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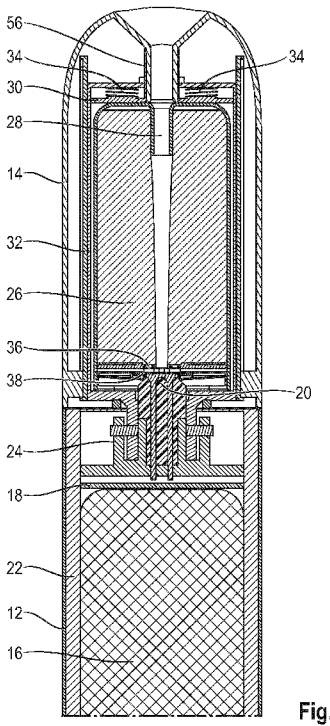


Fig. 1

(57) Abstract: An inhalation device has a heater part (12) with a heater (20), a consumable part (14) housing a container (26) containing a consumable substance and a wick (36), a membrane (38) being provided on the container (26), the membrane (38) being adapted to transfer heat from the heater (20) to the wick (36), wherein the heater part (12) and the consumable part (14) are connected by a bayonet connection (24) having at least one radial projection and at least one circumferential track having an inclined portion, on which the projection slides when rotating the consumable part (14) and the heater part (12) relative to each other.

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Inhalation Device

Technical field

The present invention relates to an inhalation device such as a device for heating a consumable substance like a liquid which can be vaporized.

Background

Several types of inhalation or aerosol generating devices are known and continuously replace traditional cigarettes. Such devices can have heater part with a heater and a consumable part adapted to house a container containing a consumable substance, the parts being connectable for producing vapor to be inhaled and being to some extent disconnectable, e.g. for replacing the container when empty.

Summary of the invention

In view of the above, there remains a need for an inhalation device, which is convenient in use and ensures reliable and efficient heat transfer from the heater to the wick.

This is achieved by means of the inhalation device of claim 1.

Accordingly, the inhalation device generally has a heater part which is used essentially unchanged throughout the lifetime of the device. The heater part comprises a heater, which can, for example, have an essentially flat surface adapted to contact a membrane provided on a container containing a consumable substance and described in more detail hereinafter. The heater can, at the mentioned surface, for example, be provided with resistively heatable heater tracks.

The device as a whole further has a consumable part housing or at least adapted to house the mentioned container containing a consumable substance and a wick. The container can also be called a pod, can contain a liquid and can be exchanged for a new, full container, when it is essentially empty. In other words, the wick, which can, for example, be solid and can be made from a ceramic material, is part of the disposable container. This also applies to the membrane provided on the container and being adapted to transfer heat from the heater to the wick.

In accordance with the invention, the heater part and the consumable part are connected or at least connectable by a bayonet connection having at least one radial projection and at least one circumferential track having an inclined portion, on which the projection slides when rotating the consumable part and the heater part relative to each other. It is noted that the consumable part as such is formed so as to form one part of the bayonet connection, the other part of which is constituted by the heater part. In other words, it is not the disposable container, in which the bayonet connection is formed. In particular, in the connected state, the consumable part will be firmly connected with the heater part so as to ensure a certain pressing force acting between the heater and the membrane in order to enable efficient heat transfer. Further, this connected state corresponds to the state, in which the device is used for inhalation, so that the device gives the appearance and impression of a solid device essentially without any movable parts.

In contrast, when the consumable part and the heater part are disconnected, the mentioned parts will to some extent be rotatable and linearly movable with respect to each other, but will essentially not be entirely disconnectable. Nevertheless, in the disconnected state, the container can be taken out and replaced by another container.

Since the bayonet connection is formed on the consumable part, which is usable as such throughout the lifetime of the device as a whole, the bayonet connection can be provided firm and long-lasting. If the replaceable container as such was provided with a bayonet connection of this type, this would disadvantageously increase the manufacturing costs thereof. According to the invention, this type of investment is advantageously made with regard to the device as such, which is usable for a long time.

At the same time, the wick, which is an important component for transferring heat originally provided by the heater to the vaporizable substance, is housed in the container and, consequently, well protected. Merely the membrane necessary to transfer heat from the heater to the wick is provided on the container, in other words accessible so as to allow surface contact with the heater.

It should in this context also be mentioned, that providing the heater in the reusable heater part allows the container containing the consumable substance to be provided particularly inexpensive, easy to manufacture and sustainable.

It should be noted that efficient heat transfer allows a particularly large volume of aerosol to be generated. Consequently, with efficient heat transfer, the charging cycle for a battery providing electric power to the heat can be prolonged. Avoiding moving parts will also have the advantage of preventing undesired noise and ensuring a reliable sealing between the parts. At the same time, also the container is fixedly held within the consumable part.

In particular, a bayonet connection has proven to reliably provide a connection, ensuring the relatively large force which is desired to be present as a pressing force between

the heater and the membrane. Moreover, since the position of the heater relative to the part of the bayonet connection provided at the heater part can be well-defined, and this also applies to the position of the heat transfer membrane relative to the part of the bayonet connection provided on the consumable parts, any misalignments between the heat transfer membrane and the heater can be ruled out. This contributes to efficient heat transfer, as such misalignments would impair the heat transfer.

The interaction between the projection and the inclined portion essentially moves the heater part and the consumable part towards each other when moving from the disconnected to the connected state. In particular, this movement towards each other can be effected in a manner to ensure a desired surface pressing force between the heater and the membrane in the connected state. In the disconnected state, the mentioned parts will be moved away from each other, allowing replacement of the container and, moreover, enabling protection of the heater as described in more detail below. An inclination of the tracks and/or ramps of more than 1° is currently preferred. The device as a whole is handheld with an appropriate size allowing the desired handling.

Preferred embodiments of the inhalation device are described in the further claims.

Whereas a single projection and track are sufficient to provide a bayonet connection, it is preferred to provide at least two tracks, preferably at diametrically opposite positions, so that the bayonet connection can be particularly stable and firm and can advantageously be well balanced along the circumference of the device.

The bayonet connection typically comprises at least one locking portion, preferably at least locking the parts in the connected state, as described in more detail below.

Particularly in connection with such a locking portion at least one elastic component is preferably provided biasing the consumable part and the heater part in a direction away from each other. The elastic component can, for example, be a spring. Effectively, the mentioned parts are biased away from each other and are moved, against the biasing force, towards each other by means of the bayonet connection and then locked relative to each other with the biasing force still acting in the connected state. This supports the transition from the connected to the disconnected state, when this is desired.

A particularly stable and reliable type of a bayonet connection is expected to be present, when the track is provided as a groove, preferably a through groove, and/or the projection is provided is a pin.

It is further expected to provide advantages, when the track is provided fixed relative to the consumable part.

Moreover, as already indicated above, it will provide advantages, if at least one locking portion and/or at least one mechanical connector, such as a snap fit and/or at least one magnet are provided and adapted to keep the heater part and the consumable part connected.

In an embodiment, essentially as an alternative to the above-mentioned groove forming the track, the track can also be provided as a ramp.

Efficient production is further expected for an embodiment, in which the projection is provided on an axial post.

As described above, in the connected state, a defined force will act on the membrane of the container by means of the heater being in contact therewith. In order to limit the force acting on the container to a value, which the container can withstand, a resilient stop is preferably provided

between the container and the housing or frame of the consumable part. In other words, due to the elasticity of the resilient stop, the container can move to some extent within the housing, and the described force acting from the heater can thus be limited. At the same time, the container is held tight, so that any noise due to movements of the container can be avoided. Moreover, the air- and aerosol flow can in this manner be sealed well, in particular at the interface between the opening of the container and the opening of the device as such, through which the user can inhale.

In order to provide a device with an attractive appearance being at the same type convenient in use, the consumable part preferably has a slidable cover allowing access to the container while covering the container during use.

In this context, the cover's movement can advantageously be limited by at least one stop and/or guided by at least one guide so as to add to convenience during sliding movement of the cover and securing same to the consumable part so as to advantageously avoid the cover from coming loose.

As regards the preferred force acting between the heater and the membrane, this is, in the connected state a pressing force, which is preferably within a range of 10 to 20 N. This has proven to maintain a sufficient heat transfer efficiency.

In order to provide a convenient-to-use bayonet connection, it is currently preferred that at least on track covers 50 to 90° in the circumferential direction. Below a value of 50°, the necessary movements in order to allow convenient replacement of the container would be hard to ensure. Beyond 90°, the turning movement of the consumable and the heater part relative to each other would be felt by the user to be excessive.

At least one heater cover can advantageously be provided

between the heater and the container in order to allow the heater to be protected. This particularly applies to the preferred measure, that the heater cover is, in a disconnected state, farther away from the heater part than the heater. In other words, the heater cover protects the heater from being accessible and inadvertently be damaged during replacement of the container.

As regards preferred materials, the container preferably comprises a body made from hard plastic and/or metal, such as aluminium. These materials are expected to be stable enough to withstand the loads and forces acting on the container. In order to ensure durability of the bayonet connection, the track and/or the projections are preferably made from metal, such as steel and/or a hard plastic, such as PEI. This material can advantageously be produced, amongst others, by injection moulding. In case of metal, the parts of the bayonet connection can advantageously be machined, optionally having been cast before. Alternatively, they can also be cast and merely be deburred. Any metallic components of the bayonet connection can be insert- or over-moulded into a suitable plastic or glued in during assembly. The one or more projection and/or one or more track frequently moving relative to each other, can, moreover, be provided with a coating having good sliding properties, such as a PTFE coating and/or they can be provided with a lubricant such as silicone oil. In this context, a plain bearing can also be provided in the surroundings of bayonet connection, so that at least during a part of the movement for connecting the mentioned parts, surfaces thereof will be in contact in the plain bearing.

Brief description of the drawings

Hereinafter, preferred embodiments of the invention are described with reference to the drawings, in which

Fig. 1 shows a longitudinal cut view of the inhalation device,

Fig. 2 shows a perspective view of the device in the disconnected state,

Fig. 3 shows a perspective view of essential parts of the device,

Fig. 4 shows a perspective view of the container of the device,

Fig. 5 shows details of the device in the disconnected state,

Fig. 6 shows details of the bayonet connection,

Fig. 7 shows details of the device with the container removed in the connected state,

Fig. 8 shows details of the device with the container removed in the disconnected state,

Fig. 9 shows a longitudinal cut view of a second embodiment,

Fig. 10 shows a perspective view of the second embodiment during replacement of the container, and

Fig. 11 to 13 show further details of the second embodiment.

Detailed description of preferred embodiments

As can be taken from Fig. 1, the inhalation device 10 generally comprises two parts, a heater part 12, which is a lower part in the figures, and a consumable part 14. The

heater part 12 accommodates, in the embodiment shown, a battery 16 and a printed circuit board 18 with electronic components, which are not shown, and which is connected to a heater 20. The mentioned components are surrounded by a frame 22, and the heater 20 is surrounded by a part of the bayonet connection 24 described in more detail below.

As can be seen in the upper part of Fig. 1, the consumable part 14 accommodates a container 26, containing a consumable substance and having an outlet 28 at its upper end which is in fluid connection with an opening of the consumable part 14 essentially forming a mouthpiece for allowing inhalation. In its upper part, in other words the part closest to the outlet 28, a stop 30 is provided within a frame 32 of the consumable part 14 and is resiliently supported at the upper end of the consumable part frame 32 by means of, in the case shown, two springs 34.

In the lower part of the container, a wick 36 is provided in the container 26 and is in contact with a thermal interface membrane 38. As will be apparent from other figures, the membrane 38 is provided on the container 26 so as to be accessible from the outside, so that it can be brought into contact with the heater 20, when the heater part 12 and the consumable part 14 are connected as shown in Fig. 1. In this state, heat can be transferred efficiently from the heater 20 via the membrane 38 to the wick 36, so that the consumable substance inside the container 26 can be heated and vaporized, and can eventually be inhaled through the outlet of the device.

As shown in Fig. 2, the device can also be brought into a disconnected state, in which the heater part 12 and the consumable part 14 are essentially turned 90° relative to each other. In the situation of Fig. 2, the consumable part 14 was turned 90° in a counter-clockwise direction. As will be described in more detail below, this turning movement

separates the consumable part 14 and the heater part 12 a few millimeters from each other. In the situation shown in Fig. 2, a cover 40 of the consumable part 14 was slidingly moved away from the heater part 12. In this state, the container 26 can be removed and replaced by a new, filled one.

As can generally be seen in Fig. 1 and 2, the device 10 as a whole is elongated with a substantially oval cross-sectional. Both ends of the device are rounded so as to provide a pleasant feeling when handling the device 10. Along the longitudinal axis of the device 10, the heater part 12 has a slightly longer extension than the consumable part 14. Moreover, the cover 40 of the consumable part 14 is slidable along the longitudinal axis of the device 10 as a whole, and the turning movement bringing the device 10 from the connected to the disconnected state and back is essentially about the longitudinal axis.

Fig. 3 shows the device 10 without the cover 40 of the consumable part 14 and without a housing of the heater part 12, which can be seen in the lower part of Fig. 1 and 2. In particular, the figure shows the frame 22 of the heater part, which essentially has two side legs 42 extending along the longitudinal axis of the device 10 as a whole, and essentially three plates 44 having the shape similar to the cross-section of the device, and the lowest plate constituting the end of the device 10 most remote from the mouthpiece. A center plate 46 essentially delimits the space, where the battery 16 and the printed circuit board 18 are accommodated and carries a part of the bayonet connection 24. In the embodiment shown, the uppermost plate of the frame 22 supports a plane bearing 48, on which the frame 32 of the consumable part 14 is supported during a part of the turning movement of the consumable part 14 relative to the heater part 12, in particular towards the end of the movement resulting in the connected state and at the beginning of the

movement bringing the mentioned parts in the disconnected state.

In particular, in the connected state shown in Fig. 3, a lowermost plate 50 of the frame 32 of the consumable part 14 rests on the plane bearing 48. As can further be seen in Fig. 3, the frame 32 of the consumable part 14 has side legs 52, in which linear grooves are provided at the outside so as to provide guides 54 guiding the sliding movement of the cover 40, which is not shown in Fig. 3.

Fig. 3 additionally shows the container 26 abutting the stop 30, which is essentially a plate guided by its center hole, in which the outlet channel 56 of the device 10 as a whole is accommodated. This can additionally be taken from the top part of Fig. 1. Fig. 3 finally shows the springs 34 resiliently supporting the stop 30 against an upper plate 58 of the frame 32 of the consumable part 14.

Fig. 4 shows the container 26, which is essentially cuboid with rounded side edges and a recessed bottom, at which the membrane 38 is accessible.

Details of the bayonet connection can already be seen in Fig. 3. In the embodiment shown, two axial posts 60 are essentially provided on the middle plate 46 of the frame 22 of the heater part 12. Each post 60 carries a pin 62, essentially extending in a radial or transverse direction relative to the longitudinal axis of the device 10. The pins 62 cooperate with an inclined track 64 which is, in the embodiment shown, provided on a hollow cylinder connected to the frame 32 of the consumable part 14. For assembly, the parts of the bayonet connection are brought in the positions shown, and the pins 62 are inserted last.

When the consumable part 14 is turned essentially 90° in a counter-clockwise direction as shown in Fig. 5, the pins 62

slide along the tracks 64, and the inclination of the track 64 essentially moves the consumable part 14 away from the heater part 12 and slightly upwards in the figures. This allows the container 26 to be replaced.

Fig. 5 also shows a locking portion 66 of the track 64, at which the track 64 essentially extends in a direction opposite to its inclination. By means of the locking portion, the consumable part 14 and the heater part 12, which are biased in a direction away from each other as detailed below, can be locked relative to each other, since the biasing force essentially pushes the pin 62 into the locking portion 66 or, looking at the locking portion 66 which is shown as the moving part when comparing Fig. 1 and 3 on the one hand and Fig 2 and 5 on the other hand, upwards so as to provide locking. It should be noted in this context, that the bayonet connection can be connected and disconnected by any appropriate turning movement of the heater part 12 and consumable part 14 relative to each other.

Returning to Fig. 3, it can be seen that the lower end of the track 64 is also widened so as to indicate to the consumer that the disconnecting movement has come to an end. In other words, this is not only indicated by the pin 62 abutting the end of the track 64 but also by allowing additional movement of the parts 12 and 14 relative to each other so as to give the user a loose feeling of the parts 12 and 14 relative to each other indicating the state, in which the container 26 can be replaced.

Fig. 6 additionally shows that the pins 62 are not only supported by the posts 60, but also by a center cylinder 68.

Fig. 7 and 8, additionally, show that the heater 20 extends through the lowermost plate 50 of the consumable part frame 32 in the connected state, but is below the mentioned plate 50 in the disconnected state shown in Fig. 8. Thus, the

mentioned plate 50 essentially provides a heater cover 70 which is, in the disconnected state, further away from the heater part 12 than the heater 20 so as to protect the heater from possible damage in the disconnected state shown in Fig. 8 and when replacing the container.

Fig. 9 shows a second embodiment, and merely differences to the first embodiment will be explained. Firstly, the resilient stop 30 provided between the container 26 and the consumable part frame 32 is, in this case, essentially a block of rubber material. Moreover, a spring 72 is shown, which biases the heater part 12 and the consumable part 14 in a direction away from each other. This pushes the parts 12, 14 away from each other, in order to release the container. In the first embodiment, this movement is effected by the pin sliding in the groove, but the ramps 78 of the second embodiment can theoretically be turned relative to the projections 80 without the parts moving away from each other.

In the connected state, the heater 20 is pressed with a relatively high force against the membrane 38 in order to ensure efficient heat transfer. In order to avoid the container 26 being damaged by possible excessive forces acting from the heater 20, the above-described resilient stop 30 between the container 26 and the consumable part frame 32 is provided.

As can be seen in Fig. 10, the cover 40 of the consumable part 14 is provided different to the effect that it essentially covers only one half of the consumable part 14. Since the device 10 as a whole again has an oval cross-section, the cover 40 essentially extends along one of the long sides of the oval and, moreover, has a stop 74 defining a state, in which the recess accommodating the container 26 is closed. As can be taken from Fig. 11, the consumable part frame 32 additionally has a recess 76 defining a stop for the movement of the cover 14 away from the heater part 12.

Also different from the first embodiment, the consumable part 14 essentially has two inclined ramps 78, which cooperate with transverse projections 80 provided on axial posts 60. The posts and projections 80 are provided on the heater part 12, as will be shown in more detail in the other figures, and the ramps 78 have a portion with a surface essentially perpendicular to the longitudinal axis constituting a locking portion 66. In the state shown in Fig. 11, the projections 80 rest, with a surface perpendicular to the longitudinal axis provided on the projections, on the locking portion 66 of each ramp 78. The ramps 78 extend, similar to the tracks 64 shown for the first embodiment as through grooves, in a circumferential direction, in other words curved along a section of a circle, about the longitudinal axis. Further, in both embodiments, two tracks are provided in diametrically opposite positions.

The turning movement of the consumable part 14 in a counter-clockwise direction will move the projections 80 down the ramps 78 and will thus separate the parts 12 and 14 from each other for a few millimeters. Different from the first embodiment, the turning movement of the parts 12 and 14 relative to each other is only about 55 instead of 90°.

As indicated in Fig. 12, the consumable part 14 again has a heater cover 70 which is above the heater 20 in the disconnected state so as to protect the heater 20 from damage. In the connected state, the heater 20 extends through the opening in the heater cover 70 so as to allow the membrane 38 provided on the container, which is not shown in Fig. 12, to transfer heat. In both embodiments, the heater 20 is essentially provided on a conical post 86.

Fig. 12 also shows the spring 72 in an extended state. When the parts 12 and 14 are brought into the connected state, an appropriate annular extension provided at the bottom of the

consumable part frame 32 abuts the spring 72 and compresses same, so that the spring 72 essentially biases the parts 12 and 14 away from each other. The same figure also shows a rail 84 providing a guide for the movement of the cover 40. It is noted that the resilient stop 30 supports the described biasing in both embodiments. In both embodiments, the resilient stop can also comprise in addition or alternatively to the components shown, one or more of a screw, a rubber ring, a resilient parallelogram, and it can also comprise a hard stop, such as when the springs of the first embodiment are fully compressed. This will facilitate removal of the container.

Finally, Fig. 13 shows the bayonet connection with most of the consumable part 14 removed, but the ramps 78 provided thereon still visible. In addition, the projections 80 cooperating therewith can be seen, and this also applies to electrical connections 82 of the heater 20, which is removed in Fig 12. This figure also shows curved openings in the consumable part 14, in which the posts 60 carrying the projections 80 are guided. As can also be seen in the figure, the ramps 78 extend in a radial direction somewhat farther than the projections 80 so as to ensure sufficient support.

Claims

1. An inhalation device (10) having a heater part (12) with a heater (20), a consumable part (14) housing a container (26) containing a consumable substance and a wick (36), a membrane (38) being provided on the container (26), the membrane (38) being adapted to transfer heat from the heater (20) to the wick (36),

wherein the heater part (12) and the consumable part (14) are connected by a bayonet connection (24) having at least one radial projection (62, 80) and at least one circumferential track (64, 78) having an inclined portion,

on which the projection slides when rotating the consumable part (14) and the heater part (12) relative to each other.

2. The inhalation device (10) of claim 1, wherein at least two tracks (64, 78) are provided, preferably at diametrically opposite positions.

3. The inhalation device (10) of one of the preceding claims, wherein at least one elastic component, such as a spring is provided biasing the consumable part (14) and the heater part (12) in a direction away from each other.

4. The inhalation device (10) of one of the preceding claims, wherein the track (64) is provided as a groove, preferably a through groove, and/or the projection is provided as a pin (62).

5. The inhalation device (10) of one of the preceding claims, wherein the track (64, 78) is provided fixed relative to the consumable part (14).

6. The inhalation device (10) of one of the preceding claims, wherein the track (64, 78) further has at least one locking portion (66) and/or at least one mechanical connector, such as a snap fit and/or at least one magnet adapted to keep the heater part (12) and the consumable part (14) connected.

7. The inhalation device (10) of one of the preceding claims, wherein the track (78) is provided as a ramp.

8. The inhalation device (10) of one of the preceding claims, wherein the projection is provided on an axial post (60).

9. The inhalation device (10) of one of the preceding claims, wherein a resilient stop (30) is provided between the container (26) and a housing of the consumable part (14).

10. The inhalation device (10) of one of the preceding claims, wherein the consumable part (14) has a slidable cover (40) allowing access to the container (26).

11. The inhalation device (10) of claim 10, wherein at least one stop (74) adapted to limit the cover's movement and/or at least one guide (54) adapted to guide the sliding movement of the cover (40) is provided.

12. The inhalation device (10) of one of the preceding claims, wherein the heater (20) and the membrane (38) are pressed towards each other, preferably with a force from 10 to 20 N, in a connected state of the consumable part (14) and the heater part (12).

13. The inhalation device (10) of one of the preceding claims, wherein at least one track (64, 78) covers 50 to 90° in the circumferential direction.

14. The inhalation device (10) of one of the preceding claims, wherein at least one heater cover (70) is provided

between the heater (20) and the container (26), which preferably is, in a disconnected state of the consumable part (14) and the heater part (12), farther away from the heater part (12) than the heater (20).

15. The inhalation device (10) of one of the preceding claims, wherein the container (26) comprises a body made from hard plastic and/or metal, such as aluminium, and/or the track (64, 78) and/or the projections are made from metal, such as steel and/or a hard plastic, such as PEI, and optionally provided with a lubricant such as silicone oil and/or a PTFE coating.

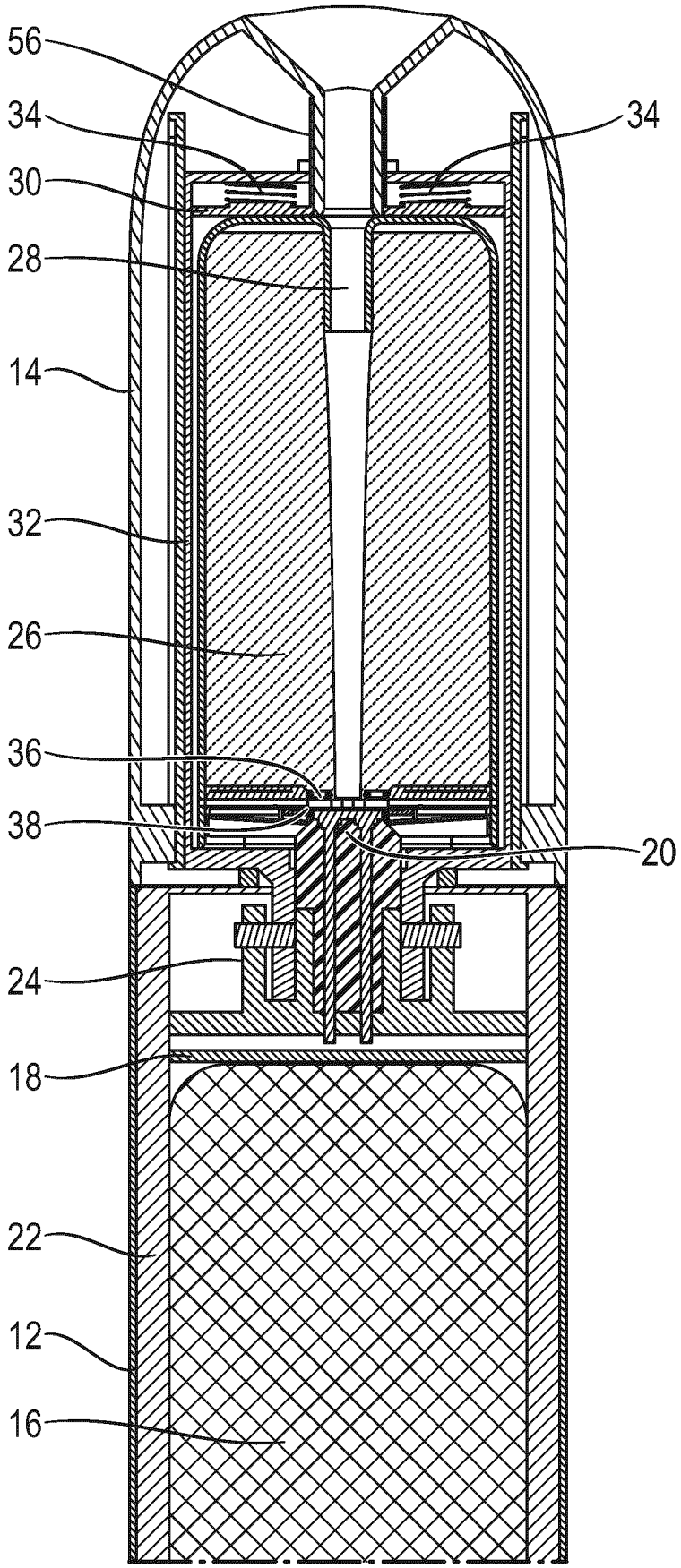


Fig. 1

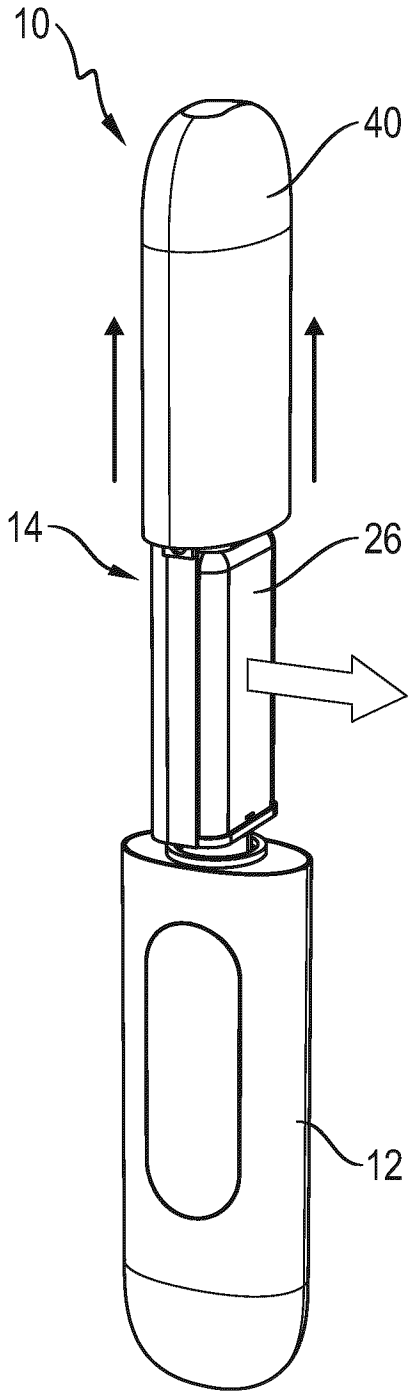
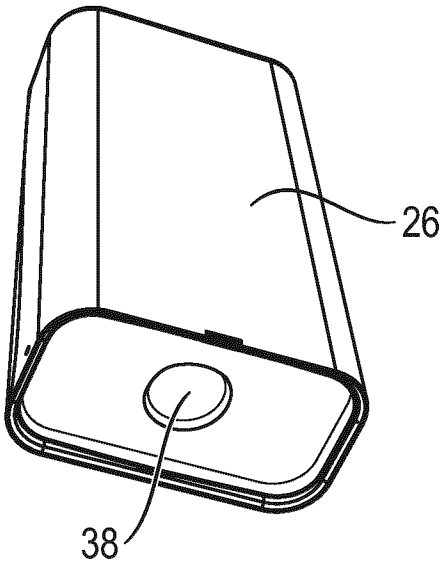


Fig. 2

Fig. 4


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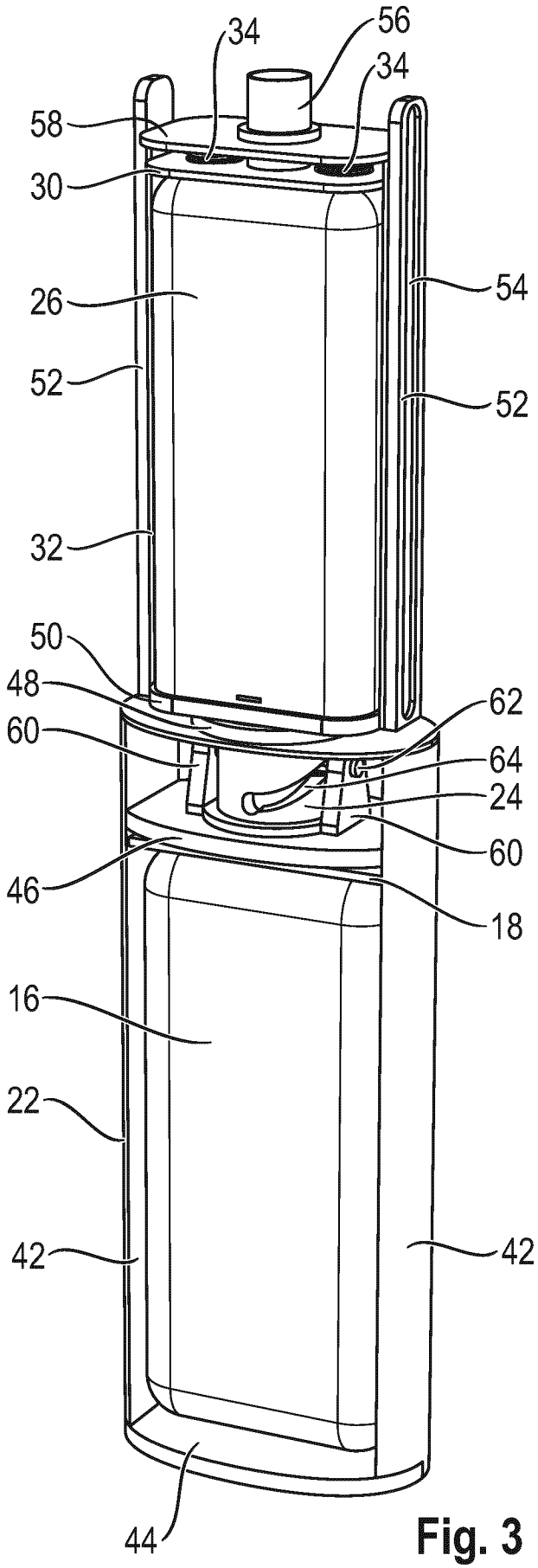

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Fig. 3

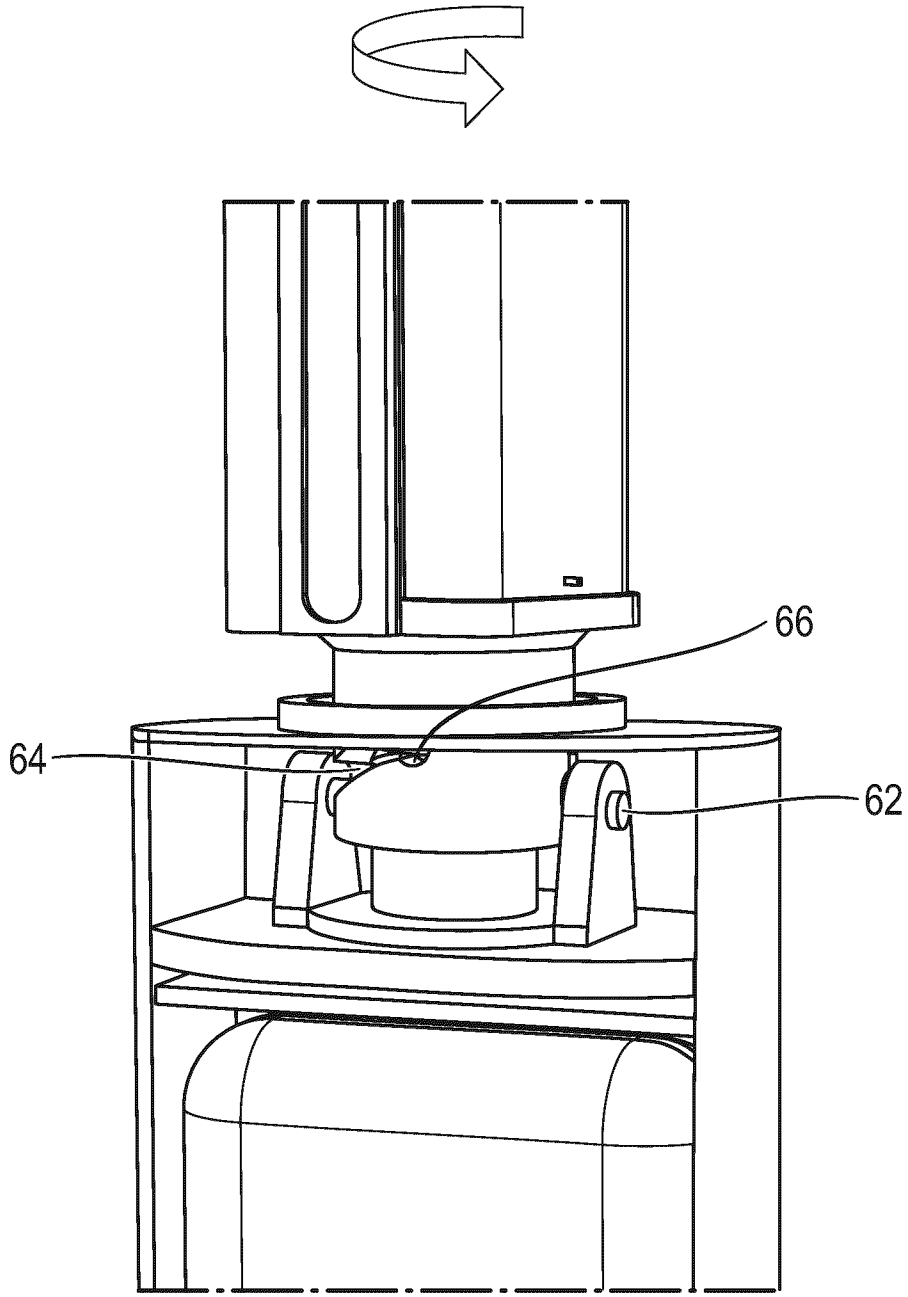


Fig. 5

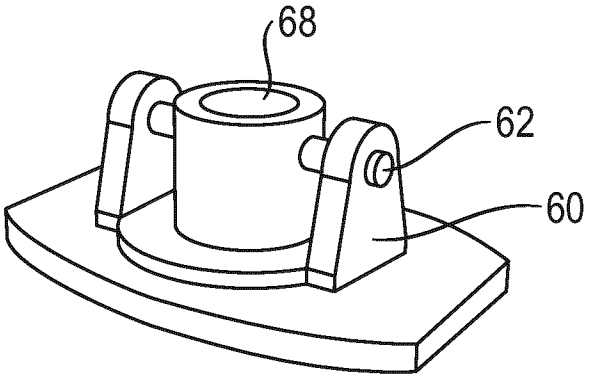


Fig. 6

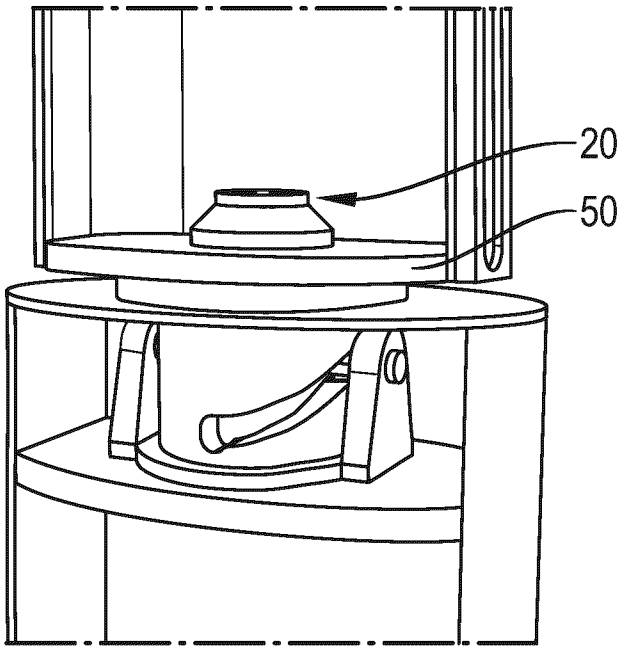


Fig. 7

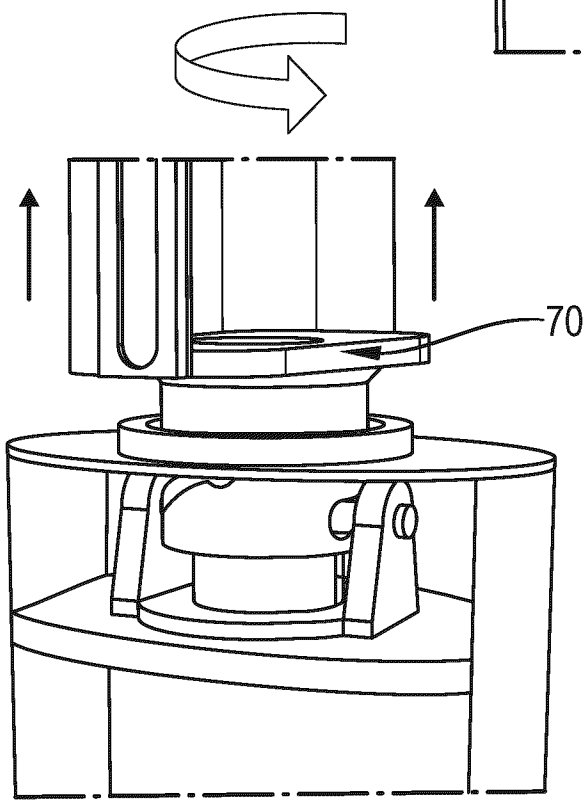


Fig. 8

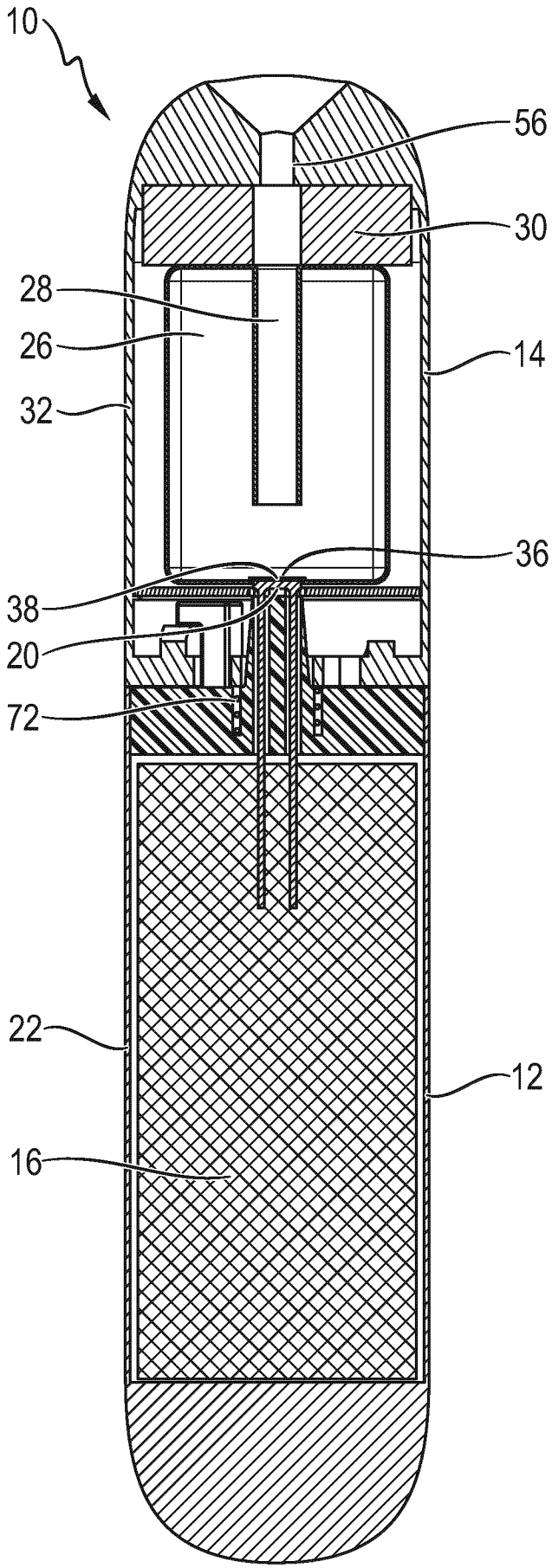


Fig. 9

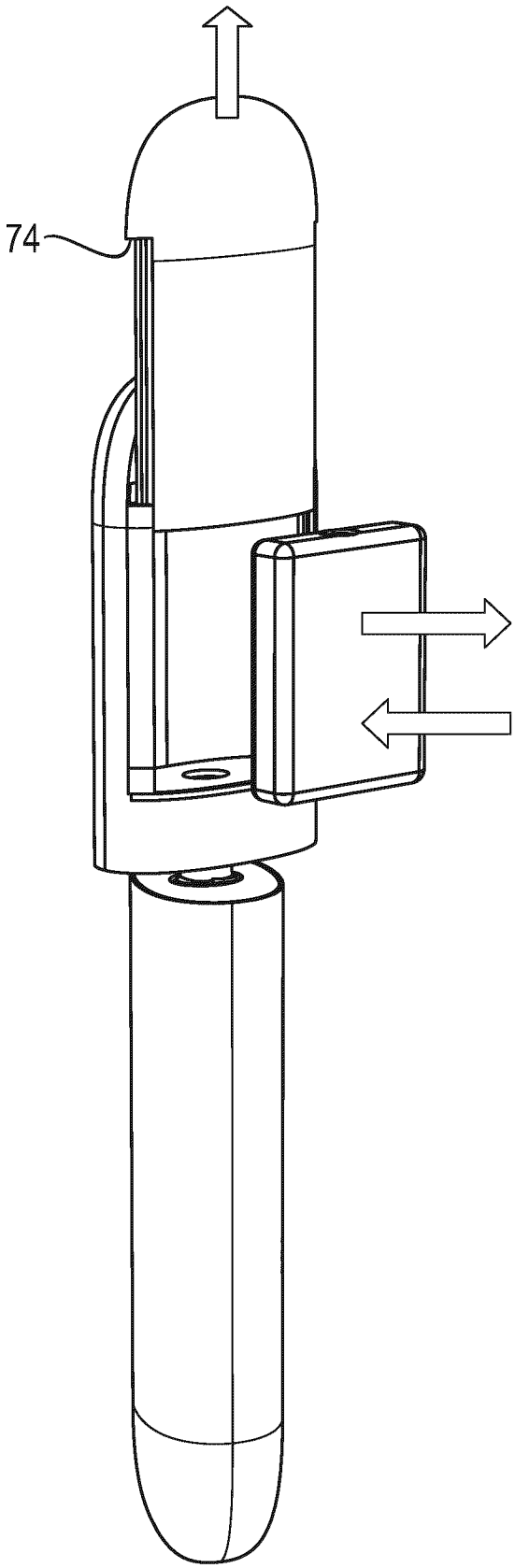


Fig. 10

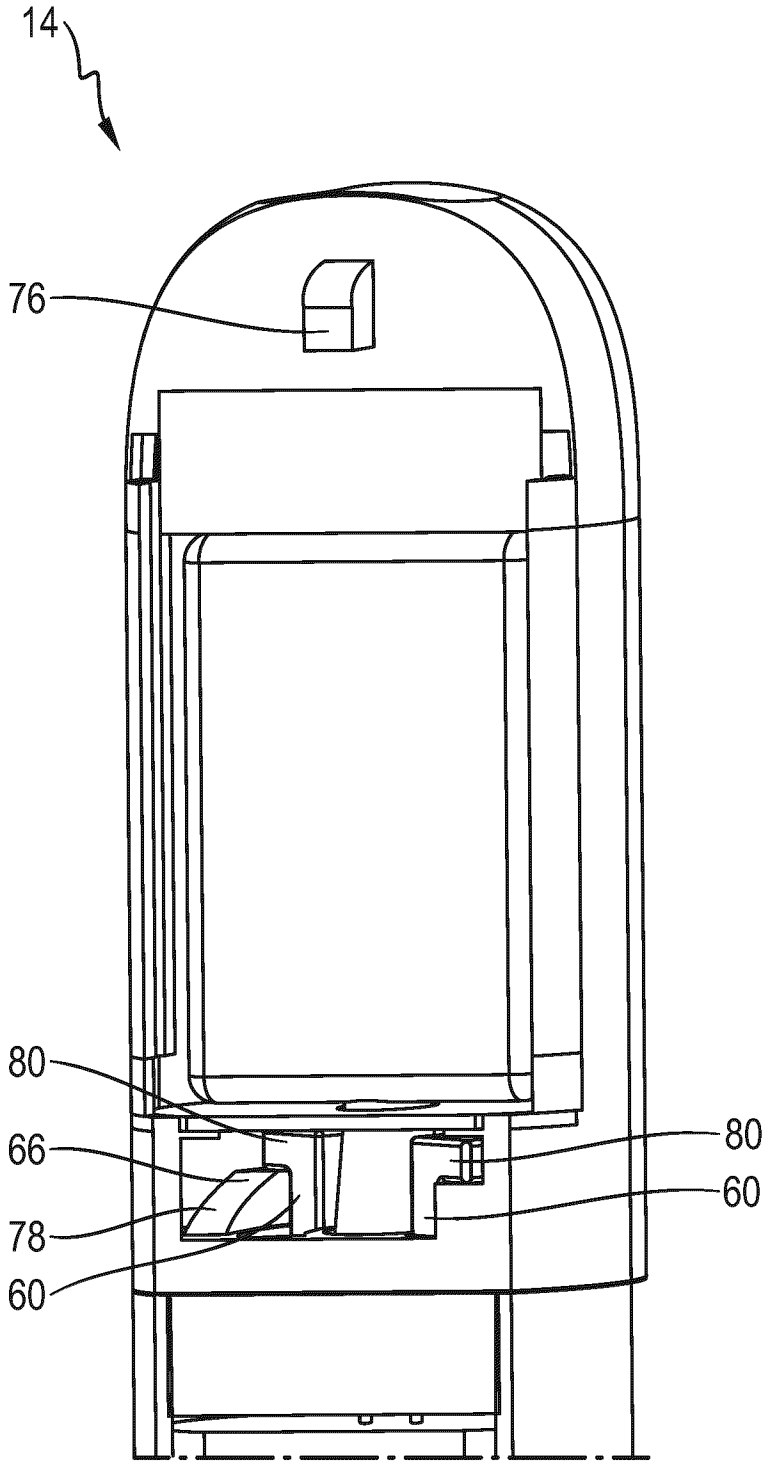


Fig. 11

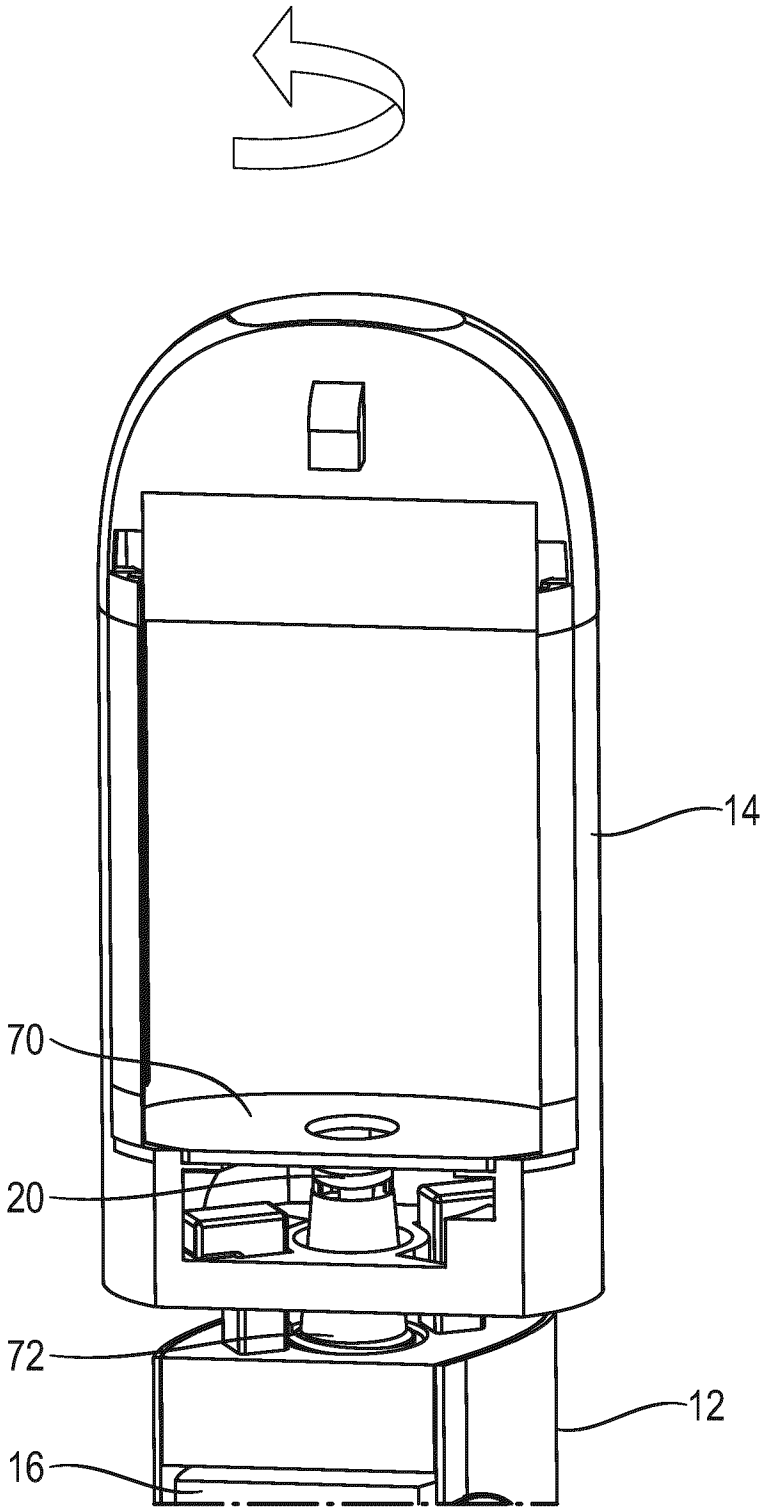


Fig. 12

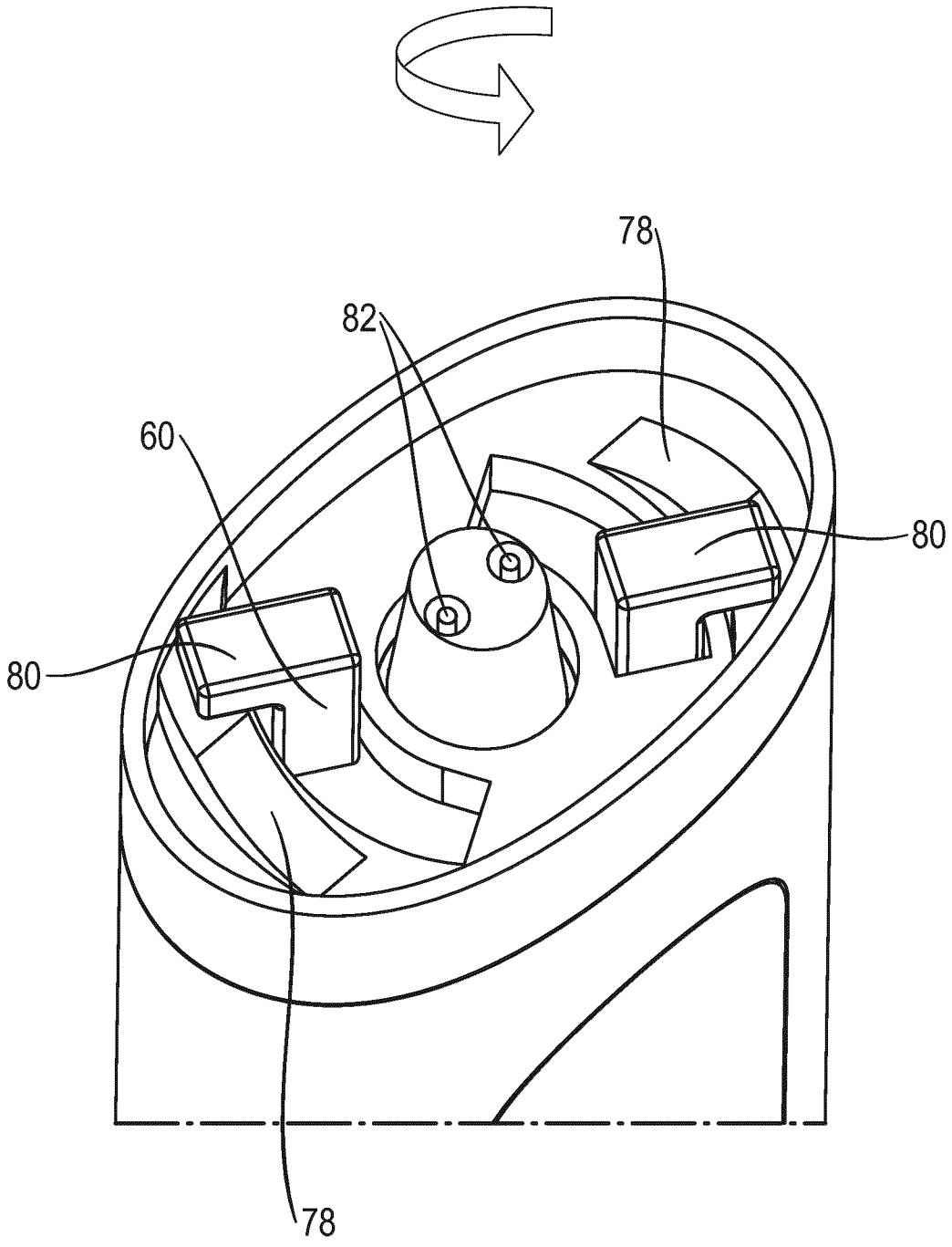


Fig. 13

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2024/058268

A. CLASSIFICATION OF SUBJECT MATTER

INV. A24F40/40 A24F40/46
ADD. A24F40/10

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)

A24F

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 3 890 523 B1 (JT INT SA [CH]) 8 February 2023 (2023-02-08) figures 1-9 paragraphs [0060], [0061], [0065], [0070] - [0072], [0095], [0097], [0099]	1-15
A	WO 2018/068224 A1 (SHENZHEN BAUWAY TECH LIMITED [CN]) 19 April 2018 (2018-04-19) figures 2-7 pages 5-6	1-15
A	EP 2 875 739 A1 (KIMREE HI TECH INC [VG]) 27 May 2015 (2015-05-27) figures 2, 3 paragraphs [0004] - [0007]	1-15

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

☒ See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search	Date of mailing of the international search report
19 June 2024	01/07/2024

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Kirchmayr, Katrin

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2024/058268

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 3890523 B1	08-02-2023	CA 3122160 A1	11-06-2020
		CA 3122161 A1	11-06-2020
		CA 3122166 A1	11-06-2020
		CA 3122167 A1	11-06-2020
		CN 113163862 A	23-07-2021
		CN 113163864 A	23-07-2021
		CN 113163868 A	23-07-2021
		CN 113164695 A	23-07-2021
		EP 3890523 A1	13-10-2021
		EP 3890526 A1	13-10-2021
		EP 3890527 A1	13-10-2021
		EP 3890809 A1	13-10-2021
		JP 2022510255 A	26-01-2022
		JP 2022510256 A	26-01-2022
		JP 2022510267 A	26-01-2022
		JP 2022510307 A	26-01-2022
		KR 20210098460 A	10-08-2021
		KR 20210098461 A	10-08-2021
		KR 20210098468 A	10-08-2021
		KR 20210098469 A	10-08-2021
		US 2022000176 A1	06-01-2022
		US 2022000180 A1	06-01-2022
		US 2022007730 A1	13-01-2022
		US 2022022552 A1	27-01-2022
		WO 2020115172 A1	11-06-2020
		WO 2020115173 A1	11-06-2020
		WO 2020115174 A1	11-06-2020
		WO 2020115175 A1	11-06-2020
WO 2018068224 A1	19-04-2018	NONE	
EP 2875739 A1	27-05-2015	CN 203424295 U	12-02-2014
		EP 2875739 A1	27-05-2015
		US 2016316817 A1	03-11-2016
		WO 2015021676 A1	19-02-2015