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APPLIKATORVORRICHTUNG

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## Description

**[0001]** The invention concerns an applicator device comprising  
a casing,  
a storage means for a product to be applied,  
an application means comprising a ball held rotatably in a ball holder,  
a sealing means which is displaceable along a predetermined path between a first position with respect to the casing in which it bears sealingly against the ball and a second position with respect to the casing in which it releases the ball for application of the product, and  
an increased pressure-producing means for producing an increased pressure in the storage means, wherein the sealing means is coupled in a predetermined portion of the path to the increased pressure-producing means.

**[0002]** Applicator devices of the above-indicated kind are known, for example from EP 1 445 121 A1.

**[0003]** As the sealing means in the above-mentioned first position bears sealingly against the ball, it urges the ball into the ball holder in such a way that a gap is produced between the ball holder and the ball, through which gap the product to be applied can issue as soon as an increased pressure obtains in the storage means. As, in the known applicator devices, the predetermined portion of the path of the sealing means from the first position into the second position, that is to say that portion of the path in which the sealing means is coupled to the increased pressure-producing means, directly adjoins the first position, an increased pressure is produced in the storage means while the ball is still being urged into the ball holder by the sealing means, for which reason there is the risk of the product escaping.

**[0004]** The object of the present invention is to develop the applicator device of the kind set forth in the opening part of this specification, in such a way that the risk of the product which is to be applied running out is reduced.

**[0005]** According to the invention in the applicator device of the kind set forth in the opening part of this specification that object is attained in that the sealing means is independent of the increased pressure-producing means in a first portion of the path which is delimited by the first position.

**[0006]** In other words that portion of the path of the sealing means from the first position into the second position, in which the sealing means is coupled to the increased pressure-producing means, does not directly adjoin the first position. Rather, coupling of the sealing means to the increased pressure-producing means takes place only in a later portion of that path of movement, and for that reason no increased pressure is produced in the storage means as long as the ball is still urged into the ball holder by the sealing means in such a way that a gap opens between the ball and the ball holder. Rather, the increase in the pressure in the storage means takes place only when the sealing means has left the ball and the above-indicated gap is closed. That re-

duces the risk of the product which is to be applied running out.

**[0007]** In accordance with a preferred embodiment of the invention there is provided a screwthread for displacing the sealing means with respect to the casing. That configuration is mechanically particularly simple to embody.

**[0008]** Additionally or alternatively it is also possible to provide a bayonet connection.

**[0009]** In a further preferred feature there is provided a coupling means for coupling the sealing means to the increased pressure-producing means in the predetermined portion of the path of movement. Such a coupling means more specifically permits uncoupling in said first portion of that path.

**[0010]** In that case the coupling means preferably has a first coupling element at the sealing means and a second coupling element at the increased pressure-producing means, which can be coupled together by way of a frictional engagement and/or by way of a positively locking engagement.

**[0011]** In that case the two coupling elements can be provided integrally at the sealing means and at the increased pressure-producing means respectively or can be in the form of a separate portion and connected to said components.

**[0012]** The coupling means can have a ring of teeth at the increased pressure-producing means and/or at the sealing means.

**[0013]** In other words that configuration operates essentially with a positively locking connection.

**[0014]** Both such a positively locking connection and also a frictional connection can be designed in such a way that overall the arrangement affords a slipping clutch, for example in order to limit the increased pressure produced in the storage means.

**[0015]** Particularly in the case of the ring of teeth, it can be provided in accordance with the invention that the coupling means has at least one tooth-like projection on the sealing means and/or the increased pressure-producing means.

**[0016]** The ring of teeth and/or the tooth-like projection is/are preferably provided on a sleeve-like projection which preferably has at least one longitudinal slot.

**[0017]** That design configuration is preferred in comparison with a design configuration for example with three rings of teeth because coupling engagement takes place more easily.

**[0018]** In accordance with a particularly preferred feature of the invention it is provided that the increased pressure-producing means is controllable in such a fashion as to afford a reduction in the pressure in the storage means.

**[0019]** That is advantageous in particular in regard to non-leak security.

**[0020]** In accordance with a further preferred embodiment of the invention it is provided that the increased pressure-producing means has a transmission means

with at least one female screwthread element and at least one male screwthread element, wherein the transmission means can assume at least two operating conditions, namely

a first operating condition in which the two screwthread elements mesh with each other to produce the increased pressure, and

a second operating condition in which they do not mesh with each other, thereby resulting in a reduction in the increased pressure.

**[0021]** In other words, in accordance with this preferred embodiment of the invention it is provided that two screwthread elements are coupled together to produce the increased pressure and are uncoupled to reduce the pressure in the storage means. That affords a solution which is particularly simple from the point of view of structure, inexpensive and easy to handle.

**[0022]** It can happen that a user of the applicator device forgets to reduce the pressure in the storage means after work has been done. In such a case, under some circumstances, the product which is to be applied can suffer damage in the storage means. In addition it is not possible to be sure that the product will not run out.

**[0023]** In accordance with a particularly preferred embodiment of the invention it is therefore provided that the applicator device can assume at least two operating conditions, namely a rest condition and a use condition, and has a means for reducing the pressure in the storage means, said pressure-reducing means being responsive to a movement of the applicator device from the use condition into the rest condition.

**[0024]** In other words, this configuration of the invention provides that the pressure in the storage means is automatically reduced as soon as the applicator device is moved into the rest condition, after its work has been done.

**[0025]** In that respect it can be provided that the applicator device is put into the rest condition by putting the sealing means into the first position with respect to the casing.

**[0026]** In other words, this configuration of the invention provides that putting the sealing means into the first position, that is to say into that position in which it bears sealingly against the ball, results in an automatic reduction in the pressure in the storage means.

**[0027]** The invention is described in greater detail hereinafter by means of a preferred embodiment in the form of pencils with reference to the accompanying drawing in which:

Figure 1 is a view in longitudinal section of a pencil according to a particularly preferred embodiment of the invention,

Figure 2 shows views of a plunger arrangement of the pencil of Figure 1,

Figure 3 shows views of a control pushrod of the pencil of Figure 1,

Figures 4 through 7 show diagrammatic views in sec-

tion relating to the co-operation of a cap with the pencil, and

Figures 8 and 9 show diagrammatic views in section of the front portion of the pencil with the cap.

**[0028]** Referring to Figure 1, the pencil has an external shaft 10 which serves as a casing and on to which a cap 12 is screwed in the operating position shown in Figure 1 (rest position). For that purpose there is a screwthread identified by reference numeral 14. The cap 12 has a seal 16 which sealingly embraces a tip 18 in the operating condition shown in Figure 1. At the free end of the tip a ball 20 is held in a ball holder 21 against which the seal 16 sealingly bears.

**[0029]** The tip 18 is enclosed by a cartridge sleeve 22 at its end portion remote from the ball 20. The cap 12 is rotationally coupled to the sleeve 22 in portion-wise manner in a fashion described in greater detail hereinafter.

**[0030]** The internal space of the sleeve 22 forms a storage means 24 for ink 26. Arranged on the side remote from the ball 20 in the storage means 24 is a closure mass 28 which serves for sealing off in relation to the ambient atmosphere. The rear boundary of the storage means 24 is formed by a plunger 30. The plunger 30 is disposed slidably within the storage means 24. As seen from the ball, a plunger holder 32 is disposed behind the plunger 30. A control pushrod 34 projects into the plunger holder. A spring 36 bears on the one hand against the control pushrod 34 and on the other hand against a closure cap 38.

**[0031]** As can be seen from Figure 2 the plunger 30 has a projection 40 which in the assembled condition engages into a window 42 in the plunger holder 32. At its end portion remote from the plunger 30 the plunger holder 32 has projections 44 and 46 which engage into corresponding recesses in the cartridge shaft 22, for rotational coupling purposes. Accordingly the plunger holder 32 is admittedly rotationally coupled to the cartridge shaft 32 but it is held axially slidably therein.

**[0032]** Also at its end portion remote from the plunger 30 the plunger holder 32 is provided in its interior with a substantially hemispherical female screwthread element 48 which serves for coupling - at times - to the control pushrod 34.

**[0033]** The control pushrod 34 is provided with male screwthread elements which are complementary to the female screwthread element 48 and of which one is identified by way of example by reference numeral 50. The male screwthread elements 50 correspond to segments of a helicoidal groove and respectively extend over an angle of somewhat more than 300°. They are interrupted by a longitudinal groove 52 which extends over an angle of about 27°.

**[0034]** At its end portion remote from the wall 20 the control pushrod 34 is provided with projections 54, 56, 58 and 60 which engage into corresponding recesses in the external shaft 10 for rotational coupling purposes. The control pushrod 34 is however axially slidable with

respect to the external shaft 10 between the closure cap 38 and an abutment 62. The function of the pencil illustrated in the drawing is as follows:

Figures 4 through 7 show various operating positions of the cap 12 with respect to the external shaft 10 serving as a casing.

**[0035]** As can be seen in particular from Figures 4 through 7, provided in the internal space of the cap 12 is a sleeve-shaped projection 66 which projects beyond the seal 16 and has at least one longitudinal slot 68. Provided on the inside of the projection 66 is a series of tooth-like projections of which one is identified by way of example by reference numeral 70.

**[0036]** The sleeve 22 carries a ring of teeth 72 which are matched to the tooth-like projections 70 on the projection 66.

**[0037]** As already mentioned above, Figure 1 shows the rest position of the pencil, that is to say that position in which the cap 12 is screwed on to the external shaft 10 serving as the casing, more specifically in such a way that the seal 16 bears sealingly against the ball 20. The same position (rest position) is also shown in Figure 4. When now the cap 12 is unscrewed from the external shaft 10, the cap moves towards the left in Figure 4. In a first portion 74 (Figure 4) of that path of movement the tooth-like projections 70 are not in engagement with the ring of teeth 72, for which reason the sleeve 22 is not also rotated by the cap 12. Rather, the tooth-like projections 70 only come into engagement with the ring of teeth 72 in a later portion 76 of the path of the cap 12 from the rest position into the operative position. In that position the seal 16 has already lifted off the ball 20. That condition is shown in Figure 5. Because of the engagement of the tooth-like projections 70 into the ring of teeth 72, the sleeve 22 now rotates with the cap 12.

**[0038]** The portion 76 is adjoined by a portion 78 in which the tooth-like projections 70 have again left the ring of teeth 72, see Figures 6 and 7. In that operative position further rotation of the cap 12 with respect to the external shaft 10 does not cause any further rotational movement of the sleeve 22.

**[0039]** In the operating position shown in Figure 1 (rest position), that is to say when the cap 12 is screwed on to the external shaft 10, the female screwthread element 48 is in the groove 52. Accordingly in that operating position there is no coupling between the control pushrod 34 and the plunger 30. The plunger 30 accordingly does not apply any pressure to the closure mass 28 or the ink 26.

**[0040]** When the cap 12 is rotated with respect to the external shaft 10 in order to unscrew it, then, because of the rotational coupling effect which is not yet present between the cap 12 and the sleeve 22, in the first portion 74 of the path of movement of the cap 12, the plunger holder 32 does not rotate. Rotary movement of the plunger holder 32 first takes place in the portion 76 of the path

of movement of the cap 12, more specifically by virtue of the engagement of the tooth-like projections 70 into the ring of teeth 72. In the further course of the rotary movement the female screwthread element 48 leaves the groove 52 and passes into the male screwthread element 50. Further rotary movement in that condition means that the female screwthread element 48 travels along the male screwthread element 50, whereby the control pushrod 34 which hitherto has been supported against the projection 62 is displaced against the spring 36. As a result the elastic return force of the spring 36 acts by way of the control pushrod 34 on the plunger holder 32 and thus on the plunger 30, whereby the pressure in the storage means 24 rises. At its end the male screwthread element 50 is limited by an abutment 64 against which the female screwthread element 48 butts upon further rotary movement. In the embodiment illustrated in the drawing the dimensions are so selected that, with the female screwthread element 48 butting against the abutment 64, the cap 12 reaches the portion 78 in which the tooth-like projections 70 are no longer in engagement with the ring of teeth 12.

**[0041]** It is however not out of the question that production tolerances cause difficulty in accurate matching. The longitudinal slot 68 is accordingly provided. More specifically, if the female screwthread element 48 should butt against the abutment 64 while the tooth-like projections 70 are still in engagement with the ring of teeth 72, then the projection 66 can expand because of the longitudinal slot 68 so that the tooth-like projections 70 slip on the ring of teeth (slipping clutch) and therefore the tooth-like projections 70 and the ring of teeth 72 are not damaged.

**[0042]** The increased pressure which is now built up in the storage means 24 can be used for discharging the ink 26. The pencil is now in the operative position.

**[0043]** When, after use of the pencil, the cap 12 is screwed on to the external shaft 10 again, then the female screwthread element 48 travels along the male screwthread element 50 back into the groove 52 again, because of the coupling effects described in detail hereinbefore, in the portion 76. As a result, under the influence of the spring 36, the control pushrod 34 travels again towards the abutment 62 where it is supported. Accordingly the spring 36 no longer acts on the ink 26 by way of the plunger holder 32 and the plunger 30. In that condition there is no longer any increased pressure obtaining in the storage means 24, which is of great advantage in terms of protecting the ink 26 and the closure mass 28 by being gentle therewith and in regard to the anti-leakage safeguard.

**[0044]** When the cap 12 is screwed on to the external shaft 10 the plunger holder 32 is moved away from the ball 20 until the female screwthread element 48 passes into the groove 52. So that in that case the plunger 30 does not suck the ink out of the tip 18 the plunger 32 is in the form of a trailing plunger. More specifically the plunger holder 32 can move away from the ball 20 in

accordance with the axial length of the window 42 without entrainment of the plunger 30.

**[0045]** In addition to or instead of the projection 40 in the window 42 it is also possible to provide an elastic coupling means between the plunger holder 42 and the plunger.

**[0046]** The elastic coupling means and/or the play can however also be connected elsewhere between the control pushrod 34 and the plunger surface which delimits the storage means 24.

**[0047]** The rotary transmission means shown in Figures 1 through 3 can compensate for a reduction in the filling level in the storage means 24. More specifically, with a reducing filling level the plunger holder 32 moves together with the plunger 30 gradually into the storage means 24 whereas the control pushrod 34 does not change its position relative to the spring 36 in accordance with the filling level, for which reason the same return force is always available for producing the increased pressure.

**[0048]** The closure cap 38 can be held resiliently in the manner of a shock absorber. The spring 36 serves for that resilient holding effect, that is to say that elastic element whose return force serves to produce the increased pressure in the storage means 24. That configuration thereby provides for minimising the number of components involved.

## Claims

1. An applicator device comprising
  - a casing (10),
  - a storage means (24) for a product (26) to be applied,
  - an application means comprising a ball (20) held rotatably in a ball holder (21),
  - a sealing means (16) which is displaceable along a predetermined path (74, 76, 78) between a first position with respect to the casing (10) in which it bears sealingly against the ball (20) and a second position with respect to the casing (10) in which it releases the ball (20) for application of the product (26), and
  - an increased pressure-producing means (22, 30, 32, 34, 36) for producing an increased pressure in the storage means (24), wherein
  - the sealing means (16) is coupled in a predetermined portion (76) of the path (74, 76, 78) to the increased pressure-producing means (22, 30, 32, 34, 36),
  - characterised in that**
  - the sealing means (16) is independent of the increased pressure-producing means (22, 30, 32, 34, 36) in a first portion (74) of the path (74, 76, 78) which is delimited by the first position.
2. An applicator device as set forth in claim 1 **characterised by** a screwthread (14) for displacing the sealing means (16) with respect to the casing (10).
3. An applicator device as set forth in claim 1 or claim 2 **characterised by** a bayonet connection for displacing the sealing means (16) with respect to the casing (10).
4. An applicator device as set forth in one of the preceding claims **characterised by** a coupling means (70, 72) for coupling the sealing means (16) to the increased pressure producing means (22, 30, 32, 34, 36) in the predetermined portion (76) of the path of movement (74, 76, 78).
5. An applicator device as set forth in claim 4 **characterised in that** the coupling means (70, 72) has a first coupling element (70) at the sealing means (16) and a second coupling element (70) at the increased pressure-producing means (22, 30, 32, 34, 36), which elements can be coupled together by way of a frictional engagement and/or a positively locking engagement.
6. An applicator device as set forth in claim 4 or claim 5 **characterised in that** the coupling means (70, 72) has a ring of teeth (72) at the increased pressure-producing means (22, 30, 32, 34, 36) and/or at the sealing means (16).
7. An applicator device as set forth in one of claims 4 through 6 **characterised in that** the coupling means (70, 72) has at least one tooth-like projection (70) at the sealing means (16) and/or at the increased pressure-producing means (22, 30, 32, 34, 36).
8. An applicator device as set forth in claim 6 or claim 7 **characterised in that** the ring of teeth (72) and/or the tooth-like projection (70) is/are provided on a sleeve-like projection (66).
9. An applicator device as set forth in claim 8 **characterised in that** the sleeve-like projection (66) has at least one longitudinal slot (68).
10. An applicator device as set forth in one of the preceding claims **characterised in that** the increased pressure-producing means (22, 30, 32, 34, 36) is controllable to produce a fall in the pressure in the storage means (24).
11. An applicator device as set forth in one of the preceding claims **characterised in that** the increased pressure-producing means (22, 30, 32, 34, 36) has a transmission means with at least one female screwthread element (48) and at least one male screwthread element (50), wherein the transmission means can assume at least two operating conditions, namely
  - a first operating condition in which the two screwthread elements (48, 50) mesh with each other to

produce the increased pressure, and a second operating condition in which they do not mesh with each other, a fall in the increased pressure resulting therefrom.

12. An applicator device as set forth in one of the preceding claims **characterised in that** it can assume at least two operating conditions, namely a rest condition and a use condition, and has a means (16, 22, 30, 32, 34, 36, 70, 72) which is responsive to the applicator device being moved from the use condition into the rest condition, for reducing the pressure in the storage means (24).
13. An applicator device as set forth in claim 12 **characterised in that** it is put into the rest condition by the sealing means (16) being put into the first position with respect to the housing (10).

#### Patentansprüche

1. Auftraggerät mit einem Gehäuse (10), einem Speicher (24) für ein aufzutragendes Produkt (26), einer Auftrageinrichtung mit einer drehbar in einem Kugelhalter (21) gehaltenen Kugel (20), einer Dichteinrichtung (16), die entlang eines vorbestimmten Weges (74, 76, 78) zwischen einer ersten Stellung bezüglich des Gehäuses (10), in der sie dichtend an der Kugel (20) anliegt, und einer zweiten Stellung bezüglich des Gehäuses (10) verstellbar ist, in der sie die Kugel (20) zum Auftragen des Produkts (76) freigibt, und einer Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) zum Erzeugen eines Überdrucks in dem Speicher (24),  
- wobei die Dichteinrichtung (16) in einem vorbestimmten Abschnitt (76) des Weges (74, 76, 78) mit der Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) gekoppelt ist,  
**dadurch gekennzeichnet, daß** die Dichteinrichtung (16) in einem von der ersten Stellung begrenzten ersten Abschnitt (74) des Weges (74, 76, 78) von der Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) unabhängig ist.
2. Auftraggerät nach Anspruch 1, **gekennzeichnet durch** ein Schraubgewinde (14) zum Verstellen der Dichteinrichtung (16) bezüglich des Gehäuses (10).
3. Auftraggerät nach Anspruch 1 oder 2, **gekennzeichnet durch** einen Bajonettverschluß zum Verstellen der Dichteinrichtung (16) bezüglich des Gehäuses (10).
4. Auftraggerät nach einem der vorangehenden An-

sprüche, **gekennzeichnet durch** eine Kupplung (70, 72) zum Koppeln der Dichteinrichtung (16) mit der Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) in dem vorbestimmten Abschnitt (76) des Weges (74, 76, 78).

5. Auftraggerät nach Anspruch 4, **dadurch gekennzeichnet, daß** die Kupplung (70, 72) ein erstes Kupplungselement (70) an der Dichteinrichtung (16) und ein zweites Kupplungselement (70) an der Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) aufweist, die über einen Reibschluß und/oder einen Formschluß miteinander koppelbar sind.
6. Auftraggerät nach Anspruch 4 oder 5, **dadurch gekennzeichnet, daß** die Kupplung (70, 72) einen Zahnkranz (72) an der Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) und/oder an der Dichteinrichtung (16) aufweist.
7. Auftraggerät nach einem der Ansprüche 4 bis 6, **dadurch gekennzeichnet, daß** die Kupplung (70, 72) mindestens einen zahnartigen Ansatz (70) an der Dichteinrichtung (16) und/oder an der Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) aufweist.
8. Auftraggerät nach Anspruch 6 oder 7, **dadurch gekennzeichnet, daß** der Zahnkranz (72) und/oder der zahnartige Ansatz (70) an einem hülsenartigen Ansatz (66) ausgebildet ist/sind.
9. Auftraggerät nach Anspruch 8, **dadurch gekennzeichnet, daß** der hülsenartige Ansatz (66) mindestens einen Längsschlitz (68) aufweist.
10. Auftraggerät nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, daß** die Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) im Sinne einer Senkung des Drucks in dem Speicher (24) steuerbar ist.
11. Auftraggerät nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, daß** die Überdruckerzeugungseinrichtung (22, 30, 32, 34, 36) ein Getriebe mit mindestens einem Innengewindeelement (48) und mindestens einem Außengewindeelement (50) aufweist, wobei das Getriebe mindestens zwei Betriebszustände einnehmen kann, nämlich einen ersten Betriebszustand, in dem die beiden Gewindeelemente (48, 50) zum Erzeugen des Überdrucks miteinander kämmen, und einen zweiten Betriebszustand, in dem sie nicht miteinander kämmen, woraus eine Senkung des Überdrucks resultiert.
12. Auftraggerät nach einem der vorangehenden An-

sprüche, **dadurch gekennzeichnet, daß** es mindestens zwei Betriebszustände einnehmen kann, nämlich einen Ruhezustand und einen Gebrauchszustand, und eine auf ein Verbringen des Auftraggeräts vom Gebrauchszustand in den Ruhezustand ansprechende Einrichtung (16, 22, 30, 32, 34, 36, 70, 72) zum Senken des Drucks in dem Speicher (24) aufweist.

13. Auftraggerät nach Anspruch 12, **dadurch gekennzeichnet, daß** es durch Verbringen der Dichteinrichtung (16) in die erste Stellung bezüglich des Gehäuses (10) in den Ruhezustand verbracht wird.

## Revendications

1. Dispositif applicateur comprenant une enveloppe (10), un moyen de stockage (24) de produit (26) à appliquer, un moyen d'application comprenant une bille (20) maintenue rotative dans un dispositif porte-bille (21), un moyen d'étanchéité (16) qui est mobile le long d'un trajet préétabli (74, 76, 78) entre une première position par rapport à l'enveloppe (10) dans laquelle il est hermétiquement en appui contre la bille (20) et une seconde position par rapport à l'enveloppe (10) dans laquelle il libère la bille (20) aux fins d'application du produit (26), et un moyen de production de pression accrue (22, 30, 32, 34, 36) destiné à produire une pression accrue dans le moyen de stockage (24), dans lequel le moyen d'étanchéité (16) est couplé, dans une section préétablie (76) du trajet (74, 76, 78), au moyen de production de pression accrue (22, 30, 32, 34, 36), **caractérisé en ce que** le moyen d'étanchéité (16) est indépendant du moyen de production de pression accrue (22, 30, 32, 34, 36) dans une première section (74) du trajet (74, 76, 78) qui est délimitée par la première position.
2. Dispositif applicateur selon la revendication 1, **caractérisé par** un filetage (14) permettant le déplacement du moyen d'étanchéité (16) par rapport à l'enveloppe (10).
3. Dispositif applicateur selon la revendication 1 ou la revendication 2, **caractérisé par** un raccord à baïonnette permettant le déplacement du moyen d'étanchéité (16) par rapport à l'enveloppe (10).
4. Dispositif applicateur selon l'une quelconque des revendications précédentes, **caractérisé par** un moyen de couplage (70, 72) permettant de coupler le moyen d'étanchéité (16) au moyen de production de pression accrue (22, 30, 32, 34, 36) dans la section préétablie (76) du trajet de déplacement (74, 76,

78).

5. Dispositif applicateur selon la revendication 4, **caractérisé en ce que** le moyen de couplage (70, 72) présente un premier élément de couplage (70) au niveau du moyen d'étanchéité (16) et un second élément de couplage (70) au niveau du moyen de production de pression accrue (22, 30, 32, 34, 36), lesquels éléments peuvent être couplés l'un à l'autre par friction et/ou par complémentarité de forme.
6. Dispositif applicateur selon la revendication 4 ou la revendication 5, **caractérisé en ce que** le moyen de couplage (70, 72) présente une couronne crantée (72) au niveau du moyen de production de pression accrue (22, 30, 32, 34, 36) et/ou au niveau du moyen d'étanchéité (16).
7. Dispositif applicateur selon l'une quelconque des revendications 4 à 6, **caractérisé en ce que** le moyen de couplage (70, 72) présente au moins une partie en saillie en forme de cran (70) au niveau du moyen d'étanchéité (16) et/ou au niveau du moyen de production de pression accrue (22, 30, 32, 34, 36).
8. Dispositif applicateur selon la revendication 6 ou la revendication 7, **caractérisé en ce que** la couronne crantée (72) et/ou la partie en saillie en forme de cran (70) est/sont prévues sur une partie en saillie en forme de douille (66).
9. Dispositif applicateur selon la revendication 8, **caractérisé en ce que** la partie en saillie en forme de douille (66) présente au moins une fente longitudinale (68).
10. Dispositif applicateur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le moyen de production de pression accrue (22, 30, 32, 34, 36) peut être commandé pour produire une chute de pression au sein du moyen de stockage (24).
11. Dispositif applicateur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le moyen de production de pression accrue (22, 30, 32, 34, 36) dispose d'un moyen de transmission comportant au moins un élément de filetage femelle (48) et au moins un élément de filetage mâle (50), par le biais desquels le moyen de transmission peut adopter au moins deux états de fonctionnement, à savoir un premier état de fonctionnement dans lequel les deux éléments de filetage (48, 50) sont en prise l'un avec l'autre pour produire la pression accrue, et un second état de fonctionnement dans lequel ils ne sont pas en prise l'un avec l'autre, avec pour conséquence une chute de pression.

12. Dispositif applicateur selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** peut adopter au moins deux états de fonctionnement, à savoir un état au repos et un état d'utilisation, et **en ce qu'il** présente un moyen (16, 22, 30, 32, 34, 36, 70, 72) qui réagit au passage du dispositif applicateur de l'état d'utilisation à l'état au repos, pour réduire la pression au sein du moyen de stockage (24). 5
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13. Dispositif applicateur selon la revendication 12, **caractérisé en ce qu'il** passe à l'état au repos lorsque le moyen d'étanchéité (16) est amené à la première position par rapport à l'enveloppe (10). 15

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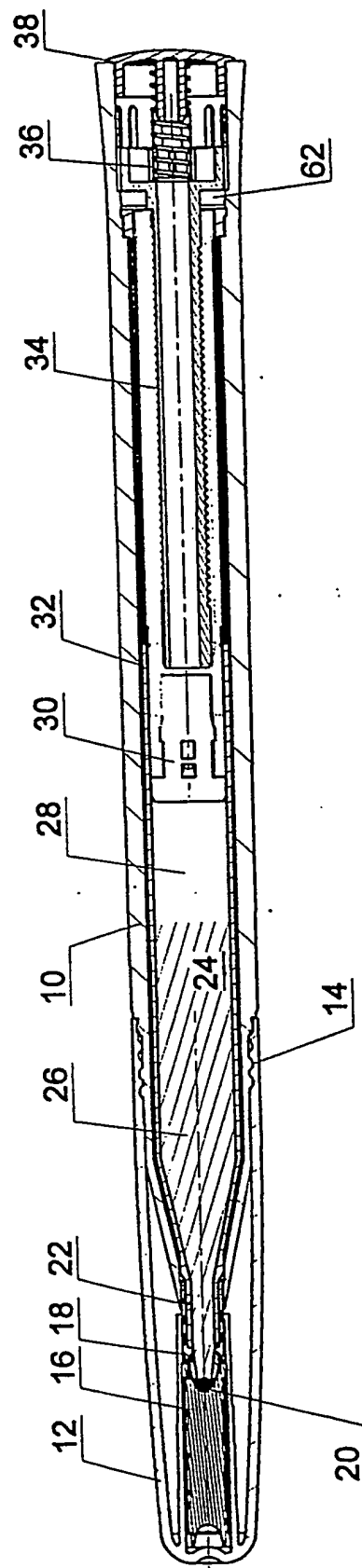


Fig.1

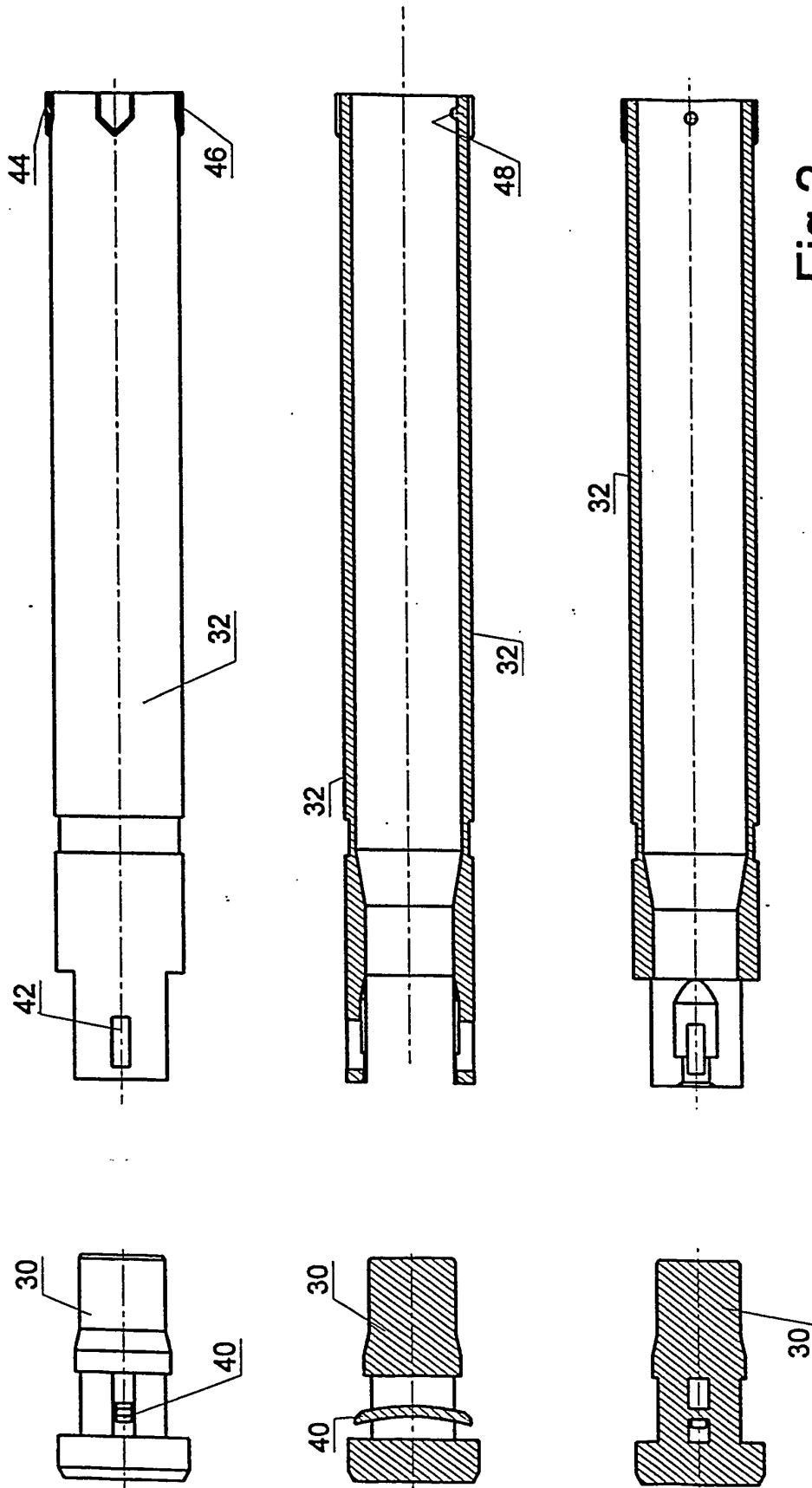


Fig.2

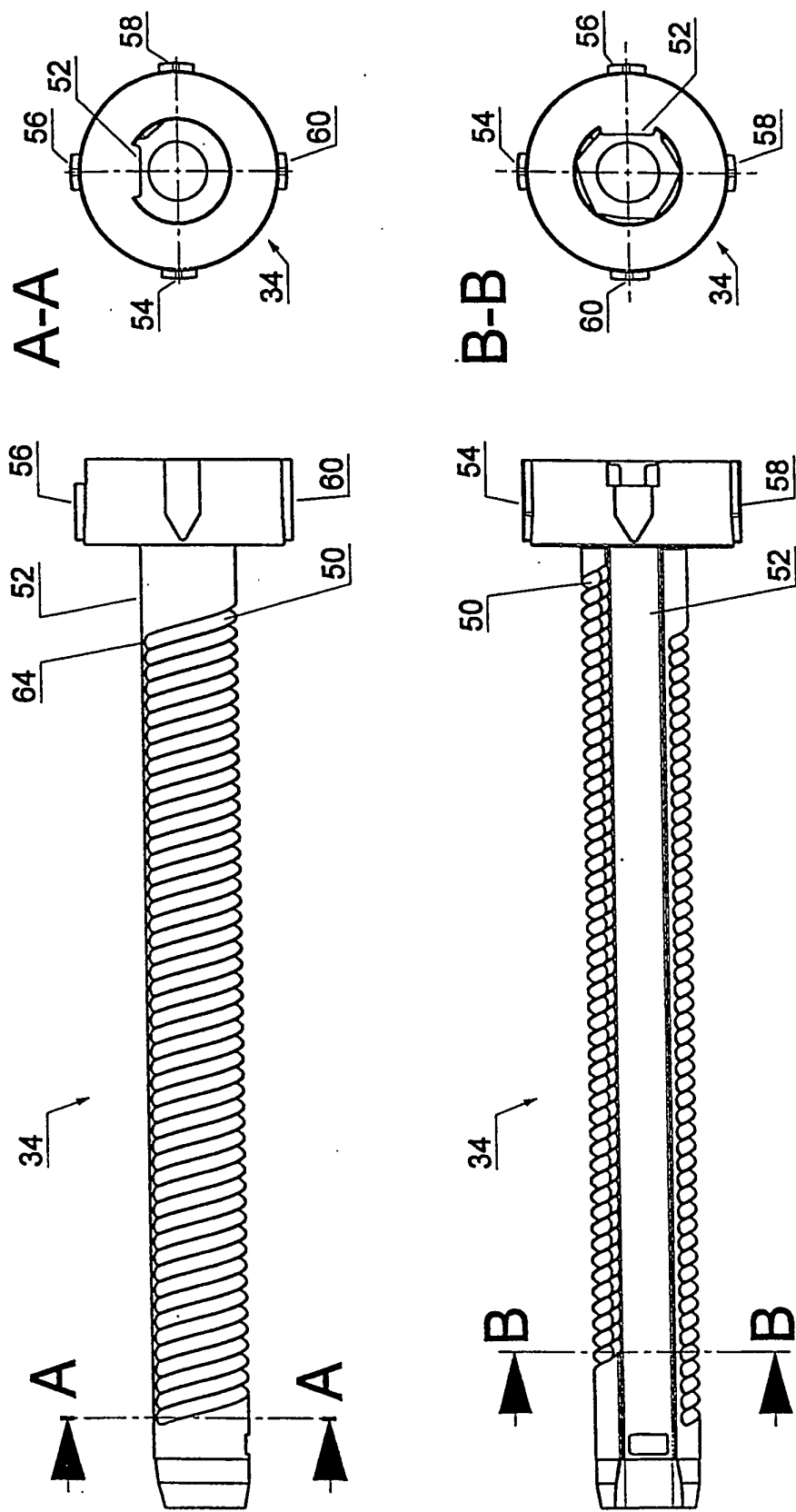


Fig.3

Fig. 4

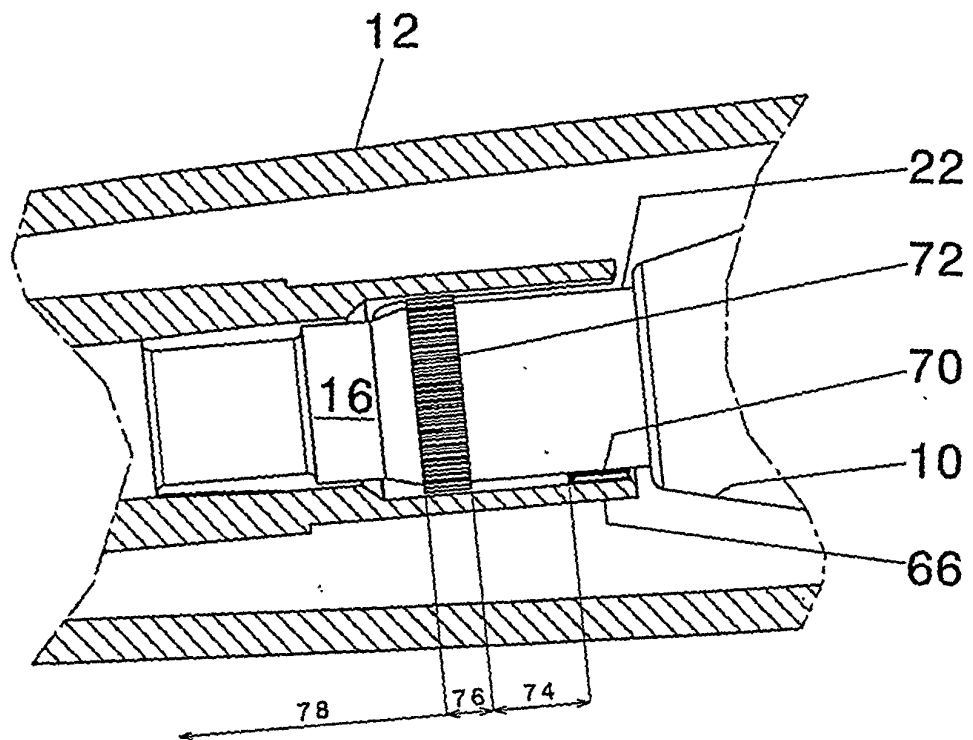


Fig. 5

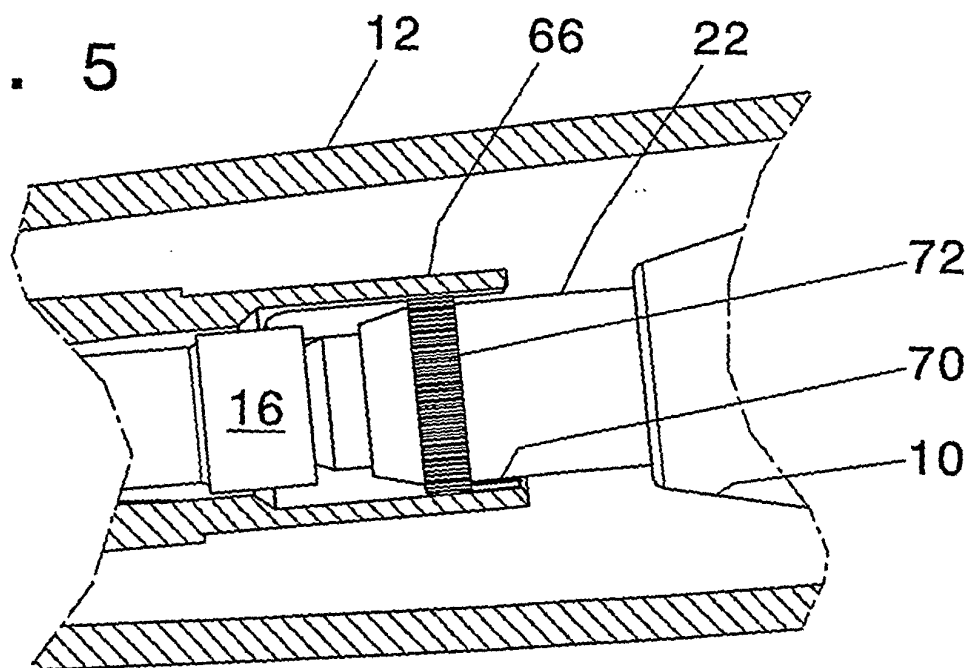


Fig. 6

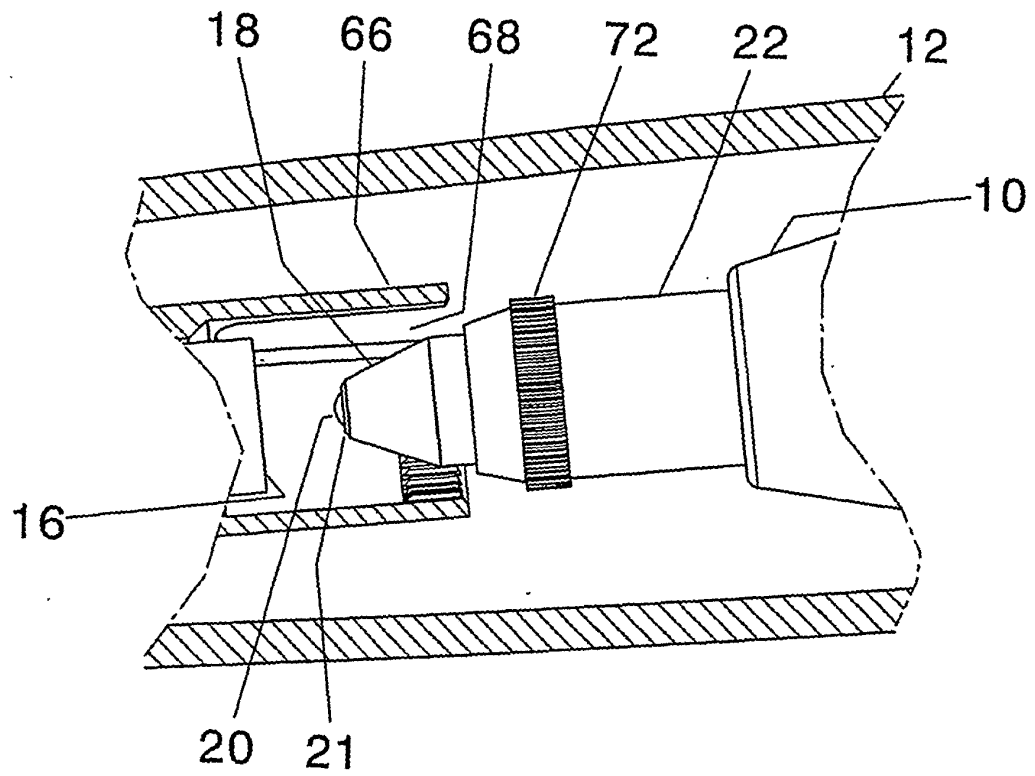


Fig. 7

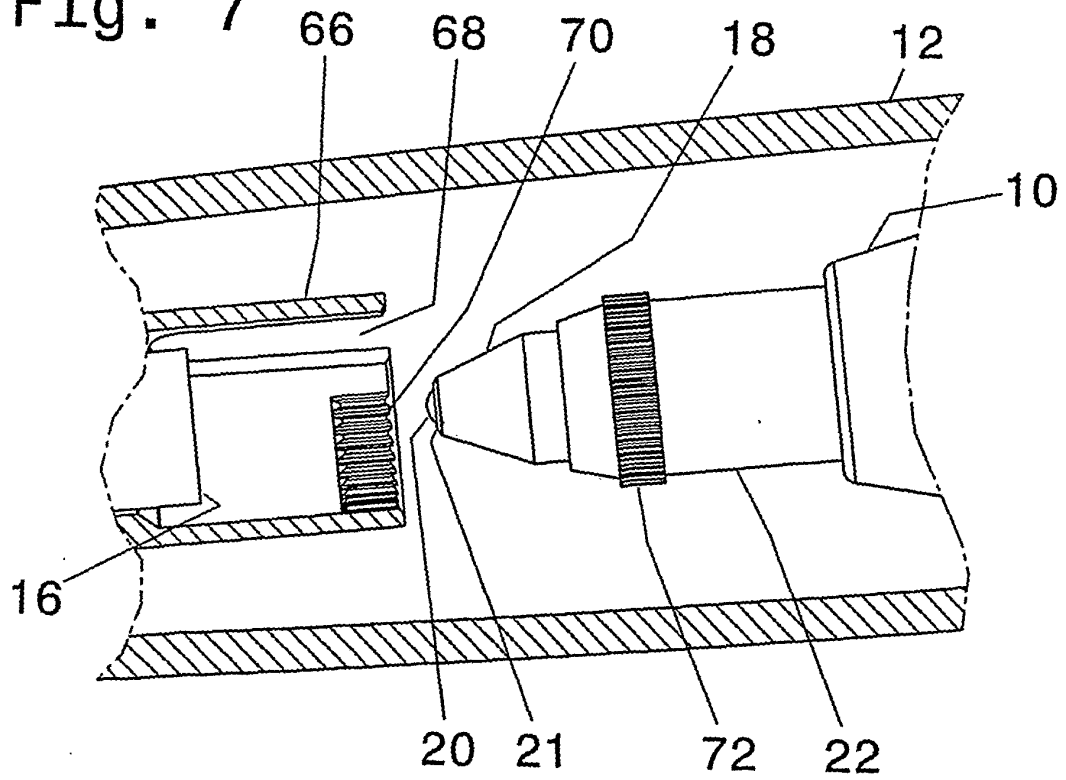


Fig.8

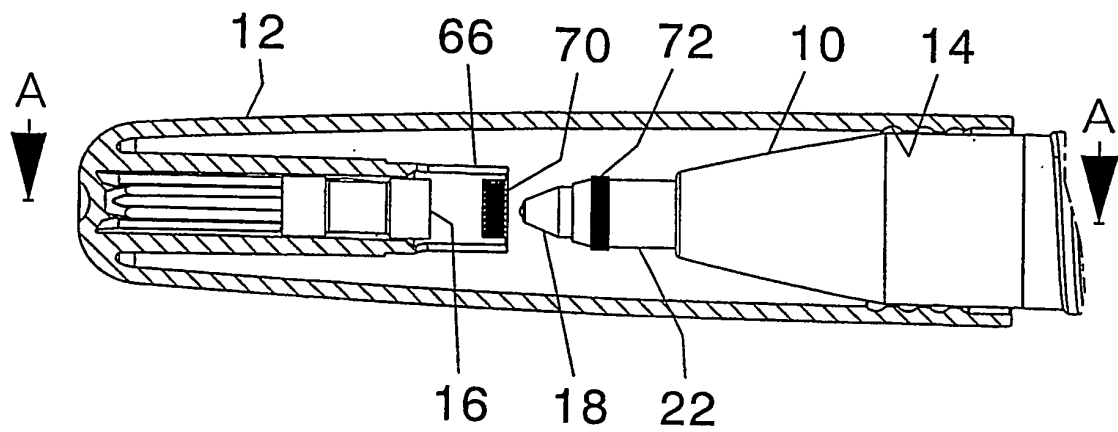
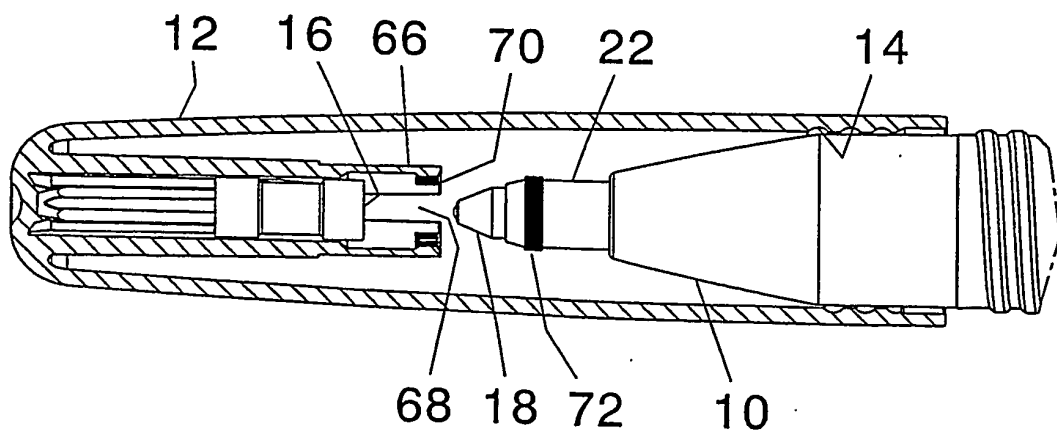


Fig.9

A-A



**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- EP 1445121 A1 [0002]