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(54) PEN WITH CLAMPING AREA

STIFT MIT KLEMMBEREICH

STYLO POURVU D'UNE ZONE DE SERRAGE

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Description

[0001] The invention is related to a pen having a first part, a second part pivotable with respect to the first part, wherein an area for clamping an object placed therein is formed between said both parts, and an elastic restoring device coupled to both parts and defining a geometric axis, the restoring force of the restoring device counteracting a pivoting movement of both parts which opens the clamping area.

[0002] These pens are known from the state of the art. They can be attached in a slip-safe manner at a pocket of a shirt or a jacket, by clamping a piece of cloth of the pocket in the clamping area of the pen.

[0003] For instance, the pen shown in Fig. 8 in an axial longitudinal section is known from US 7,527,448 B2. The clamping area of this pen is formed between the pen 200 and the near end 3aa of a clip 300, which is pivotable around a pivot axis perpendicular to the pen axis over a connecting structure R in the form of a see-saw with respect to the pen 200. On the side of the clip 300 opposite to the clamping area a helical spring 400 is arranged with geometric axis (spring axis) orthogonal to the axial pen axis and orthogonal to the pivot axis.

[0004] If one applies a force on the rearward part 3b of the clip, as indicated by the force-arrow F1, the helical spring 400 formed as a pressure spring is biased in direction of its geometrical axis and thereby compressed, while contemporarily the clamping area becomes larger in direction of said geometric axis of the spring 400. Upon discontinuation of the force F1 the clip 300 returns in its resting position by means of the axial restoring force of the helical spring 400, wherein an object meanwhile placed between the pen and the near end of the clip 300 can be clamped. Accordingly, the pen can be attached for instance at a pocket of a shirt in a simple and slip-safe manner. However, such a pen was found not completely satisfying as regards its functional reliability.

[0005] US 6,685,374 B1 discloses a pen having a clip pivotable to the pen body. A torsion spring is arranged exterior to the pen body between body flanges able to open wide to securably clasp thicker more voluminous objects.

[0006] FR 1 494 233 A discloses pincers to provide perforations in tickets. The tickets can be introduced into a space between the yaws of the pincer and perforation of tickets is effected by actuating a lever of the pincer providing a pivot movement between one yaw and a portion of the main body of the pincer about a pivot axis. On its other end the pincers have a bore to accommodate the end of a pen, and has clip-like means to fix the pincer carrying the pen in form of an agraffe.

[0007] The object of the invention is to improve a pen as initially discussed, in particular with view to its functional reliability.

[0008] To achieve this object, the invention provides a pen with the features of claim 1. Preferred embodiments are given in the sub-claims.

[0009] In the following, the torsion spring is also called restoring device, however, the restoring device is always meant to be a torsion spring. Further, the spring axis is subsequently also called geometrical axis, however, the geometrical axis always means the spring axis of the torsion spring.

[0010] When a pivoting movement increasing the extension of the clamping area in clamping direction is performed, a tension force acting radially with respect to the geometric axis of the restoring device is applied against the restoring force of the restoring device.

[0011] Under this provision one achieves that the restoring action of the restoring device is based on a bending moment of the restoring device directed in direction of the geometric axis of the restoring device and caused by said radially acting tension force. Therewith, one creates a condition that the angular moment generated when pivoting the parts can be induced as a bending moment, without the need of generating force-components caused by said angular moment, which do not contribute to the effective tensioning of the restoring device.

[0012] In contrast, in view of the angular moment acting on the clip 300 according to the state of the art discussed above, transversal forces in direction of the longitudinal extension of the clip and acting on the restoring device (helical spring 400) are generated, which can deteriorate the connecting mechanism of the restoring device and possibly release its connection.

[0013] The expression "pen" is to be understood in a general manner and comprises, apart from writing utensiles of all kind, in particular also cosmetic products as a lipstick or a mascara-pen/brush.

[0014] The geometric axis is arranged in the direction of the pivot axis. Thereby, one can make use of the provision described above in an optimized manner. In particular, one can arrange the geometric axis such that it coincides with the pivot axis. Thereby, one provides advantageous proportions for exterior forces applied, which cause the pivoting movement.

[0015] The restoring device surrounds its geometric axis in a circumferential direction over the full circumference. In that way, a radial limitation is provided around the geometric axis, which can lead to an easier mounting of the restoring device, on the one hand. On the other hand, the restoring device gains an increased stability.

[0016] According to a particularly preferred embodiment, an elongated portion of the restoring device is wound around the geometric axis in particular with a plurality of windings. Thereby, the bending action of the restoring device extends along a large bending path, although it is constructed in a compact manner. This bending portion of the restoring device can be manufactured for instance from spring steel, in particular over the overall length of the elongated portion. Further, it can be formed as a rod, with arbitrary cross section, wherein a circular cross section is preferred. The wound portion is, moreover, less susceptible against perturbations with view to for instance defouling or the intrusion of impurities, even

when having contact to the environment, since the deforming by bending is independent of having free space in the axial gaps between the windings.

[0017] Conveniently, the bending moment caused by said tension force is constant over the length of the wound elongated portion. To this end, it is in particular provided that the geometrical moment of inertia of the elongated portion does not vary in the bending direction along its length.

[0018] In a further preferred embodiment, the restoring device is pre-biased in a resting position defined by the lowest extension of the clamping area. In this way, also very thin plane objects can be reliably held in the clamping area. This lowest extension in the resting position can be effectively zero, there may, however, also remain a thin gap in clamping direction.

[0019] In the first case, those portions of both parts delimiting the clamping area automatically form a blocking device for a further reduction of the extension of the clamping area. In the latter case, one can preferably provide a first blocking device, which holds both parts in the resting position, against the initial tension of the restoring device.

[0020] As regards the other direction of motion, one may also think of a second blocking device which blocks a pivoting movement of both parts going beyond a given pivot angle. This angle should be at least 5°, preferably at least 10°, in particular at least 20°. Also, the angle should not exceed 80°, preferably not exceed 60°, in particular not exceed 40°. In this way, one obtains an advantageous combination from possible points of attack of the exterior force causing the pivot movement, and of a spatially compact construction of the pen.

[0021] It is convenient that the tension force is applied by means of a lever. In this way, a high clamping force obtained by means of a relatively high bending moment can be obtained by a relatively low exterior force.

[0022] To this end, a lever can be connected with an end of the wound elongated portion, in particular each one lever with each one end thereof, and the lever may comprise a portion arranged tangentially to the geometric axis. In other words, the coupling between both parts and the restoring device is tangentially spaced apart from the geometric axis.

[0023] In particular, one can provide that the levers directly assigned to the restoring device extend versus the rear of the pen, that is away from the side wherein the clamping area is arranged. In this way, the restoring device becomes arrangeable in the interior of the pen in an easy manner. Further, one can arrange that the levers assigned to both ends of the elongated wound portion, in the resting position, do not cross in a projection onto a plane defined by the pen axis and the clamping direction. Thereby, maintaining a compact construction and enough room for the functional units of the pen, one can make sure that the pivot movement enlarging the clamping area causes a bending moment of the restoring device, which goes along with an increase in the winding length of the wound portion.

[0024] The central axis of the pen the main body of the pen is axially extending along, is arranged transversely, in particular orthogonally to the pivot axis. This arrangement allows for longer levers and a slender form of the pen.

[0025] The central axis of the pen goes through the portion of the pen in which the restoring device is arranged. In other words, the arrangement of the clamping arrangement formed by both parts is not provided in form of a mounting spaced apart from the central axis, but moreover is integrated in the main body of the pen. This aspect of the invention can also be effectuated independently from the manner at the direction relative to the geometric axis of the tension force acting on the restoring device; accordingly, this aspect provides a further inventive concept, which allows not only a more compact construction, but also an improved aesthetic form of the pen. In particular, one can arrange for an essentially symmetric arrangement between the first and the second part, and/or that the axis of the pen and the pivot axis are essentially arranged in the same plane.

[0026] Thereby, advantageously one of the parts is a portion of the main body of the pen and in particular integrally connected therewith. However, one may also think of design both parts in form of a cap mountable onto the rear end of the main body of the pen, for instance by dipping, and to design the clamping arrangement suitable for such a mounting as a separated member with both parts and the restoring device coupled thereto. Also such a member is provided by the invention, namely in the form of a clamping arrangement with a first part, a second part pivotable with respect to the first part, wherein an area for clamping an object placed therein is formed between said both parts and an elastic restoring device coupled to both parts and defining a geometric axis, wherein a pivoting movement between both parts enlarging the extension of the clamping area in clamping direction is effectuable, wherein one of both parts is arranged for coupling to the rear portion of the pen, in particular by clipping, and which has in particular one or more of the functional features defined above.

[0027] In this context it is convenient when the restoring device is, referring to the central axis, arranged rearward any mechanism involved in the functionality of the pen for writing therewith. One can, however, also arrange that a mechanism for axially moving a lead of the pen extends through the portion, in which the restoring device is arranged, or overlaps therewith.

[0028] As regards the coupling of the restoring device to the both parts one may provide a fixed connection. Preferably, however, the restoring device is merely supported by the first and/or the second part, whereby a simple mounting as well as a simple exchange of the device is obtainable.

[0029] Such a supporting portion of the restoring device may conveniently comprise a section extending essentially parallel to the geometric axis. This is to avoid

transverse forces, which may lead to an unsymmetric load when transmitting the angular momentum of the motion into a bending moment of the elastic restoring device. Correspondingly, a counter bearing formed at the first and/or the second part can be arranged for the respective supporting portion of the restoring device.

[0030] As said above, the restoring force is provided by a torsion spring (leg spring, Schenkelfeder). Such a spring can be easily manufactured with predefined specific values.

[0031] Further features, details and advantages of the invention can be derived from the description of the enclosed figures. Therein:

Fig. 1 shows a pen in the first embodiment of the invention in a side view,

Fig. 2 shows the pen of Fig. 1 in a perspective view in an angular view from behind,

Fig. 3 shows the rearward end of a pen of a second embodiment in two perspective views,

Fig. 4 shows the rearward end of the pen of Fig. 3 in two further views,

Fig. 5 shows a suitable restoring device in different views,

Fig. 6 shows a detailed view of a pen in a further embodiment,

Fig. 7 shows a further detailed view of this embodiment, and

Fig. 8 shows the rear end of a pen known from the state of the art.

[0032] A main body 10 of the pen of a first embodiment shown in Fig. 1 extends along the central axis X of the pen. Opposite to the front end of the pen used for writing, the main body 10 narrows in the region of the rear portion 1 of the pen, at the beginning only slightly in the region of its front section 1b and then stronger in the region of its rear section 1a. Thereby, the main body 10 maintains its form of essentially a hollow cylinder at the bottom side in Fig. 1, and the narrowing in the rear section 1a is provided by a cut in the main body 10 which is inclined to the pen axis X.

[0033] With this cut in the main body, a space for a movable arrangement of a clip 2 is provided, which is, together with the rear portion 1 of the pen, a part of a clamping arrangement, with which the pen can be fixed for instance at a pocket of a shirt or a jacket.

[0034] Thereto, the clip 2 is pivotably mounted, spaced apart from the rear end of the pen, in a transition portion between the front section 1b and the rear section 1a of the rear portion 1 of the pen, around a pivot axis Z, which is orthogonal to the pen axis X and which crosses said axis in the shown embodiment. The clip 2 is, therefore, mounted like a see-saw with respect to the rear portion 1 of the pen, wherein the rear sections 2a, 1a face each other as the front sections 2b, 1b of both parts 2, 1 of the clamping arrangement.

[0035] In Fig. 1 the clip 2 is shown in its resting position, wherein a clamping area 3 formed between the front sections 2b, 1b of both parts 2, 1 is minimum in its extension in a clamping direction Y arranged orthogonal to the X-Z plane. The clamping area 3 is limited by a first clamping face 1c, which extends in the front section 1b of the rear portion 1 of the pen essentially parallel to the X-Z plane and spaced therefrom. The distance between the clamping face 1c from the X-Z plane corresponds essentially to half the diameter of the main body 10 in its rearward portion 1. The clamping face 1c is, however, slightly recessed with respect to the outer contour of the front portion of the pen, over a short slope.

[0036] A second clamping face 2c, which is formed as a plane face on the inner side of the clip 2 in its front section 2b is facing first clamping face 1c. In the resting position, the second clamping face 2c extends essentially parallel to the first clamping face 1c, wherein a gap of approximately 0.5 to1 mm gap width (in radial direction or clamping direction Y) is formed between both clamping faces.

[0037] Due to the first clamping face 1c being slightly recessed inwardly with respect to the outer contour of the pen in its front portion, an improved clamping action is obtained, which can be explained in a demonstrative manner in that a holding of a laminar piece of clothes is possible through the angulate clamping thereof, even hypothesizing that the mounting of the clip 2 at the rearward 1 of the main body 10 would be immovable.

[0038] The radial dimension (or dimension in clamping direction Y) of the front section 2b of the clip 2 is relatively small, such that the outer face in the front section 2b of the clip 2 assumes a contour up to the rear section 2a thereof, which contour corresponds essentially to the opposite contour of the main body 10 in its rearward portion 1. In this regard, there is a form symmetry of the parts 1 and 2 of the clamping arrangement.

[0039] From Fig. 1 one can further see that front abut-portions 1d, 2d of the rearward portion 1 of the pen / 2 of the clip are formed in the region between the clamping faces 1C, 2c and the pivot axis Z, said abut-portions abutting on each other in the resting position of the clamping arrangement and thereby delimiting a pivoting movement between the pen and the clip 2 in a direction diminishing the extension of the clamping area 3 in the clamping direction Y. The other way round, at the rear sections 1a, 2a rear abut portions 1e, 2e facing each other are formed as edges of a section formed between the cylindrical base form of the outer contour and the sloped recess/cut, which abut on each other, when the clip 2 in Fig. 1 is pivoted in clockwise direction, thereby delimiting such a pivoting movement. Thus, the space traversed by the

rear section 2A of the clip 2 when a pivoting movement starting from the resting position until the maximum pivoting position (Fig. 3) is reached, has the form of a V in a projection onto the X-Y plane.

[0040] Coupled to the rearward portion 1 of the pen and the clip 2 is a wounded bending spring 4, which kernel is a wound bending spring 4, which kernel is a portion 5 wounded around the axis A of the spring 4. In the resting position of the spring 4 in the not-mounted state, the winding length in this embodiment is 6,5 π (Fig. 5D); one can, however, also use smaller or larger winding lengths.

[0041] The spring 4 is loaded, when two levers arranged respectively at the ends of the wound portion 5 in form a legs 6, 8 of the wound bending spring 4 formed as a leg spring are moved so as approaching each other, that is in a direction, in which the winding length is increased by the angle traversed in this movement. The force thereby introduced into the spring 4 by means of the levers 6, 8 acts radially with respect to the spring axis A and generates a bending movement in the direction of the spring axis A.

[0042] As best to be seen from Fig. 2 and Fig. 4A, the spring 4 is coupled to the rearward portion 1 of the pen and the clip 2, such that the spring axis A is colinear to the pivoting axis Z, and even coincides therewith in the shown embodiments.

[0043] The leg portions 6, 8 extending tangentially to the spring axis A are, thus, arranged essentially in a plane parallel to the X-Y plane, that is in a rotary plane of the pivoting movement between the clip 2 and the rearward portion 1 of the pen. Therefore, a pivoting movement of the clip 2 caused by an external force onto clip 2 when the pen is fixed, loads the spring 4 without the generation of transversal forces, which do not serve for the restoring force of the spring 4, the latter being due to the deforming of the spring and contributes to the clamping action.

[0044] As regards the connecting coupling of the spring 4, leg end portions 7, 9 which are bent off from the tangentially extending leg portions 6, 8 by essentially 90°, thereby extending in parallel to the spring axis A, form supported sections, which are supported with respect to the circumferential direction of the spring axis A at inner faces 1f/2f of the rear portions 1 of the pen / 2 of the clip, which inner faces face each other, that is in the region of the rear sections 1a and 2a. By means of this support, a angular momentum caused by the pivoting of both parts 1, 2 through an external force is transmitted to the spring 4.

[0045] As regards the holding of the spring against a possible shift in the direction of the pen axis it is provided that the space enclosed by the wound portion 5 of the spring 4 is at least partially penetrated by a journal 21 (Fig. 2) or journal portions 21' (Fig. 4A), wherein the outer diameter of the journal should not excess the inner diameter of the wound portion 5 when the spring 4 is completely biased. The journals 21, 21' can be assigned to the rearward portion 1 of the pen or to the clip. In the embodiments shown they are assigned to the clip 2 and are mounted in a journal bearing 11 between the rear section 1a and the front section 1b of the rearward portion 1 of the pen.

[0046] Further, a supporting bar 13 extending parallel to the pivot axis Z at the inner face 2f of the rear section 2a of the clip 2 is provided, at which the angled supported portion 9 of the leg 8 of the spring 4 is supported in a direction tangentially to the spring axis A. As a further holding element, a bar 12 is provided, which extends parallel to the support bar 13 in a portion close to the pivot axis of the rear section 1a of the rearward portion 1 of the pen beyond the wound portion 5 of the spring 4. In contrast, the supported portion 7 bent off the pen-side leg 6 of the spring 4 can slide tangentially to the spring-axis A (that is, with component in direction of the pen axis X) along the inner face 1f, to not oppose a tangential movement of the leg 6 occurring at a bending of the torsion (leg) spring 4.

[0047] In the resting position of the clamping arrangement, the angle between the legs 6, 8 of the mounted spring 4 is lowered from the 90° of the unbiased spring in the non-mounted state shown in Fig. 5A to about 40°, that is the spring 4 is already biased in the resting position, to provide for a secure fixing of the pen by means of the clamping arrangement. Further dimensions and details of embodiments of the restoring device in form of a torsion (leg) spring 4 of the invention are shown in the Figs. 5A to 5C. In particular, one can see that the windings are spaced apart from each other by about half a millimeter to avoid friction contact. This can also be seen in the mounted state, in particular from the second embodiment shown in Fig. 3B, in which the clamping arrangement is pivoted at maximum against the restoring moment of the spring 4.

[0048] In particular from Fig. 4A one can see at the wound portion 5, as far it is not penetrated by the journals 21', is essentially free. Even if the space between the windings is fouled, said possibly occurring fouling will not influence the restoring action of the spring 4, since the latter is based on a bending moment and not on an axial compression.

[0049] In the embodiment shown in Fig. 6, a holding element in form of a quarter-cup 17 is provided replacing the bar 12. Therefore, one support element 16 each is arranged between the inner face 1f and the journal bearing 11 in order to absorb forces acting onto the journal bearing 11 at the rearward portion 1 of the pen when the clip 2 is mounted. The quarter-cup 17 is arranged between the support elements 16. On the side of the clip 2, angulated reinforcement elements 18 provide for an improved structural stability and stiffening of the journals 21" (Fig. 7) determining the pivot axis Z.

[0050] The main body 10 with the rearward portion 1 of the pen are formed from plastic in the shown embodiments, they can, however, be also formed from another material, for instance from a metal. By means of the open structure of the clamping mechanism as described above, the parts can be easily mounted. To this end, it

is merely necessary that the spring 4 is (partly) penetrated by the journals 21/21'/21", and the journal portions 21' are to clicked into the journal bearing 11 with the spring 4 held in this position. In the same manner, replacement of the spring 4 is simple.

[0051] As can be seen from the above figures, the pen according to the invention does not only provide for a reliable clamping function by means of the integrated clip, but also an aesthetically improved pen.

[0052] By the way, the invention is not limited to the exemplary embodiments shown in the enclosed figures.

List of Reference Numerals (Figs. 1 to 7):

[0053]

1	first part (rearward portion of the pen)
2	second part (clip)
1a, 2a	rear section
1b, 2b	front section
1c, 2c	first/second clamping face
1d, 2d	front abut-portions
1e, 2e	reard abut-portions
1f, 2f	inner faces
3	clamping portion
4	restoring device (spring)
5	wound portion
6, 8	lever/leg supported portions
10	main body
11	journal bearing
12	bar
13	supporting bar
16	supporting element
17	quarter-cup
18	reinforcing element
21, 21', 21"	journals (-portion)
A	geometric axis (spring axis)
X	pen-axis
Y	clamping direction
Z	pivot axis

Claims

1. Pen, having a main body (10) that extends axially along a central pen-axis (X), the pen having
a first part (1),
a second part (2) pivotable with respect to the first part (1), wherein an area (3) for clamping an object placed therein is formed between said first and second parts (1, 2),
said first and second parts (1, 2) forming a clamping arrangement which also comprises a torsion spring (4) coupled to said first and second parts (1, 2) and said torsion spring (4) surrounding its own spring axis (A) in a circumferential direction over the full circumference, the restoring force of the torsion spring (4) counteracting a pivoting movement of said first and second parts (1, 2) said pivoting movement being directed to open the clamping area, the spring axis (A) of said torsion spring (4) being arranged coaxial with the axis (z) of the pivoting movement and wherein the pivot axis (Z) is arranged transverse, in particular orthogonal to the central axis (X) of the pen,
characterized in that the arrangement of the clamping arrangement is integrated in the main body (10) of the pen by having the central axis (X) of the pen and the pivot axis (Z) essentially arranged in the same plane and the spring axis (A) going essentially through the central axis (X) of the pen.

2. Pen according to claim 1, wherein an elongated portion (5) of the torsion spring (4) is wound around the spring axis (A) with a plurality of windings.

3. Pen according to claim 2, wherein a bending moment caused by a tension force which counteracts the restoring force is constant over the length of the wound elongated portion (5).

4. Pen according to any one of the preceding claims, wherein the torsion spring (4) is pre-biased in a resting position defined by a lowest extension in clamping direction of the clamping area (3) in its closed state.

5. Pen according to claim 4, wherein a first blocking device (1d, 2d) holds both parts (1, 2) in the resting position, against the initial tension of the torsion spring (4).

6. Pen according to any one of the preceding claims, wherein a second blocking device (1e, 2e) blocks a pivoting movement of both parts (1, 2) going beyond a given pivot angle.

7. Pen according to any one of the preceding claims, wherein a/the tension force counteracting the restoring force is applied by means of a lever (6, 1a; 8, 2a).

8. Pen according to claim 7, wherein a lever is connected with an end of the wound elongated portion (5), in particular each one lever with each one end thereof, and has in particular a portion (6, 8) arranged tangentially to the spring axis (A).

9. Pen according to any of the claims 5 to 8, wherein said first blocking device comprises abut-portions (1d, 2d) abutting on each other in said resting position and being formed in the region between the clamping faces (1c, 2c) and the pivot axis (Z).

10. Pen according to any of the preceding claims, wherein the first part (1) is a portion of the main body (10) of the pen and is in particular integrally connected therewith.

11. Pen according to any of the preceding claims having a mechanism involved in the functionality of the pen for writing therewith, wherein the torsion spring (4) is, referring to the central axis (X), arranged rearward any such mechanism.

12. Pen according to any one of the preceding claims, wherein the torsion spring (4) is supported by the first and/or the second part.

13. Pen according to claim 12, wherein a supporting portion of the torsion spring (4) comprises a portion (7,9) extending essentially parallel to the spring axis (A).

14. Pen according to claim 12 or 13, wherein a counter bearing (1f; 2f, 13) for the respective support portion of the torsion spring (4) is formed at the first (1) and/or second (2) part.

Patentansprüche

1. Stift mit einem sich axial längs einer zentralen Stiftachse (X) erstreckenden Hauptkörper (10), wobei der Stift Folgendes aufweist:

einen ersten Teil (1),
einen relativ zu dem ersten Teil (1) schwenkbar angeordneten zweiten Teil (2), wobei zwischen dem ersten und dem zweiten Teil (1, 2) ein Bereich (3) zum Einklemmen eines darin einzubringenden Gegenstands gebildet ist,
wobei der erste und der zweite Teil (1, 2) eine Klemmanordnung bilden, die zudem eine Torsionsfeder (4) umfasst, die mit dem ersten und zweiten Teil (1, 2) gekoppelt ist, und die Torsionsfeder (4) ihre eigene Federachse (A) in Umfangsrichtung über den gesamten Umfang umgibt, wobei die Rückstellkraft der Torsionsfeder (4) einer Schwenkbewegung des ersten und des zweiten Teils (1, 2) entgegenwirkt, wobei die Schwenkbewegung auf ein Öffnen des Klemmbereichs gerichtet ist, wobei die Federachse (A) der Torsionsfeder (4) koaxial zu der Achse (Z) der Schwenkbewegung angeordnet ist und wobei die Schwenkachse (Z) quer, insbesondere orthogonal zu der zentralen Stiftachse (X) angeordnet ist,
dadurch gekennzeichnet, dass die Anordnung der Klemmanordnung in den Hauptkörper (10) des Stiftes integriert ist, indem die zentrale Stiftachse (X) und die Schwenkachse (Z) im Wesentlichen in derselben Ebene angeordnet sind und die Federachse (A) im Wesentlichen durch die zentrale Stiftachse (X) verläuft.

2. Stift nach Anspruch 1, bei dem ein länglich gebildeter Bereich (5) der Torsionsfeder (4) mit einer Vielzahl von Wicklungen um die geometrische Federachse (A) gewunden ist.

3. Stift nach Anspruch 2, bei dem ein aufgrund einer der Rückstellkraft entgegengesetzten Spannkraft hervorgerufenes Biegemoment konstant über die Länge des gewundenen, länglich gebildeten Bereichs (5) wirkt.

4. Stift nach einem der vorhergehenden Ansprüche, bei dem die Torsionsfeder (4) in einer Ruheposition vorgespannt ist, die durch eine niedrigste Ausdehnung in Klemmrichtung des Klemmbereichs (3) in seinem geschlossenen Zustand definiert ist.

5. Stift nach Anspruch 4, bei dem eine erste Sperreinrichtung (1d, 2d) die beiden Teile (1, 2) gegen die Vorspannung der Torsionsfeder (4) in der Ruhestellung hält.

6. Stift nach einem der vorhergehenden Ansprüche, bei dem eine zweite Sperreinrichtung (1e, 2e) eine Schwenkbewegung der beiden Teile (1, 2) über einen vorgegebenen Winkel hinaus sperrt.

7. Stift nach einem der vorhergehenden Ansprüche, bei dem die/eine der Rückstellkraft entgegengesetzte Spannkraft über einen Hebel (6, 1a; 8, 2a) aufgebracht wird.

8. Stift nach Anspruch 7, bei dem ein Hebel mit einem, insbesondere je einer mit einem jeweiligen Ende des gewundenen, länglich gebildeten Bereichs (5) verbunden ist und insbesondere einen tangential zur Federachse (A) verlaufenden Bereich (6, 8) aufweist.

9. Stift nach einem der Ansprüche 5 bis 8, bei dem die erste Sperrrvorrichtung Stoßabschnitte (1d, 2d) umfasst, die in Ruhestellung aneinander stoßen und in dem Bereich zwischen den Klemmflächen (1c, 2c) und der Schwenkachse (Z) gebildet sind.

10. Stift nach einem der vorhergehenden Ansprüche, bei dem das erste Teil (1) ein Bereich des Stifthauptkörpers (10) ist und insbesondere integral mit ihm verbunden ist.

11. Stift nach einem der vorhergehenden Ansprüche mit einer der Schreibfunktion des Stiftes dienenden Einrichtung, wobei die Torsionsfeder (4) bezüglich der zentralen Achse (X) hinter jeglicher der Schreibfunktion des Stiftes dienenden Einrichtung angeordnet ist.

12. Stift nach einem der vorhergehenden Ansprüche, bei dem sich die Torsionsfeder (4) an dem ersten und/oder dem zweiten Teil abstützt.

13. Stift nach Anspruch 12, bei dem ein Abstützbereich der Torsionsfeder (4) einen sich im Wesentlichen parallel zu der Federachse (A) erstreckenden Bereich (7, 9) aufweist.

14. Stift nach Anspruch 12 oder 13, bei dem an dem ersten (1) und/oder zweiten (2) Teil ein Gegenlager (1f; 2f, 13) für den jeweiligen Abstützbereich der Torsionsfeder (4) gebildet ist.

Revendications

1. Stylo, présentant un corps principal (10) s'étendant axialement le long d'un axe central (X) du stylo, le stylo présentant :

une première partie (1),
une deuxième partie (2) susceptible de pivoter par rapport à la première partie (1), une zone (3) étant formée entre lesdites première et deuxième parties (1, 2) pour pincer un objet qui y est placé,
lesdites première et deuxième parties (1, 2) constituant un dispositif formant pince comprenant en outre un ressort de torsion (4) couplé auxdites première et deuxième parties (1, 2), ledit ressort de torsion (4) entourant son propre axe de ressort (A) dans le sens circonférentiel sur toute sa circonférence, la force de rappel du ressort de torsion (4) agissant à l'encontre d'un mouvement de pivotement desdites première et deuxième parties (1, 2), ledit mouvement de pivotement étant dirigé vers une ouverture de la zone de pincement, l'axe de ressort (A) dudit ressort de torsion (4) étant coaxial à l'axe (Z) du mouvement de pivotement et ledit axe de pivotement (Z) étant transversal, notamment orthogonal à l'axe central (X) du stylo,
caractérisé en ce que le dispositif constitué par le dispositif formant pince est intégré dans le corps principal (10) du stylo en ayant l'axe central (X) du stylo et l'axe de pivotement (Z) agencés sensiblement dans le même plan et l'axe de ressort (A) traversant sensiblement l'axe central (X) du stylo.

2. Stylo selon la revendication 1, dans lequel une partie allongée (5) du ressort de torsion (4) est enroulée autour de l'axe de ressort (A) selon une pluralité de spires.

3. Stylo selon la revendication 2, dans lequel un moment de flexion causé par une force de tension agissant à l'encontre de la force de rappel est constant sur toute la longueur de la partie allongée (5) enroulée.

4. Stylo selon l'une quelconque des revendications précédentes, dans lequel le ressort de torsion (4) est précontraint dans une position de repos définie par une extension la plus basse dans la direction du pincement de la zone de pincement (3) à l'état fermé.

5. Stylo selon la revendication 4, dans lequel un premier organe de blocage (1d, 2d) maintient les deux parties (1, 2) en position de repos, contre la précontrainte du ressort de torsion (4).

6. Stylo selon l'une quelconque des revendications précédentes, dans lequel un deuxième organe de blocage (le, 2e) bloque un mouvement de pivotement des deux parties (1, 2) au-delà d'un angle de pivotement donné.

7. Stylo selon l'une quelconque des revendications précédentes, dans lequel une/la force de tension agissant à l'encontre de la force de rappel est appliquée au moyen d'un levier (6, la ; 8, 2a).

8. Stylo selon la revendication 7, dans lequel un levier est raccordé à une extrémité de la partie allongée (5) enroulée, un levier respectif étant notamment raccordé à chacune desdites extrémités, et présente notamment une portion (6, 8) agencée tangentiellement à l'axe de ressort (A).

9. Stylo selon l'une quelconque des revendications 5 à 8, dans lequel ledit premier organe de blocage comprend des portions de mise en butée (1d, 2d) venant en butée l'une contre l'autre dans ladite position de repos et constituées dans la zone située entre les faces de pincement (1c, 2c) et l'axe de pivotement (Z).

10. Stylo selon l'une quelconque des revendications précédentes, dans lequel la première partie (1) constitue une portion du corps principal (10) du stylo et est notamment réalisée d'un seul tenant avec celui-ci.

11. Stylo selon l'une quelconque des revendications précédentes, présentant un mécanisme associé à la fonctionnalité d'écriture dudit stylo, ledit ressort de torsion (4) étant agencé, par rapport à l'axe central (X), sur l'arrière d'un tel mécanisme.

12. Stylo selon l'une quelconque des revendications précédentes, dans lequel le ressort de torsion (4) est supporté par la première et/ou la deuxième partie.

13. Stylo selon la revendication 12, dans lequel une portion d'appui du ressort de torsion (4) comprend une portion (7, 9) s'étendant de manière sensiblement parallèle à l'axe de ressort (A).

14. Stylo selon la revendication 12 ou 13, dans lequel un contre-support (1f ; 2f, 13) destiné à une portion d'appui respective du ressort de torsion (4) est constitué sur la première (1) et/ou la deuxième (2) partie.

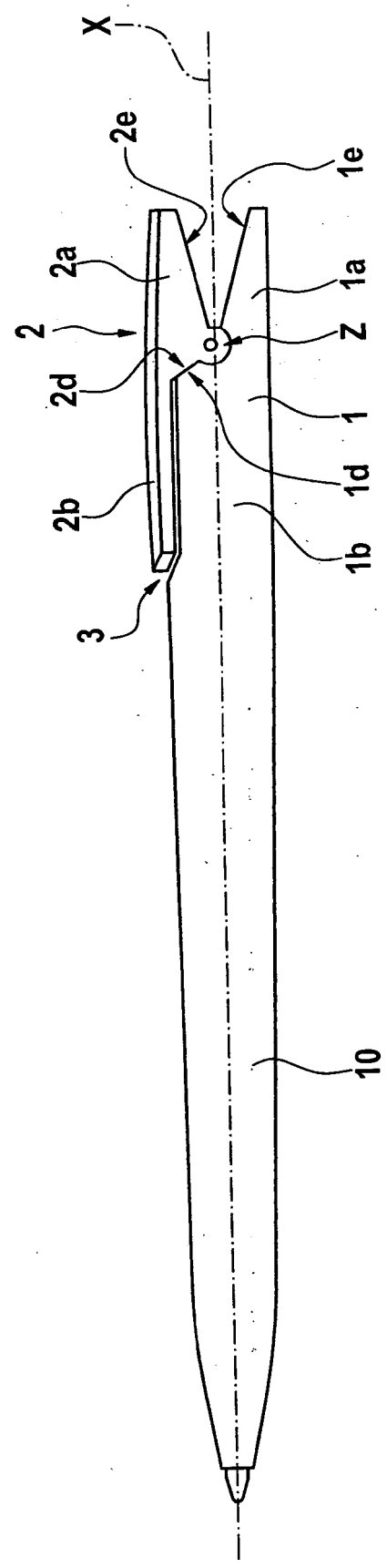


Fig. 1

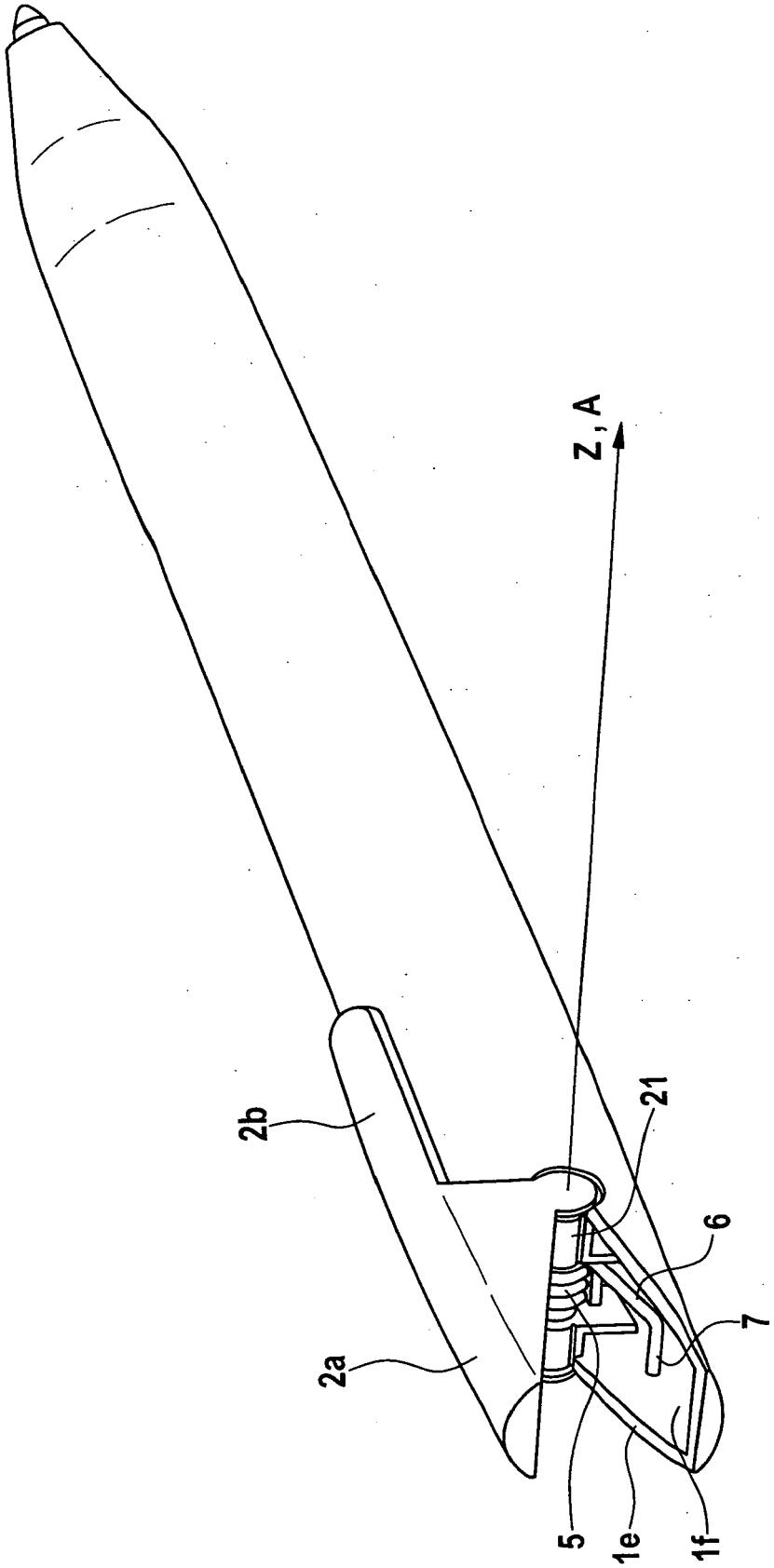


Fig. 2

Fig. 3a

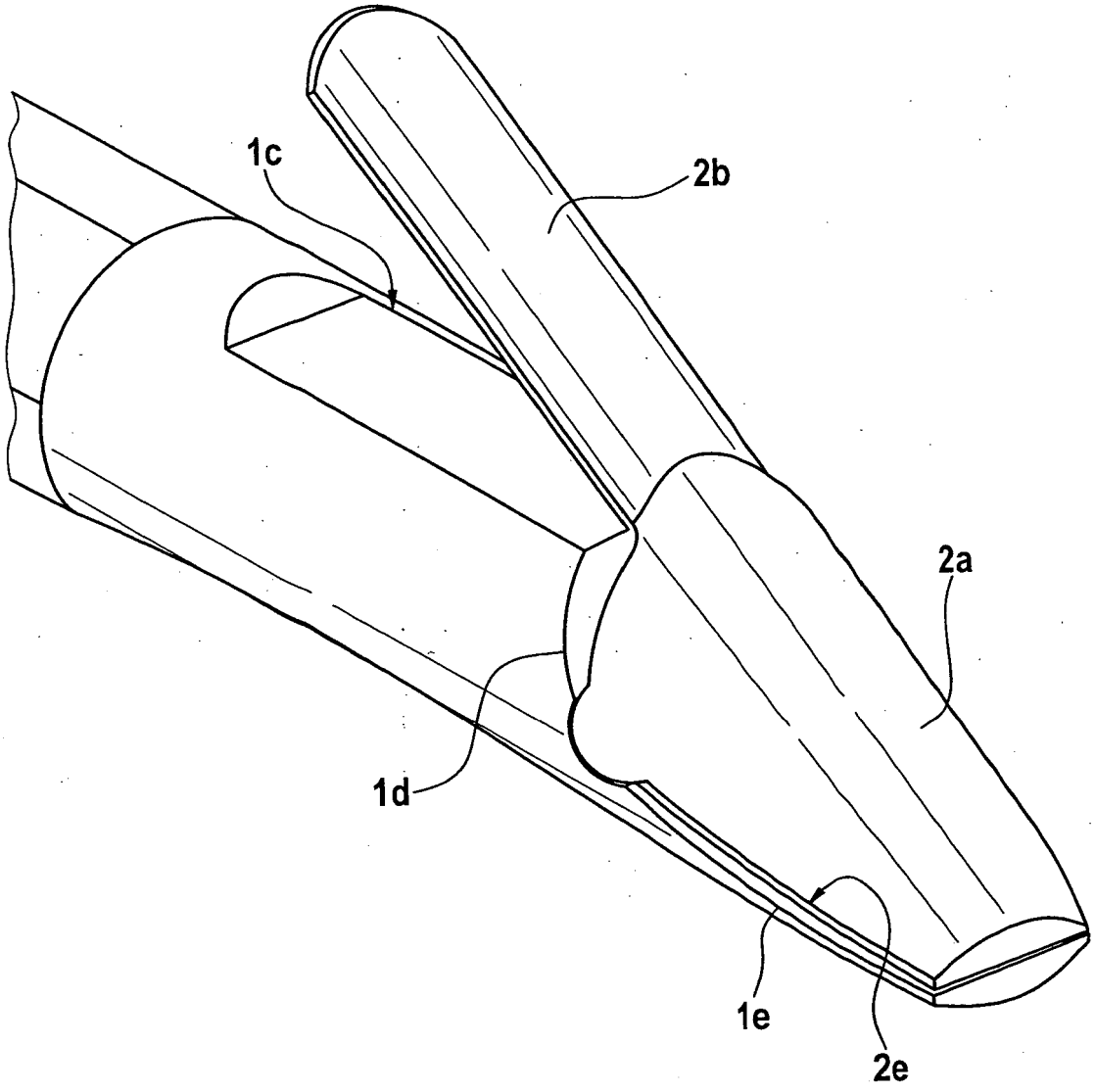


Fig. 3b

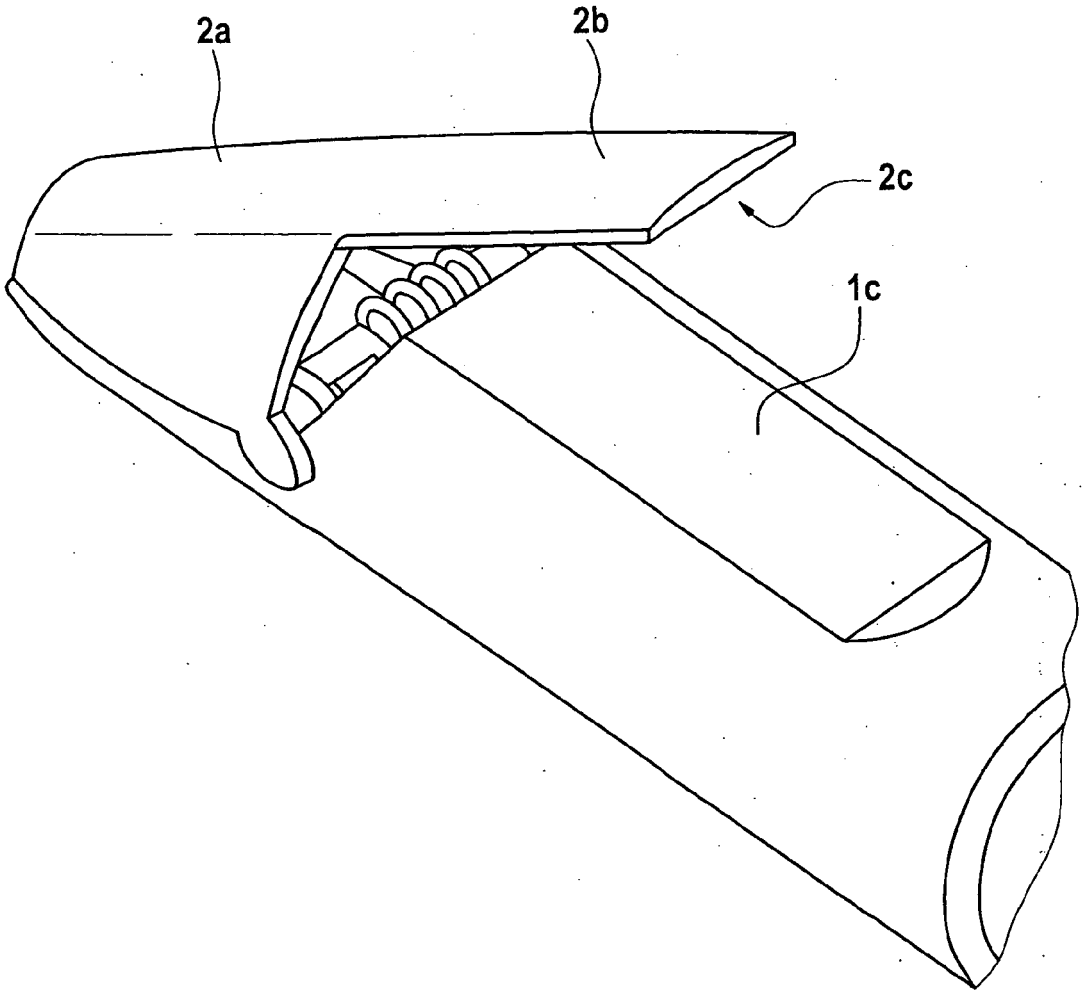


Fig. 4a

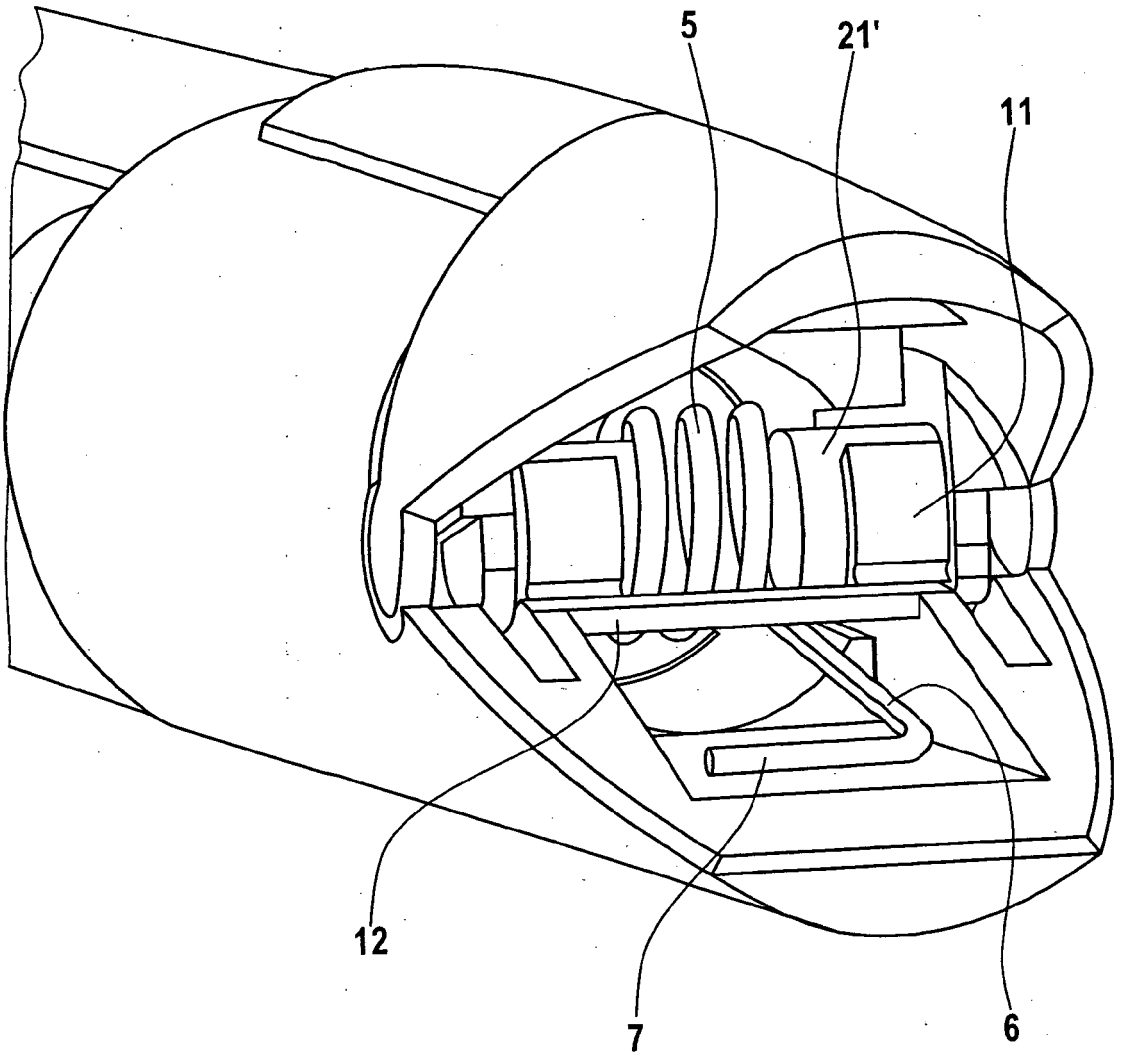
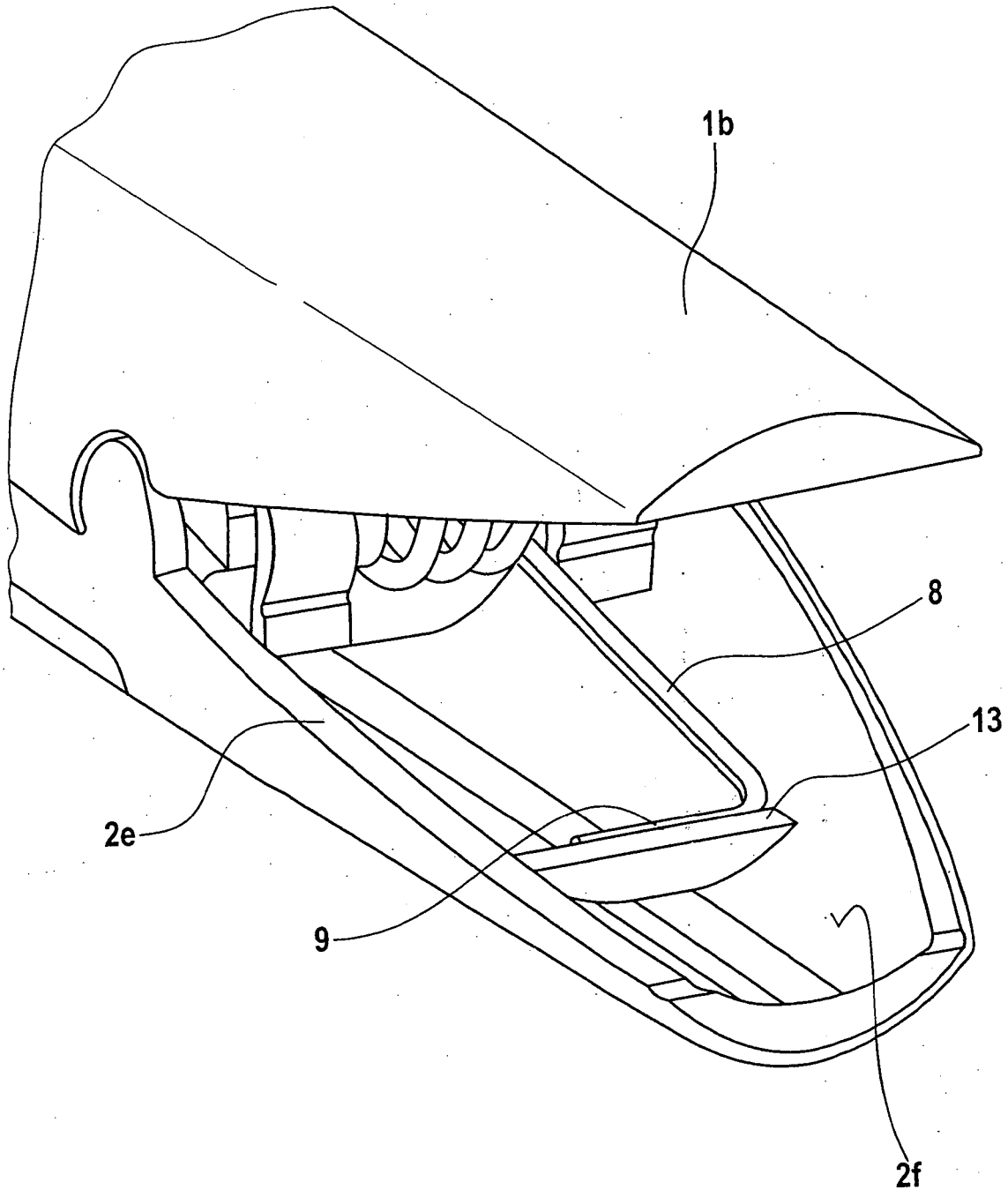


Fig. 4b



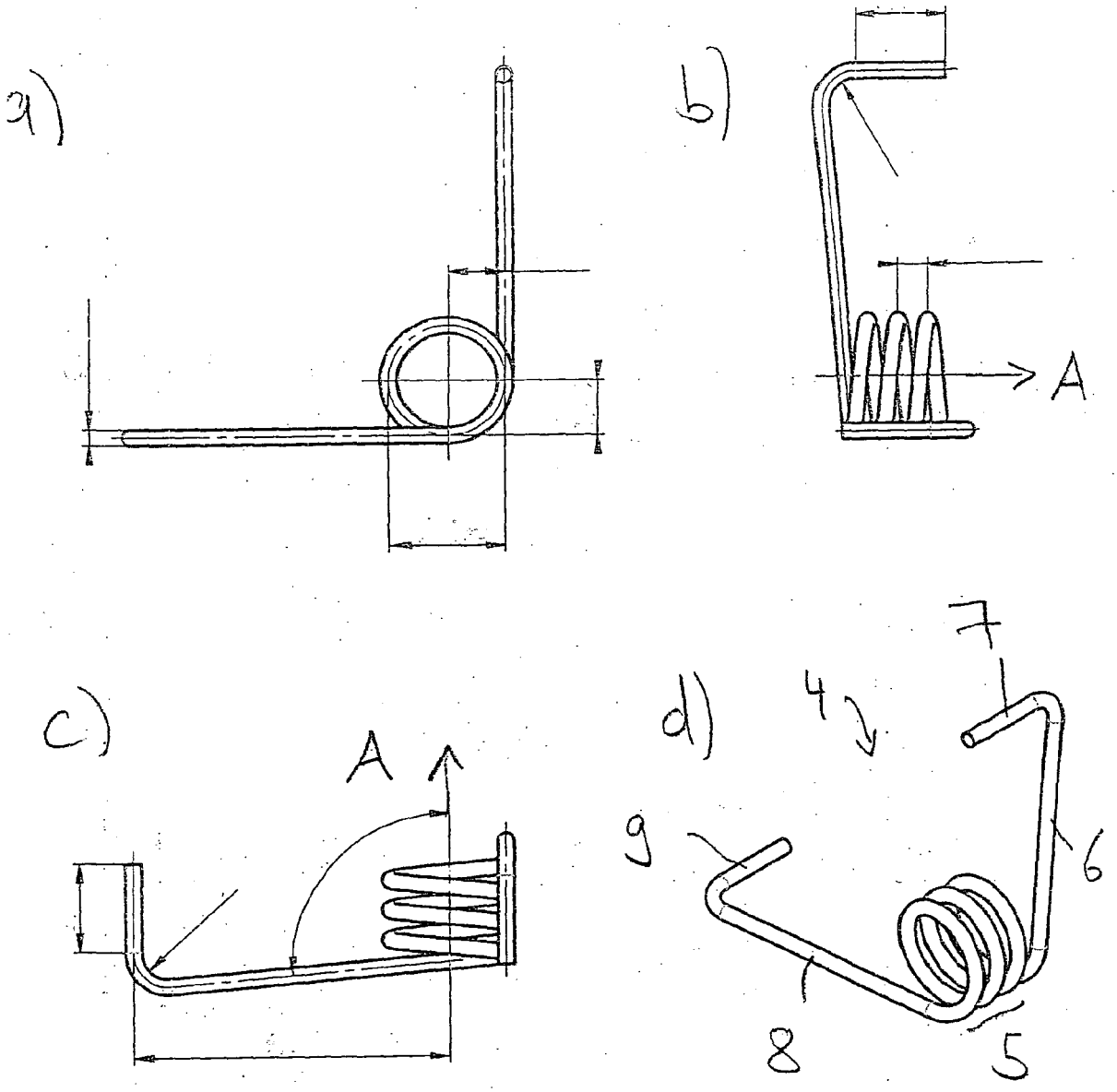


Fig. 5

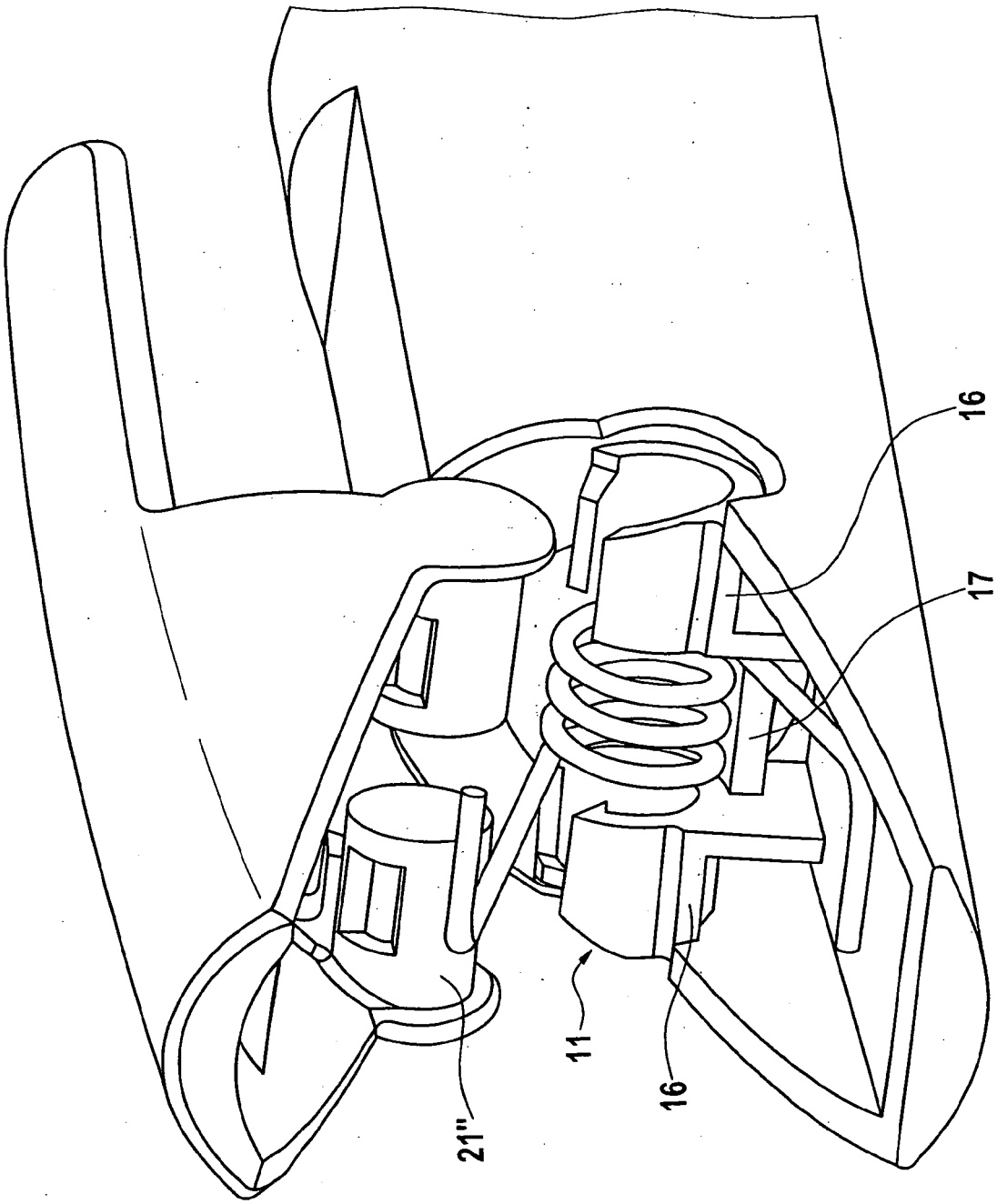


Fig. 6

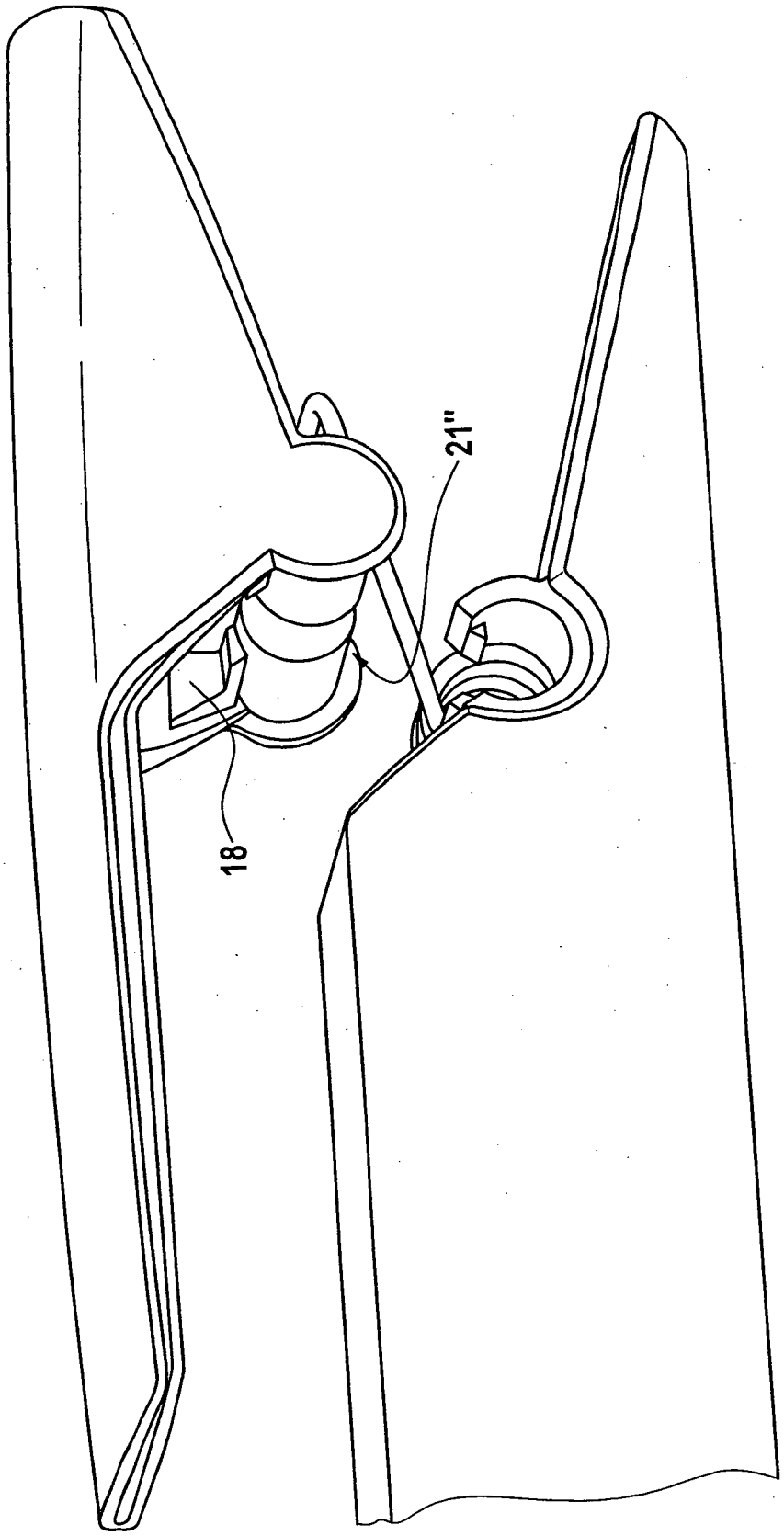


Fig. 7

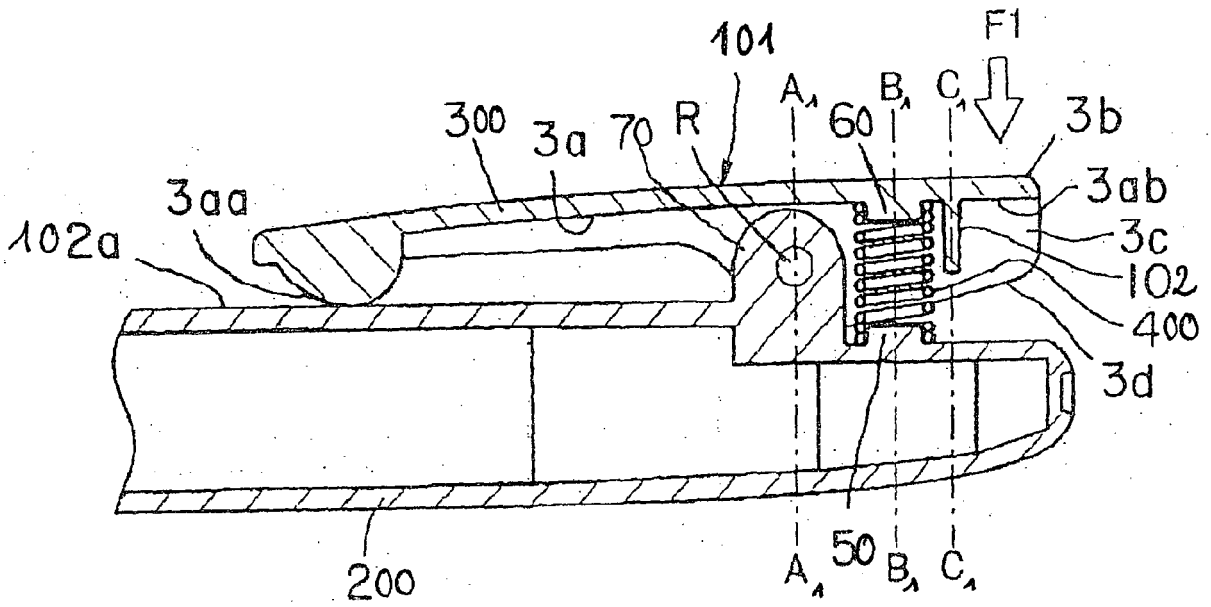


Fig. 8

REFERENCES CITED IN THE DESCRIPTION

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- FR 1494233 A **[0006]**