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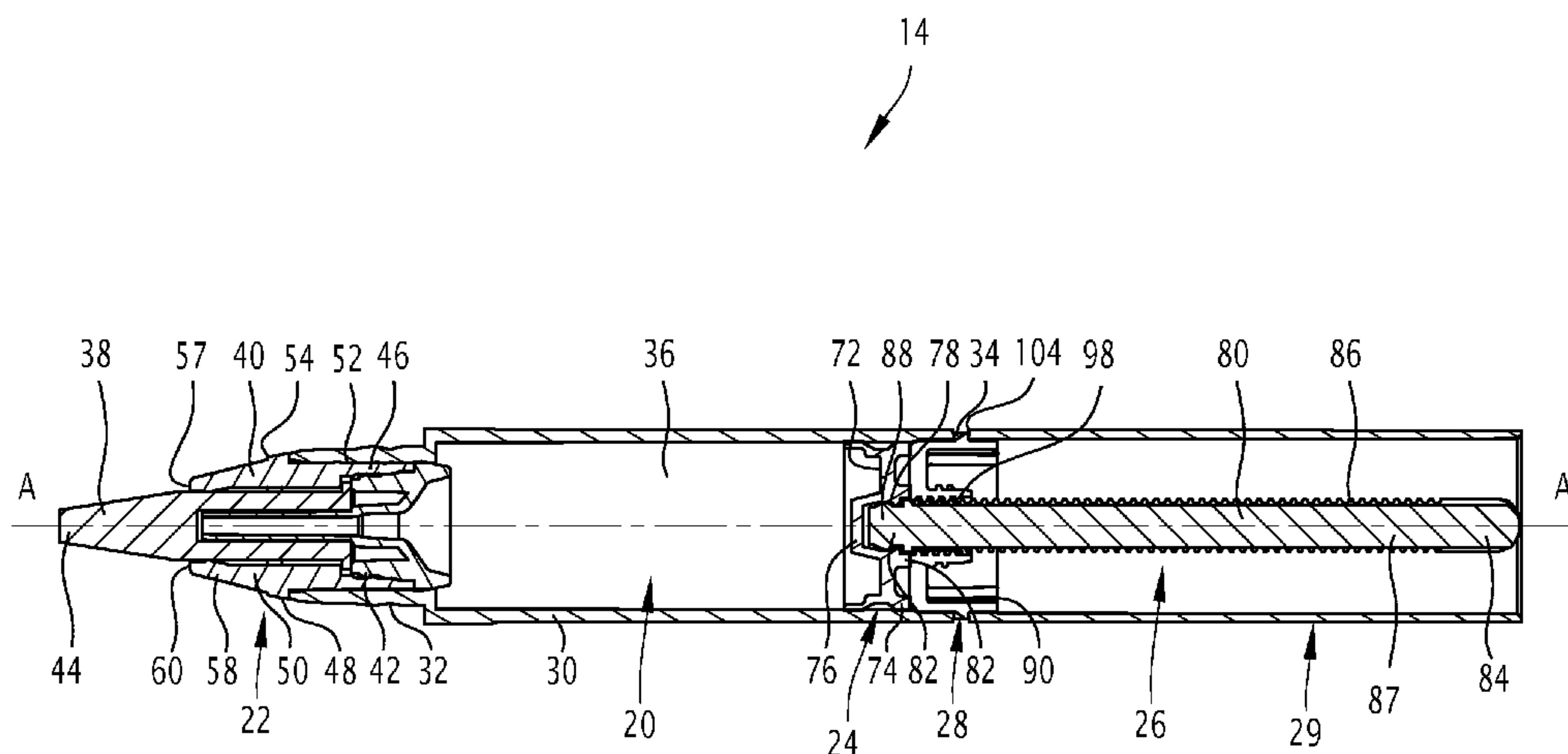


FIG.3

(57) Abstract: The refill includes: a chamber (20); an applicator (22), mounted at a proximal end of the chamber (20) to receive cosmetic product contained in the chamber (20); an attachment head (28) mounted at a distal end of the chamber (20), the attachment head (28) including at least one coupling assembly (98) with the dispensing mechanism; a piston (24) slidably mounted in the chamber (20) to push the cosmetic product toward the applicator (22); a piston (24) actuation screw (26), traversing the attachment head (28), the actuation screw (26) having a proximal end connected to the piston (24) and a threaded distal end (80) projecting longitudinally out of the chamber (20) to be introduced into the dispensing mechanism.

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TITLE: Cosmetic product refill, loading assembly, dispensing mechanism and associated kit

The present invention concerns a cosmetic product refill, intended to be removably mounted in a ratchet dispensing mechanism, the refill comprising:

- a chamber intended to contain the cosmetic product, the chamber extending along a longitudinal axis.

The refill is particularly intended to contain a cosmetic makeup, care or coloring product, capable of being applied onto a surface of a user's body, such as the user's skin or keratin fibers.

More generally, a cosmetic product is defined in EC Regulation No. 1223/2009 of the European Parliament and the Council of November 30, 2009, relating to cosmetic products.

Known cosmetic product packaging and dispensing devices include an applicator formed from a tuft of bristles which is connected to a chamber containing the cosmetic product.

A ratchet dispensing mechanism, actuated by a push-button triggers very precise dispensing of the cosmetic product in the applicator. A simple actuation of the button by the user moves a piston contained in the chamber to push the product toward the applicator.

Such a packaging and dispensing device enables very precise application of a controlled dose of cosmetic product by the user. The device also has dimensions, an external appearance, and an operating procedure very appreciated by the user.

However, this device can be improved further, so as to lower the environmental impact thereof. Indeed, when the cosmetic product contained in the refill has been fully dispensed, the packaging and dispensing device must be disposed of as a whole.

To overcome this problem, it is known for example from EP 1 557 288 to provide cosmetic product packaging and dispensing devices, having a refill capable of being filled, or replaced once the cosmetic product has been used up.

Such a device does not provide full satisfaction. Indeed, it is not adapted to the dispensing with a ratchet dispensing mechanism. Furthermore, the adaptation thereof to a ratchet mechanism would require changing the dimensions, the external appearance, and the operating procedure of the device significantly.

One aim of the invention is that of providing a refill for a cosmetic product packaging and dispensing device enabling precise product dispensing, while having

a lower environmental impact, without notably changing the dimensions, the external appearance, and the operating procedure of the device for the user.

To this aim, the invention concerns a cosmetic product refill as defined above, characterized by:

5 - an applicator, mounted at a proximal end of the chamber to receive cosmetic product contained in the chamber;

 - an attachment head in the dispensing mechanism, mounted at a distal end of the chamber, the attachment head including at least one coupling assembly with the dispensing mechanism;

10 - a piston slidably mounted in the chamber to push the cosmetic product toward the applicator;

 - a piston actuation screw, traversing the attachment head, the actuation screw having a proximal end connected to the piston and a threaded distal end projecting longitudinally out of the chamber to be introduced into the dispensing mechanism.

15 Such a refill is therefore particularly adapted to be inserted into a ratchet mechanism, capable of gripping the actuation screw, without notably changing the dimensions, its external appearance, or its operating procedure.

 The refill is compact and has a number of parts that remains limited, allowing to retain the mechanism for long-term use, while only disposing of that which is strictly
20 necessary when the cosmetic product is used up.

 This is obtained with minimal adaptation of the external shape and dimensions of the cosmetic product packaging and dispensing device, allowing to retain the desired procedure.

 According to alternative embodiments:

25 - the piston is rotatably mounted at the proximal end of the actuation screw;
 - the piston is mounted free to move in translation relative to the proximal end of the actuation screw along a limited stroke relative to the actuation screw.

 The rotational uncoupling of the piston relative to the screw easily enables the sliding thereof in the chamber, generating a homogeneous product dispensing.
30 Moreover, the degree of freedom in translation between the piston and the screw ensures that, when assembling the applicator on the chamber, the applicator is not contaminated with cosmetic product.

 According to alternative embodiments:

35 - the actuation screw includes at least one lateral flat area extending longitudinally along the threaded rod;

 - the actuation screw includes a rounded distal end.

The presence of a lateral flat area on the screw enables the easy gripping thereof by the ratchet mechanism. Furthermore, the rounded distal end thereof ensures guidance and reliable insertion in the ratchet mechanism.

According to alternative embodiments:

- the coupling assembly includes an internal skirt having at least one external coupling member to the dispensing mechanism, in particular an external threading;
- the internal skirt delimits a central circulation passage of the actuation screw, the central passage comprising an internal threading engaged on the threaded rod of the actuation screw.

The coupling assembly formed by a skirt is simple to mount, particularly by screwing in the mechanism. The skirt also delimiting an inner guide passage of the screw, the screw is therefore secured and guided during the rotation thereof to enable homogeneous cosmetic product dispensing.

According to an alternative embodiment, the applicator includes a tuft, and a tuft holder, mounted at the proximal end of the chamber.

The refill is particularly adapted for applicators including a tuft of bristles and a tuft holder, since it guarantees a change of applicator at each use.

According to an alternative embodiment, the refill includes an external skirt for protecting the actuation screw, and for guiding the insertion of the refill into the dispensing mechanism, the external skirt projecting around the threaded skirt, up to the distal end of the actuation screw.

The external skirt projects around the distal segment, up to the distal end of the screw, protecting the screw during storage of the refill, and facilitating the insertion of the refill into the ratchet mechanism during use.

According to other embodiments:

- the attachment head is separate from the chamber and is mounted on the chamber;
- the attachment head is provided with ridges to immobilize the attachment head axially and radially relative to the chamber, the ridges being capable of entering radial locking notches provided in the chamber.

The invention also relates to an assembly including a refill as defined above and an assembly/disassembly cover of the refill in the dispensing mechanism, the assembly/disassembly cover being removably engaged around the refill applicator.

The presence of a temporary assembly cover facilitates the introduction of the refill into the mechanism, and subsequently, the replacement thereof.

The invention also relates to a ratchet dispensing mechanism, intended to removably receive a refill containing a cosmetic product, the refill including a cosmetic product dispensing actuation screw, and a coupling assembly to the dispensing mechanism, the dispensing mechanism comprising:

- an external cap delimiting an internal volume for introducing the refill;
- a ratchet actuation assembly including:

- *an actuation button movably mounted in translation relative to the external cap, capable of being actuated by a user according to a back and forth movement;

- * a ratchet, capable of moving in conjunction with the actuation button;

- * a ratchet wheel, cooperating with the ratchet to always be rotated in the same direction during a back and forth translation movement of the ratchet, the ratchet wheel delimiting an internal opening for receiving the actuation screw containing at least one member for rotating the actuation screw;

- *a distal elastic member for actuating the ratchet and the actuation button; the dispensing mechanism further including:

- a complementary coupling assembly of the refill, capable of cooperating with the coupling assembly when the refill is received in the dispensing mechanism.

The mechanism is intended to be used several times with successive refills, while ensuring reliable operation and simplified product dispensing for the user. It includes most of the parts required for this dispensing.

According to alternative embodiments:

- the or each member for rotating the actuation screw is a fin for engaging the actuation screw, capable of cooperating with at least one flat area of the actuation screw to rotate the actuation screw.

- the or each fin is beveled at the proximal end thereof.

The presence of a central passage provided with fins, enables effective engagement of the screw, for reliable rotation when the mechanism is actuated. The presence of chamfered fins also simplifies this introduction.

The invention also relates to a kit intended to be assembled to form a cosmetic product packaging and dispensing device, including a dispensing mechanism as defined above and at least one refill as defined above, intended to be removably mounted in the dispensing mechanism, the refill coupling assembly being intended to be engaged in the complementary coupling assembly of the dispensing mechanism, the actuation screw being intended to be inserted into the internal receiving opening defined by the ratchet wheel, the kit advantageously including at least one additional

refill as defined above intended to be removably mounted in the dispensing mechanism, in replacement of the refill.

Such a kit therefore has a particularly lower environmental impact, while offering the possibility of readily assembling a cosmetic product packaging and dispensing device, wherein the procedure is sought by the user.

The invention will be easier to understand after reading the following description, provided solely as an example and with reference to the appended drawings, wherein:

- [Fig 1] figure 1 is a cross-section along a median axial plane of a cosmetic product packaging and dispensing device according to the invention;

- [Fig 2] figure 2 is a view equivalent to that in figure 1 of a dispensing mechanism of the device in figure 1;

- [Fig 3] figure 3 is a view equivalent to that in figure 1 of a cosmetic product refill intended to be introduced into the mechanism in figure 2;

- [Fig 4] figure 4 is a view of the relevant parts of the device in figure 1, once the refill has been inserted into the mechanism;

- [Fig 5] figure 5 is an end view of figure 4;

- [Fig 6] figure 6 is a perspective three-quarters front view of an assembly/disassembly cover of the refill in figure 3;

- [Fig 7] figure 7 is a side view of the cover in figure 6;

- [Fig 8] figure 8 is a view of the end of the applicator present on the refill in figure 3; and

- [Fig 9] figure 9 is a view of a kit comprising a refill and a mechanism, with an assembly/disassembly cover assembled on the refill, during the positioning of the refill.

Hereinafter, the term "proximal" is generally understood as located relatively closer to the application point of the cosmetic product on the body surface and the term "distal" is generally understood as located relatively farther from this application point.

A first cosmetic product packaging and dispensing device 10 is illustrated in figure 1. The device 10 generally extends along a longitudinal axis A-A', between a proximal product application end (on the left in figure 1) and a distal product dispensing actuation end (on the right in figure 1).

The device 10 includes a ratchet dispensing mechanism 12 intended to be retained for a plurality of uses of the device 10, and a removable refill 14, intended to be introduced into the mechanism 12 to form the device 10.

The packaging and dispensing device 10 further includes an external finishing band 16 housing the dispensing mechanism 12 and a closing cover 18 intended to seal the refill 14 temporarily.

The refill 14 is replaceable when the cosmetic product contained therein is used up or to enable the user to modify the cosmetic product delivered by the device 10.

With reference to figure 3, the refill 14 includes a chamber 20 containing cosmetic product, an applicator 22, mounted at a proximal end of the chamber 20, and a piston 24 disposed distally in the chamber 20 to push the cosmetic product toward the applicator 22.

The refill 14 further includes an actuation screw 26 of the piston 24, intended to cooperate with the dispensing mechanism 12 and an attachment head 28 in the mechanism 12, which closes the chamber 20 at the distal end thereof.

In this example, the refill 14 further includes an external distal skirt 29 for protecting the actuation screw 26 and for guiding the introduction of the refill 14 into the dispensing mechanism 12.

The chamber 20 is delimited externally by a cylindrical wall 30 of longitudinal axis A-A'.

At the proximal end thereof, the cylindrical wall 30 includes a neck 32 for mounting the applicator 22. It opens into the external skirt 29 at the distal end thereof.

In the vicinity of the distal end of the chamber 20, the cylindrical wall 30 defines notches 34 for locking the attachment head 28. The notches 34 traverse the cylindrical wall 30 herein.

The chamber 20 delimits an internal volume 36 containing a cosmetic product intended to be dispensed by the device 10. The volume of cosmetic product contained in the chamber 20 is for example less than 15 mL, and particularly between 1 mL and 5 mL.

The applicator 22 is mounted at the distal end of the chamber 20, in fluidic connection with the chamber 20. In this example, it includes a tuft 38 of bristles, and a tuft holder 40 gripping the tuft 38 at the end of the chamber 20.

In this example, the applicator 22 further includes a diffuser 42 inserted through the tuft holder 40 and the tuft 38, to guide the cosmetic product contained in the chamber 20 toward the end of the tuft 38.

Advantageously, the tuft 38 tapers in the proximal direction to the free end thereof. It is intended to be impregnated with cosmetic product, with a view to the application of cosmetic product on the user's body surface.

As illustrated in figure 8, the tuft holder 40 includes a cylindrical base 46, a collar 48 for locking in the reception neck 32 and a substantially truncated cap 50 intended to be engaged around the tuft 38.

The cylindrical base 46 is provided externally with gadroons 52 for clamping the tuft holder 40 in the reception neck 32. It defines an internal passage receiving the diffuser 42.

The collar 48 is intended to bear on the proximal edge of the reception neck 32. It defines a planar transverse surface 54 of circular outer contour, from which the cap 50 projects.

The cap 50 defines an internal opening 56 for inserting the tuft 38 and an outer peripheral surface 58 of deformed truncated shape, extended transversely relative to the longitudinal axis A-A'.

The outer surface 58 has, in a section in a transverse plane to the longitudinal axis A-A', at the base thereof on the collar 48, an elliptical contour C1 inscribed in the external contour C2 of the collar 48. It also has an elliptical contour C3 at the level of the free edge 60 thereof.

The ratio between the length LGA of a major axis of the ellipse forming the elliptical contour at the base on the annular collar 48, over the length LPA of the minor axis of the same ellipse is advantageously greater than 1.2 and particularly between 1.1 and 2.

Similarly, in a median axial plane P1 through the longitudinal axis A-A' and through the major axis of the ellipse, the outer surface 58 has a half-angle at the top point S greater than 12° and particularly between 10° and 20°.

These dimensions enable the rotation of the applicator 22 and the refill 14 by an assembly/disassembly cover 70, represented in figures 6 and 7, and which will be described in detail hereinafter.

Furthermore, these specific dimensions of ratio of the lengths LGA of the major axis and LPA of the minor axis, and of half-angle at the top point S of the external surface 58 offer good gripping of the assembly/disassembly cover 70 during the rotation thereof, easy clipping of this cover 70, while avoiding crushing the bristles of the tuft 38 when the tuft 38 is introduced into the cover 70.

Also, as will be described hereinafter, when the refill 14 is placed at a stop in the dispensing mechanism 12, this shape can cause the ejection of the assembly/disassembly cover 70 by proximal movement away from the applicator 22, during a rotation of the assembly/disassembly cover 70 about the longitudinal axis A-A'.

With reference to figure 3, the piston 24 includes a scraper 72 having a peripheral wall 74 sealingly applied on the cylindrical wall 30 of the chamber 20. Thus, the cosmetic product is confined in the internal volume 36, between the piston 24 and the applicator 22, without any risk of distal leakage.

5 The piston 24 can be moved in translation along the longitudinal axis A-A' in the chamber 20, under the action of the actuation screw 26, driven by the dispensing mechanism 12, from a distal position, represented in figure 3, away from the applicator 22, to a proximal position (not shown) close to the applicator 22.

10 In this example, the piston 24 defines a central pouch 76 equipped with a radial locking relief 78, intended to receive the actuation screw 26.

The actuation screw 26 includes a threaded rod 80, a proximal rod 82 intended to be inserted into the piston 24 and an unthreaded distal end 84 intended to guide the screw 26 in the dispensing mechanism 12.

15 The threaded rod 80 extends longitudinally along the axis A-A'. It is provided with a threading 86 extending angularly about the axis A-A' on opposite parts of the periphery thereof. It has, between the threaded parts, two parallel flat areas 87, intended for the gripping of the actuation screw 26 by the mechanism 12, to enable the rotation of the actuation screw 26 about the longitudinal axis A-A'.

20 The proximal head 82 has an annular housing 88 intended to receive the annular relief 78 of the central pouch 76.

Once the annular relief 78 has been engaged in the annular housing 88, the screw 26 and the piston 24 can be moved relative to one another in rotation about the longitudinal axis A-A'. Thus, the screw 26 is capable of being rotated about the axis A-A', without rotating the piston 24.

25 Furthermore, the annular housing 88 and the annular relief 78 of the pouch 76 allow longitudinal play along the axis A-A' of the piston 24 relative to the actuation screw 26 along a limited axial stroke along the axis A-A'.

This axial stroke is less than the length of the piston 24, measured along the axis A-A'. It is particularly less than 1 mm.

30 The axial stroke between the piston 24 and the screw 26 prevents the cosmetic product from entering the applicator 22, when the applicator 22 is mounted on the chamber 20, allowing the cosmetic product to move back. Thus, the tuft 38 remains devoid of cosmetic product, before the first use thereof.

35 The distal end 84 is rounded, to facilitate the insertion of the threaded rod 80 in the dispensing mechanism 12.

With reference to figure 5, the attachment head 28 includes a bowl 90 opening distally and having a transverse bottom wall 92 and a cylindrical peripheral wall 94 about the axis A-A'.

The bowl 90 defines, in its bottom wall 92, a central opening 96 for inserting the screw 26. As seen in figure 4, the attachment head 28 includes a coupling assembly to the mechanism 12, comprising herein an internal skirt 98 projecting distally from the bottom wall 92 into the peripheral wall 94.

With reference to figure 5, the peripheral wall 94 delimits longitudinal recesses 100 defining pairwise attachment tabs 102 of the head 28.

The tabs 102 are provided with ridges 104, projecting radially away from the axis A-A'. The ridges 104 are capable of entering the radial locking notches 34 to immobilize the attachment head 28 axially and radially relative to the chamber 20.

With reference to figure 4, the internal skirt 98 delimits a central passage 120 of axis A-A' opening up into the opening 96 and receiving the threaded rod 80 of the actuation screw 26.

The central passage 120 comprises an internal threading 122, intended to cooperate with the threading 86 of the threaded rod 80, to enable the progress of the actuation screw 26 by screwing.

The internal skirt 98 is provided with a coupling member 124 to the dispensing mechanism 12, formed herein by an external threading.

The protective external skirt 29 extends in the axial prolongation of the cylindrical wall 30 forming the chamber 20.

In this example, it is formed of one piece from the same material with the cylindrical wall 30. The skirt 29 has a length adapted to completely contain the screw 26 along the entire stroke of the piston 24 between the distal position and the proximal position. Thus, the screw 26 is protected when the refill 14 is stored, and is guided advantageously in the dispensing mechanism 12 by means of the skirt 29.

With reference to figure 2, the dispensing mechanism 12 includes a cylindrical external cap 130, and a ratchet actuation assembly 132, housed in the cap 130.

The cap 130 extends along the longitudinal axis A-A'. It defines internally a volume 134 for receiving the refill 14, which opens axially at the ends of the cap 130.

It defines, in the vicinity of the distal end thereof, a bracing edge 136 of the mechanism, projecting radially toward the axis A-A'.

The ratchet actuation assembly 132 is capable of always rotating the actuation screw 26 in the same direction about the longitudinal axis A-A', by a back and forth

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movement of an actuation button 150 that can move in translation along the longitudinal axis A-A'.

The ratchet actuation assembly 132 includes a support sleeve 138. The sleeve 138 defines, at the proximal end thereof, a complementary coupling assembly 140 intended to cooperate with the coupling assembly 98 of the refill 14.

The support sleeve 138 is braced axially in the cap 130, bearing on the bracing edge 136. It includes, in the vicinity of the proximal end thereof, a shoulder 142 for supporting the complementary coupling assembly 140. It also includes a locking stop 144.

Besides the actuation button 150, the ratchet actuation assembly 132 includes a ratchet 152 that can be moved in conjunction with the actuation button 150 along the axis A-A', a ratchet support 154 defining internally inclined rotation stops 156, and a ratchet wheel 158, capable of always being rotated in the same direction by cooperation with the actuation stops 156, during a back and forth movement of the ratchet 152, triggered by the actuation button 150.

The ratchet actuation assembly 132 further includes an elastic member 160 for actuating the ratchet wheel 158, the ratchet 152 and the actuation button 150 toward a distal idle configuration.

The actuation button 150 projects partially out of the external cap 130 at the distal end of the external cap 130. It is capable of being pushed by the user, against the elastic actuation generated by the elastic actuation member 160, to enable the rotation of the ratchet wheel 158.

The ratchet 152 is housed partially in the ratchet support 154. It can be moved in translation along the axis A-A' in conjunction with the actuation button 160.

It has tabs 162 bearing on the ratchet wheel 158.

The ratchet support 154 is axially braced in the support sleeve 138 by means of intermediate stops 144. It remains fixed in translation during the rotation of the ratchet wheel 158 and during the translation of the ratchet 152.

In a known manner, during a first back and forth movement of the actuation button 150 and the ratchet 152, the ratchet wheel 158 moves in translation in conjunction with the ratchet 152. During this movement, the ratchet wheel 158 is rotated in a first direction about the axis A-A' by cooperation with inclined actuation stops 136.

Then, during each successive back and forth movement of the actuation button 150, the rotation of the ratchet wheel 158 about the axis A-A' in the same first direction continues, again by cooperation with the inclined actuation stops 136.

The ratchet wheel 158 defines an internal axial opening 164 wherein the screw 26 is inserted.

It includes radial fins 166, projecting radially into the internal opening 164 to cooperate with the flat areas 87 of the screw.

5 To facilitate the introduction of the screw 26 into the internal opening 164, the fins 166 are beveled at the proximal end thereof, providing guidance of the distal end 184 of the screw 26 during the introduction thereof into the mechanism 12.

10 The elastic actuation member 160 is formed herein by a helical spring bearing, on one hand, on the bracing shoulder 152, and, on the other, on the ratchet wheel 158, to push distally in translation along the axis A-A' the ratchet wheel 158, the ratchet 152 and the actuation button 150.

The complementary coupling assembly 140 includes a cylindrical wall 170 projecting distally into the support sleeve 138 from the support shoulder 152.

15 The cylindrical wall 170 is provided internally with a complementary coupling member 172, herein formed by a threading, intended to cooperate with the coupling member 124 of the refill 14.

With reference to figures 6 and 7, the assembly/disassembly cover 70 of the refill 14 has in this example a general ogive shape truncated at the end thereof.

20 It includes an open distal region 180 for engaging on the applicator 22, delimiting an internal cavity 182 for inserting the applicator 22. It further includes a proximal gripping region 184 intended to be gripped by a user's fingers to rotate the assembly/disassembly cover 70.

25 The open distal region 180 opens at the distal end thereof. It has a cylindrical distal part 186, and convergent proximal part 188, in the shape of the dome which closes the cavity 182.

The open distal region 180 includes internally, in the cavity 182, a plurality of internal fins 190, projecting toward the axis A-A'. Each internal fin 190 has a free edge 192.

30 The free edges 192 of the fins 190 define jointly an internal cooperation surface with the external surface 58 of the tuft holder 40, of conjugate shape to the external surface 58 of the tuft holder 40.

The fins 190 delimit therebetween intermediate longitudinal spaces 194 for accommodating the bristles of the tuft 38 during the positioning of the assembly/disassembly cover 70 on the applicator 22.

Thus, the assembly/disassembly cover 70 is capable of being readily mounted on the applicator 22, to cooperate in a complementary manner with the tuft holder 40, minimizing the risk of damaging the tuft 38.

Advantageously, the open distal region 180 is furthermore provided, in the cavity 182, with bullets 196 for locking the assembly/disassembly cover 70 in translation along the longitudinal axis A-A' relative to the reception neck 32 of the applicator 22.

The proximal gripping region 184 includes at least one gripping wing 200, preferably at least three gripping wings 200 projecting radially away from the longitudinal axis A-A'.

In this example, the distal region includes four gripping wings 200 distributed angularly about the axis A-A'.

The adjacent wings 200 delimit therebetween longitudinal hollows 202 intended to receive a user's fingers.

The assembly and operation of a first cosmetic product packaging and dispensing device 10 according to the invention will now be described with reference to figure 9. The device 10 is formed from a kit 210 including a refill 14, a dispensing mechanism 12, and optionally a package containing the refill 14 and the dispensing mechanism 12.

Initially, a loading assembly 212 including a refill 14 provided with an applicator 22 and an assembly/disassembly cover 70, mounted on the applicator 22 is provided. A dispensing mechanism 12, preferably housed in an external covering band 16 is also provided separately from the loading assembly 212.

In the loading assembly 212, the applicator 22 is received in the internal cavity 182 delimited by the open distal region 180.

The cylindrical part 186 is engaged around the reception neck 32, with the bullet 196 limiting the movement in translation along the axis A-A' of the assembly/disassembly cover 70 relative to the refill 14.

The free edges 192 of the internal fins 190 delimiting an internal surface 193 of conjugate shape to the external surface 58 of the tuft holder 40, the assembly/disassembly cover 70 is engaged in an integral manner around the tuft holder 40.

In view of the deformation of the external surface 58 which has a quasi-elliptical shape at the base thereof, engaging the internal surface 193 on the external surface 58 prevents or significantly restricts the relative rotation between the cover 70 and the applicator 22.

As illustrated in figure 9, the user grips the proximal gripping region 184, advantageously by inserting their fingers into the longitudinal hollows 202 defined between the gripping wings 200. The cross shape of the gripping wings 200 facilitates gripping by the user, and enables the application of a rotational torque by the user.

5 Then, the user grips the dispensing mechanism 12 provided with the covering band 16 with another hand. They then introduce the refill 14 via the distal end to the proximal end of the external cap 130.

10 The guide skirt 29 having a substantially complementary shape to that of the internal volume 134 of the external cap 130, the refill 14 is aligned longitudinally with the dispensing mechanism 12 along the axis A-A'.

Then, the user moves the refill 14 in translation in the internal volume 134 along the axis A-A'.

15 During this movement, the threaded rod 80 of the actuation screw 26 reaches the ratchet actuation assembly 132 and traverses the complementary coupling assembly 140. It then enters, via the unthreaded distal end 84 thereof, into the internal opening 164 of the ratchet wheel 158, advantageously guided by the bevels formed at the proximal ends of the fins 166.

The fins 166 then come into contact with the opposite flat areas 87 to be engaged around the screw 26.

20 The distal movement of the refill 14 continues until the coupling assembly 98 comes into contact with the complementary coupling assembly 140.

25 The coupling member 124 formed by the external threading about the coupling member 98 of the refill 14 is engaged in the complementary coupling member 172 of the mechanism 12, formed by a complementary internal threading in the cylindrical wall 170.

The user then rotates the refill 14 about the axis A-A' to attach same in the dispensing mechanism 12, by screwing the coupling member 124 in the complementary coupling member 172.

30 Given the specific shapes of the external surface 85 of the tuft holder 40 and the conjugate shape of the internal surface 193 of the assembly/disassembly cover 70, the screwing by means of the gripping wings 200 is rendered easy by the user.

35 When screwing is completed, if the user continues to rotate the assembly/disassembly cover 70 about the axis A-A', the specific shape of the external surface 85 induces the ejection of the assembly/disassembly cover 70 away from the applicator 22. The user can then place a closing cover 18 around the applicator 22.

When seeking to use the device 10 to dispense cosmetic product, the user releases the closing cover 18. They then exert back and forth movements on the actuation button 150 which are transmitted to the ratchet 152, and to the ratchet wheel 158.

5 Under the effect of the cooperation between the ratchet wheel 158 and the actuation stops 156, the ratchet wheel 158 rotates about the axis A-A' always in the same direction, regardless of the direction of movement in translation of the actuation button 150 and the ratchet 152.

10 The rotation of the ratchet wheel 158 rotates the screw 26 about the longitudinal axis A-A', by cooperation between the fins 166 and the flat areas 87.

The external threading 86 of the threaded rod 80 being engaged in the internal threading 122 of the attachment head 28, the screw 26 moves toward the applicator 22.

15 The rotational movement of the screw 26 about the longitudinal axis A-A' is not transmitted to the piston 24, since the latter is rotatably mounted around the proximal head 82.

20 However, the movement in longitudinal translation of the screw 26 toward the applicator 22 moves the piston 24 progressively from the distal position thereof to the proximal position thereof. This movement induces the ejection of cosmetic product from the internal volume 36 of the chamber 20 toward the applicator 22, advantageously through the diffuser 42, to the tuft 38.

25 The number of back and forth movements of the actuation button 150 is controlled by the user, inducing a restricted movement of the piston 24 at each back and forth movement, and therefore, the ejection of a quantity of cosmetic product dosed by the user.

When the user wishes to change cosmetic product, or when the cosmetic product present in the chamber 20 is used up, the user can then replace the refill 14.

30 For this purpose, they engage the assembly/disassembly cover 70 once again around the applicator 22. Then, they unscrew the refill 14, triggering the unscrewing of the complementary coupling member 172 relative to the coupling member 124, to release the complementary coupling assembly 140 from the coupling assembly 98.

Then, the user removes the refill 14 by moving it in translation along the longitudinal axis A-A' out of the internal cap 130. Then, the user inserts a new refill 14, as described above.

The device 10 according to the invention is therefore particularly simple to use, and offers very precise application of a dose of cosmetic product selected by the user, with a simple procedure and adapted dimensions.

5 However, the device 10 remains readily refillable, by means of disposable refills 14, which include the only elements required for dispensing the cosmetic product in a biologically safe manner, namely the applicator 22, the chamber 20, the piston 24 and the screw 26.

10 All the other elements are part of the dispensing mechanism 12 which is retained by the user. Thus, the environmental impact of the device 10 according to the invention is greatly reduced, without for all that modifying the dimensions of the device 10, or the operating procedure.

Moreover, the introduction or removal of the refill 14 in the mechanism 12 is very simple, and is facilitated by the use of the assembly/disassembly cover 70 which is ergonomic and offers maximum use, while offering effective coupling, without
15 impeding the hold of the applicator.

16
CLAIMS

1. Cosmetic product refill (14), intended to be removably mounted in a ratchet dispensing mechanism (12), the refill (14) comprising:

5 - a chamber (20) intended to contain the cosmetic product, the chamber (20) extending along a longitudinal axis (A-A'),

characterized by:

 - an applicator (22), mounted at a proximal end of the chamber (20) to receive cosmetic product contained in the chamber (20);

10 - an attachment head (28) in the dispensing mechanism (12), mounted at a distal end of the chamber (20), the attachment head (28) including at least one coupling assembly (98) with the dispensing mechanism (12);

 - a piston (24) slidably mounted in the chamber (20) to push the cosmetic product toward the applicator (22);

15 - a piston (24) actuation screw (26), traversing the attachment head (28), the actuation screw (26) having a proximal end connected to the piston (24) and a threaded distal end (80) projecting longitudinally out of the chamber (20) to be introduced into the dispensing mechanism (12).

20 2. Refill (14) according to claim 1, wherein the piston (24) is rotatably mounted at the proximal end of the actuation screw (26).

 3. Refill (14) according to any one of claims 1 or 2, wherein the piston (24) is mounted free to move in translation relative to the proximal end of the actuation screw (26) along a limited stroke relative to the actuation screw (26).

 4. Refill (14) according to any one of the preceding claims, wherein the actuation screw (26) includes at least one lateral flat area (87) extending longitudinally along the threaded rod (80).

30 5. Refill (14) according to any one of the preceding claims, wherein the actuation screw (26) includes a rounded distal end.

 6. Refill (14) according to any one of the preceding claims, wherein the coupling assembly (98) includes an internal skirt having at least one coupling member (124) external to the dispensing mechanism (12), in particular an external threading.

5 **7.** Refill (14) according to claim 6, wherein the internal skirt delimits a central circulation passage (120) of the actuation screw (26), the central passage (120) comprising an internal threading engaged on the threaded rod (80) of the actuation screw (26).

10 **8.** Refill (14) according to any one of the preceding claims, wherein the applicator (22) includes a tuft (38), and a tuft holder (40), mounted at the proximal end of the chamber (20).

15 **9.** Refill (14) according to any one of the preceding claims, including an external skirt (19) for protecting the actuation screw (26), and for guiding the insertion of the refill (14) into the dispensing mechanism (12), the external skirt (19) projecting around the threaded skirt (80), up to the distal end of the actuation screw (26).

20 **10.** Loading assembly (212) including a refill (14) according to any one of claims 1 to 9 and an assembly/disassembly cover (70) of the refill (14) in the dispensing mechanism (12), the assembly/disassembly cover (70) being removably engaged around the refill (14) applicator (22).

25 **11.** Ratchet dispensing mechanism (12), intended to removably receive a refill (14) containing cosmetic product, the refill (14) including a cosmetic product dispensing actuation screw (26), and a coupling assembly (98) to the dispensing mechanism (12), the dispensing mechanism (12) comprising:

30 - an external cap (130) delimiting an internal volume (134) for introducing the refill (14);

 - a ratchet actuation assembly (132) including:

 * an actuation button (130) movably mounted in translation relative to the external cap (130), capable of being actuated by a user according to a back and forth movement;

 * a ratchet (152), capable of moving in conjunction with the actuation button (130);

35 * a ratchet wheel (158), cooperating with the ratchet (152) to always be rotated in the same direction during a back and forth translation movement of the ratchet (152), the ratchet wheel (158) delimiting an internal opening (164) for receiving the actuation screw (26) containing at least one member for rotating the actuation screw (26);

18

* a distal elastic member (160) for actuating the ratchet (152) and the actuation button (150); the dispensing mechanism (12) further including:

- a complementary coupling assembly (140) of the refill (14), capable of cooperating with the coupling assembly (98) when the refill (14) is received in the dispensing mechanism (12).

12. Dispensing mechanism (12) according to claim 11, wherein the or each member for rotating the actuation screw (26) is a fin (166) for engaging the actuation screw (26), capable of cooperating with at least one flat area (87) of the actuation screw (26) to rotate the actuation screw (26).

13. Dispensing mechanism (12) according to claim 12, wherein the or each fin (166) is beveled at the proximal end thereof.

14. Kit (210) intended to be assembled to form a cosmetic product packaging and dispensing device (10), including a dispensing mechanism (12) according to any one of claims 11 to 13 and at least one refill (14) according to any one of claims 1 to 9, intended to be removably mounted in the dispensing mechanism (12), the refill (14) coupling assembly (98) being intended to be engaged in the complementary coupling assembly (140) of the dispensing mechanism (12), the actuation screw (26) being intended to be inserted into the internal receiving opening (164) defined by the ratchet wheel (158), the kit (210) advantageously including at least one additional refill (14) according to any one of claims 1 to 9 intended to be removably mounted in the dispensing mechanism (12), in replacement of the refill (14).

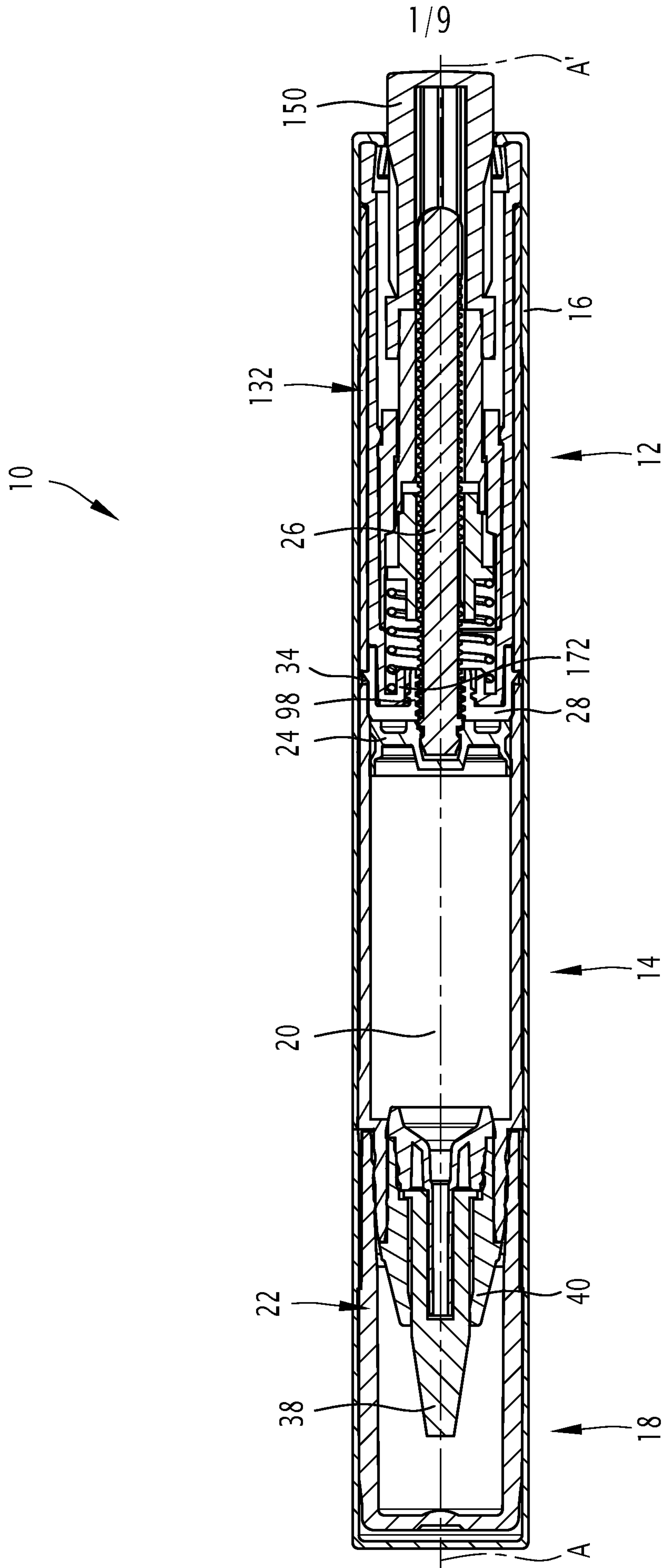


FIG.1

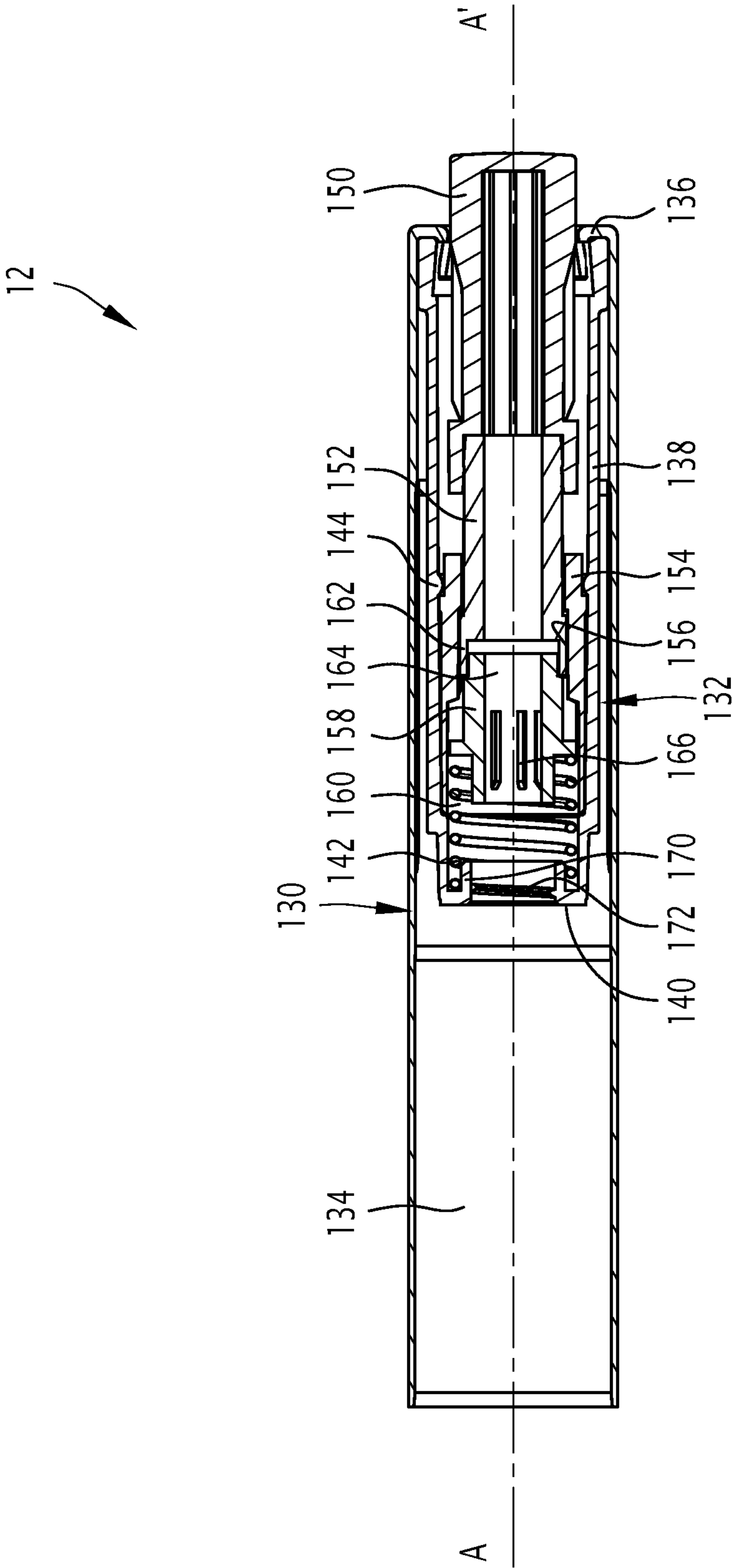


FIG. 2

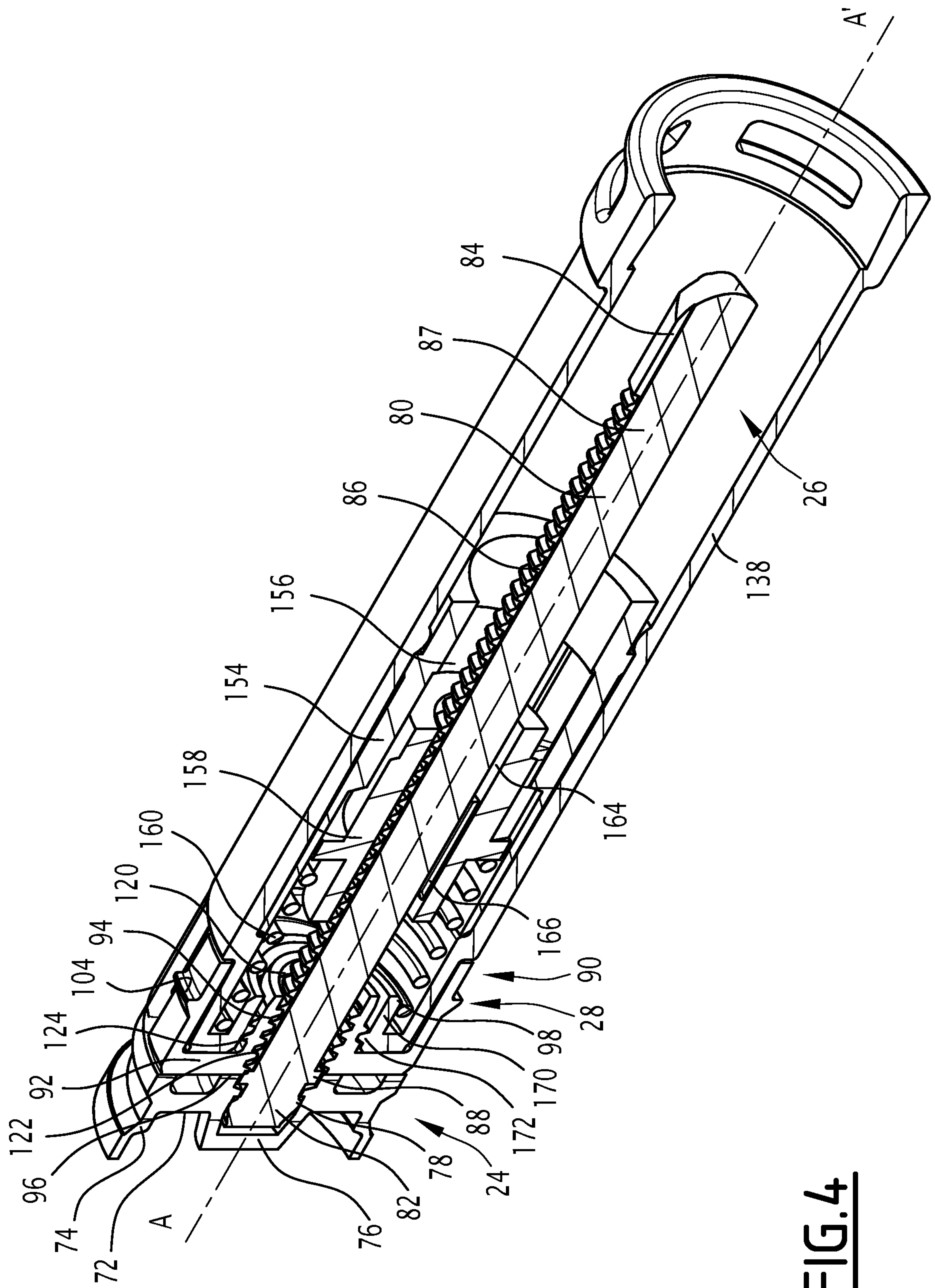


FIG. 4

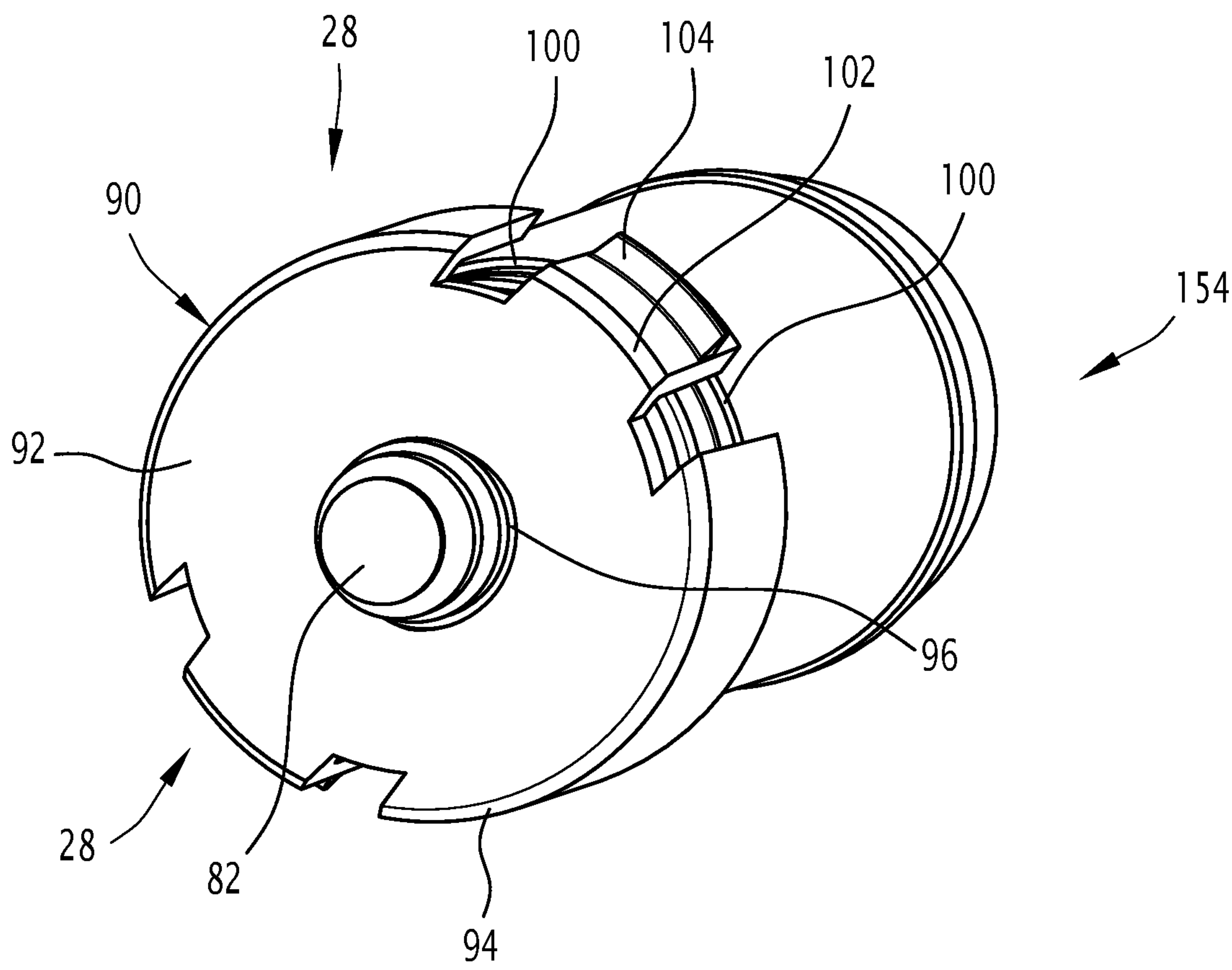


FIG.5

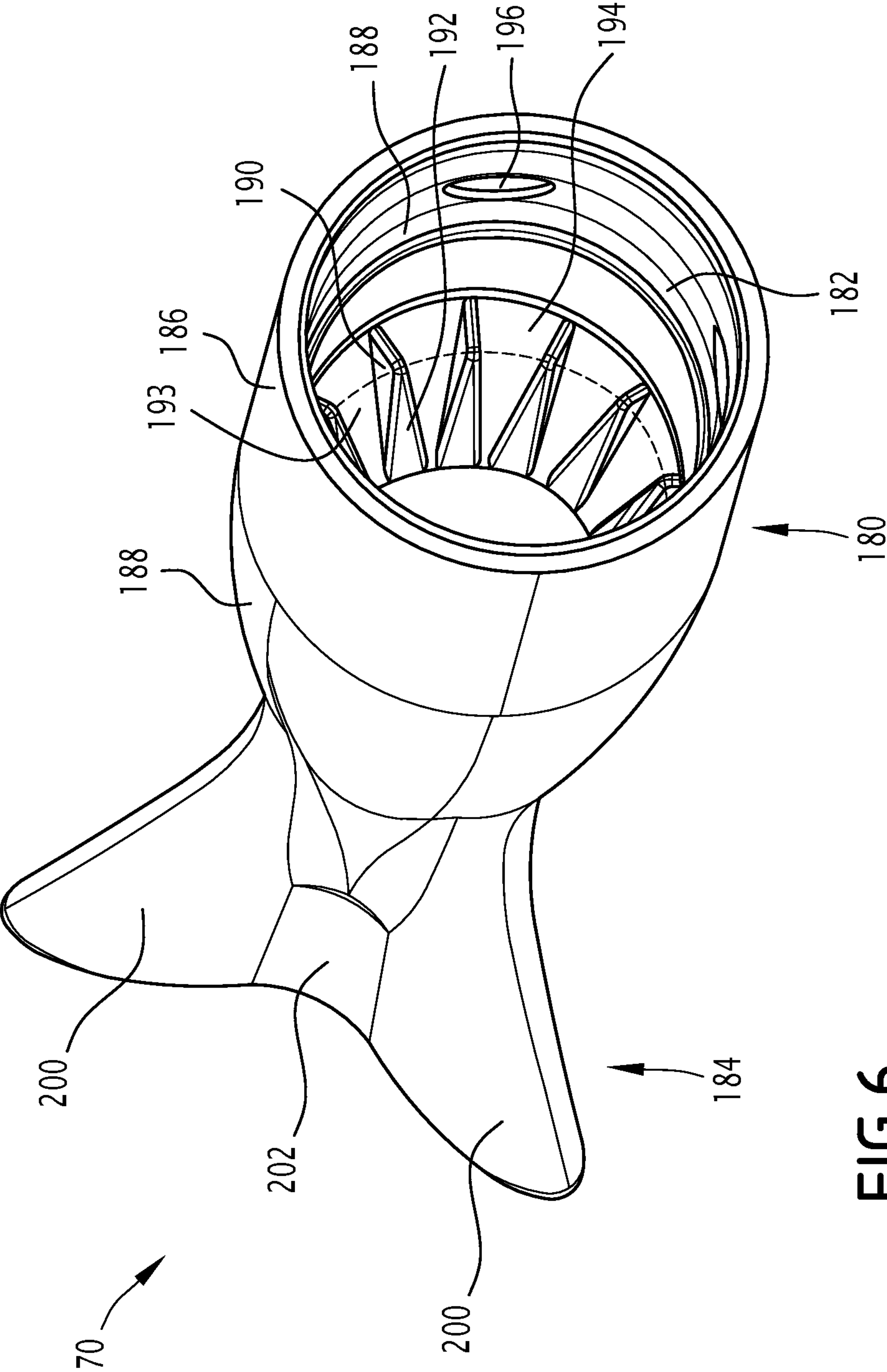


FIG. 6

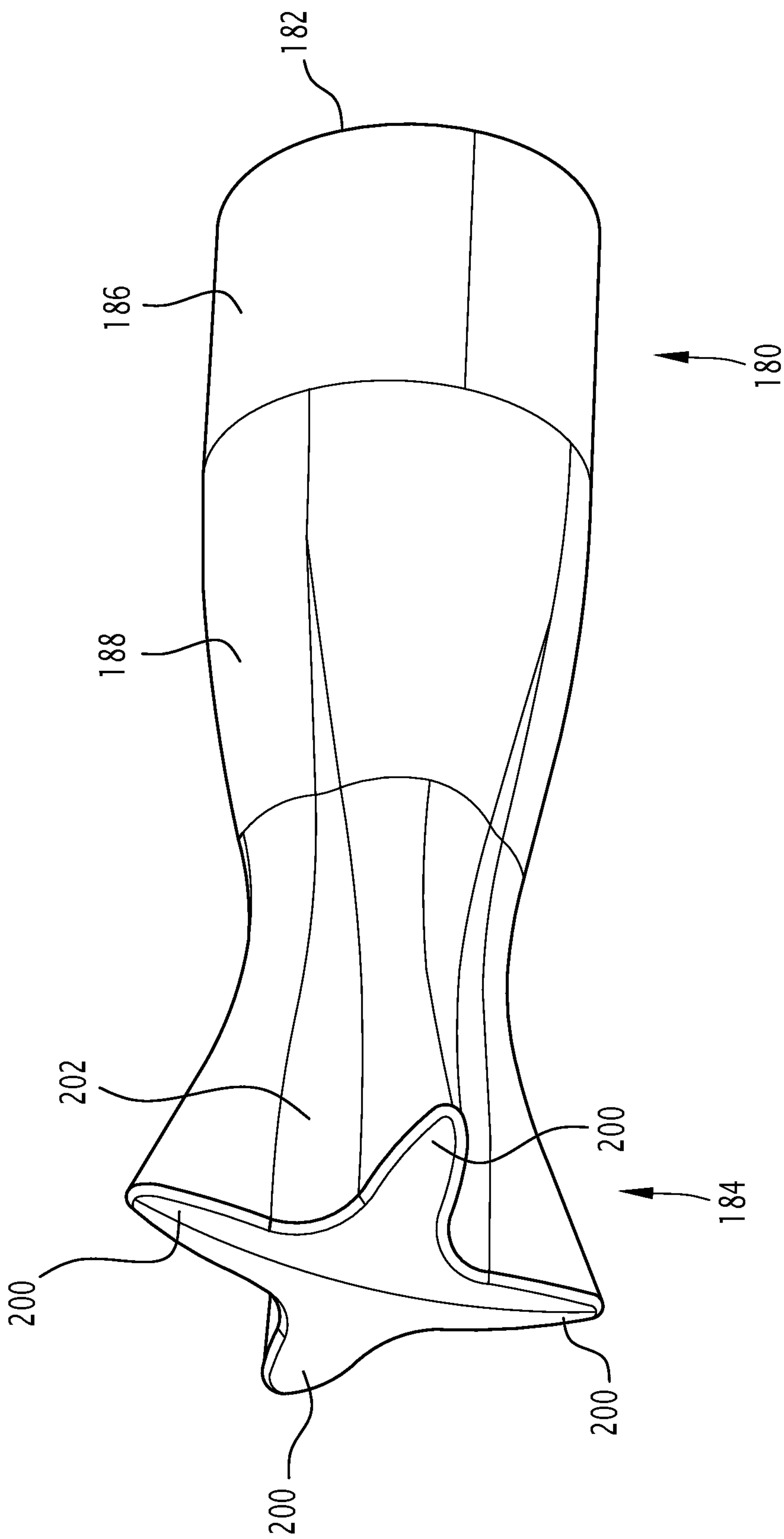


FIG. 7

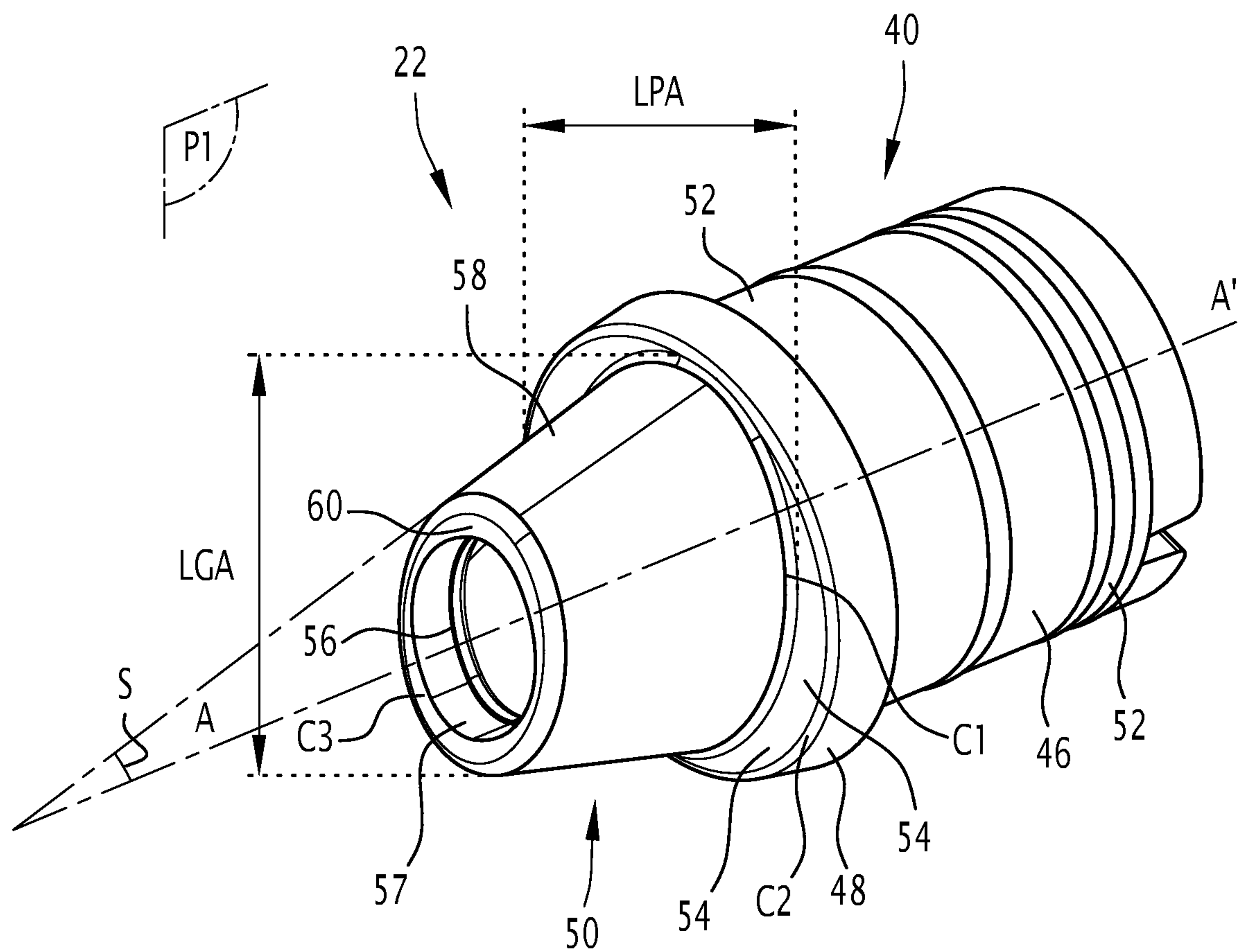


FIG.8

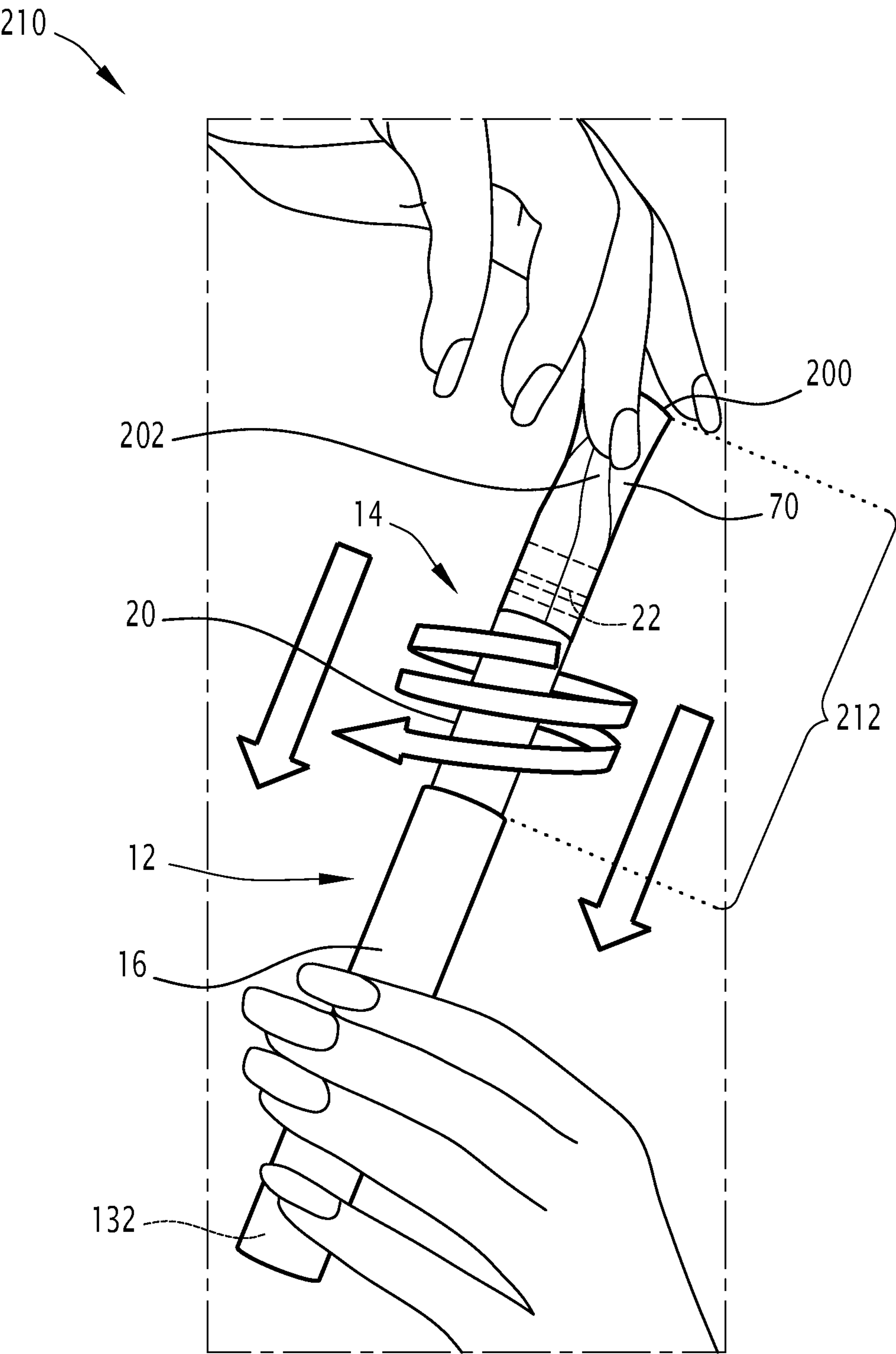


FIG.9

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/085922A. CLASSIFICATION OF SUBJECT MATTER
INV. A45D34/00 A45D34/04
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)
A45D B65D

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

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 588 733 A1 (OREAL [FR]) 24 April 1987 (1987-04-24) abstract page 3, line 31 - page 7, line 21 figures -----	1-14



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

1 February 2021

Date of mailing of the international search report

09/02/2021

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Zetzsche, Brigitta

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2020/085922

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2588733	A1	24-04-1987	NONE
