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(54) **DISPENSING DEVICE**

(57) A dispensing device (1) for a fluid substance, comprising a dispensing cap (10) coupled with a pressurized can (3), the dispensing cap (10) comprising a base element (2) equipped with constraining means (11, 11A, 12) configured for coupling to the pressurized can (3), the base element (2) being secured to a button (4) configured to be fitted onto a stem (6A) of a valve (6) of the pressurized can (3), so that pressing the button (4) results in the dispensing of a product contained inside the can (3) by means of a nozzle (8); the base element (2) comprises a yielding part (9) configured to facilitate removal of the dispenser cap (1) from the pressurized can (3).

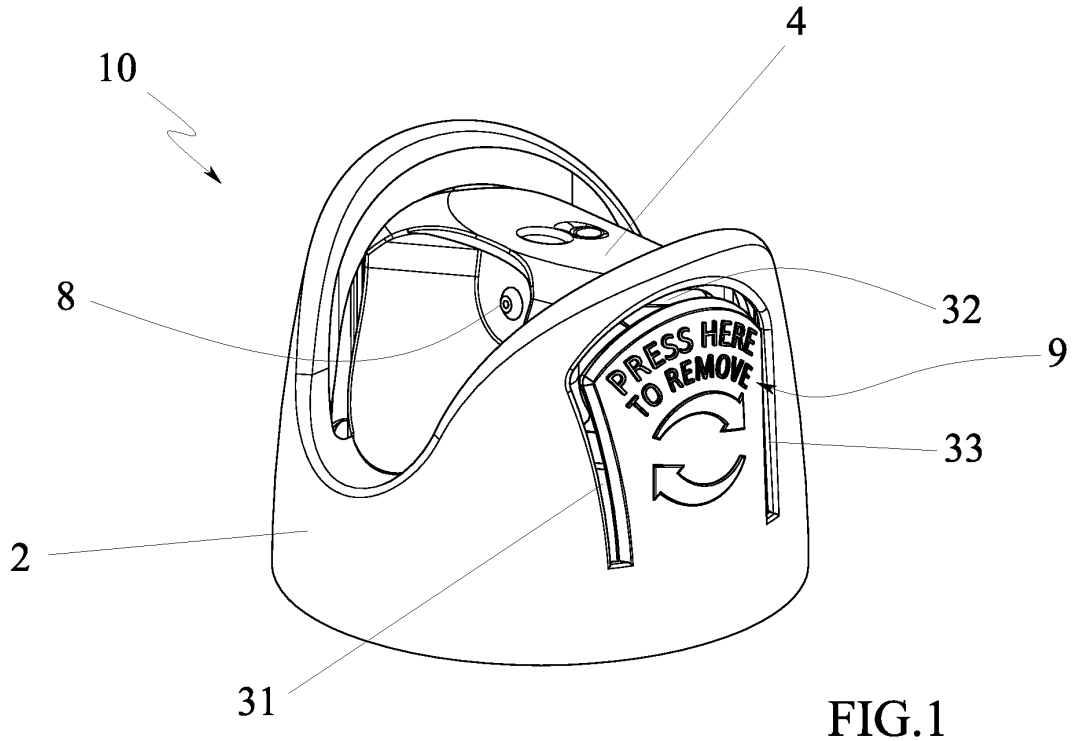

FIG.1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a dispensing device.

[0002] In particular, it relates to a dispensing device comprising a pressurized can and a valve, which, when open, generates an aerosol or a flow of the substance (for example a foam) by means of a nozzle.

BACKGROUND ART

[0003] Dispensing devices that deliver a fluid substance kept under pressure inside a pressurized can are commonly known. For example, such devices supply an aerosol, i.e. a thick mist of atomised particles upon the pressing of a dispensing button, normally located on a pressurized can, or a flow of substance (for example a foam) by means of a nozzle.

[0004] Normally, and especially so in products where the aesthetics of the container are also important, the dispensing button is integrated into a cap, which is usually made of plastic.

[0005] The can, meanwhile, is normally made of aluminium or another metal.

[0006] When the substance contained inside the can has been completely used, the user normally throws the entire can into the metal waste collection container.

[0007] In actual fact, it is impossible or extremely difficult to separate the plastic caps from the cans.

[0008] This is because the dispensing caps are fastened securely to the can by means of an undercut snap coupling, precisely to prevent them uncoupling accidentally (for example, after being dropped or receiving a blow to the cap).

[0009] This is damaging to the environment because the plastic of which the cap is made cannot be recycled, and the plastic is extremely hard to separate from the metal of which the can is made during the subsequent waste sorting stages.

SUMMARY OF THE INVENTION

[0010] The object of the present invention is to provide a dispensing device which is improved compared with the prior art.

[0011] A further object of the invention is to provide a dispensing device which is more environmentally friendly than the conventional ones present on the market.

[0012] This and other objects are achieved by means of a dispensing device produced according to the technical teachings of the claims annexed hereto.

BRIEF DESCRIPTION OF THE FIGURES

[0013] Further features and advantages of the innovation will become clearer in the description of a preferred but not exclusive embodiment of the device, illustrated - by way of a non-limiting example - in the drawings annexed hereto, in which:

Figure 1 is a partial perspective view of a dispensing cap of the device according to the present invention;

Figure 2 is a top-down view of the cap in Figure 1;

Figure 3 is a simplified section view, taken along the line III-III in Figure 2, when the cap is fitted on a can to form the device according to the present invention;

Figure 4 is a simplified section view, taken along the line IV-IV in Figure 2, of the present device;

Figure 5 is the section view of the present device in Figure 4, in a different use configuration;

Figure 6 is a bottom-up perspective view of the dispensing cap in Figure 1;

Figures 7, 9, and 11 show different configurations of a dispensing cap for the device in Figure 1; and

Figures 8, 10, and 12 are simplified axial section views of, respectively, the parts in Figures 7, 9 and 11 when the said part is fitted on a can.

DETAILED DESCRIPTION OF THE INVENTION

[0014] With reference to the figures stated, in particular Figure 3, reference number 1 is used to denote, as a whole, a dispensing device.

[0015] The dispensing device 1 is configured to dispense a fluid substance contained within a pressurized can 3.

[0016] The fluid may be contained in the can together (in direct contact) with a propellant. This way, when a valve 6 is opened, the fluid substance is expelled.

[0017] Alternatively, the fluid substance may be contained in a deformable bag inside the can. Inside the can, outside the bag, there may be a gas that compresses the bag, thereby causing the dispensing of the fluid substance when the valve 6, which is in communication with the bag, is opened.

[0018] The valves described, dispense the substance in a conventional manner through the hollow stem thereof.

[0019] In this text, the term 'fluid substance' may mean: a deodorant, hairspray, shaving foam, paint, medication, cosmetic, mechanical oil, etc.

[0020] The device comprises a dispensing cap 10 coupled with a pressurized can 3, which also contains the fluid substance.

[0021] The can comprises a valve 6 coupled with a can body 3B by means of a bottom 3A onto which the valve is mounted.

[0022] The bottom 3A may be crimped (or fastened in another way, for example, glued, lasercoupled, ultrasonic welded, etc.) directly to the body 3B of the can (as in Figure 3) or there may be an annular element 15 (possibly rounded) present, fastened to both the body 3B of the can and the bottom 3A (as in Figure 12).

[0023] The dispensing cap 10 comprises a base element 2 (which can serve a predominantly aesthetic purpose, and therefore be particularly elaborate and pleasing in appearance) equipped with constraining means 11, 11A, 12 configured for coupling to the aerosol can 3.

[0024] Advantageously, the constraining means 11, 11A, 12 comprise a plurality of ribs 11, 11A provided on the base element 2, which are configured to rest on a bottom of the valve 6 or on the said annular element 15, and a skirt 12 equipped with at least one tooth 12A (which may also be discontinuous, as in Figure 6), which engages by means of an undercut snap coupling, with a free corner end of the bottom 3A of the valve 6 or of the annular element 15.

[0025] Advantageously, the aforesaid constraining means ensure extraordinary stability to the coupling between the dispensing cap 10 and the can.

[0026] For example, they are configured to withstand 10 kg traction exerted axially between the cap and the can.

[0027] Basically, the constraining means fix the cap to the can very firmly, so that the cap and the can cannot be easily separated by hand (by grasping the cap and pulling it normally, or in the event of blows, including those of a certain intensity).

[0028] As can be seen in the figures, the base element 2 is secured to a button 4 configured to be fitted on a stem 6A of a valve 6 of the can 3.

[0029] The button 4 and the base element 2 can be made as a single piece (obtained, for example, by injection moulding plastic).

[0030] Alternatively, the button 4 and the base element 2 can be made in two or more distinct pieces, which are mutually coupled and secured.

[0031] Advantageously, a dispensing channel 4A that flows into the nozzle 8 may be supported directly by the button 4 and the nozzle 8 may also, optionally, be part of the button.

[0032] The dispensing channel 4A may have an end portion 4B configured to sealingly couple to the stem of a valve 6.

[0033] The nozzle 8A may have a pad (not shown) coupled thereto, for example to produce a fine, homogeneous aerosol.

[0034] Pressing the button 4 fills the valve stem 6A by opening the valve 6, and thereby allowing the dispensing of the product contained inside the can 3, through the hollow stem and nozzle 8.

[0035] According to the invention, the base element 2 comprises a yielding part 9 configured to facilitate removal of the dispensing cap 1 from the aerosol can 3 when the fluid substance inside the can is finished.

[0036] Advantageously, the yielding part 9 comprises at least one rib 11A configured to apply leverage to or press on a portion 14 of the can 3 (or better, of the bottom 3A or of the annular element 15) when the yielding part 9 is pressed (towards the stem 6A) to detach the dispensing cap 10 from the can.

[0037] In some of the configurations shown, the yielding part 9 bears the words (in English) 'Press here to remove'.

[0038] Obviously, there may be other information, writing, or drawings provided on the yielding part 9 or close thereto, to facilitate the user's understanding of the functions of the system.

[0039] The at least one rib 11A provided on the yielding part 9, may comprise a first resting area 13 for the can which is identical or similar to the profile (or shape) of the portion 14 of the can 3 on top of which it rests, i.e. the perimeter part of the bottom 3A (Fig. 4) fastened to the body 3B of the can (glued, crimped etc.) or the perimeter part of the annular element 15 (Fig. 12) (also fastened to the body 3B of the can).

[0040] Advantageously, the rib 11A may feature a thickness S, which makes it suitable to apply a load (at the point of application of F, Fig. 5) to the bottom flange 3A, advantageously in a point close to the crimping.

[0041] Therefore, in fact, at least one rib 11A may have a different thickness S from that of the other ribs 11 present on the base, or said thickness may be less.

[0042] In the example in Figure 4, it is clearly seen that the area 13 where the rib 11A rests has, at least partially, an arc-shaped configuration, which is identical to the profile of the perimeter part of the bottom 3A crimped onto the body 3B of the can 3.

[0043] It has been verified that this configuration of the rest area exerts a lever effect (when the yielding part 9 is pressed, Fig. 5) which facilitates the detachment of the dispensing cap 10 and the said can 3.

[0044] As can be seen in Figure 6, the remaining ribs 11, which are not coupled (for example, forming a single piece) with the yielding part 9, may provide a conventional, i.e. flat, resting area 30.

[0045] In the configuration shown in Figures 1-6, the yielding part 9 is essentially a tab, defined by through grooves or notches 31, 32, 33 around the perimeter on three sides.

[0046] Alternatively, the yielding part 9 may comprise a single notch positioned at one of its upper parts (i.e. at the notch denoted 32 in Figure 1).

[0047] The notches or grooves can be through grooves, or simply grooves interesting only a part of the width of the material surrounding the yielding part 9.

[0048] The notches may include breakable bridges, which fracture as a result of a load being applied to the yielding part 9.

[0049] In the presence of at least one notch, the yielding part 9 may be configured to bend when a predetermined force P is applied, thus making a stop 20 accessible (clearly seen in Figure 5), which acts as a rest-

ing/press point (for example, for the same finger with which the user presses the yielding part 9 in direction L) to uncouple the dispensing cap 10 from the can 3.

[0050] This is envisaged alternatively or in addition to the lever effect (force F in Figure 5) achieved by means of the at least one rib 11A (which, as already mentioned, can be formed as a single piece with the yielding part 9).

[0051] It must be noted that the bending of the yielding part 9 also generates a force G (also shown in Figure 5) which facilitates the decoupling of the tooth 12A from the bottom 3A, effectively bending the part 12 outwards.

[0052] In an embodiment not shown, the base element 2 may have two mutually facing yielding parts 9.

[0053] Figures 7 and 8 show a variant of the invention. In this case, the yielding part 9 is provided by simply making this part 9 as a sunken area (concave when viewed from the outside) of the base element 2. Note the difference in shape of the yielding part 9 which is concave, with respect to the part 90 facing it, which is convex (Fig. 8).

[0054] The shape of the yielding part 9 alone lends the said part a certain flexibility (compared to the other parts of the base element 2), which makes it suitable to decouple the dispensing cap 10 exactly as in the embodiment described above.

[0055] As can be seen clearly in this solution (Figure 8), the rest 20 in this case can be always accessible on the base element 2, and is positioned in proximity to the yielding part.

[0056] In the presence of a yielding part 9 devoid of notches, therefore, the lever effect generated by the slight bending of the yielding part 9 and by the force F generated by such bending and discharged by the rib 11A on the flange of the bottom is exploited, similarly to the cases described above (or in another part of can 3).

[0057] The pressure on the yielding part 9 also results in an ovalization of the base element which allows (arrow G) easier release of the tooth 12A.

[0058] Advantageously (even if this is not directly appreciable from the drawing in Figure 8) the yielding portion 9 may be slightly thinner than the other parts of the base element 2.

[0059] Figures 9 and 10 show another variant which is very similar to that in Figures 7 and 8.

[0060] Also in this case, the yielding part 9 is concave and may be thinner than the other parts of the base element 2.

[0061] However, the surface thereof is endowed with a plurality of rests 20 (knurls), which improve the grip on the said part 9 in order to exert a force in direction L.

[0062] Operation is very similar to that described for Figure 8, as seen in Figure 10.

[0063] The variant in Figures 11 and 12, on the other hand, is more similar to that in Figures 1-6. The only difference lies, simply, in the position of the coupling between the dispenser button 10 and the can. In this case, the constraining means 11, 11A, 12 cooperate with an intermediate annular element 15, which forms the connection between the bottom 3A of the valve and the body 3B of the can 3.

[0064] The intermediate annular element 15 may be crimped to the body 3B of the can, or secured in another commonly known way and the bottom may be crimped (or secured in another commonly known way) to the intermediate annular element 15.

[0065] Various embodiments of the innovation have been described, but others may be conceived using the same innovative concept.

Claims

1. Dispensing device (1) of a fluid substance, comprising a dispensing cap (10) associated with a pressurized can (3), the dispensing cap (10) comprising a base element (2) equipped with constraining means (11, 11A, 12) configured for coupling to the pressurized can (3), the base element (2) being constrained to a button (4) configured to be fitted on a stem (6A) of a valve (6) of the pressurized can (3), so that the actuation of the button (4) allows the dispensing of a product contained inside the can (3) through a nozzle (8), **characterized in that** the base element (2) includes a yielding part (9) configured to facilitate the removal of the delivery cap (1) from the pressurized can (3), said yielding part (9) being a tab defined by a perimetral groove (31, 32, 33) on at least one side, preferably on three sides of the tab.

2. Dispensing device (1) according to claim 1, wherein at least a perimetral groove is a through groove.

3. Dispensing device (1) according to claim 1 or 2, wherein the grooves, or at least one groove, comprise breakable bridges, which fracture as a result of a load being applied to the yielding part (9).

4. Dispensing device (1) according to claim 1, wherein the yielding part (9) comprises at least one rib (11A) configured to lever up on a portion (14) of the can (3) when the yielding part is pressed to detach the dispenser cap (10) from the can (3).

5. Dispensing device according to the preceding claim wherein the at least one rib (11A) comprises a first resting area (13) on the can which copies the profile of the portion (14) of the can (3) to which it rests, and/or in which the resting area (13) has at least partially an arc-like configuration.

6. Dispensing device (1) according to claim 2, wherein said portion (14) is a part crimped or glued to the can (3) of the bottom (3A) of the valve or of an annular element (15) to which it is also fixed the bottom (3A) of the valve.

7. Delivery device (1) according to claim 1, wherein the yielding part (9) is configured to flex when it is loaded by a predetermined force, thus making accessible a rest (20) which acts as a rest/push point for the decoupling of the dispenser cap (10) from the can (3).

8. Delivery device (1) according to claim 1, wherein the base element (2) has two yielding parts (9) facing each other.

9. Delivery device (1) according to claim 1, wherein the base element (2) is hinged to the button (4).

10. Dispensing device (1) according to claim 1, wherein the button (4) and the base element (2) are integrally formed of a single piece of plastic, and/or wherein a dispensing channel which ends into the nozzle (8) is integrally formed in the button (4).

11. Delivery device (1) according to claim 4, wherein the constraining means (11, 11A, 12) comprise a plurality of ribs (11, 11A) made on the base element (2) configured to rest on the bottom of the valve (6) or on said annular element (15) and a skirt (12) equipped with at least one tooth (12A) which snaps in an undercut manner with a free corner end of the bottom (3A) of the valve (6) or of the annular element (15).

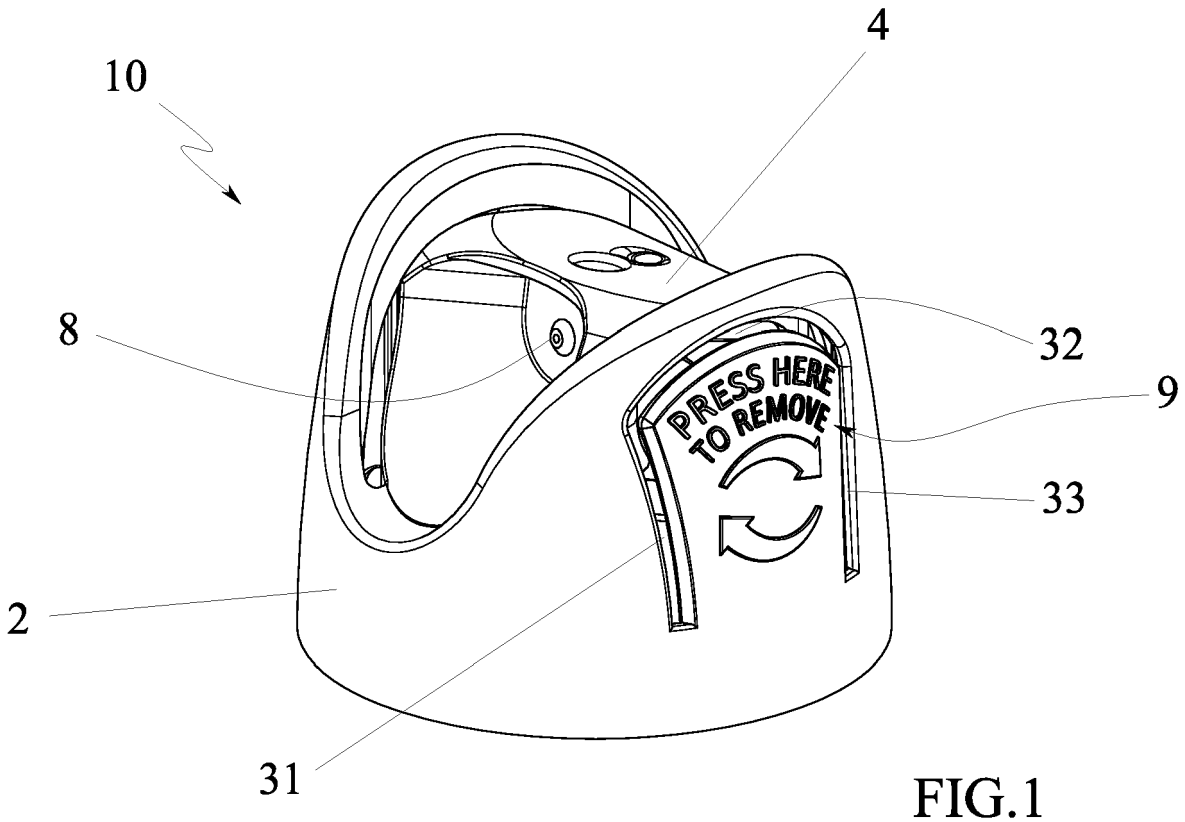

FIG.1

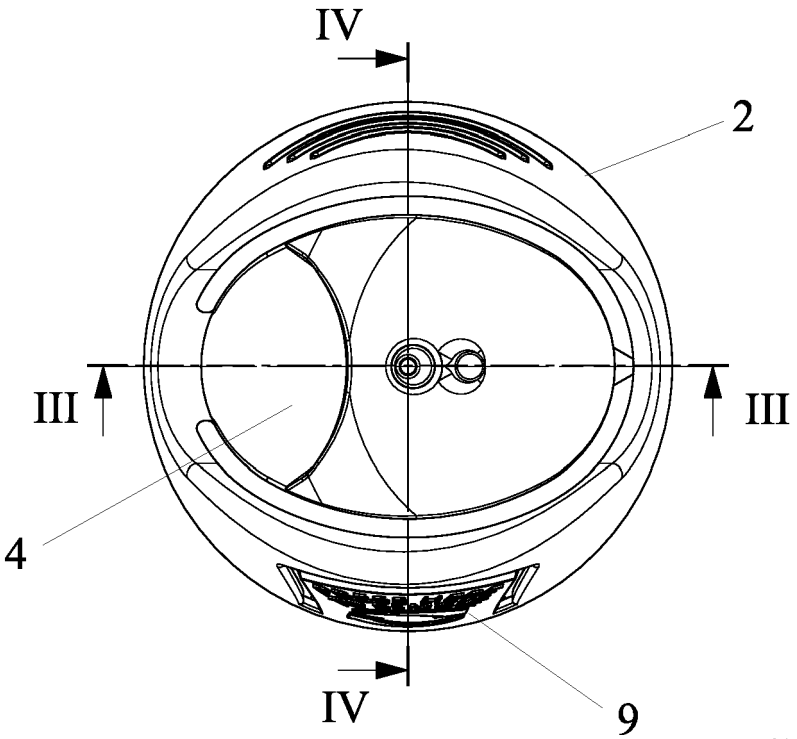

FIG.2

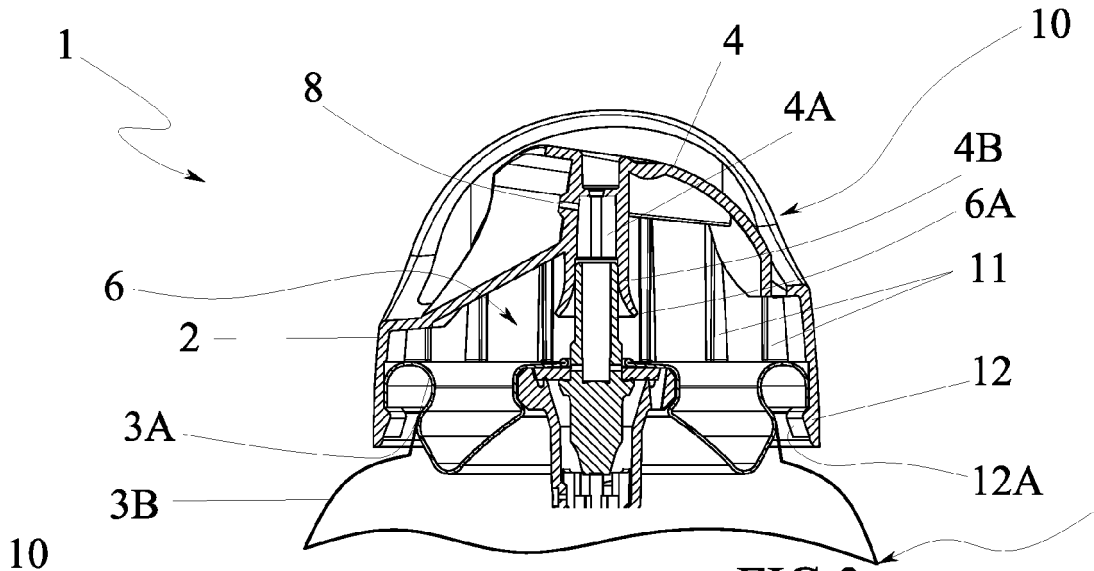

FIG.3

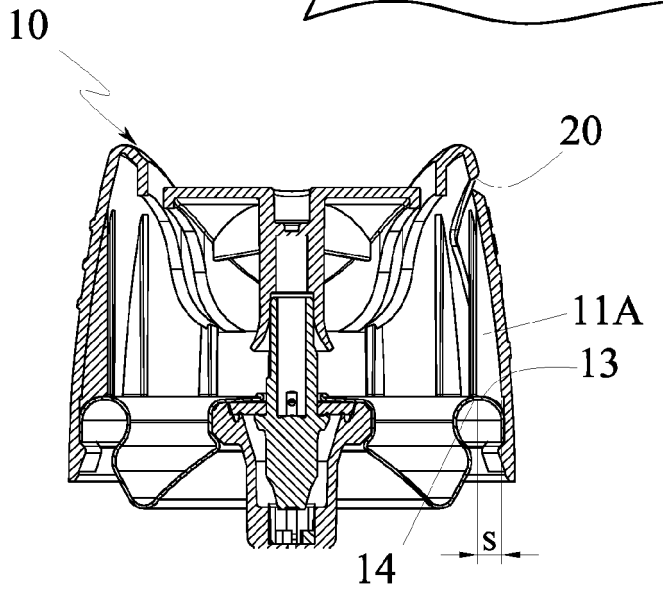

FIG.4

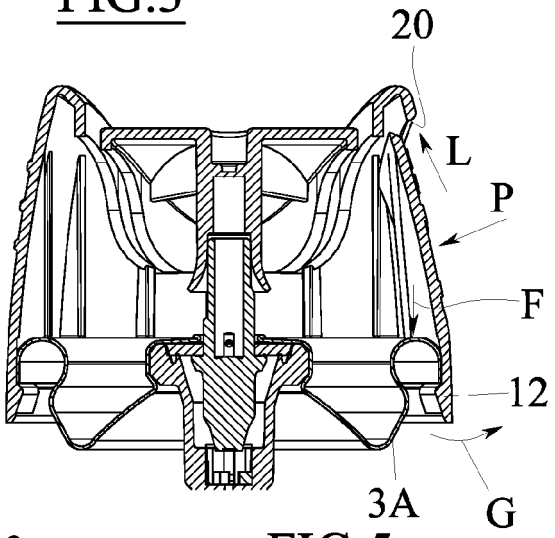

FIG.5

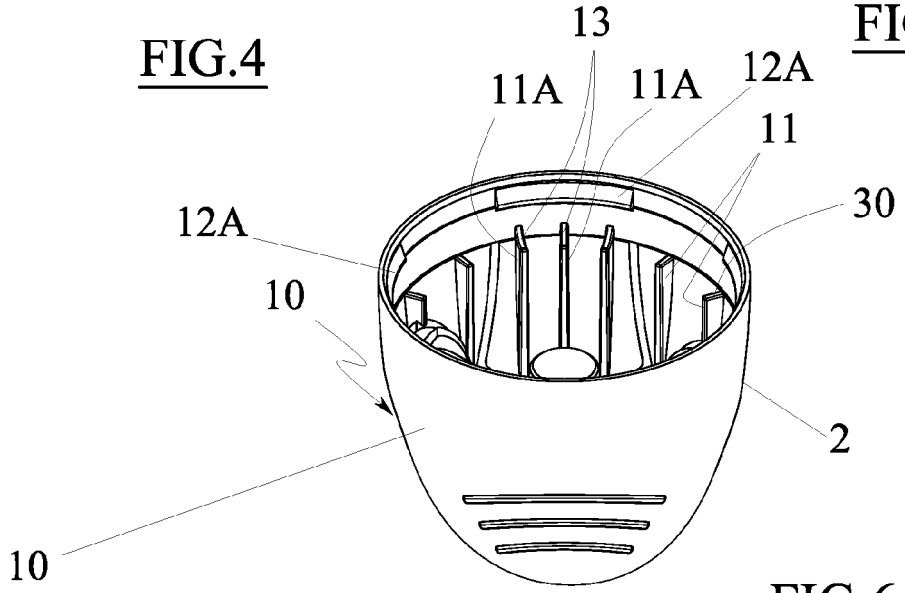

FIG.6

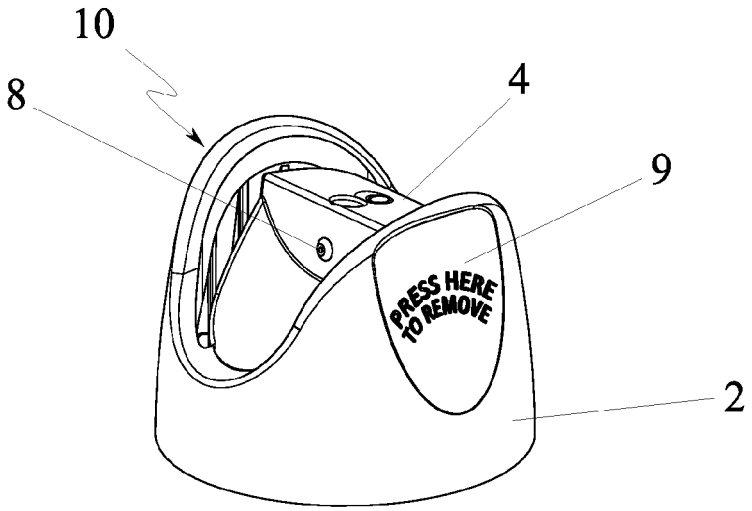

FIG.7

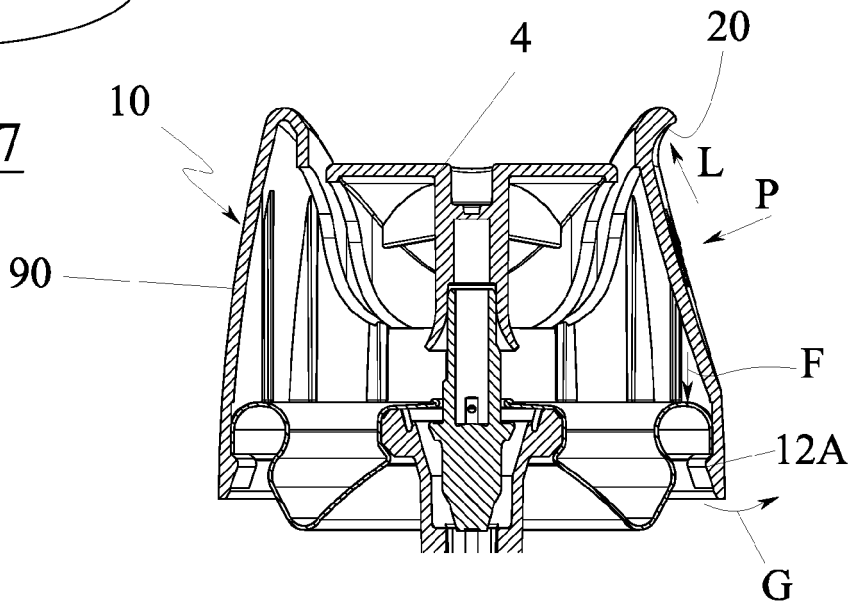

FIG.8

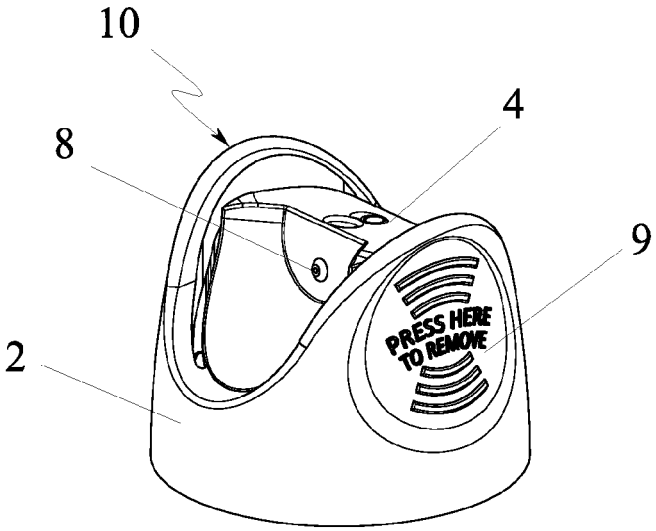

FIG.9

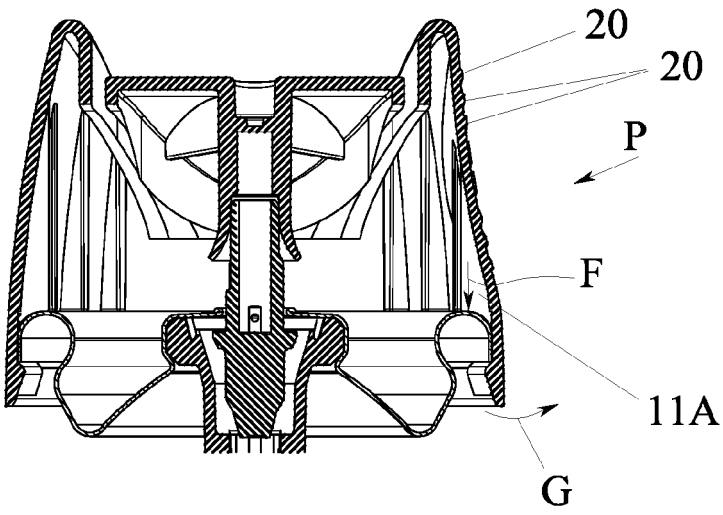

FIG.10

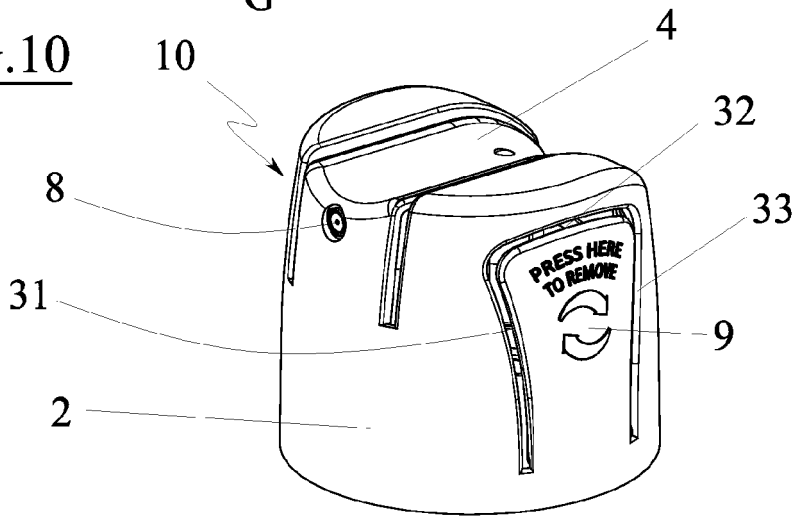

FIG.11

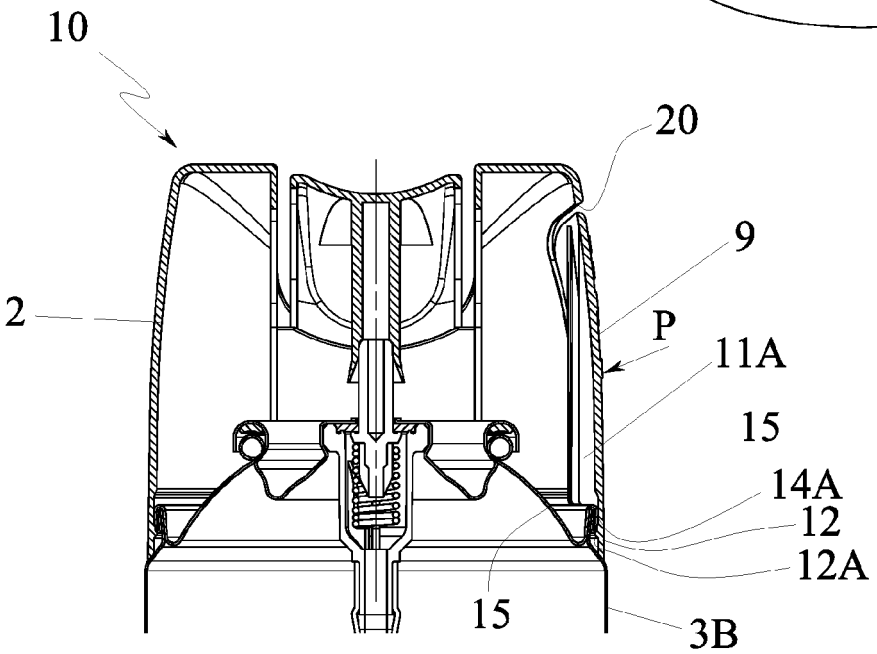

FIG.12

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EUROPEAN SEARCH REPORT

Application Number
EP 21 16 4043

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	20 July 2021	Rente, Tanja

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