

(51) International Patent Classification:
A61F 9/00 (2006.01)(21) International Application Number:
PCT/IB2019/055384(22) International Filing Date:
26 June 2019 (26.06.2019)

(25) Filing Language: Polish

(26) Publication Language: English

(30) Priority Data:
PL426067 26 June 2018 (26.06.2018) PL(71) Applicant: **PASSIO BIOMATERIALS SPÓŁKA Z O.O.** [PL/PL]; Bydgoskich Przemysłowców 6, 85-862 Bydgoszcz (PL).(72) Inventors: **CHOJNACKI, Michał**; ul. Wojciechowskiego 8, 85-790 Bydgoszcz (PL). **DANKOWSKI, Dariusz**; ul. Słoneczna 95, 88-160 Janikowo (PL). **KLUCZ, Emil**; Jądownicy Rycerskie 28A/5, 88-400 Żnin (PL). **MIESZKOWSKI, Dominik**; ul. Kołobrzeska 4, 85-704 Bydgoszcz (PL). **RYCHŁAWSKI, Krzysztof**; ul. Mrotecka 12, 86-014 Sicienko (PL). **SICHEL, Joanna**; Gąbin ul. Leśna 39, 89-200 Szubin (PL). **SIKORA, Adam**; ul. Ki-jowska 90/2, 85-703 Bydgoszcz (PL). **SROKA, Wiktor**; ul. Janosika 2/93, 85-791 Bydgoszcz (PL).(74) Agent: **PATPOL KANCELARIA PATENTOWA SP. Z O.O.**; Nowoursynowska 162J, 02-776 Warszawa (PL).(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,

(54) Title: A DISPENSER FOR A SINGLE DROP ADMINISTRATION OF LIQUID FOR A PHARMACEUTICAL APPLICATION, BEING REGISTERED AS MEDICINE OR BEING A MEDICAL PRODUCT, ESPECIALLY OF AN OPHTHALMIC LIQUID, A DISPENSING SET, AND USE THEREOF

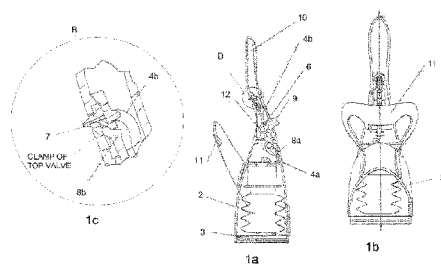


FIG. 1

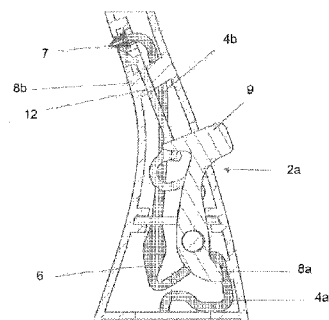


FIG. 1d

(57) Abstract: The invention discloses a dispenser (1) for a single drop administration of liquid for a pharmaceutical application, said liquid being registered as medicine or being a medical product, especially an ophthalmic liquid, said dispenser enabling the administration of a preservative-free preparation, and comprises an immobilized in a package body of a compressible container for liquid and an outlet of drops, characterized in that between said compressible container for liquid and said outlet of drops a dispensing subassembly (2a) for dispensing a single drop of liquid is provided, and under said body (2) of a liquid container (5) a pressure spring (3), with a hose (4a) for transporting liquid, is provided, wherein said hose (4a) for transporting liquid is going upwards from said liquid container (5) towards said dispensing subassembly (2a) for dispensing a single drop of liquid outflowing through an outlet nozzle (7) upon activating a trigger (9), and above said outlet nozzle (7) in said dispenser, a stabilizing arm (10) to stabilize of an application of a single liquid drop is provided. Moreover, the invention discloses a set dispensing a single drop of liquid, including said dispenser (1), and an arm (11) for pulling down the lower eyelid wherein said arm is permanently connected to the dispenser, or is detachable. The invention also concerns use of this dispenser or set for administration of a pharmaceutical preparation registered as medicine or of a medical product, especially of an ophthalmic liquid.

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

A DISPENSER FOR A SINGLE DROP ADMINISTRATION OF LIQUID FOR A PHARMACEUTICAL APPLICATION, BEING REGISTERED AS MEDICINE OR BEING A MEDICAL PRODUCT, ESPECIALLY OF AN OPHTHALMIC LIQUID, A DISPENSING SET, AND USE THEREOF

[0001] The subject matter of the invention is a dispenser for administration of a single drop of liquid for a pharmaceutical application, being registered as medicine or being a medical product, especially an ophthalmic liquid, a dispensing set, and use of said dispenser or set.

[0002] Some chronic pathological conditions require continuous use of selected pharmaceutical preparations. For example, patients with dry eyes or glaucoma need to regularly apply drops to their eyes. In order to extend the shelf life of ophthalmic preparations, preservatives are often used, including benzalkonium bromide, chlorhexidine acetate, β -phenethyl alcohol, phenylmercuric borate, phenylmercuric nitrate, chlorocresol, chlorobutanol, EDTA, and many others. Studies have shown that long-term use of preparations containing preservatives may have a negative effect on the eye surface. Many preservatives may cause inflammation or have a toxic effect on the sight organ. It is recommended to take preparations containing less harmful preservatives, or preparations containing lower concentrations thereof. The best solution seems to be to use pharmaceutical preparations enclosed in special packages what allows to refrain from adding any preservatives. These are usually packages that filter the air entering the package so that a preparation does not get contaminated and there is no proliferation of microorganisms in said preparation.

[0003] US 9402765 describes a bottle for packing of liquid distributed drop by drop, wherein bottle contains a tank that walls can be

reversibly flexibly deformed by allowing air into the container, ended with a liquid dispensing head, containing a dropper nozzle that protrudes from the bottle and an antibacterial filtering membrane that is partly hydrophilic and partly hydrophobic and placed in the liquid and air path at the base of said nozzle. In the case of the dispensing head, the solution consists in separately forming a nozzle from a material that contains a bactericide and that prevents the creation of bacteria on the surface of said nozzle on the outside of the antibacterial membrane.

US 8454828 concerns a dispensing device designed for a liquid substance, containing a tank to hold the substance, having a dispensing opening for administering the substance from the tank, and having a pressure equalizing channel that opens into the tank and has a microbiologically active system of filters inserted into the tank. According to this disclosure, the filter system has a liquid filter that is directed towards the tank, and a bacterial filter directed away from this tank.

EP2531154 describes a bottle for the packing of a liquid dispensed drop by drop, containing a wall reservoir that can be reversibly flexibly deformed by taking air inside the container, wherein this bottle is ended with a liquid-dispensing head that has a nozzle, a dropper element protruding beyond the bottle, and an antibacterial filter membrane partly hydrophilic and partly hydrophobic said bottle is placed across the flow of liquid and air.

US 2017096266 specifies a dispenser for administering a liquid or viscous product, containing a dosage valve. Said dosage valve in turn contains:

- means for sealing and releasing this product that, in the first configuration, prevents the product from flowing out of the dispenser and, in the second configuration, allows the product to flow out of the dispenser;
- flexible return means for the restoring of the sealing means to the first configuration from the second configuration. The flexible return elements

and at least some of the means for sealing and releasing the product are integrated in the same body.

[0004] Reduction or elimination of using any preservatives is not the only problem. For many people an application itself of eye drops is problematic. Mistakes made during an application of eye drops can have various consequences, ranging from not taking a full dose of liquid, until to eye damage caused by mechanical injury to the eye structure by an applicator.

[0005] Very often a procedure of applying drops of a preparation to the eye is not easy for the patient to carry out. Patients report that they are afraid they might hit the eye with an applicator, they do not see a drop that is supposed to fall into the eye, and it is difficult for them to aim at the right place. There are problems connected with squinting, as well as connected to the fact that the applicator blurs in with the bottle and they cannot see whether they are doing the dispensing properly. Very often they have to tilt their head backwards what makes it impossible to perform the application in front of a mirror, often requiring a support from other people. Some patients have shaky hands, especially the elderly or patients with neuromuscular dysfunctions.

[0006] Incorrect dispensing (where dosing is particularly important to patients with glaucoma or diabetes who have to control the appropriate pressure in eyeball) causes losses in a preparation, repeated attempts to apply drops to the eye, or need to involve third parties in a process of drops application, or incorrect dosing that is not in accordance with doctor or manufacturers recommendations.

[0007] The aim of the invention is to develop a new dispenser, also as a part of set, that will allow to eliminate above-mentioned problems, and will enable a quick and easy, an accurate and safe administration of liquid

to a specific person, without a need to use any help of other people, and ensuring the elimination of any impurities or bacteria from a preparation.

[0008] Thus, the subject matter of the invention is a dispenser for a single drop administration of liquid having a pharmaceutical application registered as medicine or being a medical product, especially of an ophthalmic liquid, said dispenser enabling the administration of a preservative-free preparation, and comprises an immobilized in a package body of a compressible container for liquid and an outlet of drops, characterized in that between said compressible container for liquid and said outlet of drops a dispensing subassembly for dispensing a single drop of liquid is provided, and under said body of said liquid container a pressure spring is provided, wherein a hose for transporting a liquid is going upwards from said liquid container towards said dispensing subassembly for dispensing a single drop of liquid that outflows through an outlet nozzle upon activating a trigger, and above said outlet nozzle in said dispenser a stabilizing arm to stabilize an application of a single drop of liquid is provided.

In the first embodiment of the invention, a dispenser has a dispensing subassembly for dispensing a single drop of liquid that includes a reservoir made of elastically deformable material, This reservoir is delimited at the bottom by a bottom valve, and at the top passing into a hose with an outlet nozzle, closed by a top valve. Preferably, when said bottom valve is closed, said top valve is simultaneously opened by means of a single activation of a trigger.

In the second embodiment of the invention, a dispenser has a dispensing subassembly for dispensing a single drop of liquid that includes a hose made of elastically deformable material, located near a spring-loaded element with a plastic clamp, equipped with a hook. Said hook is affected

by a trigger in the form of a knob having a divided cam, wherein this cam is at least in a double, preferably in a triple form or a corrugated form.

According to the invention, said dispenser additionally contains a safety plug. A compressible container for liquid has a body of any shape, preferably is in the form of a foldable bellows.

Preferably, a compression spring is a conical spring. Said dispenser has a stabilizing arm for stabilization of a single drop application of liquid, said arm having an elongated neck ended with a flat tip enabling said dispenser to rest against a patient's forehead or brow ridge. In the elongated neck there is an outlet nozzle for the outflowing drop of liquid, located above the eye or conjunctival sac at the moment when liquid is being dispensed. An outlet nozzle preferably has a thickening, protrusion, or edging part that prevents the liquid from flowing down a dispenser wall.

Preferably, said dispenser has a release button that releases a single drop of liquid after being pressed or turned.

The next subject matter of the invention is a set dispensing a single drop of liquid, including a dispenser defined above, and an arm for pulling down the lower eyelid, wherein said arm is permanently connected to said dispenser, or is detachable.

The invention also concerns use of said dispenser or set according to the invention for administration of a pharmaceutical preparation being registered as medicine or a medical product, said preparation is especially an ophthalmic liquid.

[0009] The advantages of said dispenser or set according to the invention are: the fact that it maintains overpressure in a liquid container, as well as the use – in the structure of a dispenser – of a dispensing subassembly consisting of a reservoir, two valves, and hoses for liquid preferably being a medicine, or consisting of a hose closed with a spring-

loaded element that is activated by a knob, for easy and simple administration of a single drop of liquid, preferably being a medicine. Such a solution eliminates a need to vent a liquid container what in turn eliminates any need of using filters for air returning to the container with a preparation. The end-nozzle is a non-return valve that prevents impurities, microorganisms, and air from entering the liquid container.

[0010] Another advantage of the invention is a design itself of the outer packaging that allows easy application of a preparation. The system was designed bearing in mind an anatomical structure of the human face so as, during the application, a user has two places of support allowing to stabilize the container during the application, without completely blocking the access to light. The stabilizing arm additionally allows to stretch the skin in such a way as to create space, next to the eye, for liquid drops being administered.

[0011] Moreover, a dispenser according to the invention is designed to be easy used for children, adults, and elderly people who have problems with applying drops to eyes, as well as for the users who apply drops to eyes using only one hand.

[0012] A dispenser according to the invention is illustrated by the drawings where:

Fig. 1 shows an exemplary dispenser, wherein Fig. 1a presents a dispenser in a cross-sectional view, Fig. 1b in a side view thereof, Fig. 1c presents an enlarged fragment of element B from Fig. 1a in a cross-sectional view, and Fig. 1d presents an enlarged fragment of a dispensing subassembly of a dispenser according to Fig. 1a.

Fig. 2 shows a dispenser according to the second embodiment, wherein Fig. 2a shows a dispenser in a lateral sectional view with an outlet nozzle made visible, Fig. 2b in its cross-sectional view with a knob and trigger cam made visible, and Fig. 2c presents another variant of a trigger equipped with a

trigger cam, while Fig. 2d illustrates exemplary cams that can be used in a knob of a dispenser according to Fig. 2b. Fig. 2e presents an enlarged fragment of a dispensing subassembly of a dispenser according to Fig. 2b.

Fig. 3 shows example views of an arm for pulling down the lower eyelid, where Fig. 3a shows this arm in a side view, Fig. 3b shows this arm from the top, Fig. 3c shows an example shape of an elongated neck of a stabilizing arm to stabilize the application of a single drop of liquid.

Fig. 4 shows a dispenser with or without a protective cap.

Fig. 5 illustrates a use of a dispensing set for applying drops of liquid to an eye.

[0013] In the first embodiment of a dispenser according to the invention shown in Fig. 1, a dispenser 1 comprises a body 2 of a liquid container 5, in this case in the form of a foldable bellows, a conical pressure spring 3, liquid transporting hoses 4a, 4b, a top valve 8b and a bottom valve 8a, a reservoir 6 for liquid, an outlet nozzle 7, a trigger 9, and a stabilizing arm 10 for stabilization of a single drop application of liquid. It is preferable to flatten a structure of this elongated neck of a stabilizing arm 10, what further improves a stabilization of a dispenser according to the invention as a result of the supporting. A dispenser 1 also includes a permanently connected or detachable arm 11 for pulling down the lower eyelid. In addition, this device includes a safety plug.

[0014] The principle of operation of a dispenser 1 according to the invention shown in Fig. 1 is based on the fact that – by means of a pressure spring 3 – overpressure is generated in a liquid container, (preferably being a foldable bellows). The pressure is maintained by a spring 3 for an entire period of time when liquid is used. The overpressure in a liquid container, in a hose 4a, 4b, and in a reservoir 6 ensures sterility of the liquid. This overpressure forces the flow of the liquid from a container to the outside through hoses 4a and 4b and a reservoir 6, thus preventing air and

microorganisms from entering a liquid tank. In order to prevent continuous outflow of liquid from a container, a dispensing subassembly 2a has been designed to release a single drop of liquid. A dispensing subassembly 2a consists of a reservoir 6 made of elastically deformable material, limited from below by a bottom valve 8a and from above passing into a hose 4b with an outlet nozzle 7, closed by a top valve 8b.

When releasing a trigger 9, a bottom valve 8a opens, and a reservoir 6 gets filled with liquid. A top valve 8b is closed what prevents liquid from escaping. When said trigger 9 is pressed, firstly a bottom valve 8a is closing, and then immediately said top valve 8b is opening to allow a single drop of liquid to be dispensed. This sequence therefore ensures that a single drop of liquid is dispensed from a reservoir 6 that – when a top valve 8b is opened – pushes out precisely a single drop of liquid. The structure of an outlet nozzle 7 ensures that the entire dispenser is sterile – even the small amount of liquid that is remaining behind a top valve 8b.

A dispensing subassembly 2a that enables dispensing of a single drop of liquid, shown in Figs. 1a and 1b, can be constructed as follows. A preparation in a container under pressure is transported via a silicone hose 4a with an exemplary internal diameter of 0.1 to 0.4 mm to an outlet. A valve 8a at the outlet works based on compression of a hose 4a. A distance between the outlet and the place where said hose 4a is compressed is minimized so that as little preparation as possible comes into contact with any external impurities. A spring-loaded element 12 that compresses a hose is made of plastic. The shape of a clamp is selected in such a way as to achieve complete tightness of said valve 8a. The dispensing of a single drop is achieved by opening a valve 8b for a specific period of time. After pressing a trigger 9, a valve 8b is opening, and liquid starts to escape from a container through a hose 4b. A container with a preparation is located in the lower part of a body 2 – where a catch 14 is located, designed for fixing said container.

[0015] In the second embodiment of a dispenser 1 shown in Fig. 2, a preparation in a container under pressure is transported via a silicone hose with an exemplary internal diameter of 0.1–0.5mm to an outlet. A valve at this outlet works based on compression of a hose by means of a cam actuated by a knob (Fig. 2b) or a trigger (Fig. 2c). The shape of a clamp is such that the whole preparation is 'squeezed out' of the end of a hose. A spring-loaded element 12 that compresses a hose is made of plastic. The shape of a clamp is selected in such a way as to achieve complete tightness of a valve. The dispensing of a single drop is carried out in a dispenser in Fig. 2b by opening a valve for a specific period of time what action is controlled by a knob 17 of a cam 16. After turning said knob 17 of a trigger, said cam 16 pulls a hook 18 of a compression spring, and said valve is opened for a short time. The opening time is matched using the outline of said cam 16 so that exactly one drop of a preparation escapes. The opening time of said valve depends on the shape of said cam 16 as well as the position of said hook 18 of the spring. A container with the preparation is located in the lower part of a body – where a catch 14 is located, designed for fixing said container. The spring pushes against the bottom of said container thereby increases pressure in this liquid container.

[0016] Figs. 3a and Fig. 3b show exemplary views from side and from top of an arm 11 for pulling down the lower eyelid, whereas Fig. 3c presents the enlarged shape of an arm 11 for pulling down the lower eyelid, in side view. As shown in Fig. 3a and 3b, an arm 11 for pulling down the lower eyelid contains a saddle-shaped resting member 13 connected with a rim 15 for docking a dispenser using a latch 14.

[0017] Fig. 4 shows a dispenser with or without a protective cap being a detachable element.

[0018] Fig. 5 shows a set dispensing a single drop of liquid, said set comprising a dispenser 1 according to the invention, and an arm 11 for

pulling down the lower eyelid, thus illustrating a space next to the eye created in order to facilitate an application of liquid drops. The procedure of using this set is as follows: said arm is placed against to the lower eyelid or the upper part of the cheek. By gently pressing said arm against the face, a downward motion is made in order to pull the skin down so that the lower eyelid is pulled down too and a space is created next to the eye for a preparation being applied in drops. Next, the head of a dispenser 1 is rested on the patient's brow ridge or forehead. The outlet point that is located on the neck shall be above the conjunctival sac of the eye. A trigger 9 is pressed to release a single drop of liquid.

[0019] A dispenser and a set according to the invention are used for an easy, safe, and accurate application of a liquid, especially being medicine, to the patient's eye. However, other applications may also be considered, e.g. an application of medical products not being any medicine.

PATENT CLAIMS

1. A dispenser (1) for a single drop administration of liquid for a pharmaceutical application, said liquid being registered as medicine or being a medical product, especially an ophthalmic liquid, said dispenser enabling the administration of a preservative-free preparation, and comprises a body of a compressible container for liquid, immobilized in a package and an outlet of drops, **characterized in that** between said compressible container for liquid and said outlet of drops a dispensing subassembly (2a) for dispensing a single drop of liquid is provided, and under said body (2) of a liquid container (5) a pressure spring (3) is provided, wherein a hose (4a) for transporting liquid is going upwards from said liquid container (5) towards said dispensing subassembly (2a) for dispensing a single drop of liquid outflowing through an outlet nozzle (7) upon activating a trigger (9), and above said outlet nozzle (7) in said dispenser a stabilizing arm (10) to stabilize an application of a single drop of liquid is provided.

2. A dispenser according to claim 1 **characterized in that** said dispensing subassembly (2a) for dispensing a single drop of liquid comprises a reservoir (6) of elastically deformable material, delimited at the bottom by a bottom valve (8a) and, at the top passing into a hose (4b) having said outlet nozzle (7), and closed by a top valve (8b).

3. A dispenser according to claim 2 characterized in that when said bottom valve (8a) is closed said top valve (8b) is simultaneously opened by means of a single activation of said trigger (9).

4. A dispenser according to claim 1 **characterized in that** said dispensing subassembly (2a) for dispensing a single drop of liquid includes a hose made of elastically deformable material, located near a spring-loaded element (12) with a plastic clamp equipped with a hook (18), that is

affected by a trigger in the form of a knob (17) having a divided cam (16) or a trigger with a cam.

5. A dispenser according to claim 4 **characterized in that** said divided cam (16) is at least in a double form, preferably is tripartite or in a corrugated form.

6. A dispenser according to any of claims 1–5 **characterized in that** it additionally contains a safety plug.

7. A dispenser according to any of claims 1–6 **characterized in that** said body (2) of said compressible container (5) for liquid is of any shape, preferably being a foldable bellows.

8. A dispenser according to any of claims 1–7 **characterized in that** said compression spring (3) is a conical spring.

9. A dispenser according to any of claims 1–8, **characterized in that** said stabilizing arm (10) to stabilize an application of a single drop of liquid has an elongated neck ended with a flat tip enabling the dispenser to rest against a patient's forehead or his brow ridge, while in said elongated neck said outlet nozzle (7) for outflowing drop of liquid is provided, located above the eye or conjunctival sac at the moment of liquid dispensing.

10. A dispenser according to claim 9 **characterized in that** said outlet nozzle (7) has a thickened, protruding or edging part that prevents liquid from flowing down a dispenser wall.

11. A dispenser according to any of claims 1–10 **characterized in that** said dispenser has a release button that releases a single drop of liquid after being pressed or turned.

12. A set dispensing a single drop of liquid comprising a dispenser (1) defined in any of claims 1–11, and an arm (11) for pulling down the lower

eyelid, said arm being permanently connected to said dispenser or is detachable.

13. Use of a dispenser according to any of claims 1–11 or a set according to claim 12, for administration of a pharmaceutical preparation registered as medicine or being a medical product, especially of an ophthalmic liquid.

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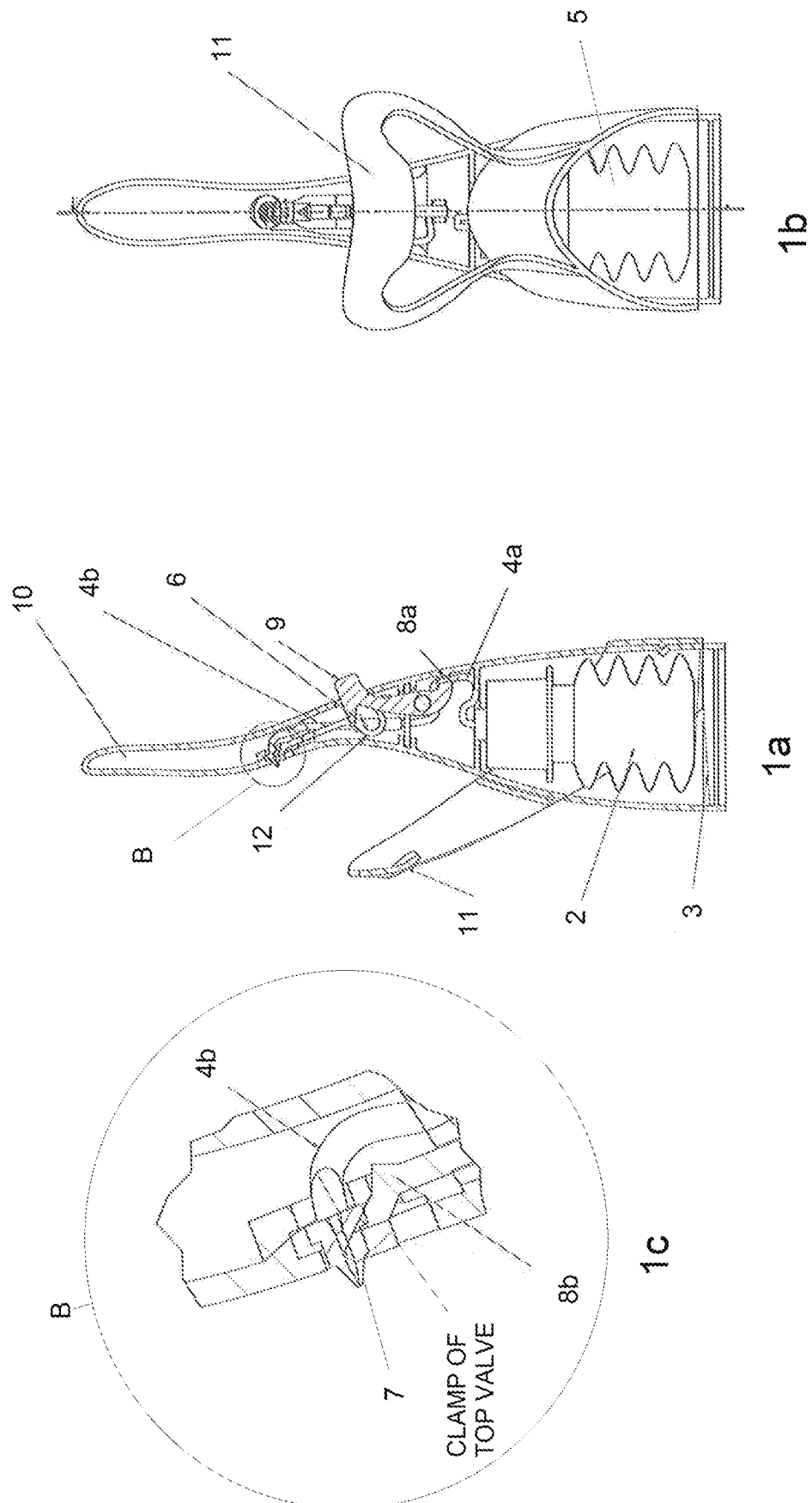


FIG. 1

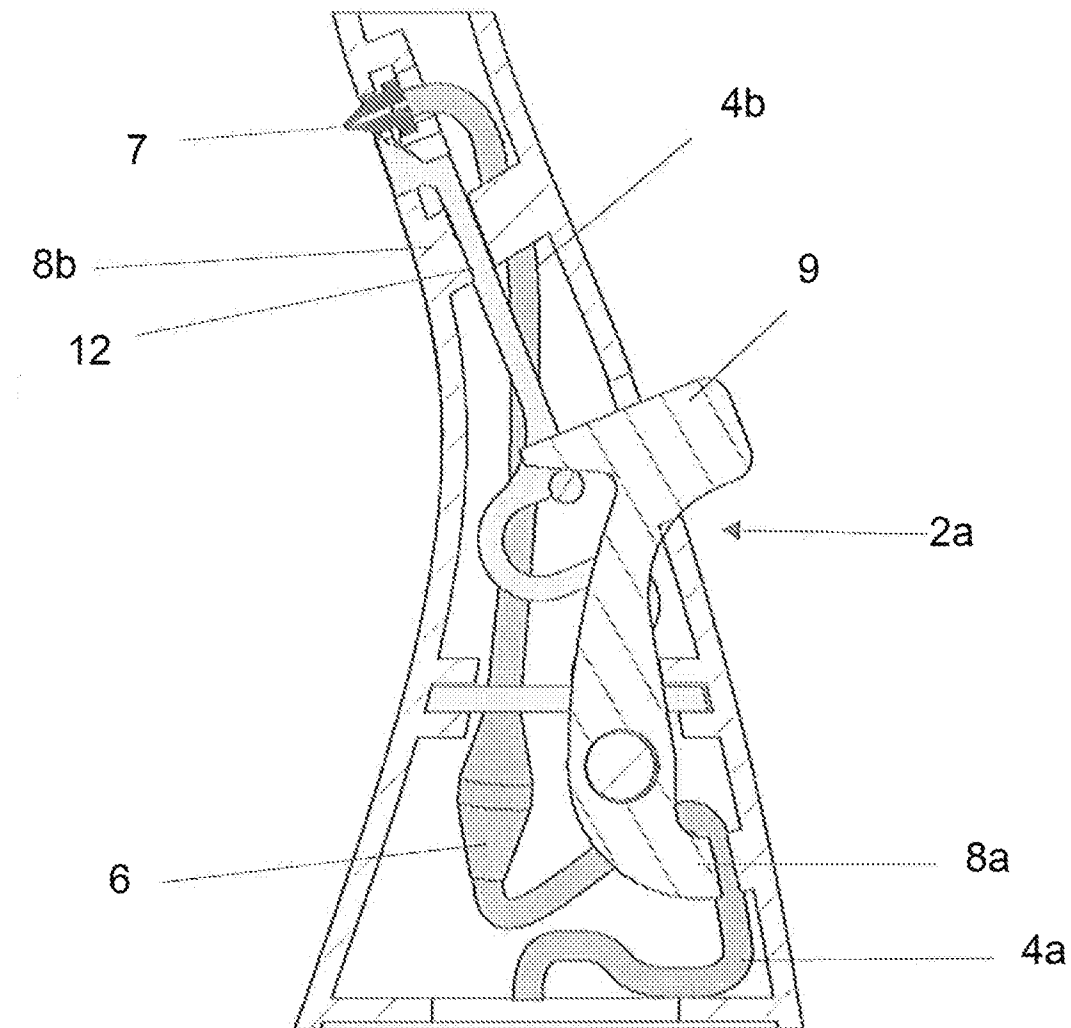


FIG. 1d

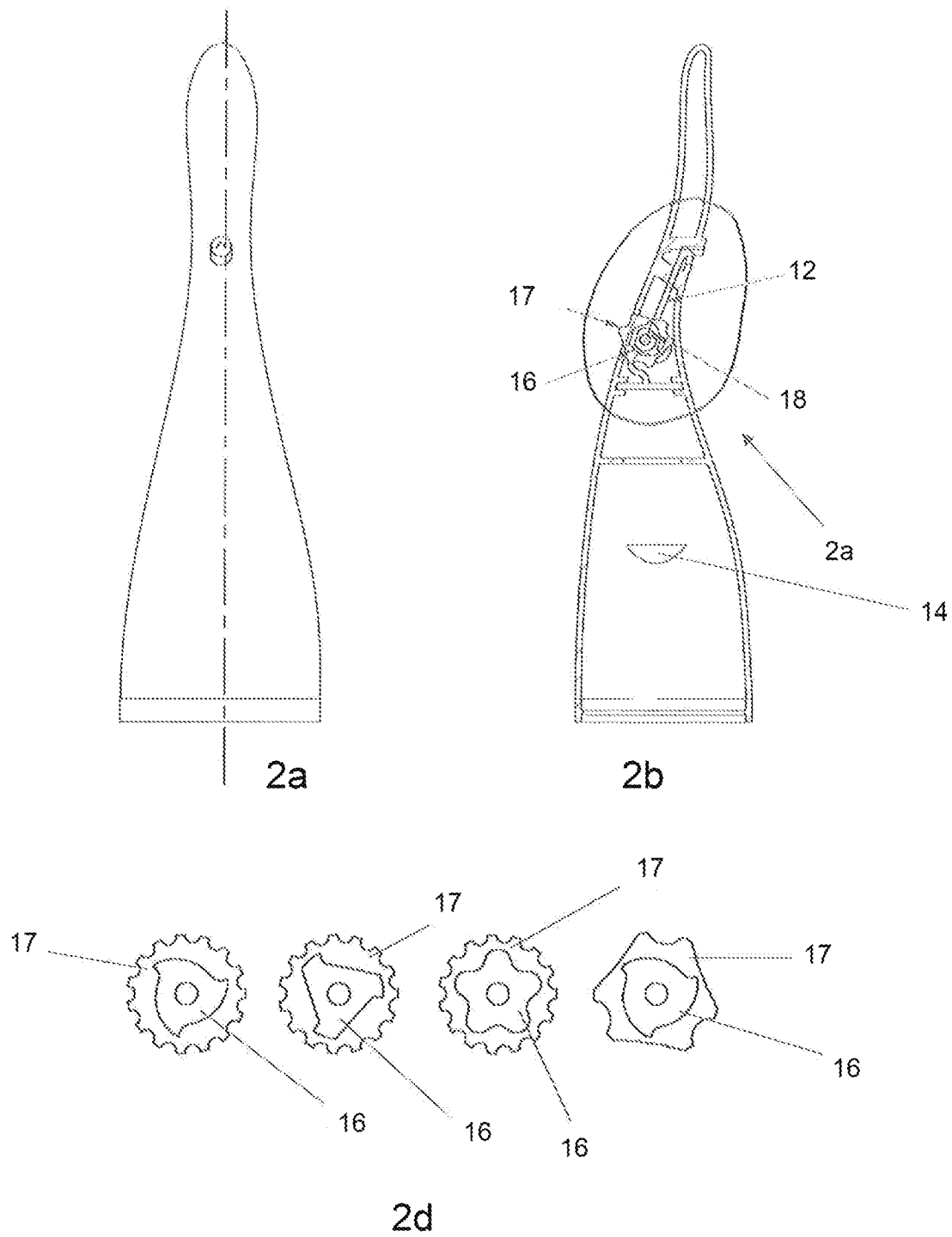
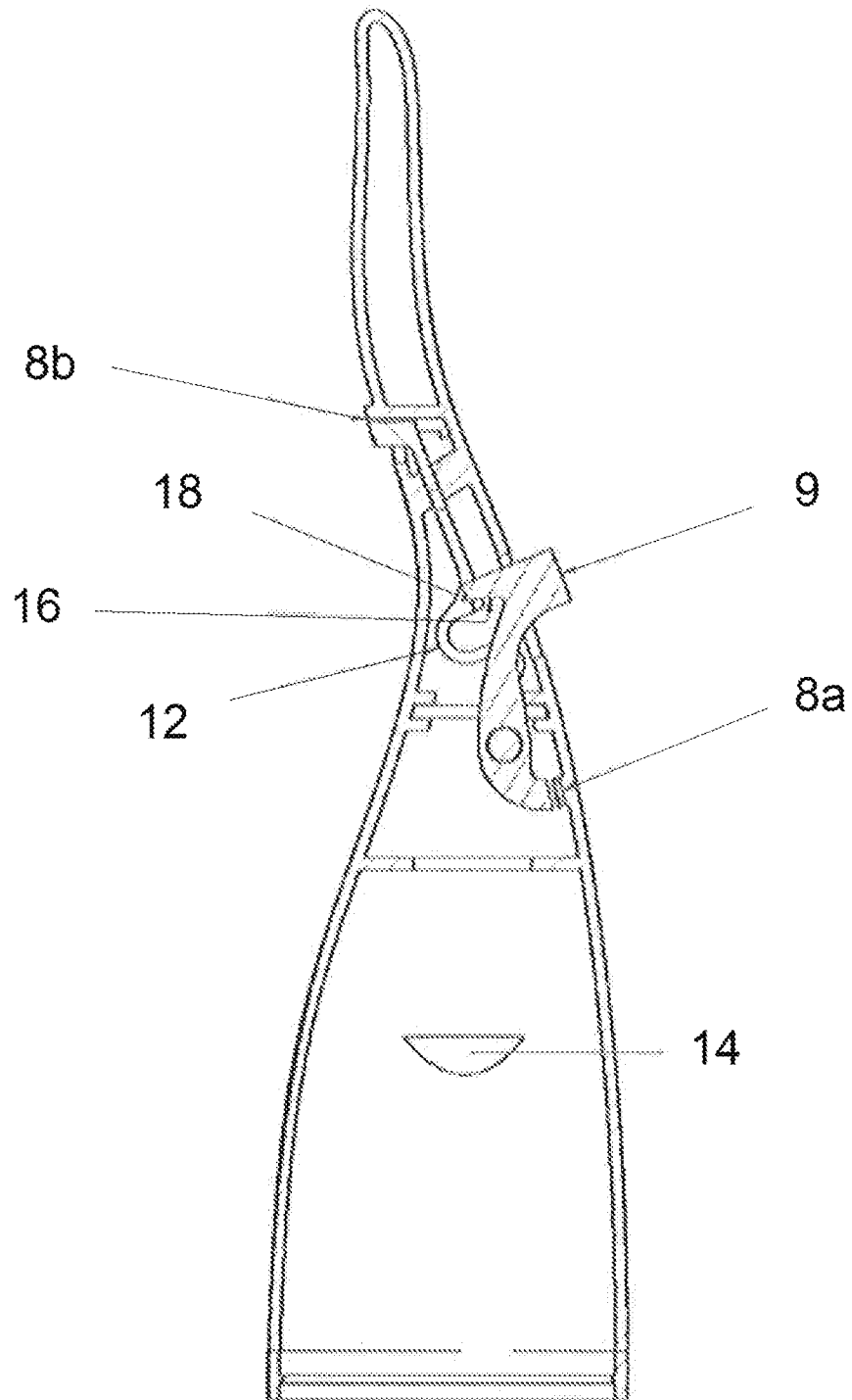


FIG.2

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2c

FIG. 2

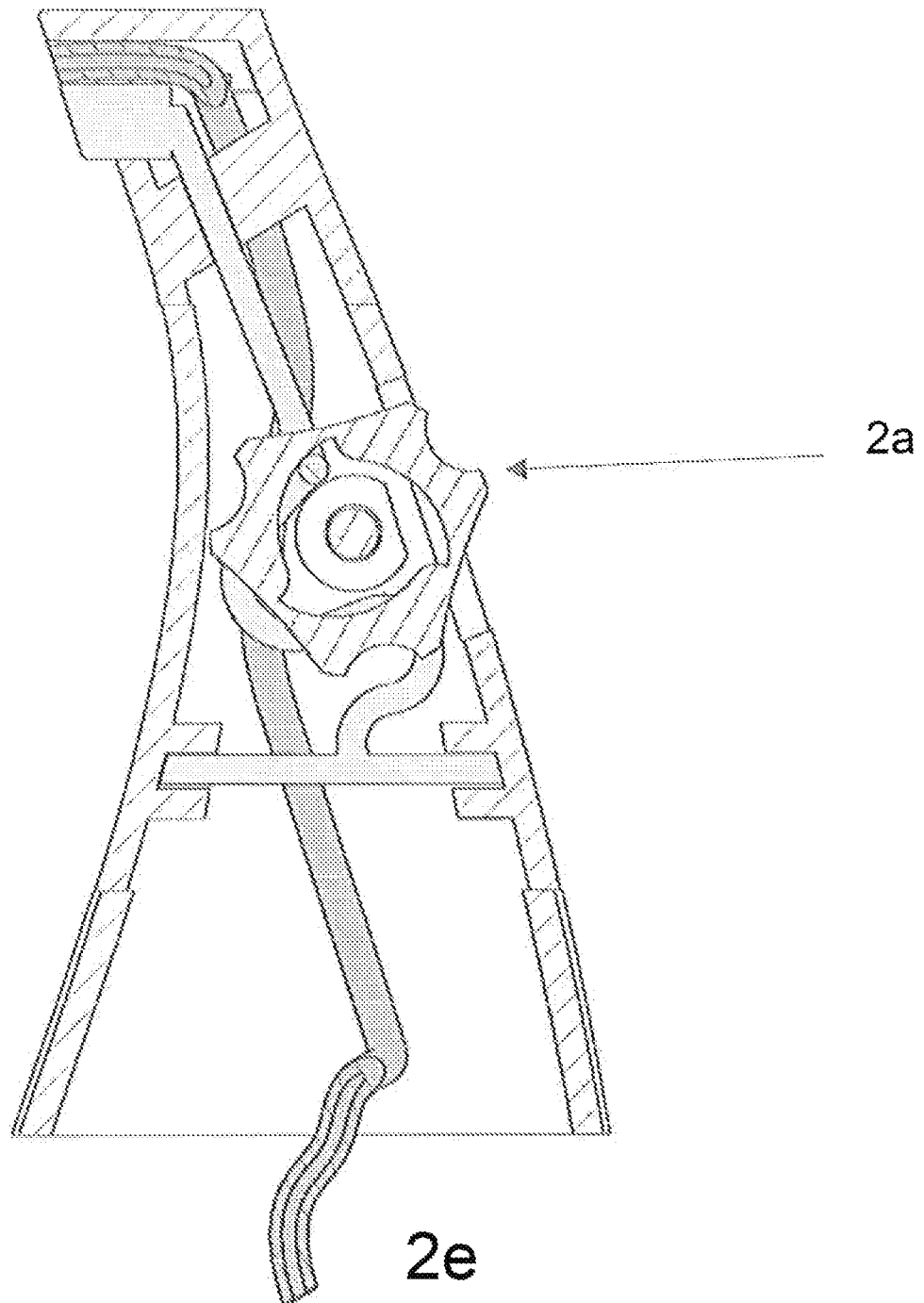
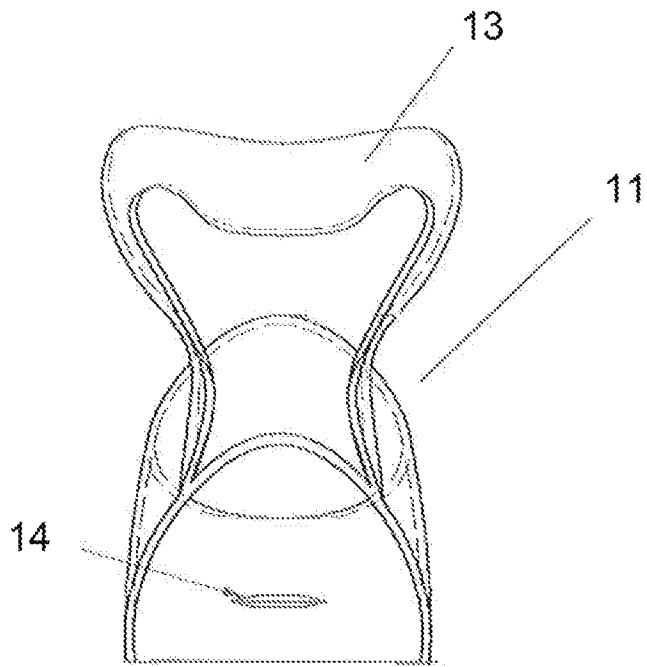
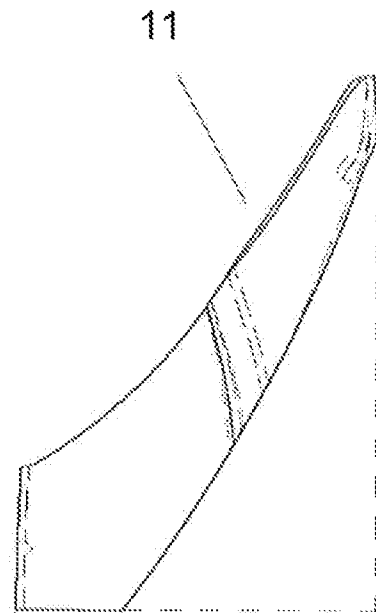


FIG. 2

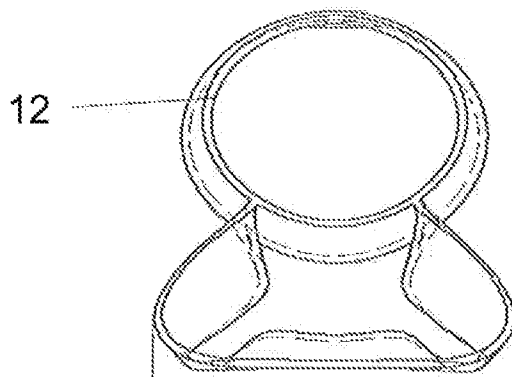
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3a



3c



3b

FIG. 3

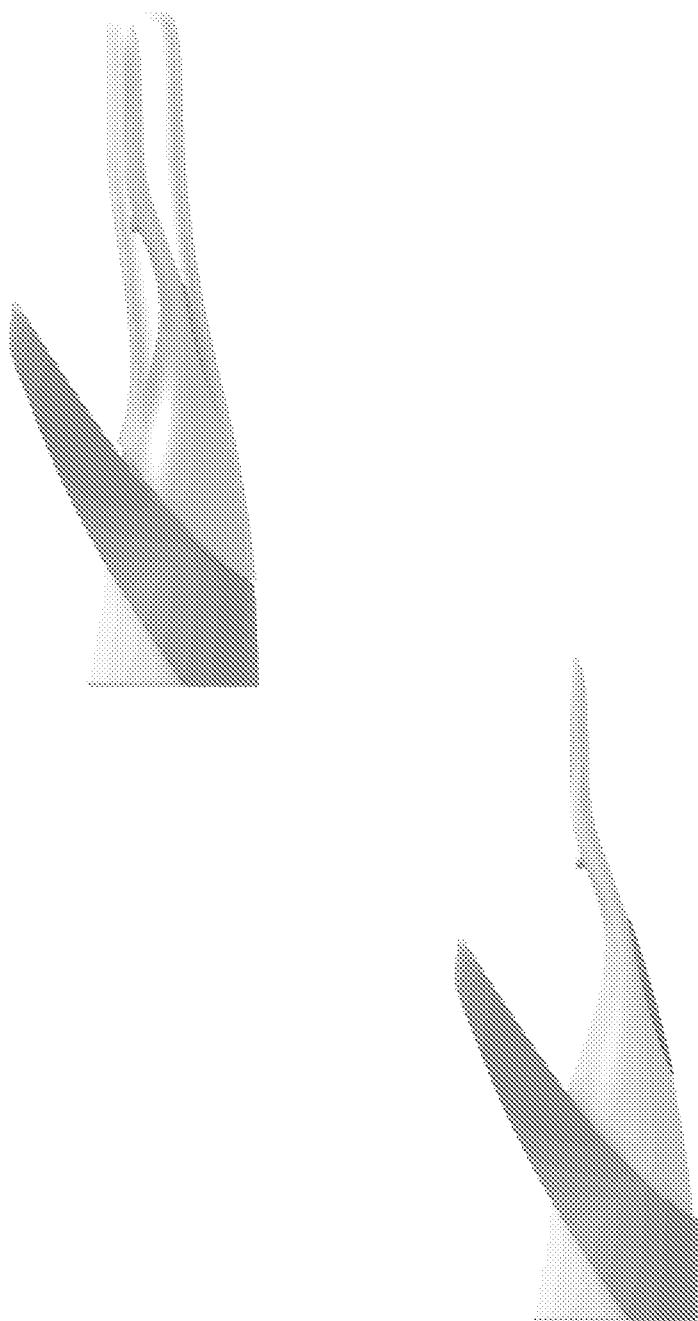


FIG. 4

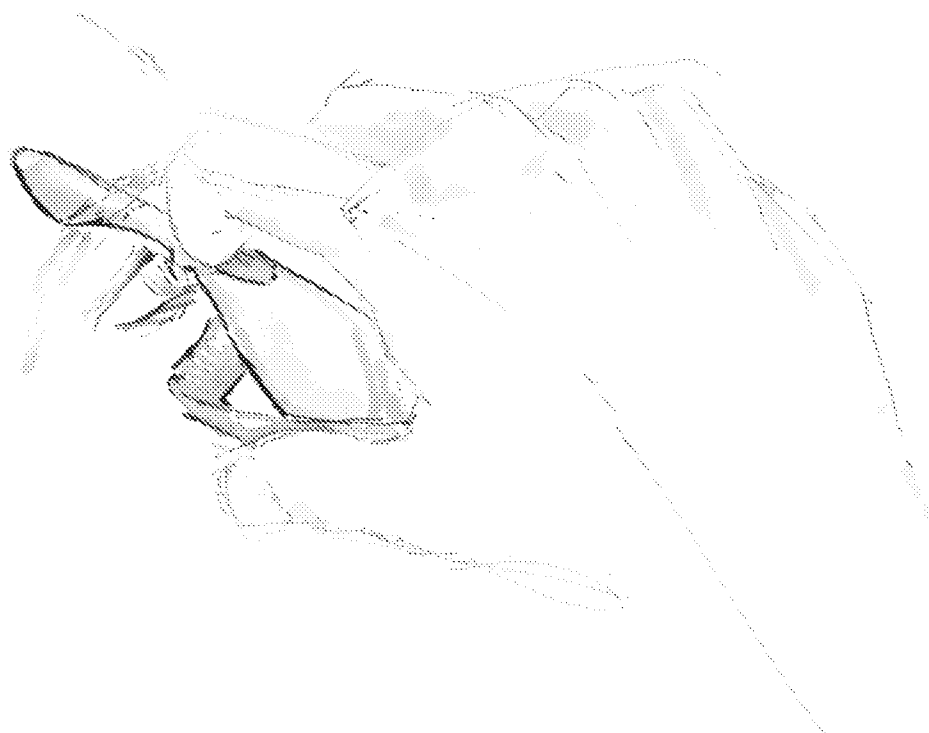


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2019/055384

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61F9/00
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)
A61F

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)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010/286633 A1 (MARX ALVIN J [US]) 11 November 2010 (2010-11-11) paragraph [0154]; figure 63 -----	1-12
A	WO 2016/081955 A2 (KELLY NIGEL [US]) 26 May 2016 (2016-05-26) page 6, line 9 - page 6, line 22; figure 1 -----	1-12
A	US 3 439 674 A (LELICOFF JHON) 22 April 1969 (1969-04-22) column 1, line 69 - column 4, line 3; figures 1-7 -----	1-12

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2019/055384

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010286633 A1	11-11-2010	NONE	

WO 2016081955 A2	26-05-2016	CN 107206196 A	26-09-2017
		US 2017367882 A1	28-12-2017
		WO 2016081955 A2	26-05-2016

US 3439674 A	22-04-1969	NONE	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2019/055384

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: **13**
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 13

The subject matter of claim 13, discloses the use of the dispenser for administration of a medical product : it relates therefore to a method comprising the step of administration of a pharmaceutical preparation registered as medicine. The International preliminary searching authority is not required to establish an opinion with regard to novelty, inventive step and industrial applicability on methods for treatment of the human body by therapy (Rule 39.1(iv) PCT).