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(71) Applicants:
- **BIC Violex Single Member S.A.**
  14569 Anoixi (GR)
- **Société BIC**
  92110 Clichy (FR)

(72) Inventors:
- **Katsikas, Georgios**
  14569 Anoixi (GR)
- **Kopelas, Panagiotis**
  14569 Anoixi (GR)
- **Michenaud, Etienne**
  92110 Clichy (FR)

(74) Representative: **Cabinet Beau de Loménie**
158, rue de l'Université
75340 Paris Cedex 07 (FR)

(54) **WRITING INSTRUMENTS**

(57) A writing instrument (10) comprising:
-a barrel (12) having a longitudinal axis (X),
-a cartridge (16),
- a writing tip (22)
-a self-retracting and sealing system (20) for sliding the cartridge (16) inside the barrel (12) between a first position wherein the writing tip (22) extends outside the barrel (12) and a second position wherein the writing tip (22) is retracted, the system (20) comprising:
-a sliding button (25) configured to move the cartridge (16) between the first and the second position, and
-a sealing member (37) configured to be actuated between a closed position closing a writing passage (14a) of the writing instrument (10), wherein

the cartridge (16) is configured to actuate the sealing member (37) to the open position when the cartridge (16) is moved to the first position and to allow the sealing member (37) in the closed position when the cartridge (16) is in the second position.

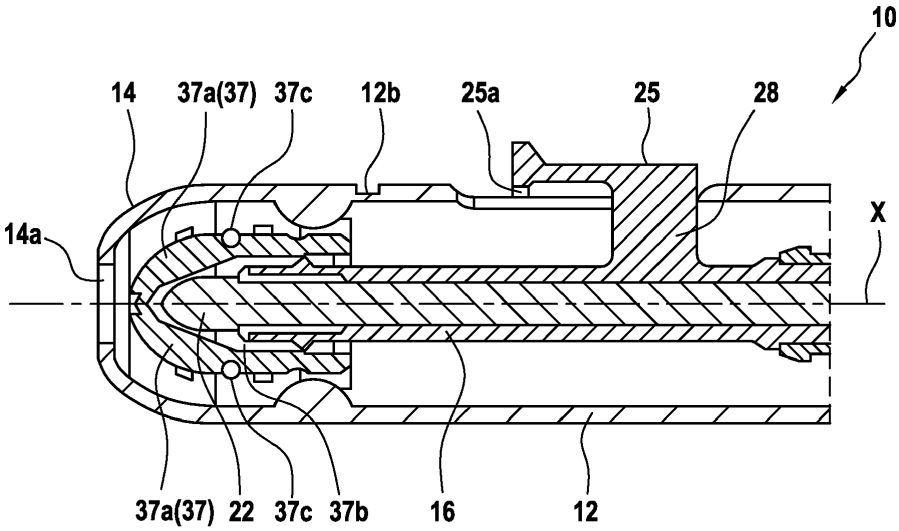

FIG.3

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Description

Technical Field

[0001] The present disclosure relates to the field of writing devices. More specifically, the present disclosure relates to writing devices with a writing tip that can be extended and retracted and sealed.

Background

[0002] Writing instruments comprising a barrel and a writing tip that can be extended outside the barrel for writing purpose when a user actuates a writing tip extension-retraction system inside the barrel and retracted inside the barrel when the user no longer needs to use the writing instrument are largely known.

[0003] However, these systems are not designed to provide protection to the internal components of the writing instrument, which may be subject to damage or drying out if exposed to the ambient environment, while also prioritizing seamless extension of the writing tip during operation and retraction during non-operation.

[0004] The present disclosure aims to address one or more problems in the prior art.

Summary

[0005] In a first aspect, the present disclosure relates to a writing instrument comprising a barrel having a longitudinal axis, a cartridge, a writing tip provided at one end of the cartridge, a self-retracting and sealing system configured to slide the cartridge axially inside the barrel between a first extended forward position wherein the writing tip extends outside the barrel and a second retracted rearward position wherein the writing tip is retracted inside the barrel from the first extended forward position along an axial rearward direction, the self-retracting and sealing system comprising: a sliding button configured to move the cartridge between the first extended forward position and the second retracted rearward position, and a sealing member configured to be actuated between a closed position where the sealing member substantially closes a writing passage of the writing instrument and an open position where the writing passage is not closed by the sealing member, wherein the cartridge is configured to actuate the sealing member from the closed position to the open position when the cartridge is moved from the second retracted rearward position to the first extended forward position and to allow the sealing member to move from the open position to the closed position when the cartridge is in the second retracted rearward position.

[0006] Thus, aspects of the present disclosure are able to provide an intuitive system for providing the easiest usage experience along with superior protection of the sensitive inner components of the writing instrument. Opening the writing instrument is natural and unobtrusive to the use of the writing instrument itself. Further, when the writing instrument is not in use, the writing tip may be automatically withdrawn into the barrel of the writing instrument and protected against the deleterious effects of the ambient environment. Additionally, the system is not bound to the orientation of the writing instrument itself, and thus is effective regardless of the circumstances of usage.

[0007] In an example, the sliding button is configured to slide. For example, the sliding button is configured to slide axially outside the barrel.

[0008] In an example, the sliding button and the cartridge are connected so as to move together.

[0009] In an example, the self-retracting and sealing system further comprises a connector that connects the button and the cartridge.

[0010] In an example, the sliding button, the connector and the cartridge are of unibody construction (integrally formed).

[0011] In an example, the writing instrument comprises holding means for holding the cartridge in the first extended forward position.

[0012] Thus, due to the construction of the writing instrument, the sealing system is able to avoid adding undue strain to the user while still operating effectively. The user does not need to provide an effort to keep the button actuated, and so any additional inconvenience by the inclusion of the system is avoided.

[0013] In an example, the sealing member comprises two moveable sealing parts configured to move between the closed position and the open position of the sealing member.

[0014] In an example, the sealing member comprises more than two moveable sealing parts, for example three or four sealing parts.

[0015] In an example, the sealing parts are configured to pivot around respective transverse axes, between the closed position and the open position.

[0016] In an example, the sealing parts sealingly cooperate with each other when the sealing member is in the closed position. By 'sealingly cooperate with each other' is understood that the contact between the sealing parts is substantially airtight so that air at atmospheric pressure does not tend to permeate at the contact surface, thus avoiding or substantially avoiding air exchanges between the inside of the sealing member where the writing passage is located, and the outside of the sealing member.

[0017] In case of more than two moveable sealing parts, a sealing part may be in contact with some or every other sealing parts.

[0018] In an example, the sealing parts are configured to be brought together in the closed position of the sealing member and to move apart from each other in the open position.

[0019] In an example, in the open position, the sealing parts define between them a passage for the writing tip. The passage may include the writing passage.

[0020] In an example, the writing member comprises a first biasing member for urging the sealing member from the open position to the closed position.

[0021] In an example, the first biasing member comprises a resilient member attached to the sealing parts so as to permanently urge the sealing parts to be brought together.

[0022] By 'permanently urge' is understood continuously applying an effort to bring parts together, in particular the sealing parts. The effort may be an effort to bring the sealing parts together when in the open position and to maintain the sealing parts together when in the closed position.

[0023] The resilient member of the first biasing member may be an elastic member. For example, the resilient member of the first biasing member may be a toric elastic member.

[0024] In an example, the cartridge is configured to push against an inner surface of the sealing member to actuate the sealing member from the closed position to the open position.

[0025] In an example, the sealing member is configured to interact with the cartridge when the sealing member is in the closed position so as to form a substantially airtight sealing chamber therein, the writing tip being inside the sealing chamber when the cartridge is in the second retracted rearward position.

[0026] In an example, the self-retracting and sealing system further comprises a second biasing member configured to urge the self-retracting and sealing system toward the second retracted rearward position.

[0027] In an example, the second biasing member is a spring.

[0028] In an example, the second biasing member is configured to exert permanent opposite pressure against the actuation of the button.

[0029] In an example, the second biasing member is connected to the cartridge.

[0030] In an example, the writing instrument further comprises a cartridge carrier having one or more bearings for supporting the cartridge inside the barrel.

[0031] In an example, the writing tip is a stylus for use with an electronic writing surface.

[0032] In an example, the cartridge is configured to supply writing medium such as ink to the writing tip.

[0033] The writing medium may comprise or consist of a solid writing medium, for example graphite; a liquid writing medium, for example ink; or any kind of writing medium available to the skilled person.

[0034] In an example, the writing instrument is ink-based. In other words, the writing medium is made of or comprises ink.

Brief Description of the Drawings

[0035]

Figure 1 shows a perspective view of a first exemplary embodiment of a writing instrument of the present disclosure in a retracted state.

Figure 2 shows a half-section view of the first exemplary embodiment of a writing instrument of the present disclosure in the retracted state.

Figure 3 shows a close-up view of the area III of Figure 2.

Figure 4 shows a perspective view of the first exemplary embodiment of a writing instrument of the present disclosure in a writing state.

Figure 5 shows a half-section view of the first exemplary embodiment of a writing instrument of the present disclosure in the writing state.

Figure 6 shows a close-up view of the area VI of Figure 5.

Figure 7 shows an exploded view of the first exemplary embodiment of the writing instrument.

Detailed Description

[0036] Hereinafter, a detailed description will be given of the present disclosure. The terms or words used in the description and the aspects of the present disclosure are not to be construed limiting as only having common-language or dictionary meanings and should, unless specifically defined otherwise in the following description, be interpreted as having their ordinary technical meaning as established in the relevant technical field. The detailed description will refer to specific embodiments to better illustrate the present disclosure, however, it should be understood that the presented disclosure is not limited to these specific embodiments.

[0037] Hereunder, the numbering "first" and "second" is to be understood as identifying and differentiating elements. The numbering is not meant to be understood as a ranking of relative importance of the elements. Unless stated otherwise, a "first" or a "second" element may be defined without the other "second" or "first" element.

[0038] In the present disclosure the term "gravity" naturally refers to the newtonian gravitational acceleration created by the earth and the term "gravity direction" refers to the direction of the acceleration which is oriented downwardly with respect to the location where the writing instrument is located.

[0039] In a first exemplary embodiment, the present disclosure relates to a writing instrument 10 as shown in figures 1 to 7 of which the description follows. Certain features of the writing instrument 10 are rendered invisible for ease of view in the figures. The following description will be made with reference to figures 1 to 7 simultaneously as some details of the writing instrument do not appear on all the figures.

[0040] The writing instrument 10 may be a marker, a felt pen, a highlighter, a ball point pen, a permanent or non-permanent marker or any other type of writing instrument or stylus with an extension and retraction mechanism for extending and retracting a writing tip of the instrument when necessary. The writing tip may, for example, convey ink to a writing surface when the writing instrument is ink-based. Alternatively, or additionally, the writing tip may be a contact point when the writing instrument is a stylus, such as, for instance, a stylus that may be used to interact with an electronic writing surface.

[0041] The writing instrument 10 may comprise a barrel or tubular body 12 having a longitudinal axis X. The tubular body 12 may be a unitary body, or may comprise multiple components.

[0042] The writing instrument 10 may comprise at a first forward end of the barrel 12 a cap 14 having a writing passage 14a formed therein. The cap 14 is mounted at the forward end of the writing instrument 10 such that the cap surrounds said forward end, with the writing passage 14a of the cap facing the writing tip 22, so as to allow the writing tip 22 to extend through the writing passage 14a when the cartridge is in the first extended forward position detailed below with respect to Figs. 4, 5 and 6. The cap 14 may be detachably attached to the barrel 12, such that the tip component 14 may be removed, for example, to replace internal components of the writing instrument 10. The cap 14 and the barrel 12 may be of unibody construction (integrally formed). The writing instrument 10 may also include a cartridge 16. In an example where the writing instrument 10 is an ink-based marking device, the cartridge 16 may be a conveyance for transporting ink to a writing tip 22 of the cartridge 16, such as via a channel 16a. The writing instrument 10 may include components for supporting the cartridge 16 within the writing instrument 10, such as a cartridge carrier 13. The cartridge carrier 13 may include one or more bearings 13 for centering the cartridge 16 inside the barrel 12. For example, the cartridge carrier 13 may include one or more sliding bearings. The writing instrument 10 may further comprise in the tubular body a tank (not shown) for storing a writing ink used by the writing tip 22. The barrel 12 may extend longitudinally in a rearward direction so as to cover as a sheath the internal components of the writing instrument 10. The writing instrument 10 may include other components or accessories typical to writing instruments, such as, but not limited to, a clip or an eraser.

[0043] The writing instrument 10 may comprise a self-retracting and sealing system 20 (hereinafter, "sealing system") that is configured to, when operated by a user, slide the writing tip 22 axially (along longitudinal axis X) through the barrel 12 between a first extended forward position (figs. 4, 5 and 6), wherein the writing tip 22 extends outside the writing passage 14a, and a second retracted rearward position (figs. 1, 2 and 3), in which the writing tip 22 has been retracted inside the barrel 12 along an axial rearward direction (arrow R) from the first extended forward position of figures 4, 5 and 6. The sealing system 20 is further configured to enclose the writing tip 22 when in the second rearward position.

[0044] The sealing system 20 may include a button 25 with at least a portion that is located on an external face of the writing instrument 10 such that it is accessible to a user. The button 25 may be located outside of the barrel 12. The button 25 may be located such that the user may actuate the button 25 when holding the writing instrument 10 in a writing position, e.g., when the user is holding the writing instrument 10 near the first forward end of the writing instrument 10 so as to mark a surface using the writing instrument 10. In the example shown, the button 25 is a sliding button 25. The button 25 may be configured to slide parallel to the axis X. The button 25 may be located proximately to the writing passage 14a. Thus, when a user is holding the writing instrument 10, such as to use the writing instrument 10 in the act of marking a surface, the user may be able to operate (actuate) the button 25 in a manner that is natural to the act of gripping a writing instrument 10, such as to operate the button 25 with a finger of the writing hand. A user may for example operate the button 25, and maintain the button 25 in an operated state when using the writing instrument 10 in the act of marking a surface. For example, the button 25 may be actuated to move forward.

[0045] As seen in Figs. 3 and 6, the writing instrument 10 may comprise holding means for holding the cartridge 16 in the first extended forward position. For example, holding means may include first holding means 25a of the button 25 and second holding means 12b of the barrel 12, the first holding means 25a and the second holding means 12b being coupled so as to maintain the cartridge 16 in the first extended forward position.

[0046] For example, the first holding means 25a may include a projection of the button 25 (projecting inwardly towards the axis X), the second holding means 12b including a notch of the barrel 12 configured so that, when the button 25 is actuated and the cartridge 16 is brought into the first extended forward position, the projection 25a enters the notch 12b so as to reversibly lock the button 25 and thereby lock the cartridge 16 in the first extended forward position.

[0047] The holding means may be configured so as to remain in a locked state as the user applies normal pressure to the writing tip 22 when using the writing instrument 10 in the act of marking a surface. The holding means may be configured so as to be unlockable by the user. The button 25 may be configured so that the projection 25a can be moved away from the notch 12b by the user. For example, the projection 25a may be a radial projection, for insertion in the notch 12b, provided at the end of an axial projection of the button 25 forming a cantilever, thereby facilitating deformation of the button 25 in the radial position.

[0048] The button 25 and the barrel 12 may be connected so as to move together. For example, the button 25 may be connected via a connector 28 to the cartridge 16. The connector 28 may be configured so as to transfer

an actuation of the button 25 to the cartridge 16. Thus, as the button 25 slides parallel to the axis X, the cartridge 16 may slide parallel to the axis X likewise. Figs. 4, 5 and 6 show views of the writing instrument 10 in a state during actuation of the button 25. When the button 25 is actuated, e.g. slided forward, the connector 28 and the cartridge 16 may be moved forward, parallel to the axis X. This may move the cartridge 16 toward the writing passage 14a, and thus extend the writing tip 22 outside of the barrel 12 through the writing passage 14a. For instance, the portion of the connector 28 connected to the button 25 may be substantially fixed laterally such that it moves along the axis X in sync with the button 25. The portion of the connector 28 connected to the cartridge 16 may be substantially fixed relative to the cartridge 16 such that it moves along the axis X in sync with the cartridge 16. As the button 25 is actuated, the cartridge 16 is brought towards the first extended forward position.

[0049] The connector 28 may extend away from the axis X, so as to connect the cartridge 16, inside the barrel 12, and the button 25, outside the barrel 12. The button 25, the connector 28 and the cartridge 16 may be of unibody construction (integrally formed).

[0050] Alternatively, the button 25 and the barrel 12 may be connected without contact, whether direct or indirect, for example via magnetic coupling, for example such that one of the button 25 and the barrel 12 comprises a magnet and the other one comprises a metal.

[0051] The cartridge 16 may be restrained so as to only be moveable in a sliding manner along the axis X. For instance, the bearings of the cartridge carrier 13 may be configured to restrain movement of the cartridge 16 away from the axis X, consequently also restraining movement of the button 25 and the connector 28 away from the axis X.

[0052] The sealing system 20 may include a sealing member 37 that is configured to, when in a closed position (such as in figs. 1, 2 and 3), substantially close the writing passage 14a so as to enclose the writing tip 22 within the barrel 12 of the writing instrument 10, and when in an open position (such as in figs. 4, 5 and 6), allow passage of the writing tip 22 through the writing passage 14a outside of the barrel 12 of the writing instrument 10. The sealing member 37 may be located at or near the forward end of the barrel 12. In an aspect, the sealing member 37 comprises sealing parts 37a. Sealing parts 37a may be moveable sealing parts moving between the open position and the closed position. In the open position, the sealing parts 37a substantially close the writing passage 14a by sealingly cooperating with each other. In the closed position, the sealing parts 37a allow passage of the writing tip 22 through the writing passage 14a outside of the barrel 12 of the writing instrument 10.

[0053] Figs. 4, 5 and 6 show that when the sealing member 37 is in the open position, the sealing member 37 is positioned away from axis X, opening the writing passage 14a and exposing the writing tip 22.

[0054] The sealing member 37 may comprise two sealing parts 37a. The two sealing parts 37a may pivot around respective transverse axes, between the closed position and the open position, for example along a respective pin axis (not shown). For the sake of facilitated understanding, the plane of the half-section views of figures 2, 3, 5 and 6 is perpendicular to the pivot direction of the sealing parts 37a; such that rotations are within the plane of the figures.

[0055] The two sealing parts 37a may be arranged such that one sealing part 37a is symmetrical to the other sealing part 37a by 180° rotation along the axis X. In complement or as an alternative, the two sealing parts 37a are symmetrical along a virtual plane. In the embodiment, the virtual plane may be the plane comprising the axis X and extending in the pivot direction of the sealing parts 37a, i.e. the direction perpendicular to the plane of the figures. The symmetry or symmetries of the two sealing parts 37a may be observed only in the closed position or in the open position. The symmetry or symmetries of the two sealing parts 37a may be observed in the closed position, in the open position and in any intermediate position.

[0056] In case of more than two sealing parts 37a, the sealing parts 37a may be arranged symmetrically along the axis X by multiple-fold rotational symmetry.

[0057] The sealing member 37 may include a seal, such as a rubber seal, positioned on an inner surface of the sealing member 37 and that is configured to, when the sealing member 37 is in the closed position, interact with the cartridge 16 so as to make the interface between the sealing member 37 and the cartridge 16 substantially air tight.

[0058] As the cartridge 16 moves through the writing passage 14a toward the first extended forward position, the cartridge 16 actuates the sealing member 37 from the closed position to the open position. In the example shown, the cartridge 16 comes into contact against the sealing member 37 and pushes the sealing member 37 from the closed position to the open position. In particular, the cartridge 16 pushes open the sealing parts 37a. When the cartridge 16 is in the second retracted rearward position, the cartridge 16 does not form an obstacle to the movement of the sealing member 37, and in particular allows the sealing member to move from the open position to the closed position.

[0059] In the example shown, the sealing parts 37a extend along the axis X. The sealing parts 37a may extend further rearward than the writing tip 22, when in the closed position. In particular, the sealing parts 37a may extend so as to be in contact with the cartridge 16 by surrounding the front end of the cartridge 16 when in the closed position. The sealing parts 37a may sealingly cooperate with the cartridge 16 when in the closed position. Therefore, when the sealing member 37 is in the closed position, the sealing parts 37a and the cartridge 16 may define a sealing chamber 37b therein. The sealing chamber 37b may be hermetically sealed, such that the writing tip 22 at the end of the cartridge 16 may be protected by

being provided in the sealing chamber 37b.

[0060] A biasing member may be provided for urging the sealing member 37 from the open position to the closed position. In particular, the biasing member may be provided for urging the sealing parts 37a from the open position to the closed position.

[0061] The biasing member may include a resilient member 37c. The resilient member 37c may be a toric elastic member. The resilient member 37c may for example be arranged against an outer surface of the sealing parts 37a, such that contraction of the elastic member 37c leads to urging the sealing parts 37a into the closing position.

[0062] A groove may be formed in the outer surface of the sealing parts 37a so as to receive the elastic member 37c.

[0063] The button 25 is configured to pivot about a pivot point, such as pin axis 34, that is perpendicular to the axis X of the barrel 12. The pin axis 34 may be located on or near an external surface of the barrel 12, and the pin axis 34 may be formed of a portion of the barrel 12.

[0064] When the button 25 is in the resting position (figs. 1, 2 and 3), such that a user has not actuated the button 25, the sealing member 37 is in the closed position closing the writing passage 14a. Thus, actuation of the button 25 (figs. 4, 5 and 6), such as by a user, provides for: 1) the writing tip 22 being pushed laterally (e.g., axially, along axis X) through the writing passage 14a such that the writing tip 22 is now in position for marking and 2) the sealing member 37 being pushed into the open position such that the writing passage 14a is no longer closed and the writing tip 22 is exposed. Likewise, when the button 25 is released, the writing tip 22 may be withdrawn back into the barrel 12 of the writing instrument 10, and the sealing member may move into the closed position, thus returning the writing instrument 10 to the state of figs. 1, 2 and 3.

[0065] The sealing system 20 may further comprise a biasing member 41, e.g. a spring, that is longitudinally disposed in the writing instrument 10 and has two opposite ends along its longitudinal dimension: one end may rest against at least one fixed stop that is arranged on an inner surface of the barrel 12, e.g. under the form of a peripheral inner ridge, and the opposite end of biasing member 41 may be ostensibly connected to the button 25, either directly or through an intermediary component. In the illustrations, the biasing member 41 is connected to the cartridge 16, and it is to be understood that the biasing member 41 may be connected operationally to the button 25 through linkages or components within the sealing system 20. Thus the biasing member 41 is positioned between a fixed part of the barrel 12 and a component of the button 25, or component otherwise interlinked with the button such as the cartridge 16, so as to exert permanent opposite (antagonistic) pressure against the actuation of the button 25. This ultimately pushes in a rearward direction the cartridge 16, and therefore pushes the sealing system 20 toward the second retracted position.

[0066] When the user ceases to actuate the button 25, the sealing system 20 is automatically released without any further specific action from the user and can slide rearwardly inside the barrel 12 under the action of biasing member 41, which is no longer compensated for by the actuation of the button 25, to occupy the second retracted position. Therefore the mere release of the button 25 as described above makes it possible to automatically close the sealing system 20 and cause the latter to move to a second retracted rearward position wherein the writing tip 22 is retracted inside the barrel 12 and the sealing member 37 is closed over the writing tip 22.

[0067] The barrel 12 may be formed of two parts. For example, the barrel 12 may be formed of two halves 12a assembled along a plane of assembly. The plane of assembly may be the plane comprising the connector 28 and in which the connector 28 moves. In other words, the plane may be the plane comprising the cartridge 16 and the button 25, and in which the cartridge 16 and the button 25 move.

[0068] Although the embodiments of the present disclosure have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications and alterations are possible, without departing from the present disclosure. It is also to be understood that such modifications and alterations are incorporated in the scope of the present disclosure and the accompanying claims.

Claims

1. A writing instrument (10) comprising:

- a barrel (12) having a longitudinal axis (X),
- a cartridge (16),
- a writing tip (22) provided at one end of the cartridge (16),
- a self-retracting and sealing system (20) configured to slide the cartridge (16) axially inside the barrel (12) between a first extended forward position wherein the writing tip (22) extends outside the barrel (12) and a second retracted rearward position wherein the writing tip (22) is retracted inside the barrel (12) from the first extended forward position along an axial rearward direction (R), the self-retracting and sealing system (20) comprising:
- a sliding button (25) configured to move the cartridge (16) between the first extended forward position and the second retracted rearward position, and
- a sealing member (37) configured to be actuated between a closed position where the sealing member (37) substantially closes a writing passage (14a) of the writing instrument (10) and an open position where the writing passage

(14a) is not closed by the sealing member (37), wherein

the cartridge (16) is configured to actuate the sealing member (37) from the closed position to the open position when the cartridge (16) is moved from the second retracted rearward position to the first extended forward position and to allow the sealing member (37) to move from the open position to the closed position when the cartridge (16) is in the second retracted rearward position.

2. The writing instrument (10) according to claim 1, wherein the sliding button (25) is configured to slide axially outside the barrel (12).

3. The writing instrument (10) according to claim 1 or 2, wherein the sliding button (25) and the cartridge (16) are connected so as to move together.

4. The writing instrument (10) according to any of claims 1 to 3, wherein the self-retracting and sealing system (20) further comprises a connector (28) that connects the button (25) and the cartridge (16), wherein the sliding button (25), the connector (28) and the cartridge (16) are optionally of unibody construction.

5. The writing instrument (10) according to any of claims 1 to 4, comprising holding means (12b, 25a) for holding the cartridge (16) in the first extended forward position.

6. The writing instrument (10) according to any of claims 1 to 5, wherein the sealing member (37) comprises two moveable sealing parts (37a) configured to move between the closed position and the open position of the sealing member (37).

7. The writing instrument (10) according to claim 6, wherein the sealing parts (37a) sealingly cooperate with each other when the sealing member (37) is in the closed position.

8. The writing instrument (10) according to claims 6 or 7, wherein the sealing parts (37a) are configured to be brought together in the closed position of the sealing member (37) and to move apart from each other in the open position.

9. The writing instrument (10) according to claim 8, wherein, in the open position, the sealing parts (37a) define between them a passage for the writing tip (22).

10. The writing instrument (10) according to any of claims 1 to 9, comprising a first biasing member (37c) for urging the sealing member (37) from the open position to the closed position.

11. The writing instrument (10) according to claim 10 taken in combination with any one of claims 6 to 9, wherein the first biasing member (37c) comprises a resilient member attached to the sealing parts (37a) so as to permanently urge the sealing parts (37a) to be brought together.

12. The writing instrument (10) according to any of claims 1 to 11, wherein the cartridge (16) is configured to push against an inner surface of the sealing member (37) to actuate the sealing member (37) from the closed position to the open position.

13. The writing instrument (10) according to any one of the previous claims, wherein the sealing member (37) is configured to interact with the cartridge (16) when the sealing member (37) is in the closed position so as to form a substantially airtight sealing chamber (37b) therein, the writing tip (22) being inside the sealing chamber (37b) when the cartridge (16) is in the second retracted rearward position.

14. The writing instrument (10) according to any one of the preceding claims, wherein the self-retracting and sealing system (20) further comprises a second biasing member (41) configured to urge the self-retracting and sealing system (20) toward the second retracted rearward position, wherein the second biasing member (41) is optionally a spring.

15. The writing instrument (10) according to any one of claims 1 to 14, wherein the cartridge (16) is configured to supply a writing medium such as ink to the writing tip (22).

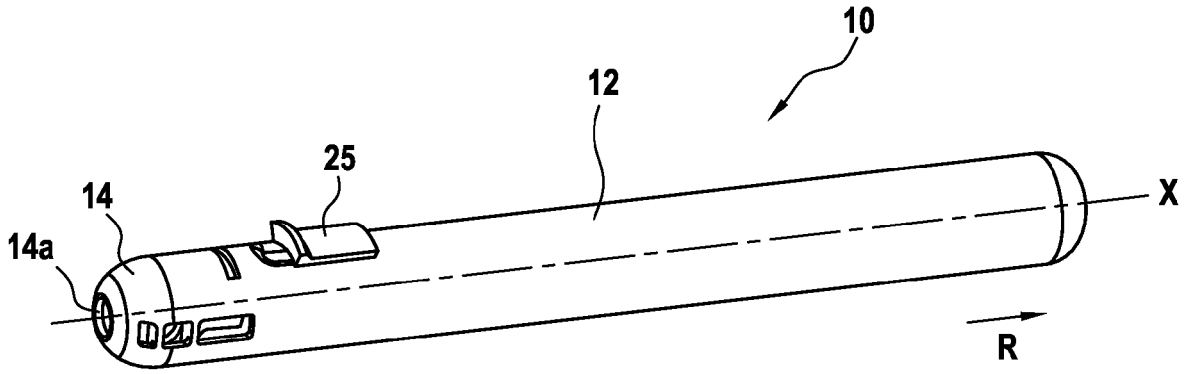

FIG.1

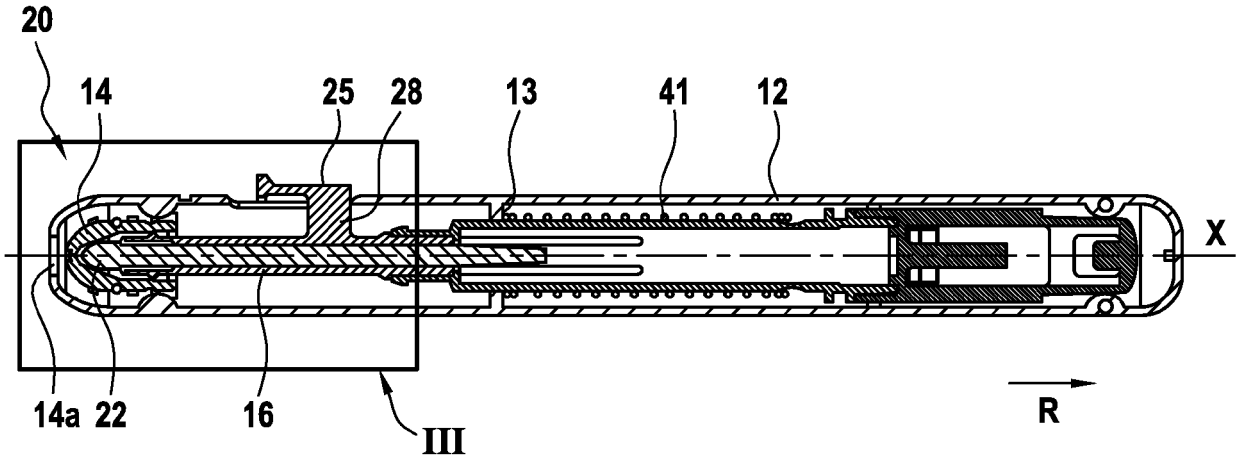

FIG.2

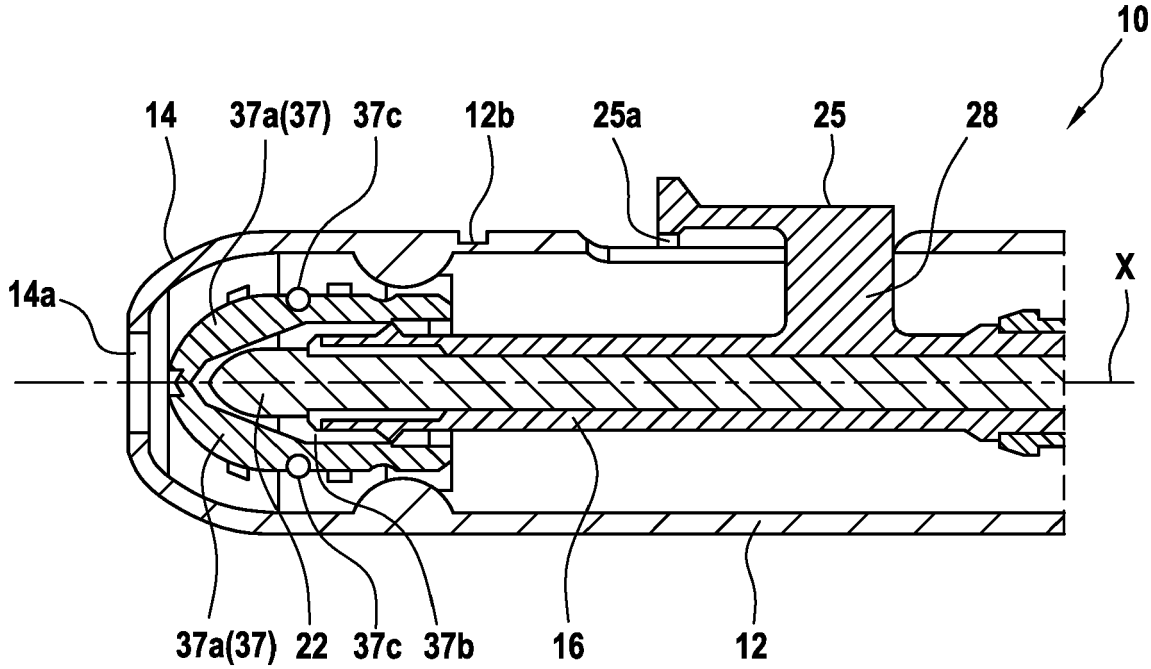
10
14
37a(37)
37c
12b
25a
25
28
14a
X
37a(37)
22
37c
37b
16
12

FIG.3

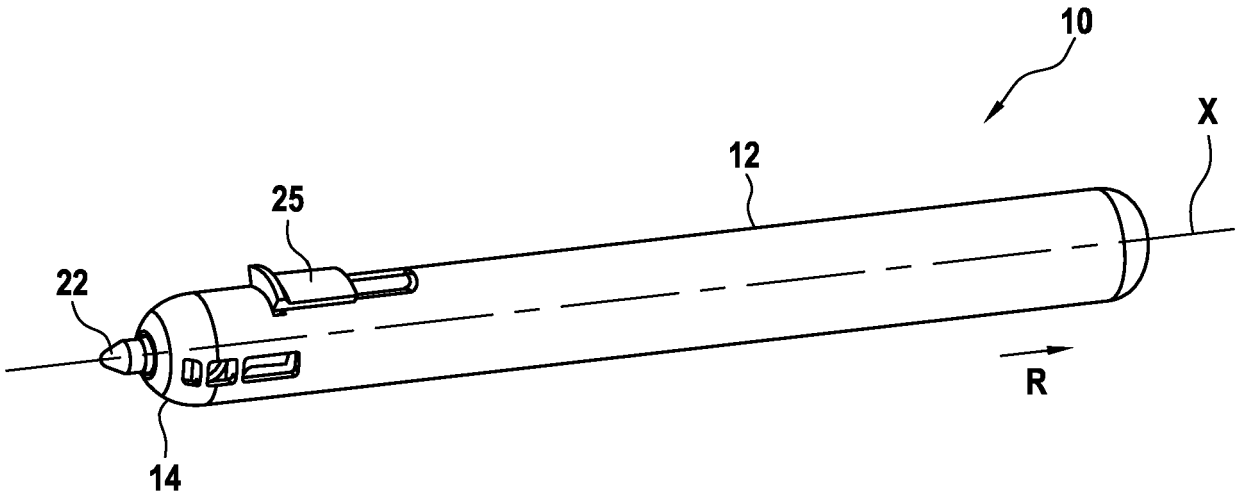
10
X
12
25
22
R
14

FIG.4

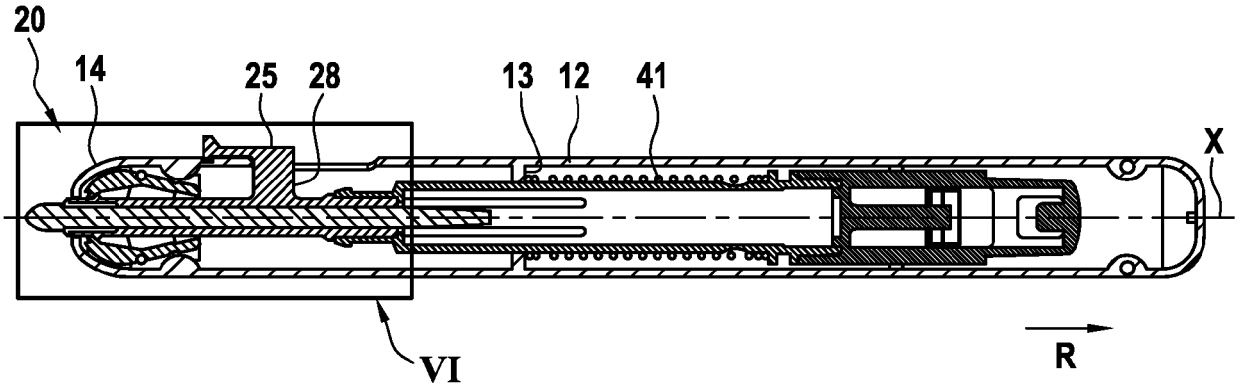
20
14
25
28
13
12
41
X
VI
R

FIG.5

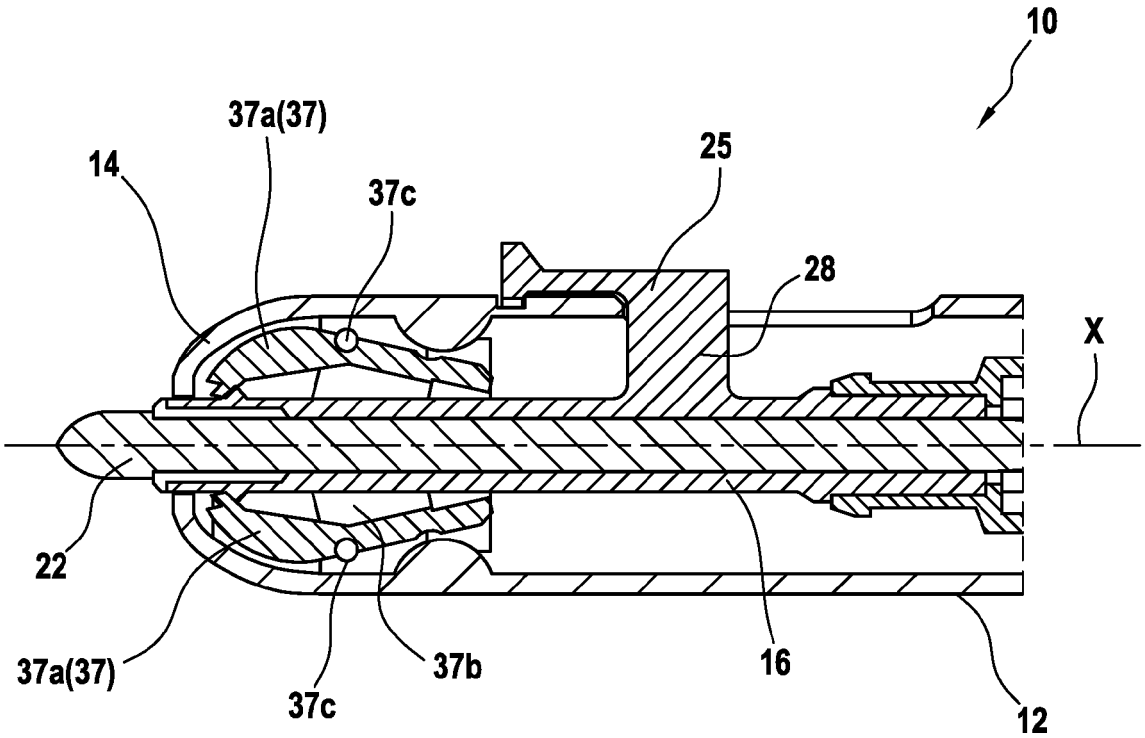
10
37a(37)
14
37c
25
28
X
22
37a(37)
37c
37b
16
12

FIG.6

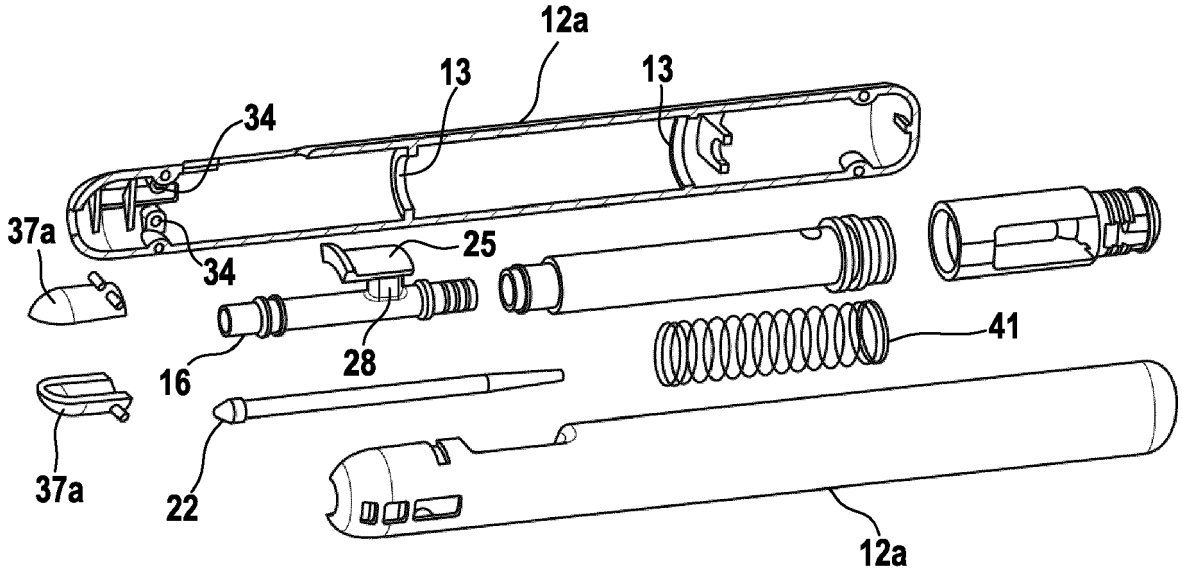

FIG.7

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Application Number
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Place of search	Date of completion of the search	Examiner
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