus the cap CP,

which has moved together with the protrusion B1, also returns to the original position thereof, whereby the upper portion of the header HD, which was open, is closed. In other words, the opening-type upper portion of the header HD is opened and then closed again as the cap CP is moved downward.

[0097] The same description is applicable when other cartridges enter the diffusing position DP. A more detailed description will be omitted.

[0098] Meanwhile, a selected cartridge should be stopped while fragrance emission is performed from the corresponding cartridge after it has entered the diffusing position DP. For example, the selected cartridge should remain at the diffusing position DP until another cartridge is selected, or until the diffuser 100 is powered off. At this time, the termination of entry of each cartridge into the diffusing position DP may be performed through the following process. For example, a sensor provided on the hill portion 1162 may recognize contact with the protrusion, and it may be performed using information derived from the rotating amount of the container 120 and the position of each space portion. Alternatively, it may be performed by counting the contact frequency of the sensor provided on the hill portion 1162 with the protrusion and matching the counted number to the order of the cartridges according to the rotational direction of the container 120. The present disclosure is not limited thereto, and the entry may alternatively be terminated using position recognition sensors.

[0099] According to the embodiments of the present disclosure, it is possible to provide a smart diffuser 100 capable of more efficiently providing a selected fragrance to a user by including a plurality of oil cartridges therein in an optimal form.

[0100] It should be noted that even though the technical spirit of the present disclosure has been specifically described with reference to the embodiments described above, the above-described embodiments are intended to be illustrative and not restrictive. It will be apparent to those skilled in the art that various embodiments can be made without departing from the spirit and scope of the present disclosure.

DRAWING REFERENCE NUMERALS

100: smart diffuser	150: lid unit
110: frame	1122: fan
112: upper frame	121: first case
114: lower frame	122: second case
116: guide unit	123: third case
1162: hill portion	124: fourth case
DP: diffusing position	O: open space
120: container	H: space
SH: (groove) space portion	W: wall
S1: (first) space portion	B: lower surface
S2: (second) space portion	B1: (first) protrusion
S3: (third) space portion	B2: (second) protrusion
S4: fourth space portion	B3: (third) protrusion
CA1: (first) cartridge	B4: (fourth) protrusion
CA2: (second) cartridge	CP: cap
CA3: (third) cartridge	HD: header
CA4: (fourth) cartridge	T: upper end
130: drive unit (or driving unit)	SP: spring
140: cover unit	R: direction

CLAIMS

What is claimed is:

1. A smart diffuser (100) comprising:
 - a frame (110) configured to define a diffusing position (DP);
 - a container (120) mounted on the frame (110) and comprising a space (H) configured to mount a plurality of oil cartridges (CA) therein; and
 - a driving unit (130) configured to drive the container (120), wherein the driving unit(130) drives the container (120) so as to cause an oil cartridge (CA) selected by a user among the plurality of oil cartridges (CA) to enter the diffusing position (DP).
2. The smart diffuser (100) of claim 1, wherein the container (120) comprises a plurality of partitioned space portions (S), and the plurality of oil cartridges (CA) are fixed in two or more of the space portions (S), respectively.
3. The smart diffuser (100) of claim 1 or 2, wherein the frame (110) comprises an upper frame (112), which is located directly above the diffusing position (DP) and comprises a fan (1122) so as to draw out a fragrance of the oil cartridge (CA), which has entered the diffusing position (DP).
4. The smart diffuser (100) of claim 3, wherein the frame (110) further comprises a lower frame (114) located at a side opposite a lid unit (150) and the driving unit (130) is placed above the lower frame (114).
5. The smart diffuser (100) of claim 4, wherein the frame (110) further comprises a guide unit (116) disposed between the upper frame (112) and the lower frame (114), and the guide unit (116) is provided with a hill portion (1162) configured to press the oil cartridge (CA) entering the diffusing position (DP).
6. The smart diffuser (100) of claim 5, wherein the diffusing position (DP) is defined at an uppermost position of the hill portion (1162).

7. The smart diffuser (100) of claim 5 or 6, wherein the oil cartridge (CA) is switched from an OFF state to an ON state in which an upper portion of the oil cartridge (CA) is opened by external pressing so that the fragrance can be drawn out, and the oil cartridge (CA), which has entered to the diffusing position (DP), is pressed upward by the hill portion (1162) so as to be switched from the OFF state to the ON state.

8. The smart diffuser (100) of any one of claims 1 to 7, wherein the container (120) is rotatably mounted on the frame (110), and the driving unit (130) rotates the container (120) so as to cause the oil cartridge (CA) to enter the diffusing position (DP).

100

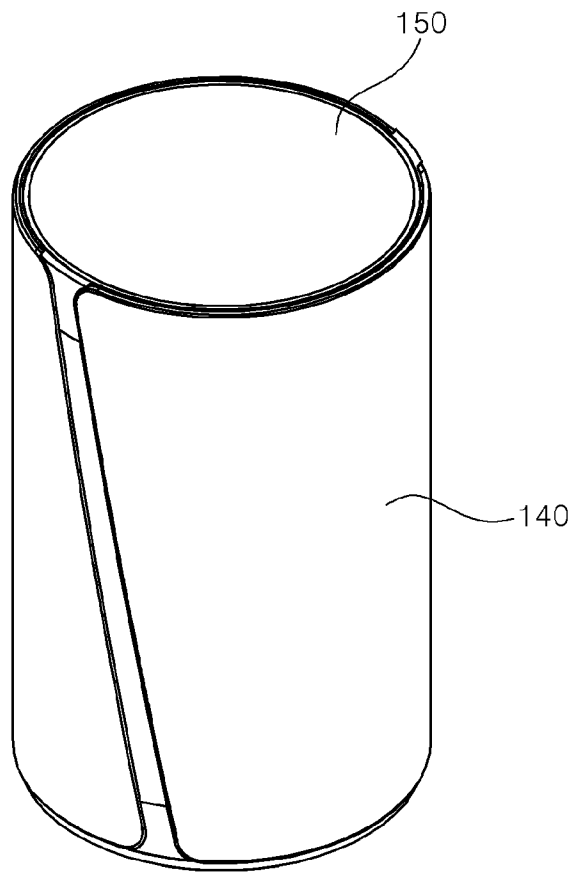


FIG. 1

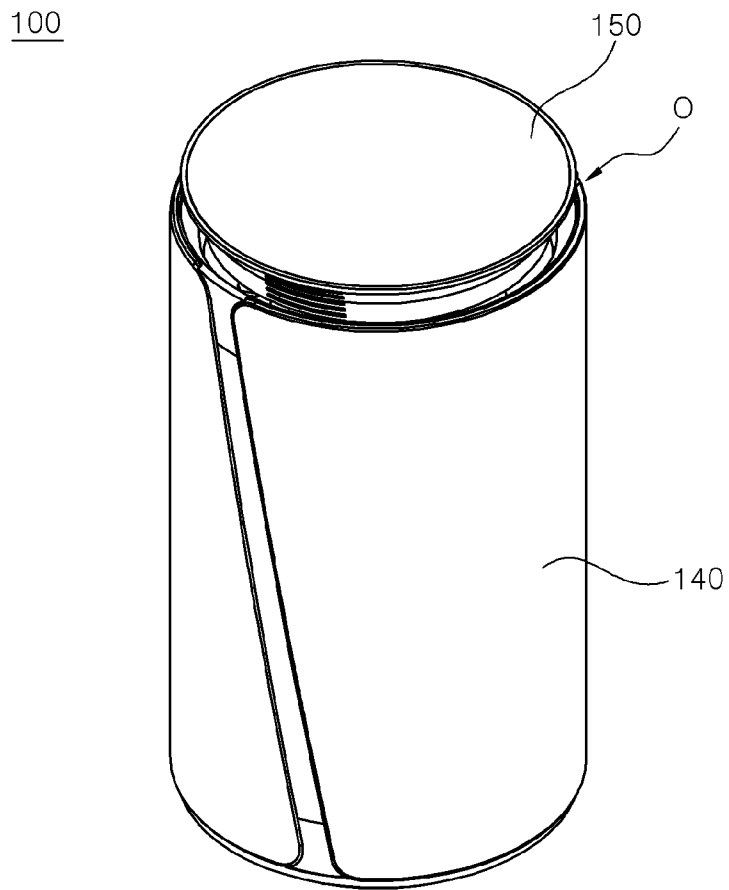


FIG. 2

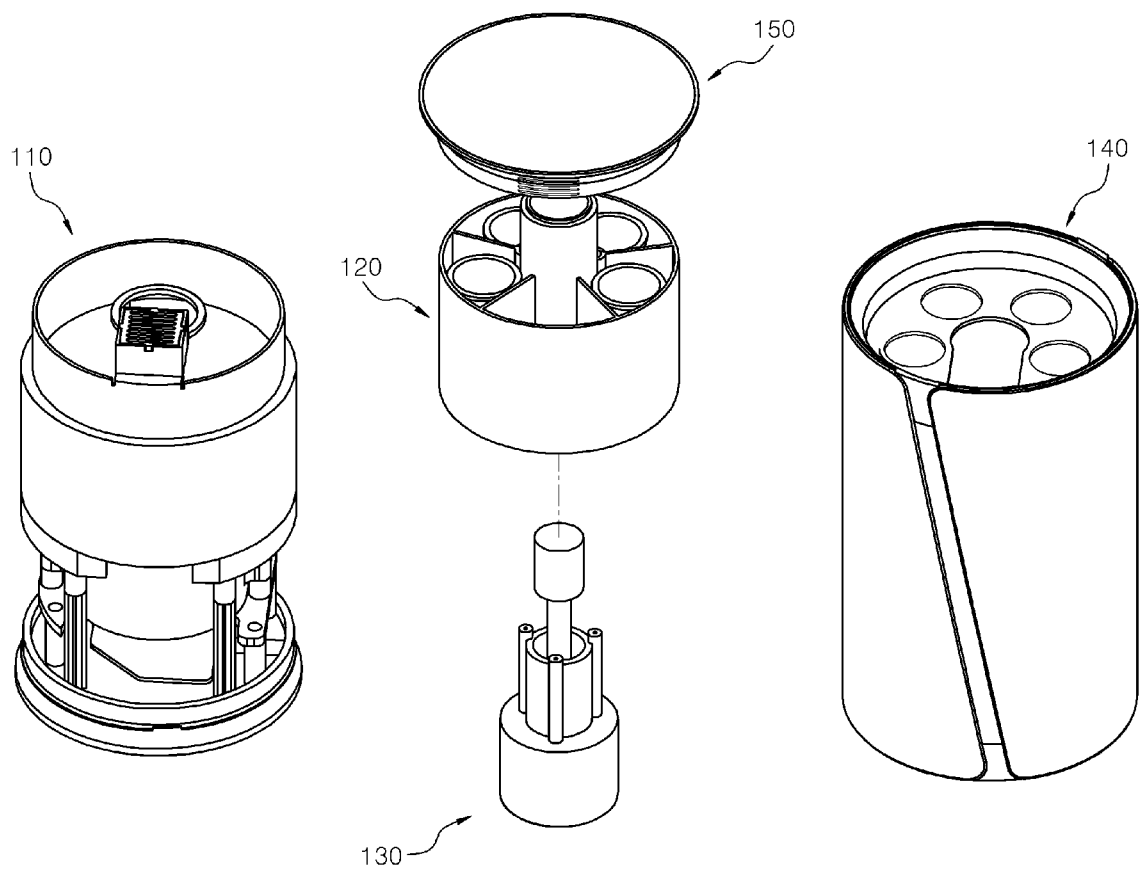


FIG. 3

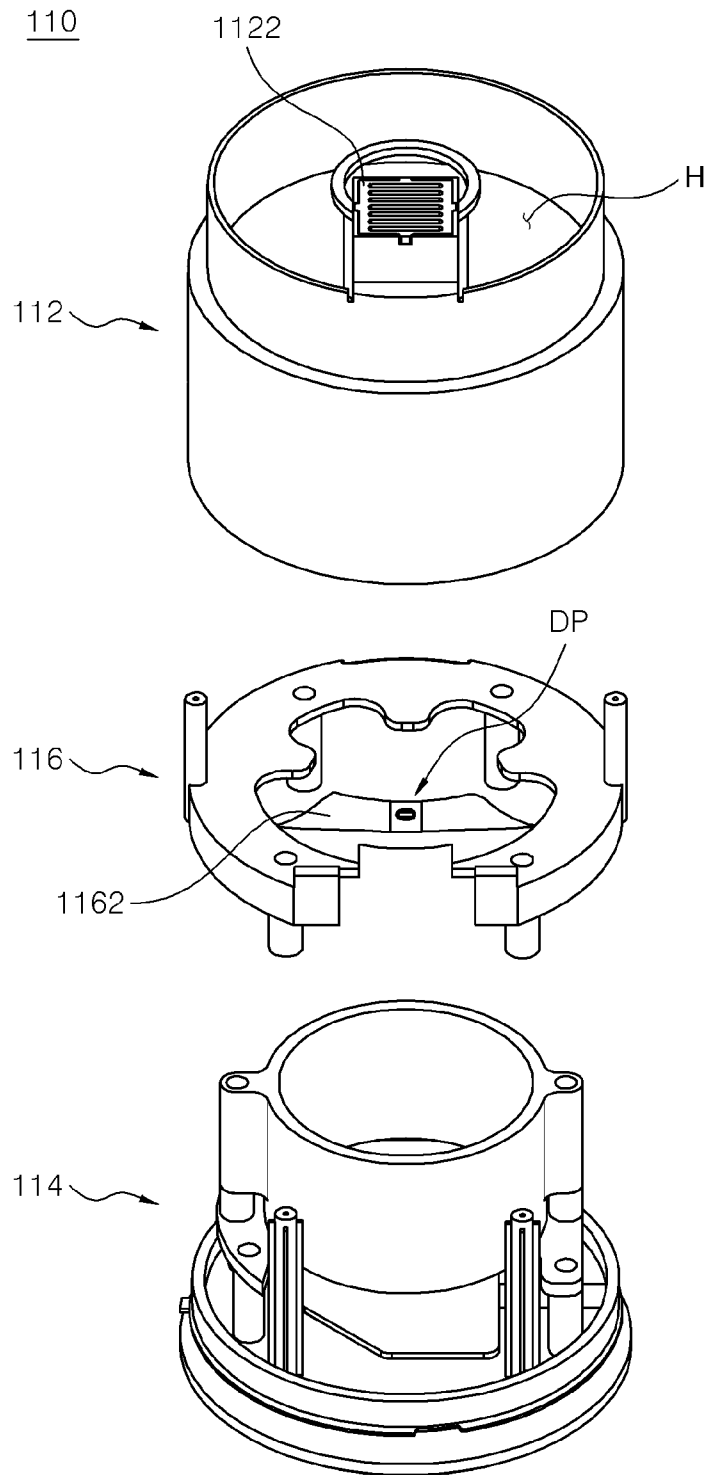


FIG. 4

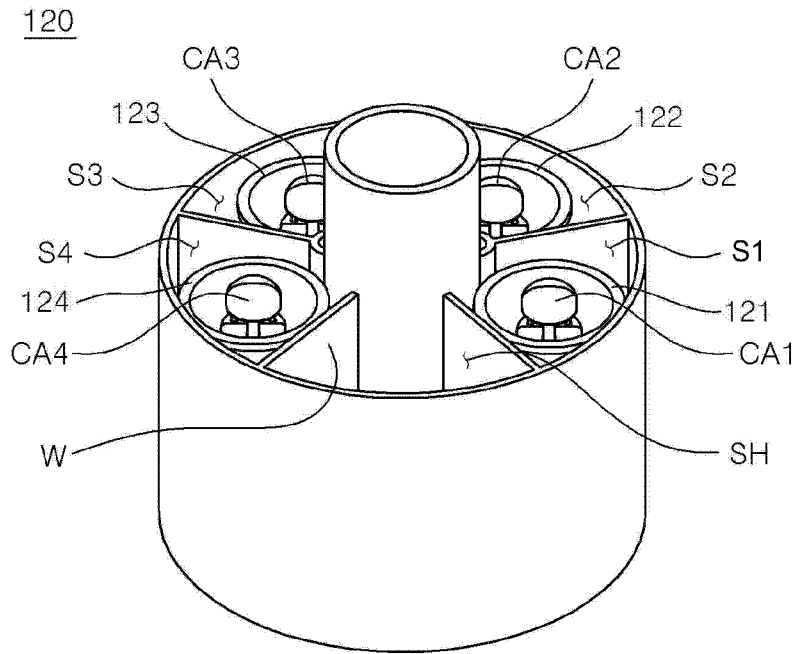


FIG. 5A

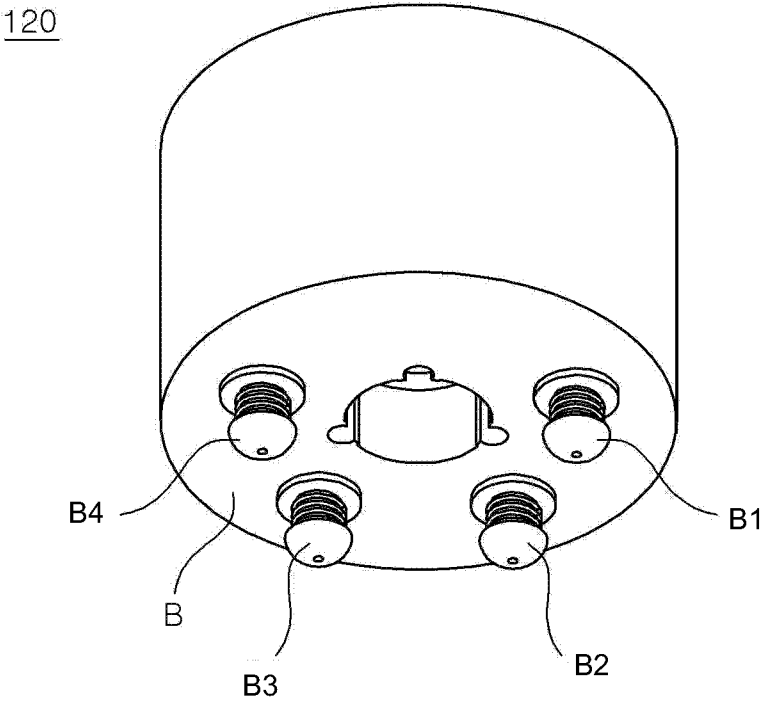


FIG. 5B

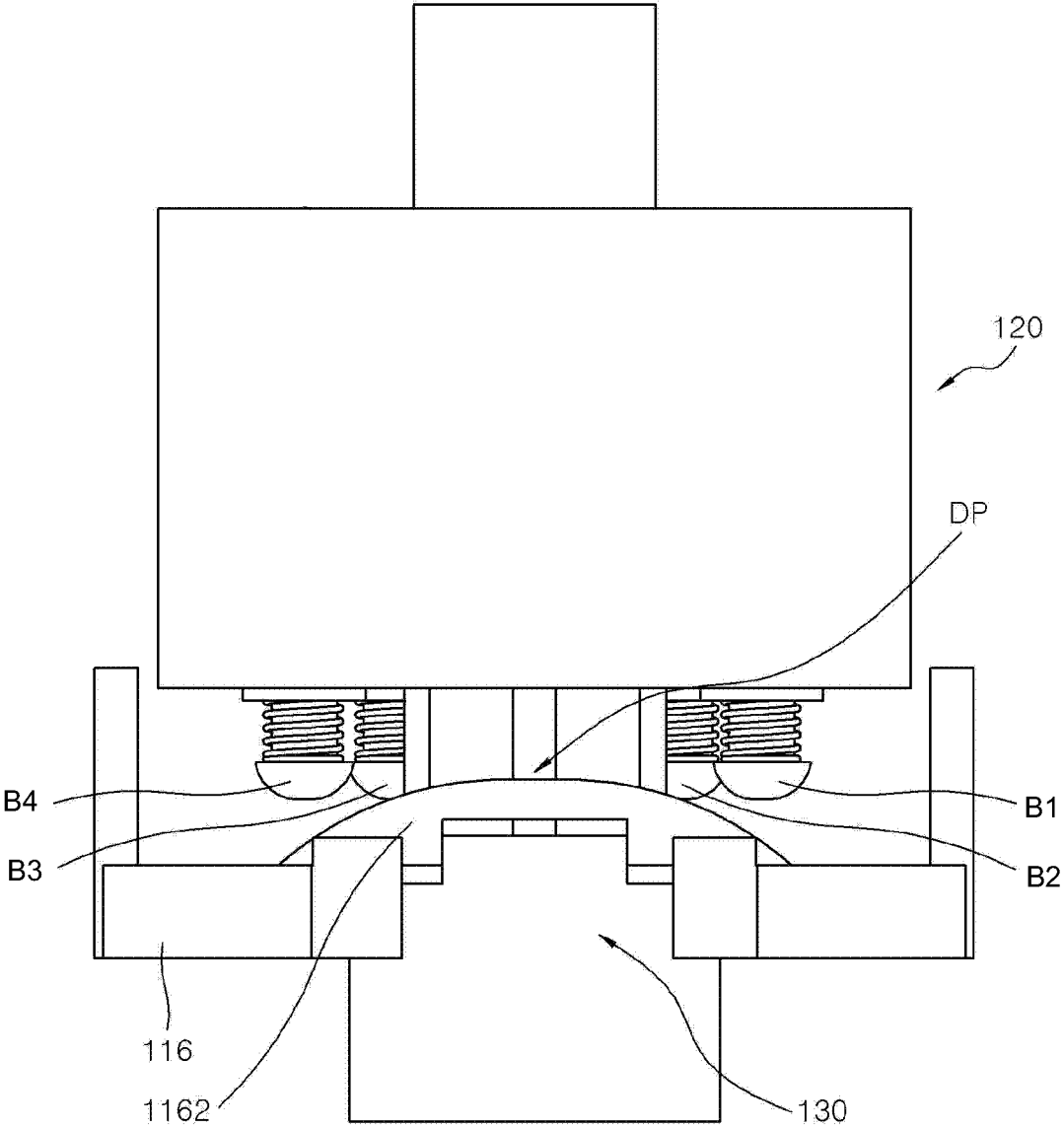


FIG. 6A

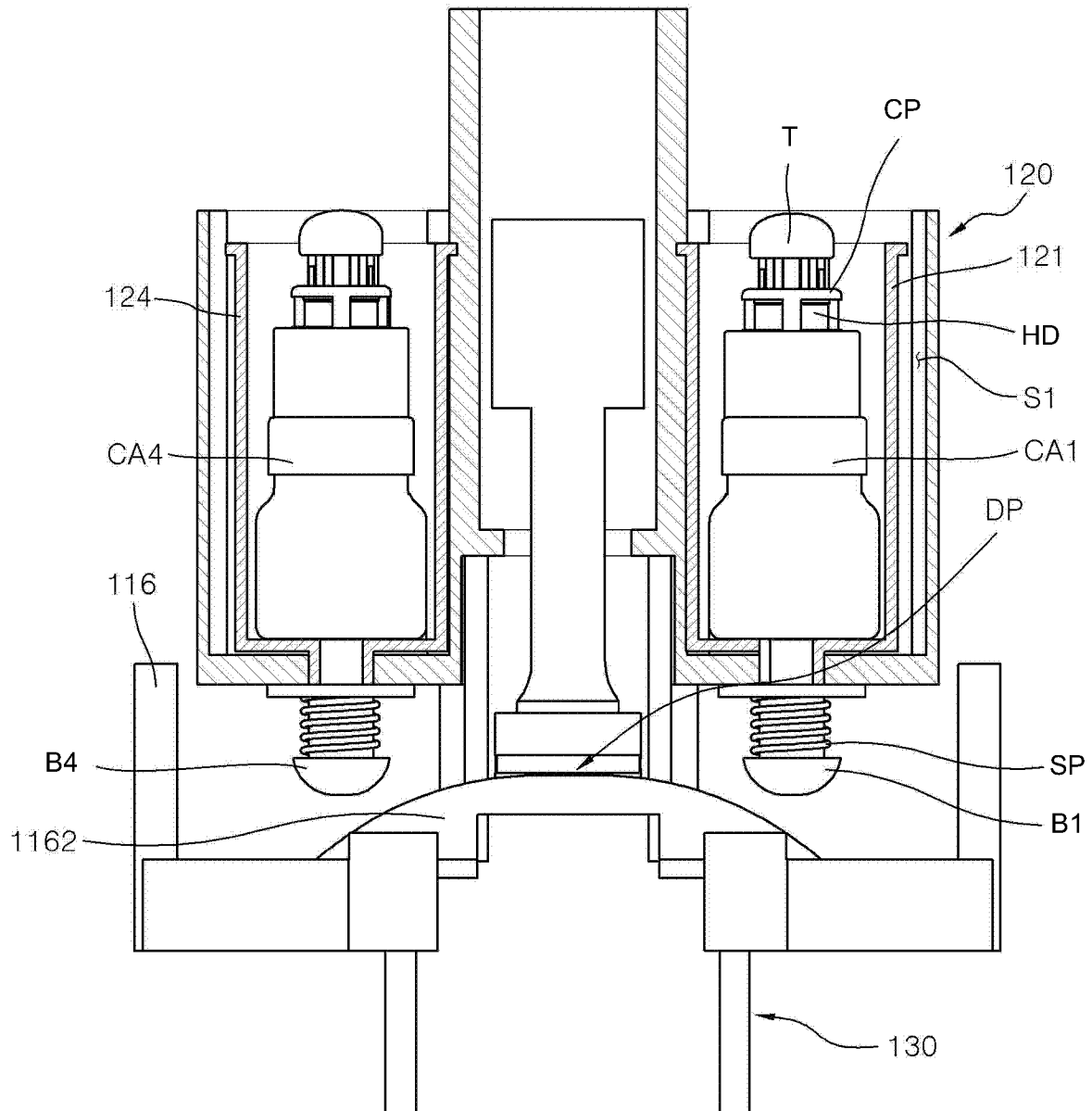


FIG. 6B

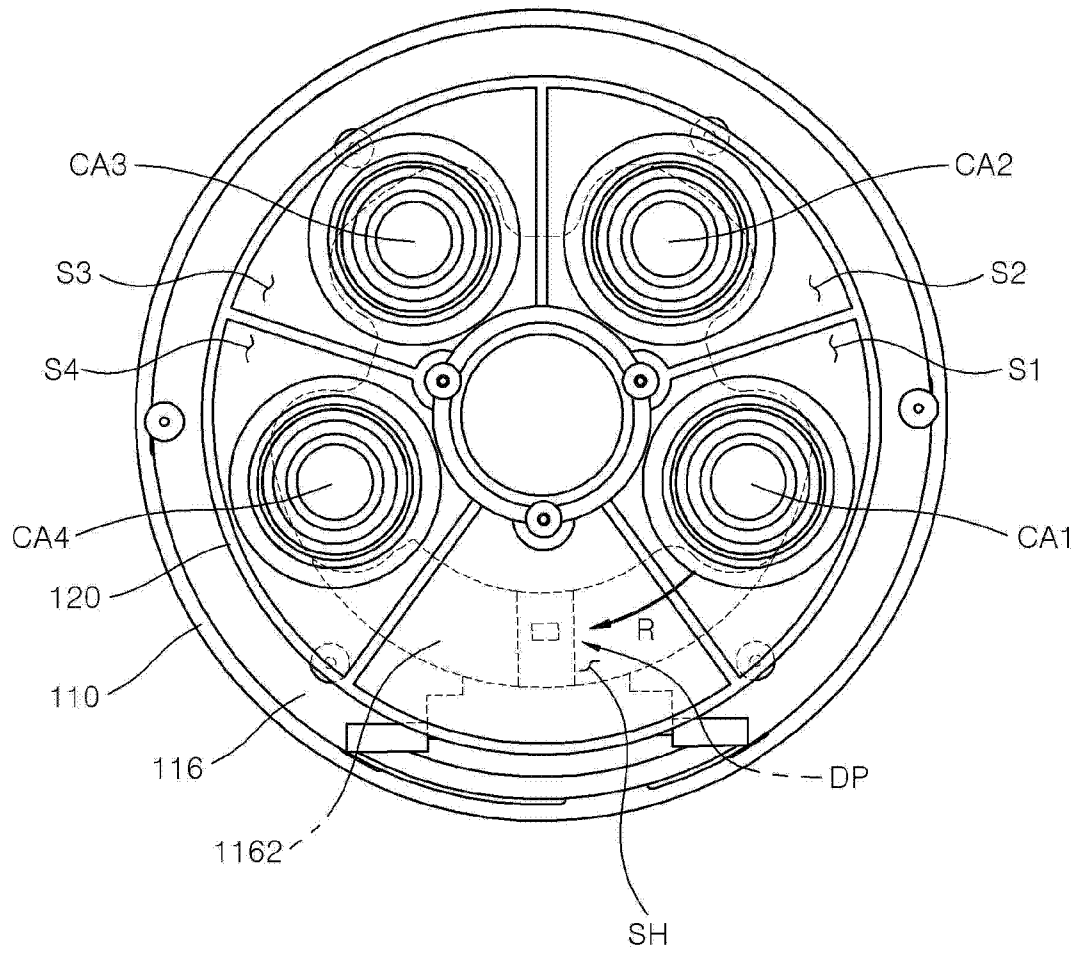


FIG. 7A

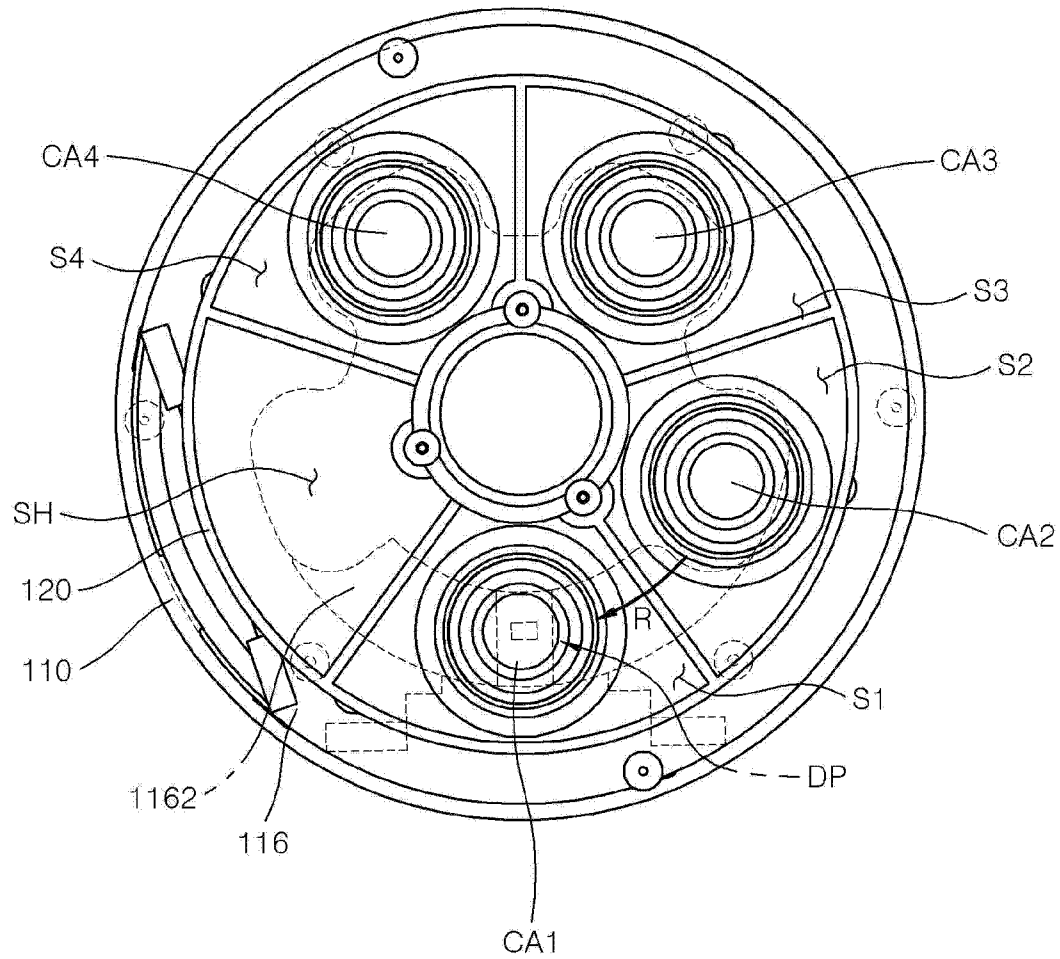


FIG. 7B

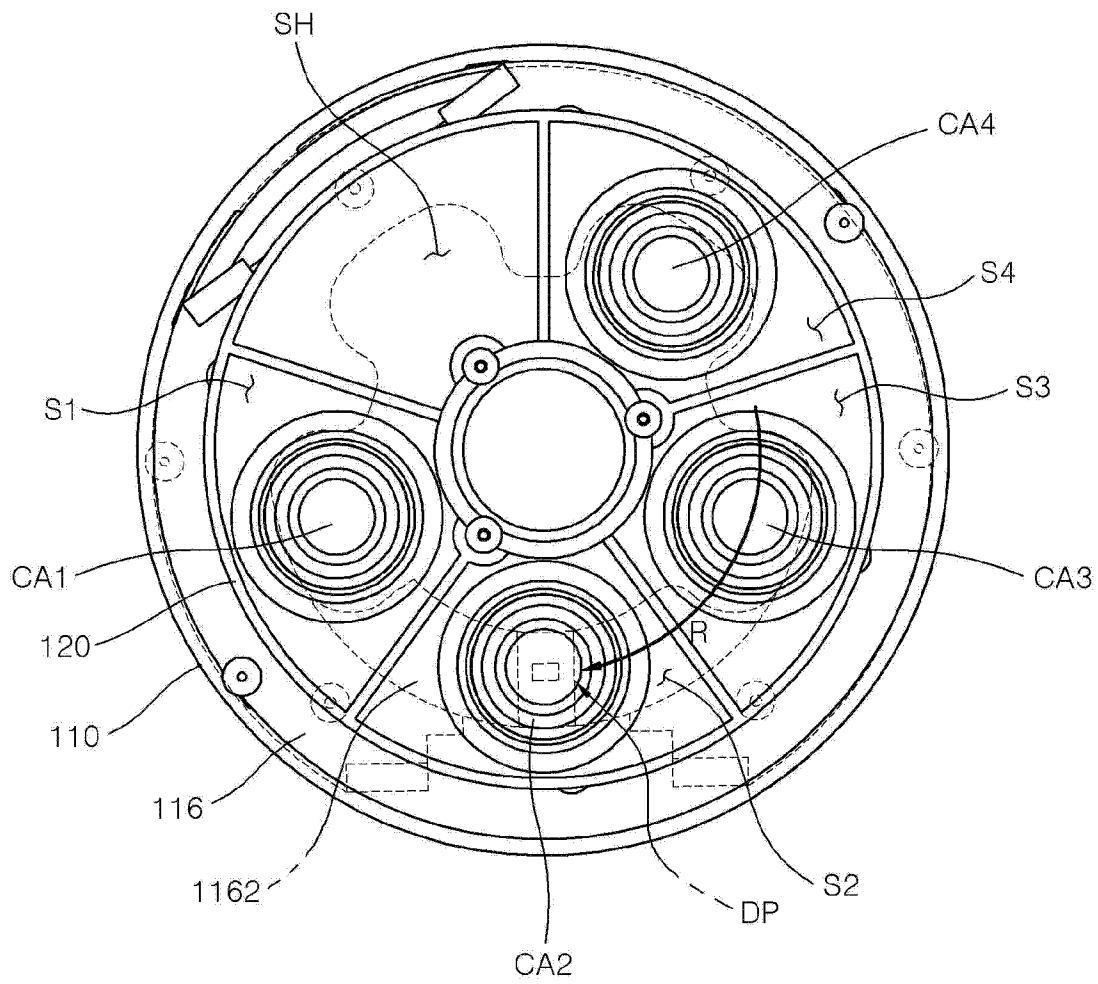


FIG. 7C

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/049035

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61L9/12
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X,P	US 10 064 970 B1 (SHAH SIDDHARTH [US] ET AL) 4 September 2018 (2018-09-04) figures 1A-C, 6	1-4,8
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Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

3 December 2019

Date of mailing of the international search report

12/12/2019

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International application No

PCT/US2019/049035

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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