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(54) **PERFUME ATOMIZER**

(57) The present invention concerns a perfume atomizer, which relates to the field of atomizer fields, and includes a perfume atomizer body, a sprinkler device, a guide rod, a guide block, a middle frame, a cam spring, a lower cam, an upper cam, a screw, an upper shell, a raised head, and a groove. An opening of the perfume atomizer body is provided with a sprinkler device, and an upper end of the sprinkler device is fixedly connected to the guide block with the guide rod, and is mounted in the middle frame with the guide block. An upper end of the guide block is screwed to the groove of the upper cam with the cam spring and the raised head of the lower cam, and the upper cam is fixed with the screw. An upper end of the middle frame is provided with the upper shell, and the upper shell is screwed with the raised head of the lower cam and the cam spring with the groove of the upper cam. The present invention provides for a proper structural design, beautiful appearance, novel and unique shape, simple operation assembling and convenient use, and has desirable airtightness and good pressing and spraying effect; therefore, it is applicable to like products such as perfume, and meets application demands of people.

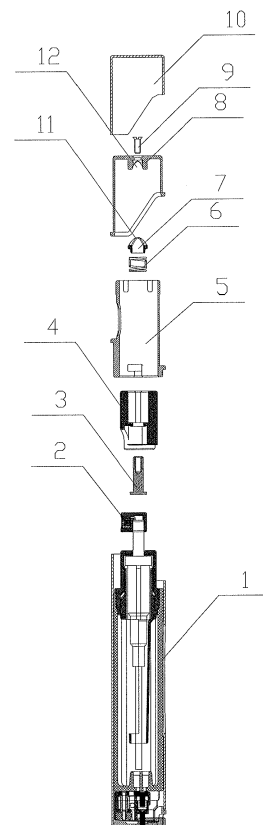


FIG. 3

## Description

### Technical Field

**[0001]** The present invention relates a perfume atomizer which is part of the technical field of atomizers.

### Background

**[0002]** Perfume is a liquid mixing an essential oil, a fixing agent, ethyl alcohol, and ethyl acetate, is used to enable an object (usually a human body part) to have a durable and pleasant odor. The essential oil comes from flowers and plants and is extracted by using distillation or enfleurage, and may also use an organism having fragrance. The fixing agent is used to blend various different perfumes, including balsam, ambergris, and glandular secretions of linsangs and musk deer. The concentration of the ethyl alcohol and ethyl acetate depends on whether perfume, eau de toilette or cologne is required. The expiration date of the perfume depends on a storage environment, and the perfume may be stored for a very long time, dozens of years or even more than a hundred years, if it is stored in a dark and cool place.

**[0003]** Currently, there are more patterns of perfume bottles used for storing perfume, and the structural design of current perfume bottles is not appropriate enough, they have common shapes, non-novel and non-unique patterns, poor airtightness, complicated assembling and usage, poor pressing and spraying effect, and limited application scope, so that they cannot meet usage demands of people.

### Summary

**[0004]** Directed to the above problems, the technical problem to be solved in the present invention is to provide a novel perfume atomizer.

**[0005]** According to the present invention, this object is solved by a perfume atomizer having the features of claim 1.

**[0006]** Advantageous further developments are set out in the dependent claims.

**[0007]** According to the present invention, a sprinkler device can be covered by an upper shell mounted in a manner so as to be rotatable with respect to said perfume atomizer body around a longitudinal direction thereof. The nozzle of the sprinkler device can be covered by the upper shell when the upper shell is in a first longitudinal rotational position with respect to perfume atomizer body. During transport of perfume atomizer spilling of perfume is prevented. For use, the nozzle of the sprinkler device is exposed by rotation of the upper shell to a second longitudinal rotational position. In order to block a longitudinal pump action of a pump associated to the sprinkler device the upper contour of the perfume atomizer body and the lower contour of said upper shell are configured such that they abut each other when the upper shell is

in the first longitudinal rotational position. A simple rotation of the upper shell around the longitudinal direction to the second longitudinal rotational position releases the abutment of the contours so that a pump action is permitted. Thus, the rotation of the upper shell into the second longitudinal rotational position not only exposes the nozzle of the sprinkler device but also allows a pump action which takes place along the longitudinal direction. On the other hand, placing the upper shell in the first longitudinal rotational position serves to block the pump action and securely covers nozzle of the sprinkler device. Thus, the content of the perfume atomizer is protected from spilling out during transport while a simple twist of the upper shell allows an immediate use of the content.

**[0008]** Preferably, the sprinkler device is mounted to the perfume atomizer body in a manner so as to be non-rotatable around a longitudinal direction and the upper shell is mounted to the sprinkler device in a rotatable manner. Thus, the upper shell does not have to be mounted to the perfume atomizer body which simplifies the structure of the upper shell and the perfume atomizer body.

**[0009]** Further preferably, the upper contour of the perfume atomizer body comprises a first upper portion which projects upwardly with respect to a second lower portion. This first upper portion serves as a stopper for blocking the pump action by abutment with a first lower portion of the lower contour of the upper shell projecting downwardly from a second upper portion thereof, when the upper shell is in said first longitudinal rotational position.

**[0010]** Further preferably the upwardly projecting first upper portion of the upper contour of the perfume atomizer body ends at a height of the perfume atomizer body which is below the nozzle of the sprinkler device when the pump is not operated. Thus, a longitudinal pump action by displacing the nozzle of the sprinkler device downwardly with respect to the perfume atomizer body is possible while the nozzle remains exposed when the upper shell is in the second longitudinal rotational position. Furthermore, the second lower portion of the upper contour of the perfume atomizer body serves as stopper for the lowermost pump movement by abutment with the first lower portion of the lower contour of the upper shell when the upper shell is in the second longitudinal rotational position.

**[0011]** Further preferably, the first upper portion of the upper contour of the perfume atomizer body and the second lower portion of the upper contour of the perfume atomizer body are connected by a middle body contour portion having a contour which, when the upper shell is in the second rotational position, mates a contour of a middle shell contour portion connecting the second upper portion of the lower contour of the upper shell and the first lower portion of the lower contour of said upper shell.

**[0012]** Further preferably the perfume atomizer according to the present invention includes a perfume atomizer body, a sprinkler device, a guide rod, a guide block, a middle frame, a cam spring, a lower cam, an

upper cam, a screw, an upper shell, a raised head, and a groove. An opening of the perfume atomizer body is provided with a sprinkler device, and an upper end of the sprinkler device is fixedly connected to the guide block with the guide rod, and is mounted in the middle frame with the guide block. An upper end of the guide block is screwed to the groove of the upper cam with the cam spring and the raised head of the lower cam, and the upper cam is fixed with the screw. An upper end of the middle frame is provided with the upper shell, and the upper shell is screwed with the raised head of the lower cam and the cam spring with the groove of the upper cam.

**[0013]** Preferably, the upper shell is rotatable during use, and when the rotation exceeds 90°, it will rotate to 180° automatically.

**[0014]** The present invention has the following beneficial effects: the present invention has proper structural design, beautiful appearance, novel and unique shape, simple operation assembling and convenient use, and has desirable airtightness and good pressing and spraying effect; therefore, it is applicable to like products such as perfume, and meets application demands of people.

### Brief Description of the drawings

**[0015]** For ease of illustration, the present invention is described in detail through the following specific implementations and accompanying drawings.

FIG. 1 is a schematic structural diagram of the present invention;

FIG. 2 is a left view of FIG. 1;

FIG. 3 is a schematic exploded structural diagram of the present invention;

FIG. 4 is a sectional view of the present invention in a non-working state; and

FIG. 5 is a sectional view of the present invention in a working state.

**[0016]** 1-perfume atomizer body; 2-sprinkler device; 3-guide rod; 4-guide block; 5-middle frame; 6-cam spring; 7-lower cam; 8-upper cam; 9-screw; 10-upper shell; 11-raised head; 12-groove.

### Detailed Descriptions

**[0017]** As shown in FIG. 1 to FIG. 5, the implementation manner adopts the following technical solution: the present invention includes a perfume atomizer body 1, a sprinkler device 2, a guide rod 3, a guide block 4, a middle frame 5, a cam spring 6, a lower cam 7, an upper cam 8, a screw 9, an upper shell 10, a raised head 11, and a groove 12. An opening of the perfume atomizer body 1 is provided with a sprinkler device 2, and an upper end of the sprinkler device 2 is fixedly connected to the with the guide block 4 guide rod 3, and is mounted in the middle frame 5 with the guide block 4. An upper end of the guide block 4 is screwed to the groove 12 of the upper

cam 8 with the cam spring 6 and the raised head 11 of the lower cam 7, and the upper cam 8 is fixed with the screw 9. An upper end of the middle frame 5 is provided with the upper shell 10, and the upper shell 10 is screwed to the raised head 11 of the lower cam 7 and the cam spring 6 with the groove 12 of the upper cam 8.

**[0018]** The upper shell 10 is rotatable during use, and when the rotation exceeds 90°, it will rotate to 180° automatically.

**[0019]** The sprinkler device 2 can be covered by the upper shell 10. The upper shell 10 is mounted in a manner so as to be rotatable with respect to the perfume atomizer body 1 around a longitudinal direction of the perfume atomizer body 1. The nozzle of the sprinkler device 2 is covered by the upper shell 10 when the upper shell 10 is in a first longitudinal rotational position with respect to perfume atomizer body 1. For use, the nozzle of the sprinkler device 2 is exposed by rotation of the upper shell 10 to a second longitudinal rotational position which is displaced by 180 degrees in the present embodiment. Other angles such as 90 degrees are possible as well. A longitudinal pump action of a pump associated to the sprinkler device 2 is blocked by the upper contour of the perfume atomizer body 1 and the lower contour of said upper shell 10 which come into abutment when the upper shell 10 is in the first longitudinal rotational position. A simple rotation of the upper shell 10 to the second longitudinal rotational position releases the abutment of the contours so that a pump action is permitted.

**[0020]** The sprinkler device 2 is mounted to the perfume atomizer body 1 in a manner so as to be non-rotatable around a longitudinal direction of the perfume atomizer body 1 and the upper shell 10 is mounted to the sprinkler device 2 in a rotatable manner. For that purpose the guide block 4 is connected to the upper end of the sprinkler device 2 bearing the nozzle in a manner that they cannot rotate with respect to each other. The guide block 4 is placed into a middle frame 5 such that the nozzle of the sprinkler device 2 is exposed through a window of the middle frame 5 in all of its locii during a pump action. The middle frame 5 is non-rotatably connected to the guide block 4.

**[0021]** The guide rod 3 penetrates an inner hole of the guide block 4 and comprises at its upper free end a threaded hole. The lower cam 7 is placed on the guide rod 3 with the interposition of the cam spring 6 which surrounds the outer circumference of the guide rod 3. The lower end of the cam spring 6 is supported by a step in the inner hole of the guide block 4, while the upper end of the cam spring 6 is supported against a step at the lower cam 7, so that the lower cam 7 is pushed upwardly.

**[0022]** On top of the assembly consisting of the guide block 4, the guide rod 5, the middle frame 5, the cam spring 6 and the lower cam 7, the upper shell is mounted and fixed.

**[0023]** The upper shell 10 comprises an upper cam 8 which is placed onto the lower cam 7. A screw fixes the upper shell 10 to the threaded hole of the guide rod 5. In

the present embodiment, the upper shell 10 comprises two parts, i.e. one part having the contours and the upper cam, which is covered by a second part placed on top thereof.

**[0024]** The upper contour of the perfume atomizer body 1 comprises a first upper portion which projects upwardly with respect to a second lower portion. This first upper portion serves as a stopper for blocking the pump action by abutment with a first lower portion of the lower contour of the upper shell 10 projecting downwardly from a second upper portion thereof, when the upper shell 10 is in said first longitudinal rotational position.

**[0025]** The first upper portion of the upper contour of the perfume atomizer body 1 and the second lower portion of the upper contour of the perfume atomizer body 1 are connected by a middle body contour portion having a contour which, when the upper shell 10 is in the second longitudinal rotational position, mates a contour of a middle shell contour portion connecting the second upper portion of the lower contour of the upper shell 10 and the first lower portion of the lower contour of said upper shell 10.

**[0026]** The specific implementation manner has proper structural design, beautiful appearance, novel and unique shape, simple operation assembling and convenient use, and has desirable airtightness and good pressing and spraying effect; therefore, it is applicable to like products such as perfume, and meets application demands of people.

**[0027]** Basic principles and main features of the present invention and its advantages are presented and described. A person skilled in the art should know that the present invention is not limited to the above embodiment, and the descriptions in the embodiment and the specification are merely intended to describe the principle of the present invention. The present invention may have various variations and improvements without departing from the scope defined by the accompanying claims.

## Claims

1. A perfume atomizer comprising a perfume atomizer body (1), a sprinkler device (2) mounted to said perfume atomizer body (1), said sprinkler device (2) comprising a pump mechanism operable by a pump action along a longitudinal direction of said perfume atomizer body and coverable by an upper shell (10) mounted in a manner so as to be rotatable with respect to said perfume atomizer body (1), wherein a nozzle of said sprinkler device (2) is covered by said upper shell (10) when said upper shell (10) is in a first longitudinal rotational position with respect to said perfume atomizer body (1), said nozzle of said sprinkler device (2) being exposable by rotation of said upper shell (10) to a second longitudinal rotational position, wherein the upper contour of said per-

fume atomizer body (1) and the lower contour of said upper shell (10) are configured to block a pump action along the longitudinal direction of said perfume atomizer body (1) when said upper shell (10) is in said first longitudinal rotational position while a pump action is permitted when said upper shell (10) is in said second longitudinal rotational position.

2. A perfume atomizer according to claim 1, wherein said sprinkler device (2) is mounted to said perfume atomizer body (1) in a manner so as to be non-rotatable and said upper shell (10) is mounted to said sprinkler device (2) in a longitudinally rotatable manner.

3. A perfume atomizer according to any of claims 1 or 2, wherein the upper contour of said perfume atomizer body (1) comprises a first upper portion which projects upwardly with respect to a second lower portion and serves as a stopper for blocking the pump action by cooperation with a first lower portion of the lower contour of the upper shell (10) projecting downwardly from a second upper portion thereof, when said upper shell (10) is in said first longitudinal rotational position.

4. A perfume atomizer according to claim 3, wherein said upwardly projecting first upper portion of said upper contour of said perfume atomizer body (1) is located longitudinally spaced below said nozzle of said sprinkler device (2) when said pump is not operated so as to allow a longitudinal pump action by displacing said nozzle of said sprinkler device (2) downwardly with respect to said perfume atomizer body (1) while said nozzle remains exposed when said upper shell (10) is in said second longitudinal rotational position and wherein said second lower portion of said upper contour of said perfume atomizer body (1) serves as stopper for the lowermost pump movement in cooperation with said first lower portion of the lower contour of the upper shell (10) when said upper shell is in said second longitudinal rotational position.

5. A perfume atomizer according to any of claims 3 or 4, wherein said first upper portion of said upper contour of said perfume atomizer body (1) and said second lower portion of said upper contour of said perfume atomizer body (1) are connected by a middle body contour portion having a contour which, when said upper shell (10) is in said second longitudinal rotational position, mates a contour of a middle shell contour portion connecting said second upper portion of said lower contour of said upper shell (10) and said first lower portion of said lower contour of said upper shell (10).

6. A perfume atomizer according to any of claims 2 to

5, comprising a guide rod (3), a guide block (4), a middle frame (5), a cam spring (6), a lower cam (7), an upper cam (8), a raised head (11) and a groove (12), wherein an upper end of the sprinkler device (2) is fixedly connected to the guide block (4) with the guide rod (3), and is mounted in the middle frame (5) with the guide block (4); an upper end of the guide block (4) is fixed into the groove (12) of the upper cam (8) with the cam spring (6) and the raised head (11) of the lower cam (7), and the upper cam (8) is fixed with the screw (9); an upper end of the middle frame (5) is provided with the upper shell (10), and the upper shell (10) is fixed to the raised head (11) of the lower cam (7) and the cam spring (6) with the groove (12) of the upper cam (8).

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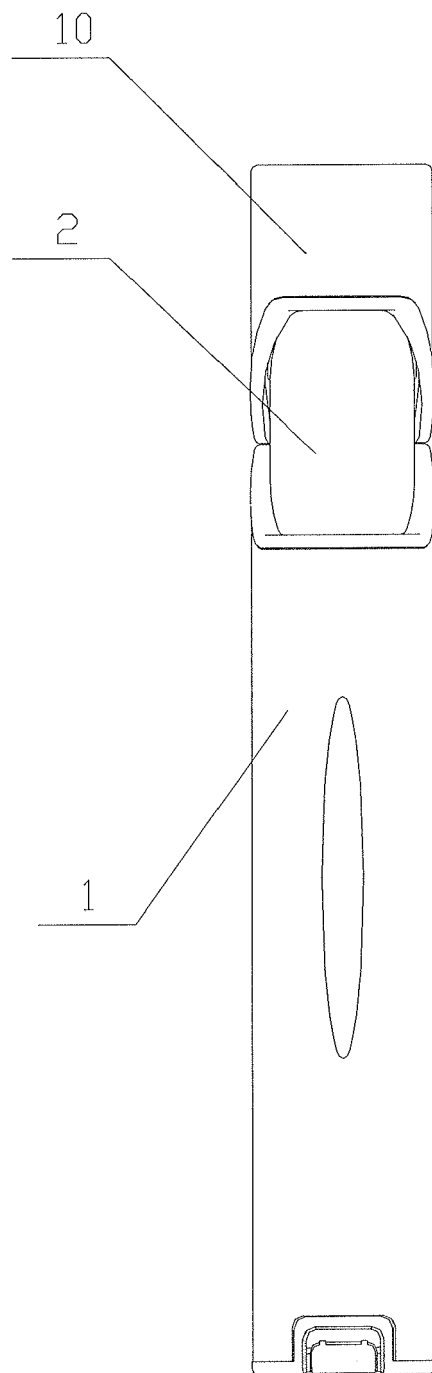


FIG. 1

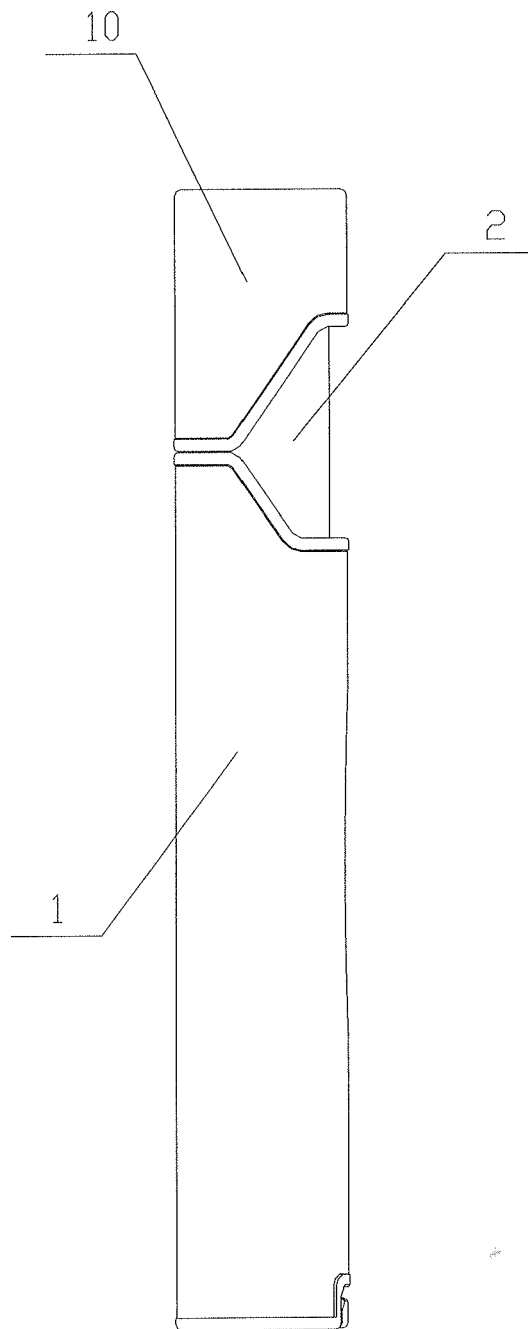


FIG. 2

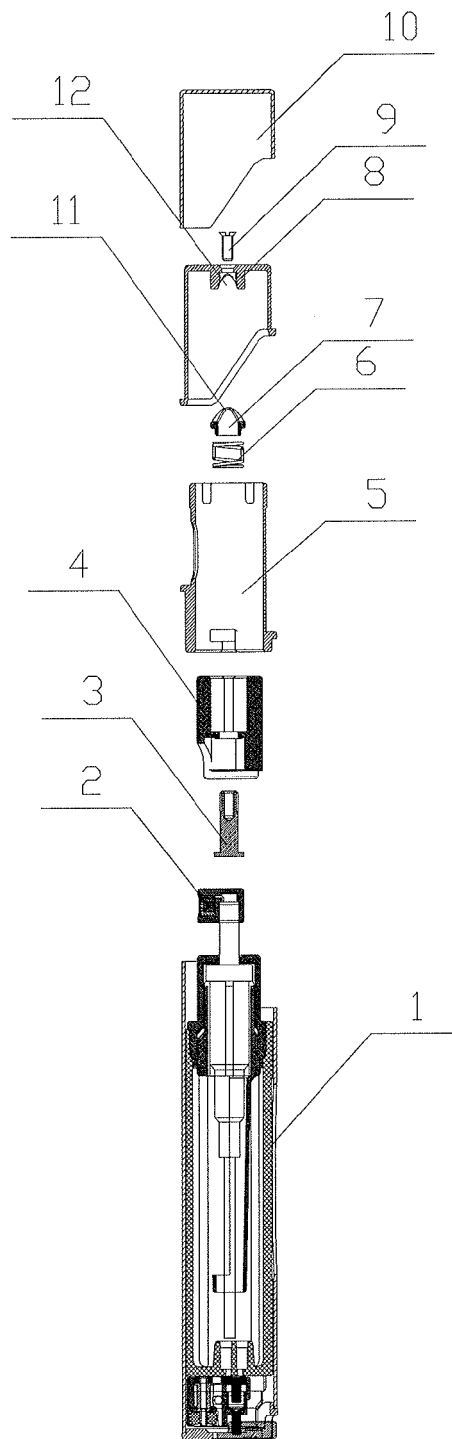


FIG. 3

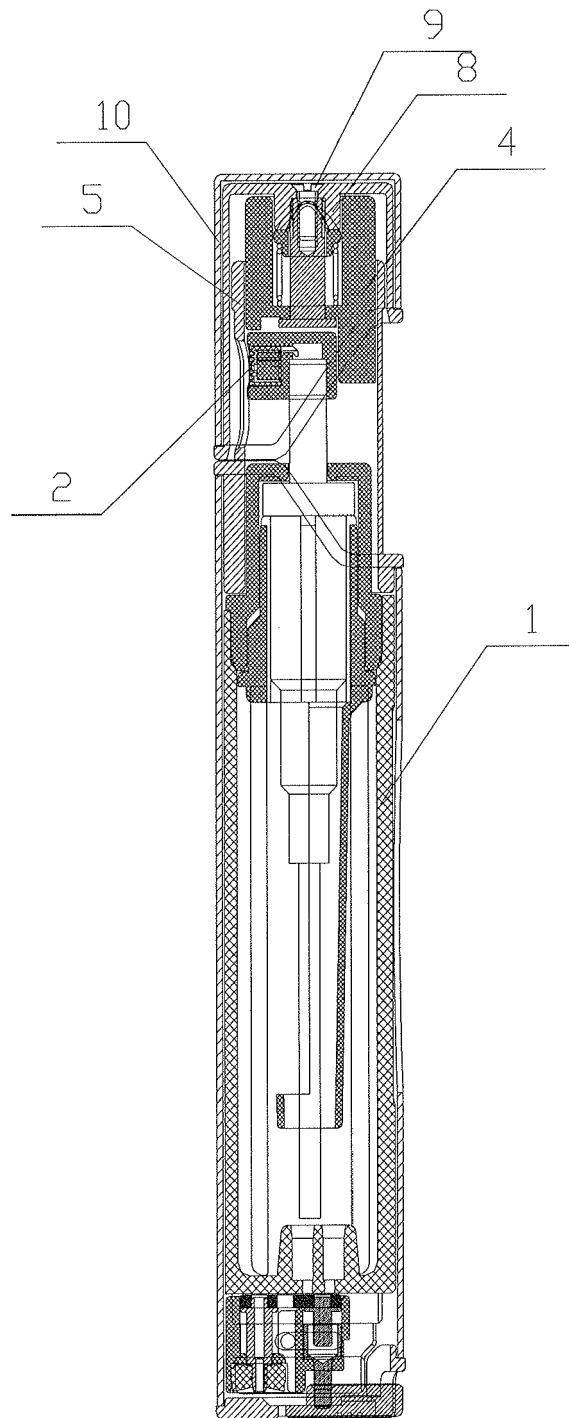


FIG. 4

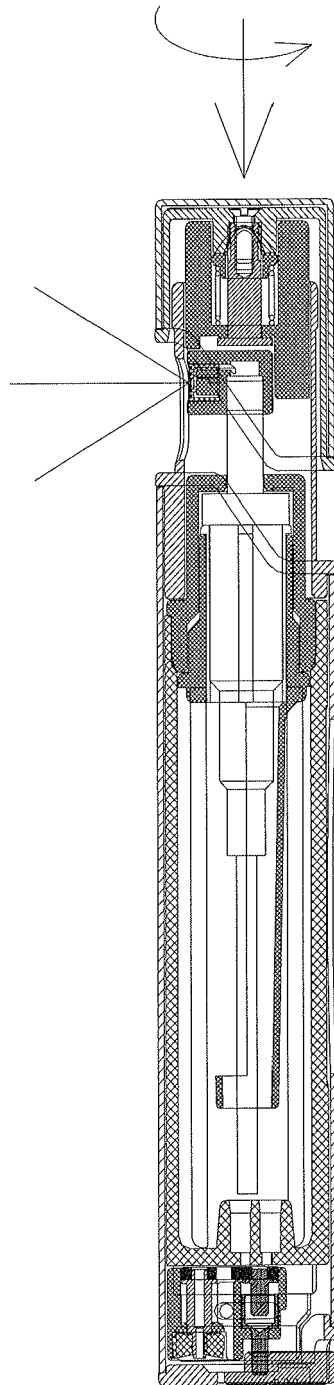


FIG. 5



## EUROPEAN SEARCH REPORT

Application Number  
EP 15 19 0613

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                                        |                                                                                                                                                                                                                                                                              |                                                          |
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| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                        |                                                                                                                                                                                                                                                                              |                                                          |
| Place of search<br><b>Munich</b>                                                                                                                                                                                                                       |                                                                                                        | Date of completion of the search<br><b>19 January 2017</b>                                                                                                                                                                                                                   | Examiner<br><b>Moroncini, Alessio</b>                    |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                        | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                          |

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