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(54) **AERATED PEN CARTRIDGE**

BELÜFTETE SCHREIBERPATRONE

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Description

Field of the Invention

[0001] The invention relates to a pen cartridge according to claim 1 and a pen according to claim 3.

Background of the Invention

[0002] Pen cartridges are known in various configurations, such as ball point pen cartridges, ink rollerball refills, gel refills or as rather unconventional gas pressure refills, for example. In the case of ball point pen inks, but rather still more in the case of a writing medium such as ink for ink rollerballs or similar, it is important on the one hand, that the ink cannot come out unhindered, for example if a pen or writing implement is kept upside down in a coat pocket or somewhere else. On the other hand, it must be ensured that the pen cartridge always releases about the same amount of ink over its lifetime for a consistent and even writing result.

[0003] The release of ink can be regulated via pressure ratios in the pen cartridge, for example, in particular in the receptacle, such as a tank or capillary reservoir, for the writing medium or pen cartridge. Since the amount of writing medium, such as an ink, available in the pen cartridge, reduces over the course of its life, it is necessary for a corresponding pressure equalisation to be able to take place.

[0004] Pressure equalisation in known pens or pen cartridges or cartridges with a capillary reservoir in the form of a tampon reservoir, for example, can be achieved particularly simply through aeration of the cartridge region of the writing member, because there is usually an annular clearance in the interior of the pen or cartridge between the tampon reservoir and the inner walls of the pen or cartridge. This is the case for example in the writing tip known from DE 20 2004 006 712 U1. Pressure equalisation can therefore be ensured at the end of the tampon reservoir turned away from the writing member, so that the ink in the tampon reservoir is fed as desired by means of gravitational effect and capillary forces to the writing member.

[0005] In the case of pen cartridges with liquid reservoirs such as ink refills and gel refills, for example, aeration of the interior of the cartridge from the region of the writing member is not possible without any extra effort because of the lack of the aforementioned annular clearance. An appropriate aeration is therefore usually provided here for the equalisation of pressure in the region of the end of the cartridge opposite the writing member.

[0006] Ambient air with atmospheric pressure is usually used for the equalisation of pressure, so that one or more aeration apertures or similar can be provided on pens, in order to enable the necessary air exchange and thereby a constant equalisation of pressure on the interior of the pen housing in which the pen cartridge is positioned, in particular between the periphery and a space

between the pen cartridge and pen housing.

[0007] There are a large number of different pens and different pen cartridges on the market, wherein an air exchange via the interior of a pen housing is not absolutely necessary in the case of certain pen cartridges, for example the aforementioned capillary reservoirs. It is also hard for a user to recognise which pen cartridge is suitable for which pen with regard to the described pressure equalisation problem.

[0008] Because in the case of pens with a pen housing and a pen cartridge inserted into it the pen housing normally hardly wears out, or at least wears out slower than the normal life of the pen cartridges, there is the problem that possibly a certain pen can only be equipped or retrofitted with certain pen cartridges.

[0009] There can also be technical innovations in the case of pen cartridges, so that a user would like to use such a new pen cartridge in their existing pen housing, in order to be able to carry on using a pen that is found to be personally ergonomic or familiar. Now if such a pen housing is only intended and suitable for pen cartridges, which at least require no equalisation of pressure for a space between the pen cartridge and the pen housing, then pen cartridges, which need an equalisation of pressure for their reservoir via the interior of the pen housing, i.e. the aforementioned space, cannot be used in such pen housings. It is therefore necessary to get used to the haptic of a new pen, which essentially encourages reluctance towards innovations.

[0010] A writing implement with a pressure equalisation system, which is attached to the rear end of a housing and is connected to a reservoir, in order to connect the reservoir with the ambient atmosphere, is known from DE 202 07 671 U1. Furthermore, a marking device with a feed pipe with an aeration hole is known from DE 602 20 150 T2. In addition, EP 1 541 371 A1 discloses a raw-ink applicator of an automatic delivery type, wherein, with the application body facing downward, an ink flow path on the application body side is arranged on the lower side relative to the ink connecting opening of the ink reservoir while an ink flow path on the ink absorber side and a ventilation annulus are arranged on the upper side relative to the ink connecting opening, the ink absorber is divided into two so that it communicates with the ink in the ink reservoir only in the opening of the ink connection opening, and in the ink flow path the relation, $A < B < C$, holds, where A represents the density of the rear portion of the flow path on the ink absorber side, B represents the density of the front portion of the flow path on the ink absorber side, and C represents the density the ink flow path on the application body side.

[0011] It is therefore a possible object of the present invention, to provide a solution to the compatibility problem described above.

Abstract of the Invention

[0012] The object is achieved with a pen cartridge ac-

cording to claim 1 and a pen according to claim 3. Advantageous improvements and embodiments are given in the respective associated sub-claims.

[0013] According to the invention a pen cartridge for a pen with a substantially airtight pen housing, wherein the pen cartridge has a front section, which exhibits a writing member and is provided on a main body and is designed to be arranged in a passage of a pen housing, is provided with an aeration groove, which extends at least along a partial section of the front section, in particular corresponding to the length of the passage, in a longitudinal direction.

[0014] The aeration groove extends at least along a partial section of the front section, along the stop surface of the main body and at least partially along the outer surface of the main body. At the same time the extension can be along or parallel to an axis. The axis can correspond to the longitudinal axis of the pen cartridge; it should be noted here that by the longitudinal axis of a body is understood the axis that is attributable to the largest spatial dimension of the body. The axis can also correspond to a symmetrical axis of the pen cartridge, which can coincide with a central longitudinal axis of the pen housing or of the pen cartridge.

[0015] An aeration groove can thereby be provided according to the invention using the pen cartridge for a pen with a substantially airtight housing, via which, at least when the pen is in a state where it is ready for writing, an aeration passage is formed with the pen housing by the aeration groove, whereby an air exchange and/or equalisation of pressure between the periphery and the interior of the housing is ensured. Irrespective of the configuration of the pen housing of a writing implement or pen, the proposed solution ensures an aeration/ventilation of the interior of the pen cartridge and thereby also of the region of a pressure equalisation aperture of the pen cartridge.

[0016] In a preferred embodiment the front section and/or the main body are designed to be fed along an interior surface of the passage of the writing housing in such a way that a substantially zero-clearance positioning of the pen cartridge in the pen housing is ensured. At the same time the interior surface of the passage can be cylindrical, i.e. circular in cross-sectional profile, or angular in cross-sectional profile, i.e. polygonal. The aeration groove can therefore be provided in the pen housing in the case of use as intended so that the front section exhibits a lateral surface with an outer contour, which is different to the inner contour of the passage and/or the inner contour of an adapter according to the invention at least along the length of the passage.

[0017] The lateral surface of the outer contour of the front section can at the same time be configured in particular such that it exhibits a shorter circumferential length than the circumferential length of the inner contour of the passage. In other words, the front section can be configured so that it does not rest against the passage along its whole circumference, in particular along the whole

length of the passage. The lateral surface of the front section can also be configured so that during use as intended in the pen housing it only rests against the passage along a circumferential length, which is shorter than the total circumferential length of the lateral surface of the front section.

[0018] The lateral surface can be cylindrical, in particular in the case of a cylindrical passage of the housing of a pen.

[0019] The front section is connected to the main body by means of a transition, in that the transition is constructed on a lateral surface of the front section, thus forming a bridge from the lateral surface of the front section to the outer surface of the main body. The transition preferably serves as a stop surface of or for the main body for an exact determination of the position of the front section in the passage of the pen housing. At the same time, it is particularly preferable for the outer dimensions of the main body to be bigger than those of the front section in relation to a longitudinal axis of the pen cartridge since thus a larger reservoir volume is available in the main body for a writing medium contained therein.

[0020] The transition can form a substantially right angle between the lateral surface of the front section and the stop surface of the main body, so that the two sides that meet each other form a corner, equivalent to an inner chamfer. This inner chamfer does not necessarily have to be right-angled however, because a tension function and/or retention function could be ensured, even with a chamfer with an angle of e.g. 45°. At the same time the transition could form a bridge from the lateral surface to a stop surface of the main body, in particular to determine the position of the front section in the passage of the pen housing. At the same time the outer dimensions of the main body are preferably bigger than those of the front section. The aeration gap can at the same time continue by the chamfer, i.e. along the chamfer, therefore be of similar construction in front and behind the chamfer.

[0021] Therefore, it is possible according to the invention to provide aeration between the periphery and the pen cartridge, in particular a receptacle of the pen cartridge in a pen housing, at an intersection between the pen cartridge and the pen housing. The aeration groove extends further, at least partially along the stop surface of the main body. According to the invention the pen cartridge can also be mounted or centred at this intersection.

[0022] The front section and the main body with the passage, forming a stop surface if appropriate, are constructed as a pen cartridge housing that is one piece, wherein the at least one aeration groove with a constant cross-sectional profile is incorporated into the pen cartridge housing.

[0023] The aeration groove extends, at least partially, along the stop surface of the main body. The aeration groove also extends at least partially along the outer surface of the main body.

[0024] In a particular embodiment the aeration groove is incorporated into the pen cartridge housing so that the

aeration groove is formed in a pen housing in the case of use as intended, so that the front section exhibits an outer surface with an outer contour, which differs from the inner contour of a surface of the passage, at least for the length of the passage.

[0025] In an improvement the pen cartridge can exhibit another sealing section near the end on which the writing member is located or on the front section, which is constructed so as to produce a substantially airtight contact for sealing the writing member that is provided on the pen cartridge between the front section and a sealing cap for the pen cartridge. The aeration groove can then also extend over a partial region of the sealing section.

[0026] The aeration groove preferably begins on the front section only after the sealing section, which is directly connected to the front end on which a writing member is arranged and reaches as far as into the housing of the pen, i.e. the interior of the pen. The aeration groove is preferably constructed such that it cannot become clogged with dirt or condensation, ink or such like. For this purpose a suitable size and/or depth is to be selected depending on the form of the aeration groove, e.g. in the shape of a channel or more than one channel.

[0027] Ultimately a pen according to the invention exhibits a pen cartridge according to the invention. Furthermore, the pen has a pen housing, which is at least constructed in two parts for exchanging the pen cartridge, wherein the at least two housing sections are connected to each other via a coupling, in particular a screw, snap or plug connection, which is constructed to be substantially airtight.

[0028] For example, the pen housing can comprise one front housing and one rear housing, which are constructed to be connected to each other via a substantially airtight coupling. This coupling must however not be constructed specially to be airtight. Mostly it is already substantially airtight in itself, for example in the case of a longer screw thread of a plastic that is at least to a slight extent deformable, so that normally no gas exchange between the surroundings and an interim space can occur even in the case of a two-piece pen housing, if no pen cartridge according to the invention is provided with an aeration groove according to the invention.

[0029] An attachment/fixed part can be provided on the pen housing, onto which the pen cartridge abuts inside the pen housing in use as intended, and which is constructed to ensure aeration between a rear end of the pen cartridge and a space.

[0030] The attachment can exhibit a region, which is not in contact with the pen cartridge. Furthermore, the attachment can constitute a cavity via which a gas exchange between a receptacle of the pen cartridge and the space in the housing can take place.

[0031] According to a preferred embodiment aeration between the space in the housing and the rear end is ensured via the cavity. This is because it is frequently advantageous if an exchange of air can occur in the case of a pen cartridge via the rear end of the pen cartridge.

For this purpose, the attachment can touch the rear end of the pen cartridge only partially, i.e. not totally along the whole extent or exterior edge of the rear end. An exchange of air between the cavity and the space can however also occur if channels or bores are provided in the attachment for a communication between the cavity and the space, so that the attachment could also come into contact along the whole extent of the pen cartridge at its rear end. It can however also be advantageous if an exchange of air could occur in the case of a pen cartridge via the outer surface of the pen cartridge. In this case an exchange of air between the cavity and the space is not absolutely necessary.

15 Short description of drawings

[0032] Further advantageous developments of the invention and an embodiment of this will be discussed below in connection with the attached drawings in more detail. The terms "left", "right", "top", "bottom" in the description of the embodiment refer to the drawings in an alignment with normally legible drawing designation and reference numerals, in which:

- 25 Fig. 1 is a sectional view of a pen cartridge in a pen housing known from prior art,
- Fig. 2 is a side view of a pen cartridge according to the invention with two culverts,
- 30 Fig. 3 is a sectional view of a pen cartridge according to the invention, the pen cartridge having two opposing openings, which are shown in sections,
- 35 Fig. 4a is a sectional view of a pen cartridge not forming part of the invention in the region of its front section,
- 40 Fig. 4b is a sectional view of a pen cartridge not forming part of the invention in the region of its front section,
- 45 Fig. 4c is a sectional view of a pen cartridge according to the invention in the region of its front section in an embodiment,
- Fig. 4d is a sectional view of a pen cartridge not forming part of the invention in the region of its front section,
- 50 Fig. 4e shows a sectional view of a pen cartridge region not forming part of the invention in the region of its front section,
- 55 Fig. 5a is a plan view of an adapter not forming part of the invention,

- Fig. 5b is a further plan view of an adapter not forming part of the invention,
- Fig. 5c is a sectional view of an adapter not forming part of the invention, and
- Fig. 6 is a sectional view of an adapter not forming part of the invention in the form of a sleeve.

Detailed description of the embodiments

[0033] Fig. 1 shows a pen 30 with a pen housing 20 consisting of a front housing 21 and a rear housing 22. In the housing 20, a pen cartridge 10 is provided which comprises a front part 11 and a main body 12.

[0034] The housing parts are connected together via a coupling 25. At the rear housing 22 an attachment 22a is provided, which defines a cavity 22b. The front housing 21 has a bushing 23 and a stop portion 23a. The stop portion 23a supporting an inserted pen cartridge 10, are provided to determine exactly how far ahead the front part 11 of the used pen cartridge 10 is from the front housing.

[0035] From the front part 11 of the cartridge 10 a tip protrudes, designed as a writing member 15, especially a writing tip with perhaps a rolling element as the actual writing member. The front part 11 connects to the main body 12, in particular via a right-angled chamfer or shoulder, which is defined by a stop surface 12.2 on the main body 12, which can reach the above mentioned stop part 23a. The front part 11 and the main body 12 each have a substantial cylindrical outer surface 11.1 or surface 12.1 respectively. The pen has a rear cartridge 12.3, on which the fixed part 22a of the rear housing 22 rests at least partially. Between the pen housing 20 and the pen cartridge 10, a space is formed Z. On the front part 11 a sealing portion 14 is provided, on which a cap (not shown) is put on the front 11 and produces a substantial airtight coupling to the front part 11.

[0036] Fig. 2 shows an embodiment of a pen cartridge according to the invention 10 with a front part 11 and a main body 12. The pen cartridge 10 has a aeration passage 13 in the form of two groove-like, passages incorporated into the lateral surface 11.1 of the front part 11, extending from a sealed section 14 at the front part 11 to the main body 12 and also having a certain length of this main body 12. One possible embodiment of a aeration passage is the air passages 13 in the form of passages 13a. With a passage an aeration passage according to the invention is designated, which is incorporated here into the surface of the front section 11, i.e. into the lateral area 11.1.

[0037] Fig. 3 shows a sectional view through a pen cartridge 10 according to the invention, which consists of a one-piece pen cartridge housing 16, in which a protruding writing member 15 is arranged in the direction of the front of the pen, and in which the at least two opposite passages 13a are incorporated, shown in sectional view,

and create aeration grooves 13. The passages 13a are incorporated groove-like in the surface of the one-piece cartridge housing 16 and/or are provided therein and at the same time run from the front part 11 of the cartridge 10 over the stop surface 12.2 to the main body 12 of the cartridge 10. At the same time, the one-piece pen cartridge housing 16 defines a receptacle A to receiving a writing medium such as (gel) ink, which is connected to the writing member 15.

[0038] The following Figs. 4a, 4b, 4d and 4e each illustrate one cross-sectional view through the front portion of a pen cartridge not forming part of the invention. The circular inner contour points out the position of a writing member 15 or a channel for routing the ink from the receptacle to the writing member 15 (pen media inflow). The outer contour indicates an inner feed passage 23.1 in the housing of a pen, such as the shown in Fig. 1.

[0039] In Fig. 4a, the aeration passage 13 is formed by using different contours of the lateral area of 11.1 and the passage interior 23.1 of the passage 23. The passage interior 23.1 is cylindrical, i.e. circular in cross section and the lateral surface 11.1 flat in sections, i.e. rectangular in cross section, especially a uniform hexagonal polygon. The uniform polygon defining the lateral surface 11.1 can be defined by the central angle α . The central angle α in Fig. 4a is therefore 60 degrees dependent on the number of polygon faces.

[0040] In Fig. 4b, the aeration passage 13 is formed again by the different contours of the lateral area of 11.1 and passage interior 23.1 of the passage 23. The passage interior 23.1 is cylindrical, i.e., circular in cross section, and the lateral surface 11.1 is flat in two specific sections of a respective arc, i.e., in sections and circular in two other specific sections of a particular arc, and formed there according to the passage interior 23.1.

[0041] In Figs. 4a and 4b, the lateral surface 11.1 runs along a chord in the sections described with the centre angle α i.e. is flat there so that the respective aeration openings 13 are formed there, which have a cross-section in the form of a circle segment area or section of a circle area.

[0042] In the embodiment shown in Fig. 4c the aeration passage 13 is formed by four passages 13a each in the form of a groove incorporated into the surface of the front portion 11. The grooves can be arranged symmetrically, in particular as shown in relation symmetry axis running centrally through the front portion 11. They can however also be arranged rotationally symmetrically. Of course it is also sufficient to provide only a single groove.

[0043] Fig. 4d shows a sectional view through a front portion not forming part of the invention in which the aeration passage 13 is formed by a passage in the form of a bore hole in the front portion 11. The bore may be arranged eccentrically; in particular to avoid a conflict situation with the tip of the pen cartridge or with the media feed to this tip.

[0044] In Fig. 4e the aeration passage 13 is formed, in that the front portion 11 exhibits a smaller diameter than

the passage interior 23.1 of the passage 23. The front portion 11 can be supported in the passage 23, in that elevations 11a are provided on the front part 11, which can be circular or spherical or also run longitudinally along the lateral surface 11.1 of the front portion 11. The illustrated rotationally symmetric arrangement is beneficial for a consistent support irrespective of an alignment of a pen, in which the pen cartridge is used when writing.

[0045] Fig. 5a shows an example of an adapter not forming part of the invention 130 in the form of a ring with adapter passages 130a, which run from an outer lateral surface 130.1 to one of the abutting faces 130.2 and can be formed as shown as passages in the form of corresponding bores. The ring is pushed into contact with the stop surface of the main body of a pen cartridge on its front part, used before the pen cartridge is pushed into the front housing.

[0046] Fig. 5b shows a side view of the adapter 130 of Fig. 5a. Here the openings of the adapter passages 130a can be seen in the external lateral surface 130.1.

[0047] Fig. 5c shows a sectional view A-A of the adapter 130 of Fig. 5a. The course of the adapter openings 130a is visible from the outer lateral area of 130.1 to the abutting face 130.2. The adapter passages 130a do not have to have an angular course; another possible geometrical form is possible, for example in the form of a circular section.

[0048] Fig. 6 shows an example of an adapter not forming part of the invention 130 in the form of a sleeve with a chamfer or a shoulder and with adapter passages 130a, which run from an outer surface of 130.1 to one of the abutting faces of 130.2 and can be configured as shown as bores. The sleeve is pushed against the stop surface of the main body of a pen cartridge on its front part. Such an (adapter) sleeve is suitable for example for use in a (universal) pen cartridge. With such a (universal) pen cartridge there are the geometric relationships shown in Fig. 4e, with the difference that the front part has no elevations. Between the front part of the cartridge and the passage of the housing of the pen there is an annular clearance. Here the (adapter) sleeve can then be inserted between the lateral surface 11.1 of the front part of the pen and passage interior 23.1 of the passage 23, corresponding surfaces of the adapter and the cartridge or the housing being next to one another. With the help of the adapter the originally unsuitable cartridge can be used and pressure equalisation is ensured.

[0049] For those specialists who work in this area, it is however understood, that the configuration of the present invention according to the aforementioned figures and the reference numerals used for the individual parts and components in the figures and the description as well as the example information must not be interpreted restrictively. The proportions selected in the individual figures for a better understanding are also shown schematically and simplified. The invention is thus not limited to the indicated embodiments. Rather all embodiments and variations are seen to belong to the invention which fall

under the attached claims.

Reference numerals list

5	[0050]	
10	Pen cartridge	
11	Front part	
11.1	Lateral surface	
10	11a	Elevation
12	Main body	
12.1	Outer surface	
12.2	Stop surface	
12.3	Rear cartridge	
15	13	Aeration passage / Aeration groove
13a	Duct	
130	Adapter	
130.1	External lateral surface	
130.2	Abutting face	
20	130a	Adapter tunnel
14	Sealing portion	
15	Writing member	
16	One-piece pen cartridge housing	
20	Pen housing	
25	21	Front housing
22	Rear housing	
22a	Fixed part	
22b	Cavity	
23	Passage	
30	23a	Stop portion
23.1	Passage interior	
25	Coupling	
30	Pen	
A	Receptacle	
35	α	Centre arc angle

Claims

- 40 1. Pen cartridge (10) for a pen with a substantially airtight pen housing (20), wherein the pen cartridge (10) has a front part (11), which exhibits a writing member (15) and is provided on a main body (12) and is formed to be arranged in a passage (23) of the pen housing (20),

45 the pen cartridge (10) being provided with an aeration groove (13), which runs at least along a partial area of the front part (11),
 50 the front part (11) connecting to the main body (12) via a transition,
 the transition being formed on the lateral surface (11.1) of the front part (11) and forming a connecting transition from the lateral surface (11.1) of the front part (11) to the outer surface (12.1) of the main body (12), in particular as a stop surface (12.2) of the main body (12) to determine the exact position of the front part (11) in the

passage (23) of the pen housing (20),
 in particular, the external dimensions of the main
 body (12) being larger in respect of a longitudinal
 axis of the pen cartridge (10) than those of the
 front part (11),
 the front part (11) and the main body (12) being
 formed with the stop surface (12.2) as a one-
 part pen cartridge housing (16), in which the aer-
 ation groove (13) is formed with a constant
 cross-sectional profile,
 the aeration groove (13) furthermore extending
 along the stop surface (12.2) of the main body
 (12) and at least partially along the outer surface
 (12.1) of the main body (12),
 the pen cartridge (10) being provided with a
 pressure equalization aperture at its rear end,
 wherein, when the pen cartridge (10) is arranged
 in the pen housing (20), the aeration groove (13)
 forms an aeration passage with the pen housing
 (20).

2. Pen cartridge (10) according to claim 1,

the pen cartridge (10) exhibiting a sealing por-
 tion (14) located near the end, where the writing
 member (15) is located, or the front part (11),
 which is designed to create an airtight contact
 for sealing the writing member (15) that is pro-
 vided on the pen cartridge (10) between the front
 part (11) and a sealing cap for the pen cartridge
 (10) and
 the aeration groove (13) preferably being ex-
 tended over a portion of the sealing portion (14).

3. Pen (30), comprising

a pen housing (20, 21, 22), which is formed in
 at least two parts (21, 22); and
 a pen cartridge (10) having a front part (11),
 which exhibits a writing member (15) and is pro-
 vided on a main body (12) and is arranged in a
 passage (23) of the pen housing (20),
 the pen cartridge (10) being provided with an
 aeration groove (13), which runs at least along
 a partial area of the front part (11),
 the front part (11) connecting to the main body
 (12) via a transition,
 the transition being formed on the lateral surface
 (11.1) of the front part (11) and forming a con-
 necting transition from the lateral surface (11.1)
 of the front part (11) to the outer surface (12.1)
 of the main body (12), in particular as a stop
 surface (12.2) of the main body (12) that deter-
 mines the exact position of the front part (11) in
 the passage (23) of the pen housing (20),
 in particular, the external dimensions of the main
 body (12) being larger in respect of a longitudinal
 axis of the pen cartridge (10) than those of the

front part (11),
 the front part (11) and the main body (12) being
 formed with the stop surface (12.2) as a one-
 part pen cartridge housing (16), in which the aer-
 ation groove (13) is formed with a constant
 cross-sectional profile,
 the aeration groove (13) furthermore extending
 along the stop surface (12.2) of the main body
 (12) and at least partially along the outer surface
 (12.1) of the main body (12),
 the pen cartridge (10) being provided with a
 pressure equalization aperture at its rear end,
 wherein the aeration groove (13) forms an aer-
 ation passage with the pen housing (20);
 the at least two housing parts (21, 22) being con-
 structed airtight via a coupling (25), in particular
 a connection by screw, snap, or plug.

4. Pen (30) according to claim 3,
 a fixed part (22a) being provided on the pen housing
 (21, 22) on which the pen cartridge (10) leans inside
 the pen housing (21, 22) and which is adapted to
 ensure an aeration between a rear side (12.3) of the
 pen cartridge (10) and a cavity (Z) in the pen housing
 (20).

5. Pen (30) according to claim 4,

the fixed part (22a) having an area which is not
 in contact with the pen cartridge (10), and
 the fixed part (22a) defining a cavity (22b) via
 which gas exchange can take place between
 the receptacle (A) of the pen cartridge (10) and
 the cavity (Z) in the pen housing (20).

6. Pen (30) according to any of the claims 3 to 5,
 the front part (11) and / or the main body (12) of the
 pen cartridge (10) being formed to be on an inside
 surface of the passage (23) of the pen housing (20)
 in such a manner to ensure a substantially play-free
 positioning of the pen cartridge (10) in the pen hous-
 ing (20).

45 Patentansprüche

1. Schreiberpatrone (10) für einen Schreiber mit einem
 im Wesentlichen luftdichten Schreibergehäuse (20),
 wobei die Schreiberpatrone (10) ein Vorderteil (11)
 aufweist, das ein Schreiborgan (15) aufweist und an
 einem Hauptkörper (12) vorgesehen ist und dazu
 ausgebildet ist, in einer Durchführung (23) des
 Schreibergehäuses (20) angeordnet zu werden,
 wobei die Schreiberpatrone (10) mit einem Lüftungs-
 durchlass (13) versehen ist, welcher sich zumindest
 entlang eines Teilbereichs des Vorderteils (11) er-
 streckt,
 wobei das Vorderteil (11) mit einem Übergang an

- den Hauptkörper (12) anschließt,
wobei der Übergang an der Mantelfläche (11.1) des
Vorderteils (11) ausgebildet ist und eine Überleitung
von der Mantelfläche (11.1) des Vorderteils (11) zur
Außenfläche (12.1) des Hauptkörpers (12) ausbil- 5
det, insbesondere als eine Anschlagfläche (12.2)
des Hauptkörpers (12), um die exakte Position des
Vorderteils (11) in der Durchführung (23) des Schrei-
bergehäuses (20) zu bestimmen,
wobei insbesondere die Außenabmessungen des 10
Hauptkörpers (12) in Bezug auf eine Längsachse
der Schreiberpatrone (10) größer als jene des Vor-
derteils (11) sind,
wobei das Vorderteil (11) und der Hauptkörper (12)
mit der Anschlagfläche (12.2) als ein einstückiges 15
Schreiberpatronengehäuse (16) ausgebildet sind, in
dem der Lüftungsdurchlass (13) mit einem konstan-
ten Querschnittsprofil ausgebildet ist,
wobei der Lüftungsdurchlass (13) sich weiter entlang
der Anschlagfläche (12.2) des Hauptkörpers (12) 20
und zumindest teilweise entlang der Außenfläche
(12.1) des Hauptkörpers (12) erstreckt,
wobei die Schreiberpatrone (10) an ihrem hinteren
Ende mit einer Druckausgleichsöffnung versehen
ist, 25
wobei, wenn die Schreiberpatrone (10) in dem
Schreibergehäuse (20) angeordnet ist, der Lüftungs-
durchlass (13) eine Belüftungsdurchführung mit dem
Schreibergehäuse (20) bildet.
2. Schreiberpatrone (10) nach Anspruch 1,
wobei die Schreiberpatrone (10) einen Dichtungs-
abschnitt (14) aufweist, der sich in der Nähe des En-
des, an dem sich das Schreiborgan (15) befindet, 35
oder des Vorderteils (11) befindet, welcher dazu aus-
gelegt ist, einen luftdichten Kontakt zum Abdichten
des Schreiborgans (15) herzustellen, das an der
Schreiberpatrone (10) zwischen dem Vorderteil (11)
und einer Verschlusskappe für die Schreiberpatrone
(10) vorgesehen ist, und 40
wobei sich der Lüftungsdurchlass (13) vorzugsweise
über einen Teilbereich des Dichtungsabschnitts (14)
erstreckt.
3. Schreiber (30), umfassend 45
ein Schreibergehäuse (20, 21, 22), das mindestens
zweiteilig (21, 22) ausgebildet ist; und
eine Schreiberpatrone (10), die ein Vorderteil (11)
aufweist, welches ein Schreiborgan (15) aufweist
und an einem Hauptkörper (12) vorgesehen ist und 50
in einer Durchführung (23) des Schreibergehäuses
(20) angeordnet ist,
wobei die Schreiberpatrone (10) mit einem Lüftungs-
durchlass (13) versehen ist, welcher sich zumindest
entlang eines Teilbereichs des Vorderteils (11) er- 55
streckt,
wobei das Vorderteil (11) mit einem Übergang an
den Hauptkörper (12) anschließt,
- wobei der Übergang an der Mantelfläche (11.1) des
Vorderteils (11) ausgebildet ist und eine Überleitung
von der Mantelfläche (11.1) des Vorderteils (11) zur
Außenfläche (12.1) des Hauptkörpers (12) ausbil-
det, insbesondere als eine Anschlagfläche (12.2)
des Hauptkörpers (12), der die exakte Position des
Vorderteils (11) in der Durchführung (23) des Schrei-
bergehäuses (20) bestimmt,
wobei insbesondere die Außenabmessungen des
Hauptkörpers (12) in Bezug auf eine Längsachse
der Schreiberpatrone (10) größer als jene des Vor-
derteils (11) sind,
wobei das Vorderteil (11) und der Hauptkörper (12)
mit der Anschlagfläche (12.2) als einstückiges
Schreiberpatronengehäuse (16) ausgebildet sind, in
dem der Lüftungsdurchlass (13) mit einem konstan-
ten Querschnittsprofil ausgebildet ist,
wobei der Lüftungsdurchlass (13) sich weiter entlang
der Anschlagfläche (12.2) des Hauptkörpers (12)
und zumindest teilweise entlang der Außenfläche
(12.1) des Hauptkörpers (12) erstreckt,
wobei die Schreiberpatrone (10) an ihrem hinteren
Ende mit einer Druckausgleichsöffnung versehen
ist, 25
wobei der Lüftungsdurchlass (13) eine Belüftungs-
durchführung mit dem Schreibergehäuse (20) aus-
bildet;
wobei die mindestens zwei Gehäuseteile (21, 22)
über eine Kupplung (25), insbesondere eine
Schraub-, Schnapp- oder Steckverbindung, luftdicht
ausgebildet sind.
4. Schreiber (30) nach Anspruch 3,
wobei an dem Schreibergehäuse (21, 22) ein Anla-
geteil (22a) vorgesehen ist, an dem die Schreiber-
patrone (10) innerhalb des Schreibergehäuses (21,
22) anliegt und das angepasst ist, eine Lüftung zw-
ischen einer hinteren Seite (12.3) der Schreiberpa-
trone (10) und einem Zwischenraum (Z) in dem
Schreibergehäuse (20) sicherzustellen.
5. Schreiber (30) nach Anspruch 4,
wobei das Anlageteil (22a) einen Bereich aufweist,
der nicht mit der Schreiberpatrone (10) in Kontakt
ist, und 45
wobei das Anlageteil (22a) einen Hohlraum (22b)
festlegt, über den ein Gasaustausch zwischen dem
Aufnahmeraum (A) der Schreiberpatrone (10) und
dem Zwischenraum (Z) im Schreibergehäuse (20)
erfolgen kann.
6. Schreiber (30) nach einem der Ansprüche 3 bis 5,
wobei das Vorderteil (11) und/oder der Hauptkörper
(12) der Schreiberpatrone (10) ausgebildet ist, an
einer Innenoberfläche der Durchführung (23) des
Schreibergehäuses (20) derart geführt zu sein, um
eine im Wesentlichen spielfreie Positionierung der
Schreiberpatrone (10) im Schreibergehäuse (20) si-

cherzustellen.

Revendications

1. Cartouche (10) de stylo pour un stylo, avec un logement (20) de stylo sensiblement étanche à l'air, dans laquelle la cartouche (10) de stylo comporte une partie avant (11) qui présente un élément d'écriture (15), est prévue sur un corps principal (12) et est formée pour être disposée dans un passage (23) du logement (20) du stylo,

la cartouche (10) de stylo étant pourvue d'une rainure d'aération (13) qui s'étend au moins le long d'une zone partielle de la partie avant (11), la partie avant (11) se connectant au corps principal (12) via une transition,

la transition étant formée sur la surface latérale (11.1) de la partie avant (11) et formant une transition de connexion de la surface latérale (11.1) de la partie avant (11) à la surface extérieure (12.1) du corps principal (12), en particulier en tant que surface de butée (12.2) du corps principal (12) pour déterminer la position exacte de la partie avant (11) dans le passage (23) du logement (20) du stylo,

les dimensions extérieures du corps principal (12) étant en particulier plus grandes par rapport à un axe longitudinal de la cartouche (10) du stylo que celles de la partie avant (11),

la partie avant (11) et le corps principal (12) étant formés avec la surface de butée (12.2) sous la forme d'un logement (16) de cartouche de stylo en une pièce, dans lequel la rainure d'aération (13) est formée avec un profil en coupe transversale constant,

la rainure d'aération (13) s'étendant en outre le long de la surface de butée (12.2) du corps principal (12) et au moins partiellement le long de la surface extérieure (12.1) du corps principal (12),

la cartouche (10) de stylo étant pourvue d'une ouverture d'égalisation de pression à son extrémité arrière,

dans laquelle, lorsque la cartouche (10) de stylo est disposée dans le logement (20) de stylo, la rainure d'aération (13) forme un passage d'aération avec le logement (20) de stylo.

2. Cartouche (10) de stylo selon la revendication 1,

la cartouche (10) de stylo présentant une partie d'étanchéité (14) située près de l'extrémité où se trouve l'élément d'écriture (15), ou la partie avant (11), qui est conçue pour créer un contact étanche à l'air pour sceller l'élément d'écriture (15) qui est prévu sur la cartouche (10) de stylo

entre la partie avant (11) et un bouchon à joint pour la cartouche (10) de stylo et la rainure d'aération (13) étant de préférence étendue sur une partie de la partie d'étanchéité (14).

3. Stylo (30) comportant

un logement (20, 21, 22) de stylo qui est formé en au moins deux parties (21, 22) ; et une cartouche (10) de stylo comportant une partie avant (11) qui présente un élément d'écriture (15), est prévue sur un corps principal (12) et est disposée dans un passage (23) du logement (20) du stylo,

la cartouche (10) de stylo étant pourvue d'une rainure d'aération (13) qui s'étend au moins le long d'une zone partielle de la partie avant (11), la partie avant (11) se connectant au corps principal (12) via une transition,

la transition étant formée sur la surface latérale (11.1) de la partie avant (11) et formant une transition de connexion de la surface latérale (11.1) de la partie avant (11) à la surface extérieure (12.1) du corps principal (12), en particulier en tant que surface de butée (12.2) du corps principal (12) qui détermine la position exacte de la partie avant (11) dans le passage (23) du logement (20) du stylo,

les dimensions extérieures du corps principal (12) étant en particulier plus grandes par rapport à un axe longitudinal de la cartouche (10) du stylo que celles de la partie avant (11),

la partie avant (11) et le corps principal (12) étant formés avec la surface de butée (12.2) sous la forme d'un logement (16) de cartouche de stylo en une pièce, dans lequel la rainure d'aération (13) est formée avec un profil en coupe transversale constant,

la rainure d'aération (13) s'étendant en outre le long de la surface de butée (12.2) du corps principal (12) et au moins partiellement le long de la surface extérieure (12.1) du corps principal (12),

la cartouche (10) de stylo étant pourvue d'une ouverture d'égalisation de pression à son extrémité arrière,

dans lequel la rainure d'aération (13) forme un passage d'aération avec le logement (20) de stylo ;

les au moins deux parties de logement (21, 22) étant réalisées de manière étanche à l'air via un accouplement (25), en particulier une connexion par vis, un bouton-pression ou un bouchon.

4. Stylo (30) selon la revendication 3, une partie fixe (22a) étant prévue sur le logement (21, 22) de stylo sur lequel s'appuie la cartouche (10)

de stylo à l'intérieur du logement (21, 22) de stylo et qui est adaptée pour assurer une aération entre un côté arrière (12.3) de la cartouche (10) de stylo et une cavité (Z) dans le logement (20) de stylo.

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5. Stylo (30) selon la revendication 4,

la partie fixe (22a) ayant une zone qui n'est pas en contact avec la cartouche (10) de stylo, et la partie fixe (22a) définissant une cavité (22b) via laquelle un échange de gaz peut avoir lieu entre le réceptacle (A) de la cartouche (10) de stylo et la cavité (Z) dans le logement (20) de stylo.

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6. Stylo (30) selon l'une quelconque des revendications 3 à 5,

la partie avant (11) et/ou le corps principal (12) de la cartouche (10) de stylo étant formés pour être sur une surface intérieure du passage (23) du logement (20) de stylo de manière à assurer un positionnement sensiblement sans jeu de la cartouche (10) de stylo dans le logement (20) de stylo.

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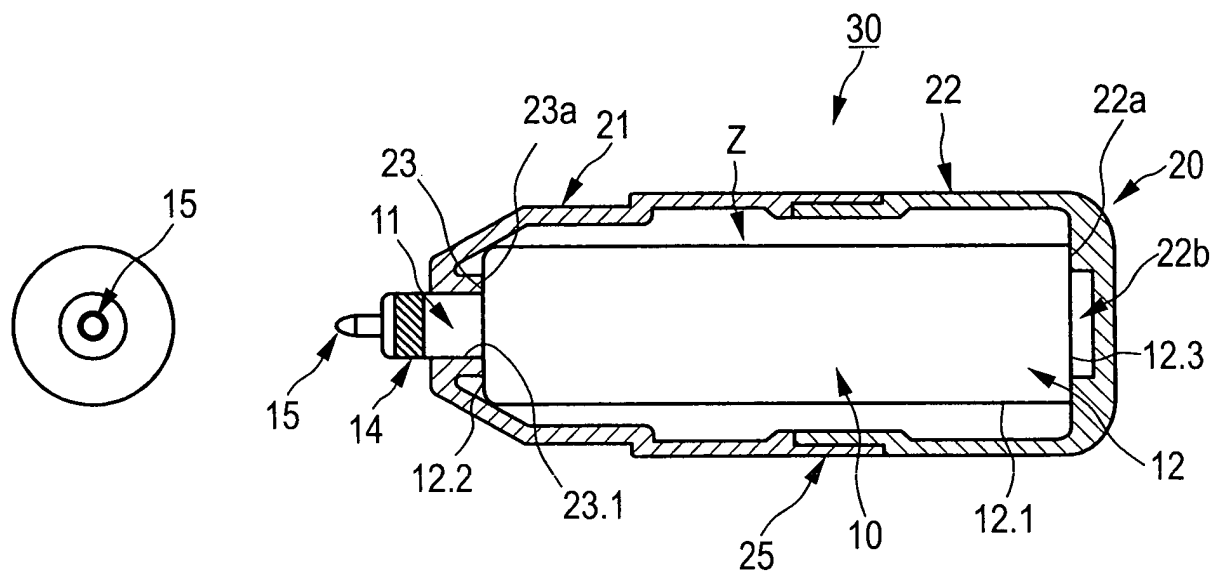


FIG. 1

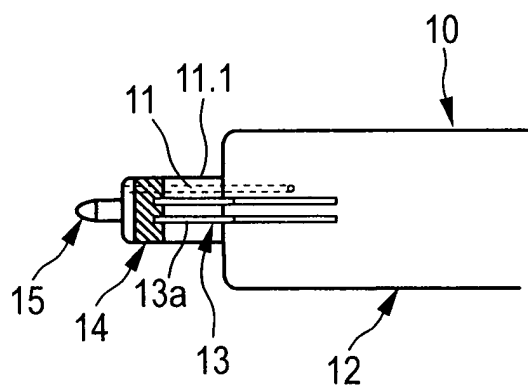


FIG. 2

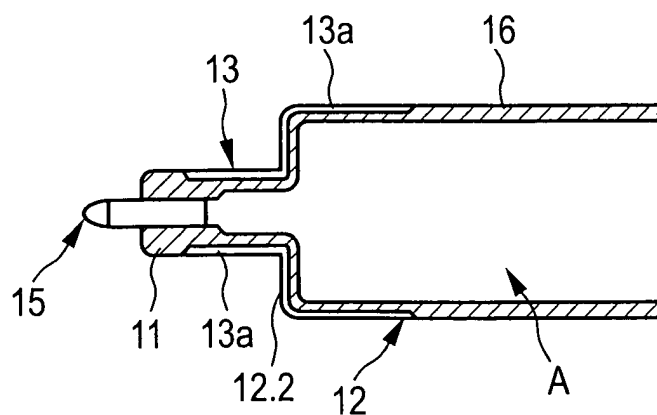


FIG. 3

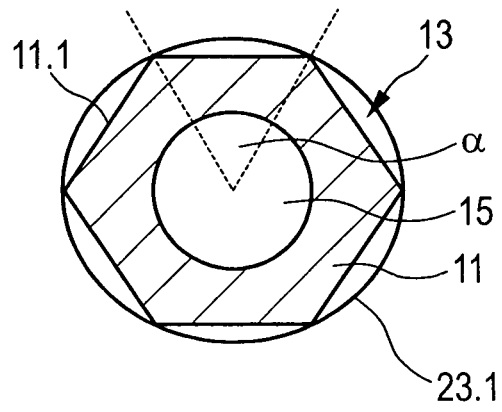


FIG. 4a

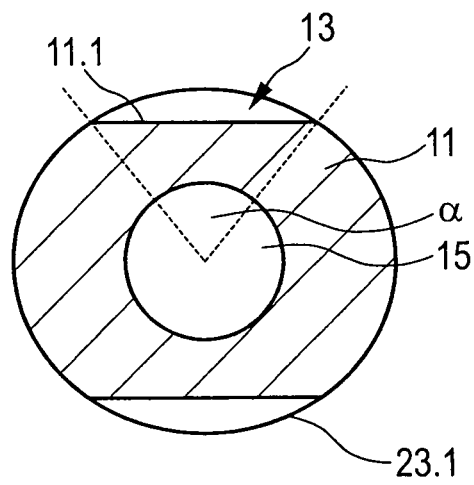


FIG. 4b

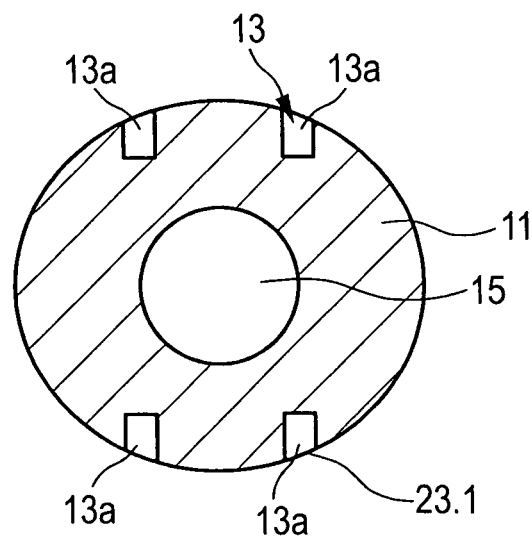


FIG. 4c

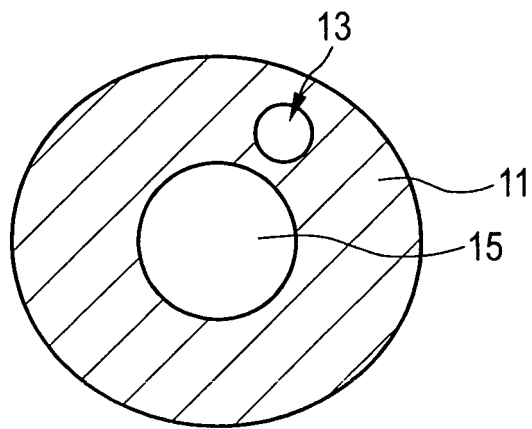


FIG. 4d

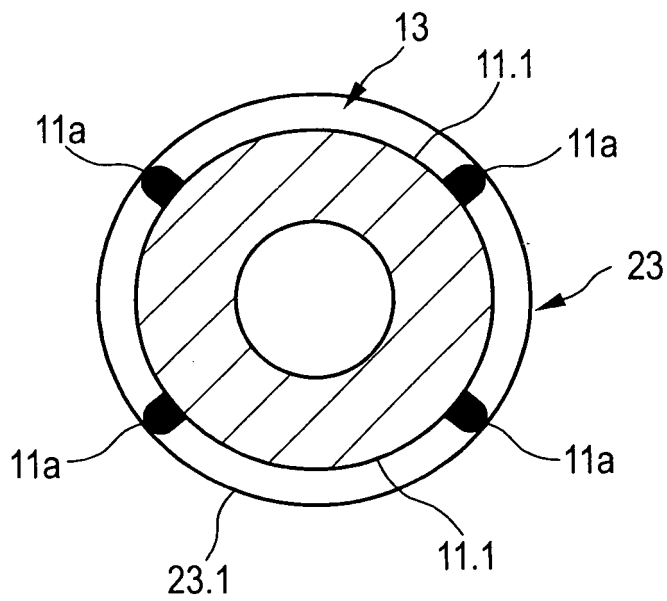
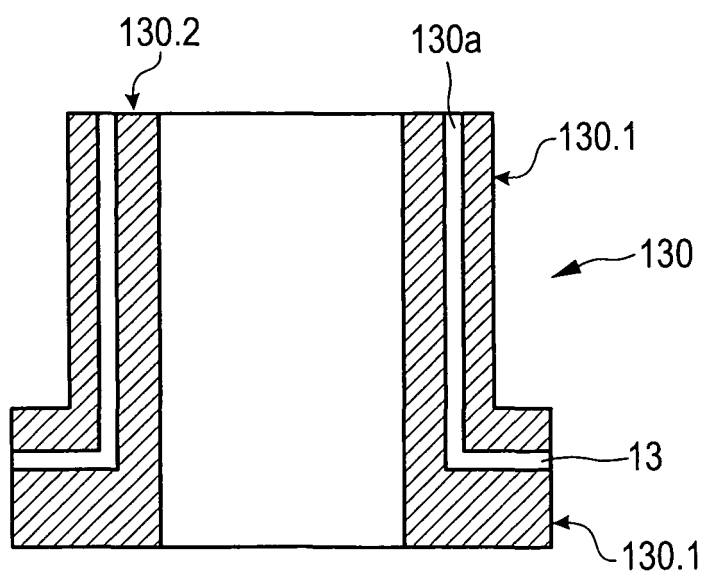
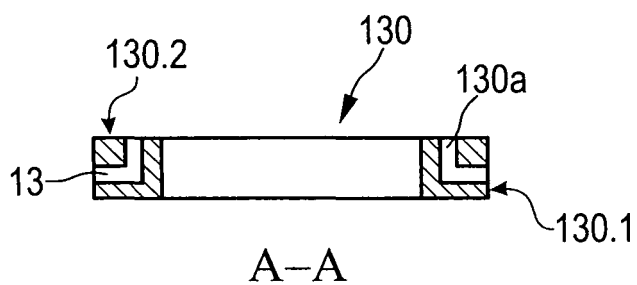
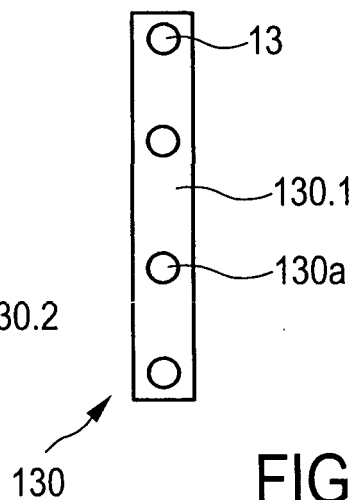
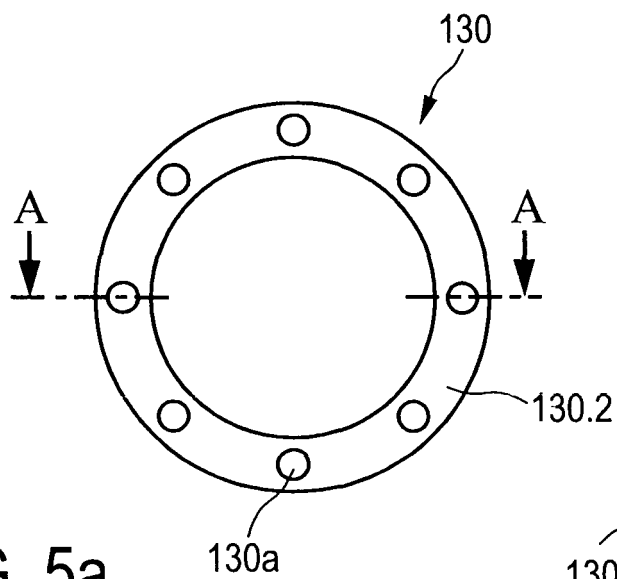


FIG. 4e



REFERENCES CITED IN THE DESCRIPTION

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