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(54) **CAP FOR ZIPPERS ASSOCIABLE WITH A SLIDER**

(57) The invention relates to a cap (1) for zippers associable with a slider, comprising an elongated body (2) provided with at least one side wall (3, 4) which is shaped so as to define at least partly a seat (5, 6) intended

to be fitted at least partly by a ring (51) of a tab (50), wherein the side wall (3, 4) comprises an end portion (7, 8) folded towards the inside of the cap (1) by an angle of less than 90°.

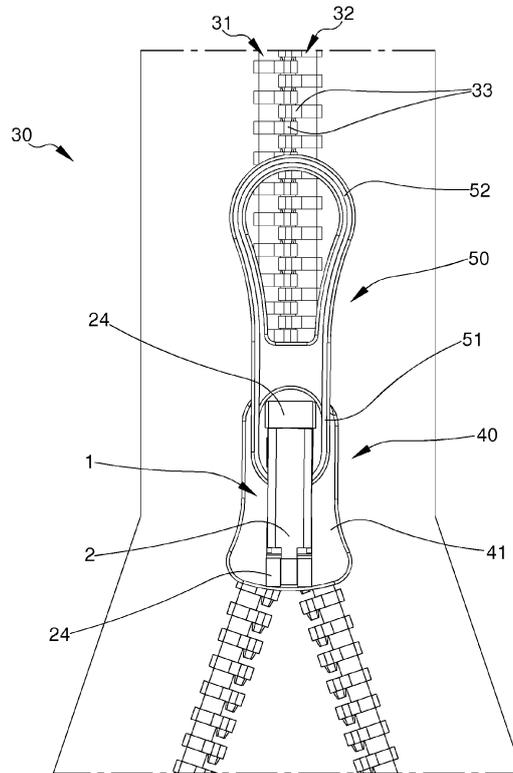


Fig.1

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**Description**Technical Field

**[0001]** The present invention relates to a cap for zippers associable with a slider.

Background Art

**[0002]** As is well known, the zipper is a type of fastener provided with two rows of teeth associable with two flaps of a fabric. The rows of teeth are adapted to engage with each other to close the zipper and, in this way, to join the fabric flaps.

**[0003]** The zipper is also provided with a so-called "slider" which has a basic body coupled in a sliding manner to the two rows of teeth to engage/disengage them from each other as a result of its sliding action.

**[0004]** Usually, the slider has a special tab adapted to be grasped by a user to pull it along the rows of teeth. The tab is connected to the basic body by means of a so-called "cap". For this purpose, the cap is provided with a pair of side walls which project towards the inside by 90° thus providing two extensions which define contact surfaces for the tab ring. For example, such a cap is that described in patent publication EP 3 871 553 A1. However, such a cap has some problems related to the fact that the tab ring during use rubs against the extensions of the side walls, which damages the relevant contact surfaces thereof, thus jeopardizing, in the long run, the overall appearance of the slider. Such rubbing damage remains visible to a user, thus going to jeopardize the aesthetic value of the product on which the zipper is applied, thus consequently reducing the value thereof.

Description of the Invention

**[0005]** Therefore, the Applicant has devised to modify the structure of the slider cap so as to make a contact point between the cap and the tab which is able to reduce if not completely eliminate the visible rubbing damage.

**[0006]** The main aim of the present invention, therefore, is to devise a cap which allows the aesthetic value of the zipper and thus of the fabric on which it is applied to remain sound and safe.

**[0007]** Another object of the present invention is to devise a cap for zippers which allows the aforementioned drawbacks of the prior art to be overcome within the framework of a simple, rational, easy and effective to use as well as affordable solution.

**[0008]** The aforementioned objects are achieved by this cap for zippers having the characteristics of claim 1.

Brief Description of the Drawings

**[0009]** Other characteristics and advantages of the present invention will become more apparent from the description of a preferred, but not exclusive, embodiment

of a cap for zippers, illustrated by way of an indicative, yet non-limiting example, in the attached tables of drawings in which:

- Figure 1 is a top view of a zipper,
- Figure 2 is a perspective view of a slider in accordance with the present invention,
- Figure 3 is a side view of the slider in Figure 2,
- Figure 4 is a perspective view from below the cap,
- Figure 5 is a longitudinal cross-sectional view of the cap in Figure 4,
- Figures 6, 7 and 8 are cross-sectional views of different embodiments of the cap in Figure 4.

15 Embodiments of the Invention

**[0010]** With particular reference to these figures, reference numeral 30 globally denotes a zipper.

**[0011]** The zipper 30 comprises a pair of rows of teeth 31, 32, each row 31, 32 being provided with a plurality of teeth 33 configured to engage/disengage with/from the teeth of the other row 31, 32. Specifically, the teeth 33 are spaced apart from each other so as to make a space where the teeth of the other row can be forced to engage.

**[0012]** The zipper 30 is also provided with a slider, denoted by reference numeral 40, coupled to the rows of teeth 31, 32 in a sliding manner and configured to engage/disengage the two rows with/from each other according to techniques known in themselves.

**[0013]** For this purpose, the slider 40 comprises a basic body 41 provided with a cavity 42, visible in Figure 2, adapted to receive the two rows of the teeth 31, 32 in a sliding manner to engage/disengage them with/from each other depending on its sliding direction.

**[0014]** According to a preferred embodiment, the basic body 41 of the slider 40 comprises a passage channel of the teeth 33, not shown in the figures, having a substantially "Y" shape. This passage channel is defined by a joining element positioned internally to the basic body 41. In actual facts, the channel has an individual section which is divided into a pair of sections separated from each other by the joining element. Such conformation allows the channel to guide the rows of teeth to couple/un-couple them to/from each other during the sliding of the body of the slider 40.

**[0015]** The conformation of the basic body 41 of the slider 40 is not covered by the present invention and therefore will not be described in detail since it is itself known in the state of the art.

**[0016]** Figures 4-8 show a cap denoted by reference numeral 1. The cap 1 is associable with a slider 40, as visible from Figures 2 and 4, and is adapted to connect a tab 50 to the basic body 41 of the slider 40. The tab 50, which is usually referred to as a puller, is configured to be gripped by a user to pull and move the slider 40 along the rows of teeth 31, 32, and thus to close or open the zipper 30.

**[0017]** Preferably, in use, the cap 1 is coupled to the basic body 41 in a removable manner. It cannot, however, be ruled out that the cap 1 may be locked together with the basic body 41.

**[0018]** With reference to Figures 2 and 3, the tab 50 has a ring 51 connecting to the cap 1. In the present case, the ring 51 is adapted to fit at least partly the cap 1. In turn, the ring 51 is adapted to be housed at least partly in an appropriate housing 18 defined by the cap 1.

**[0019]** Additionally, the tab 50 has a gripping portion 52 adapted to be gripped by the user to pull the slider 40. In particular, the gripping portion 52 is opposite the ring portion 51. Preferably, the gripping portion 52 has a conformation which is complementary to the fingertip of a finger so that it can be grasped, e.g., by taking it between the thumb and index finger.

**[0020]** As visible from Figures 4 and 5, in accordance with the present invention, the cap 1 has an elongated body 2 comprising two side walls 3, 4 shaped to define a seat 5, 6 intended to be fitted at least partly by the ring 51 of the tab 50. In the present case, the seat 5, 6 is adapted to accommodate at least partly the ring 51 of the tab 50 so that the latter can wrap at least partly around the elongated body 2, by fitting it.

**[0021]** Conveniently, each side wall 3, 4 comprises an end portion 7, 8 which projects towards the inside of the cap 1 and which defines a non-contact surface 9, 10 with the ring 51. In other words, the end portion 7, 8, or otherwise called "flap", is folded towards the inside at least where the seat 5, 6 is located, so as not to be, in use, abutted by the ring 51.

**[0022]** In detail, the side walls 3, 4 are connected to the end portions 7, 8 by curved edges each defining a contact surface 13, 14 intended, in use, to be abutted by the ring 51. Such a contact surface 13, 14 makes it possible to reduce the rubbing damage which can form on the tab 50, by reducing, if not eliminating altogether, the contact of the ring with the side wall 3, 4 and/or the end portions 7, 8. In actual facts, a user, to open or close the zipper, grasps and pulls the tab 50, which in turn, by abutting against the cap 1, moves the slider 40 along the rows of teeth 31, 32. As will be seen in the remainder of this description, the special folding of the side walls 3, 4 and thus of the end portions 7, 8 allow the ring 51 to contact only the contact surfaces 13, 14 of the curved edges with the side walls 3, 4 and/or with the end portions 7, 8 during use, thus preventing the damage thereof.

**[0023]** Advantageously, the end portion 7, 8 is folded towards the inside of the cap 1 so that the non-contact surfaces 9, 10 are at least partly invisible from the outside of the cap 1. In actual facts, the end portion 7, 8 extends by a predetermined length towards the inside of the elongated body so that the non-contact surfaces 9, 10 are not damaged by rubbing.

**[0024]** This expedient substantially allows the non-contact surfaces 9, 10 to be oriented internally to the cap 1, by hiding possible rubbing damage to the cap 1 and/or to the tab 50 from view.

**[0025]** In addition, the end portion 7, 8 allows making a substantially smooth sliding area of the tab 50 which is able to further reduce rubbing damage.

**[0026]** As anticipated above, advantageously, the side wall 3, 4 is folded where the seat 5, 6 is located towards the inside of the cap 1. In the present case, the side wall 3, 4 has, in addition to the end portion 7, 8, a main portion 11, 12. The end portion 7, 8 is positioned between the main portion 11, 12 and the contact edge 9, 10.

**[0027]** The end portion 7, 8 is arranged transversely to the main portion 11, 12. In actual facts, the end portion 7, 8 overhangs from the main portion 11, 12 towards the inside of the cap 1.

**[0028]** Preferably, such conformation of the end portion 7, 8 refers to the portion of the side wall 3, 4 which is arranged where the seat 5, 6 is located. It cannot, however, be ruled out that such a conformation may also be present in other end portions of the side wall 3, 4.

**[0029]** According to one embodiment shown in Figure 6, the end portion 7, 8 is substantially orthogonal to the main portion 11, 12. In actual facts, the side wall 3, 4 has a substantially "L" shape as a whole. In other words, the end portion 7, 8 forms with the main portion 11, 12 and thus with the side wall 3, 4, an inner angle of substantially 90°. Inner angle refers to the angle facing towards the inside of the cap 1.

**[0030]** According to one embodiment shown in Figure 7, the end portion 7, 8 is inclined with respect to the main portion 11, 12 and thus with respect to the side wall 3, 4, by an inner angle greater than 90°. Consequently, the end portion 7, 8 forms with the main portion an outer angle of less than 270°. In actual facts, in use, the end portion 7, 8 extending from the main portion 11, 12 towards the inside of the cap 1 moves closer to the basic body 41 of the slider 40.

**[0031]** This conformation of the end portion 7, 8 allows a main contact point to be made where the contact edge 9, 10 is located, thus reducing the rubbing areas between the tab 50 and the side wall 3, 4.

**[0032]** According to a further embodiment shown in Figure 8, the end portion 7, 8 is inclined with respect to the side wall 3, 4 by an inner angle of less than 90°, preferably by an angle of between 70° and 89°.

**[0033]** Even more preferably, the end portion 7, 8 is inclined with respect to the side wall 3, 4 by an inner angle of between 75° and 85°, particularly about 82°. In actual facts, in use, the end portion 7, 8 extending from the main portion 11, 12 towards the inside of the cap 1 moves away from the basic body 41 of the slider 40.

**[0034]** Such conformation of the end portion 7, 8 also allows avoiding the formation of mechanical burr on the tab.

**[0035]** As visible from Figure 5, the side wall 3, 4 has a substantially arc-shaped section which partly defines the respective seat 5, 6.

**[0036]** In the present case, the side wall 3, 4 has an edge 3a, 4a which, in use, faces the basic body 41 of the slider 40. The edge 3a, 4a has a substantially arc-shaped

section which defines the seat 5, 6. This conformation, in fact, allows the side wall 3,4 to detach itself from the basic body 41 of the slider 40 to define the seat 5, 6.

**[0037]** In actual facts, when the cap 1 is associated with the basic body 41 of the slider 40, the seat 5, 6 is bounded inferiorly by the basic body 41 and superiorly by the side wall 3, 4 of the cap 1.

**[0038]** With reference to Figure 5, where the seat 5, 6 is located, the edge 3a, 4a has a central section 15 located between two side sections 16, 17. The central section 15 is preferably substantially straight, while the side sections 16, 17 are substantially inclined with respect to the central section 15 to define an arc shape as a whole. In particular, by extending from the central section 15 towards the basic body 41, the side sections 16, 17 diverge from each other.

**[0039]** As can be seen from the figures, the elongated body 2 has a pair of side walls 3, 4 opposite each other. These side walls 3, 4 are substantially similar to each other and, therefore, the description regarding one of the side walls 3, 4 refers to both side walls 3, 4. In particular, the cap 1 has a substantially symmetrical shape with respect to one of its centerlines parallel to the longitudinal direction of the cap 1. Therefore, the centerline divides the cap 1 into two parts which are substantially similar to each other, and for simplicity of description, in some passages in this description reference is made to only one of the parts, although these passages can apply to both parts of the cap 1.

**[0040]** In the present case, each side wall 3, 4 is shaped to define a related seat 5, 6, both seats 5, 6 being intended to be fitted by the ring 51 of the tab 50. In particular, the seats 5, 6 define at least partly a housing 18 adapted to house, in use, at least part of the ring 51 of the tab 50.

**[0041]** As anticipated above, each side wall 3, 4 has a relevant seat 5, 6 and a relevant end portion 7, 8 folded towards the inside of the cap 1, that is, towards the other side wall 3, 4. In actual facts, the end portion 7, 8 is folded towards the inside of the housing 18. In other words, the end portions 7, 8 are folded close to each other.

**[0042]** As visible from Figures 4 and 5, the elongated body 2 extends along its own longitudinal direction between a pair of extremal portions 19, 20. The extremal portions 19, 20 are adapted to be connected to a basic body 41 of a slider 40, as described in detail later in this description.

**[0043]** Referring to Figure 4, the elongated body 2 has a central portion 21 located between the extremal portions 19, 20. Such a central portion 21 is shaped to define the housing 18. In particular, each side wall 3, 4, where the central portion 21 is located, has a substantially arc shape which partly defines the respective seat 5, 6 so that the elongated body 2 defines a substantially arc-shaped housing 18 as a whole. In the present case, the central portion 21 has an arc conformation adapted to at least partly define the housing 18.

**[0044]** As can be seen from Figures 6 and 7, in cross-

section, the cap 1 has a substantially "U" or "C" shape. Specifically, as anticipated above, the cap 1 has a pair of side walls 3, 4 opposite each other and a joining wall 22 located between the pair of side walls 3, 4.

**[0045]** In addition, the cap 1 has a compartment 23 bounded by the side walls 3, 4 and by the joining wall 22.

**[0046]** The side walls 3, 4 are substantially parallel to each other. In the present case, the main portions 11, 12 of the side walls 3, 4 are substantially parallel to each other.

**[0047]** On the other hand, the joining wall 22 is transverse to the side walls 3, 4. In this case, the joining wall 22 is substantially orthogonal to the side walls 3, 4.

**[0048]** The side walls 3, 4 are substantially parallel to the direction of longitudinal extension. In addition, the side walls 3, 4 are substantially orthogonal to the transverse direction of the cap 1. On the other hand, the joining wall 22 is substantially parallel to the transverse direction.

**[0049]** As anticipated above, each side wall 3, 4 extends from the joining wall 22 towards the contact edge 9, 10. In this case, the main portion 11, 12 is located between the joining wall 22 and the end portion 7, 8.

**[0050]** Preferably, the cap 1 has a length, meant as a longitudinal dimension, of between 5 mm and 20 mm, preferably 10 mm. In addition, the cap 1 has a width, meant as a transverse dimension, of between 1 mm and 5 mm, preferably 3 mm.

**[0051]** The end portion 7, 8 extends towards the inside by a length of between 0.1 mm and 2 mm, preferably 0.3 mm.

**[0052]** When the cap 1 is associated with the basic body 41 of the slider 40, the central portion 21 of the cap 1 is at least partly detached from the basic body 41 to make the housing 18. In actual facts, the housing 18 is bounded superiorly by the cap 1 and inferiorly by the basic body 41.

**[0053]** Conveniently, the cap 1 is connected to the basic body 41 in a removable manner. This arrangement makes it possible to remove the cap 1 from the basic body 41 in order to insert or remove the tab 50 from the seats 5, 6, or to replace the cap 1.

**[0054]** Preferably, each extremal portion 19, 20 is connected to the basic body 41 by interposition of a connecting element 24. The connecting element 24 is locked together with the basic body 41. The extremal portions 19, 20, on the other hand, are configured to make a coupling by shape with one of the connecting elements 24. Preferably, the coupling by shape is of the type of an interlocking coupling.

**[0055]** In the preferred embodiment, each extremal portion 19, 20 has at least one tooth element 25 and each connecting element 24 has a housing compartment 26 adapted to receive the tooth to make the coupling by shape. Preferably, each extremal portion 19, 20 has a pair of tooth elements 25 and each connecting element 24 has a pair of housing compartments 26 to receive the pair of tooth elements 25.

**[0056]** It cannot, however, be ruled out that the cap 1

may be associated with the basic body 41 in a different way, such as e.g. by welding.

**[0057]** The present invention also relates to a slider 40 provided with a basic body 41, a cap 1 connected to the basic body 41 and a tab 50 associated with the cap 1 as described above.

**[0058]** The present invention also relates to a zipper 30 provided with a pair of rows of teeth 31, 32 and a slider 40 coupled to the pair of rows of teeth 31, 32 in a sliding manner, as described above.

**[0059]** It has in practice been ascertained that the described invention achieves the intended objects and, in particular, the fact is emphasized that by means of the particular conformation of the cap, the flaps protruding from the side walls of the cap do not provide contact surfaces for the tab ring, thus allowing making a point of contact between the cap and the tab where the edges are located between the side walls and the flaps so as to extremely reduce visible rubbing damage, thereby keeping the aesthetic value sound and safe of the zipper and thus of the fabric on which it is applied.

## Claims

1. Cap (1) for zippers associable with a slider, comprising:

an elongated body (2) provided with at least one side wall (3, 4) which is shaped so as to define at least partly a seat (5, 6) intended to be fitted at least partly by a ring (51) of a tab (50), **characterized by** the fact that said side wall (3, 4) comprises an end portion (7, 8) folded towards the inside of the cap (1) by an angle of less than 90°.

2. Cap (1) according to claim 1, wherein said end portion (7, 8) is folded towards the inside of said cap (1) by an angle of between 70° and 85°, preferably about 82°.

3. Cap (1) according to one or more of the preceding claims, wherein said side wall (3, 4) is connected to the end portion (7, 8) by a curved edge which defines a contact surface (13, 14) intended, in use, to be abutted by the ring (51).

4. Cap (1) according to one or more of the preceding claims, wherein said end portion (7, 8) extends towards the inside by a length of between 0.1 mm to 2 mm.

5. Cap (1) according to one or more of the preceding claims, wherein said end portion (7, 8) defines a non-contact surface (9, 10) which, in use, is not abutted by the ring (51).

6. Cap (1) according to one or more of the preceding claims, wherein said elongated body (2) comprises a pair of side walls (3, 4) opposite each other, each of said side walls (3, 4) comprising a relevant end portion (7, 8).

7. Cap (1) according to claim 6, wherein said elongated body (2) has a substantially U-shaped cross section, wherein a joining wall (22) is identified between said pair of side walls (3, 4).

8. Slider (40) for zippers comprising:

- a basic body (41) provided with a cavity (42) adapted to receive two rows of teeth of a zipper (30) in a sliding manner to engage/disengage them with/from each other,
- a cap (1) according to one or more of the preceding claims associated with said basic body (41), and
- a tab (50) coupled to said cap (1).

9. Zipper (30) comprising a pair of rows of teeth (31, 32), each of said rows of teeth (31, 32) being provided with a plurality of teeth (33) configured to engage/disengage with/from said teeth (33) of the other row of said pair of rows of teeth (31, 32), **characterized by** the fact that it comprises a slider (40) according to the preceding claim coupled to said pair of rows of teeth (31, 32) in a sliding manner.

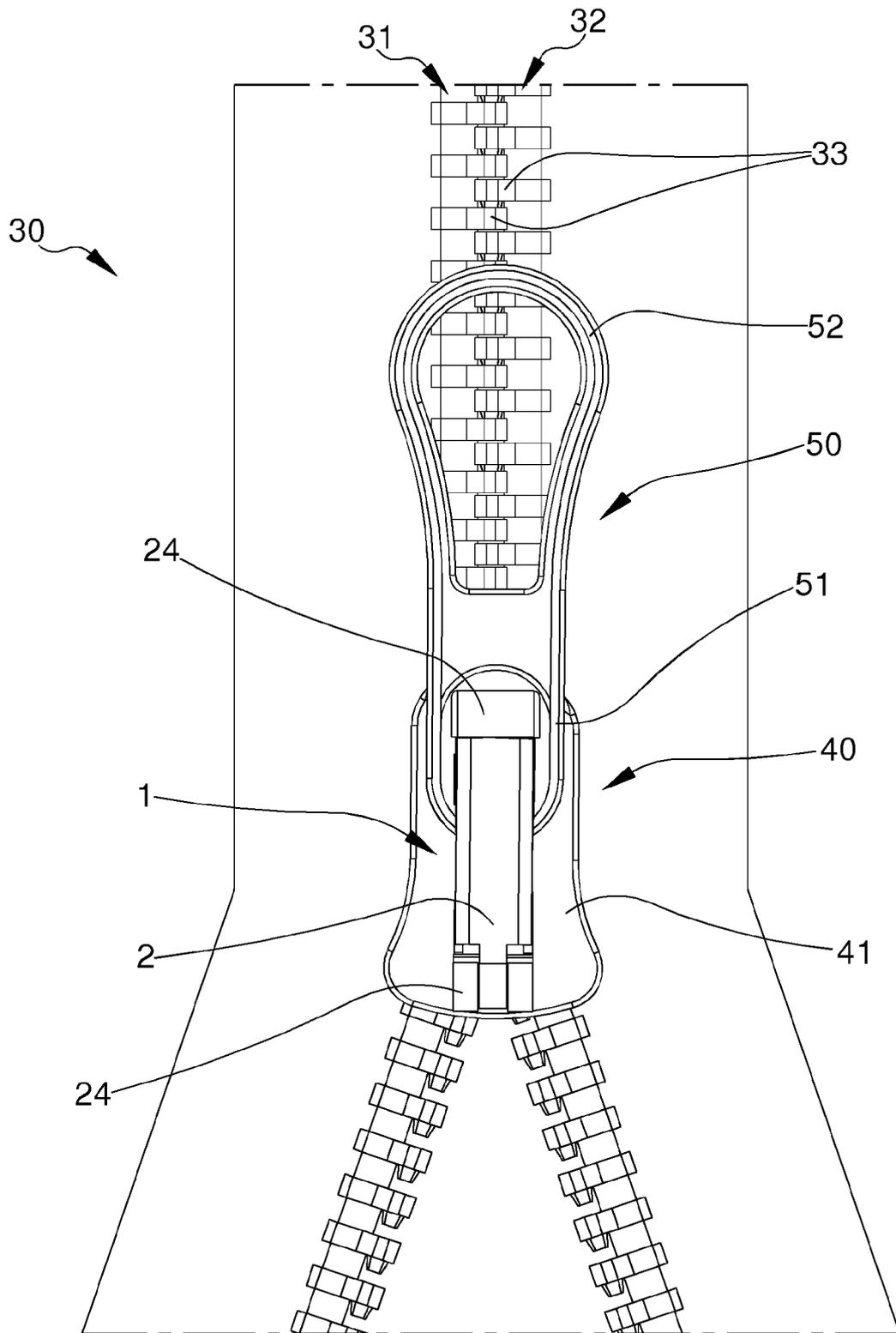


Fig.1

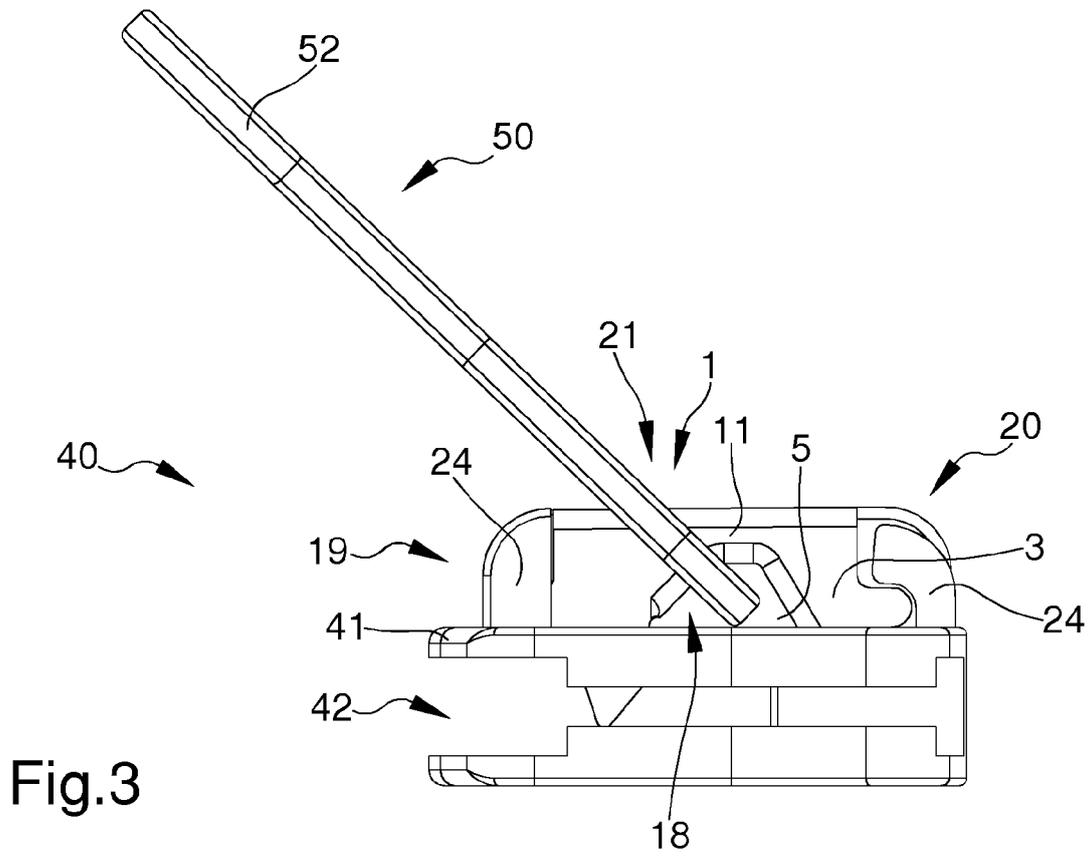
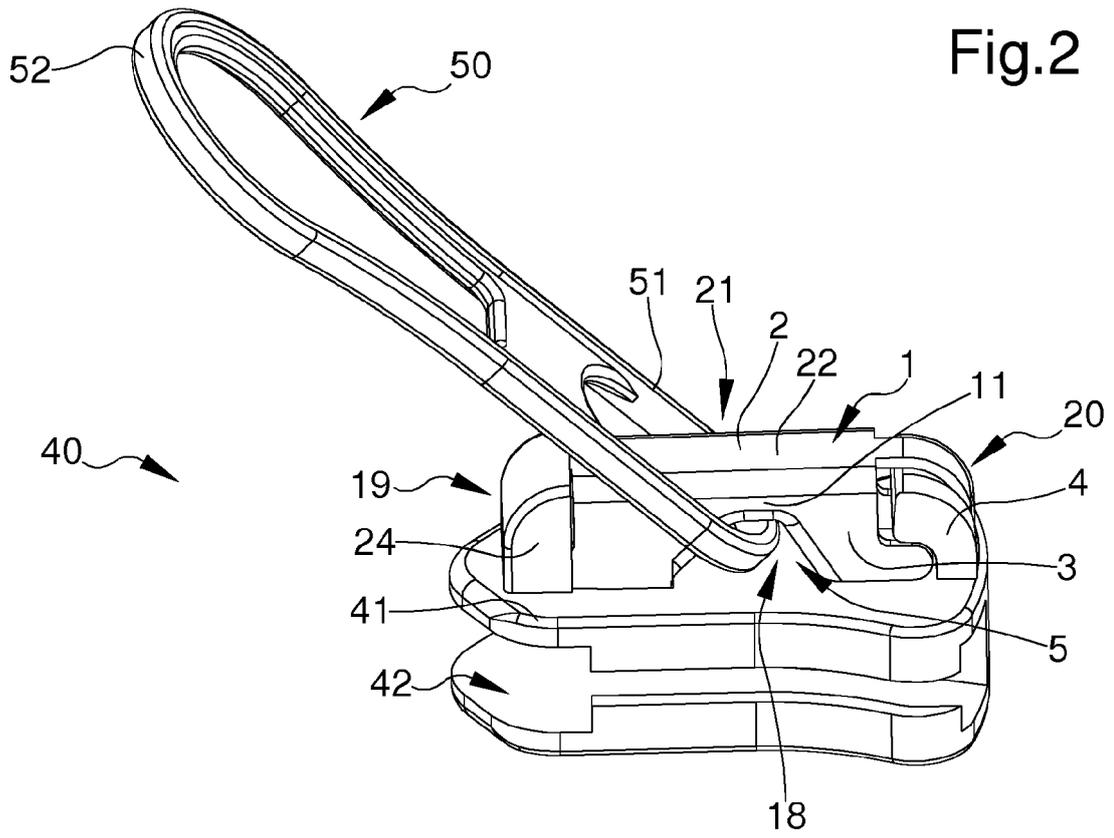


Fig.4

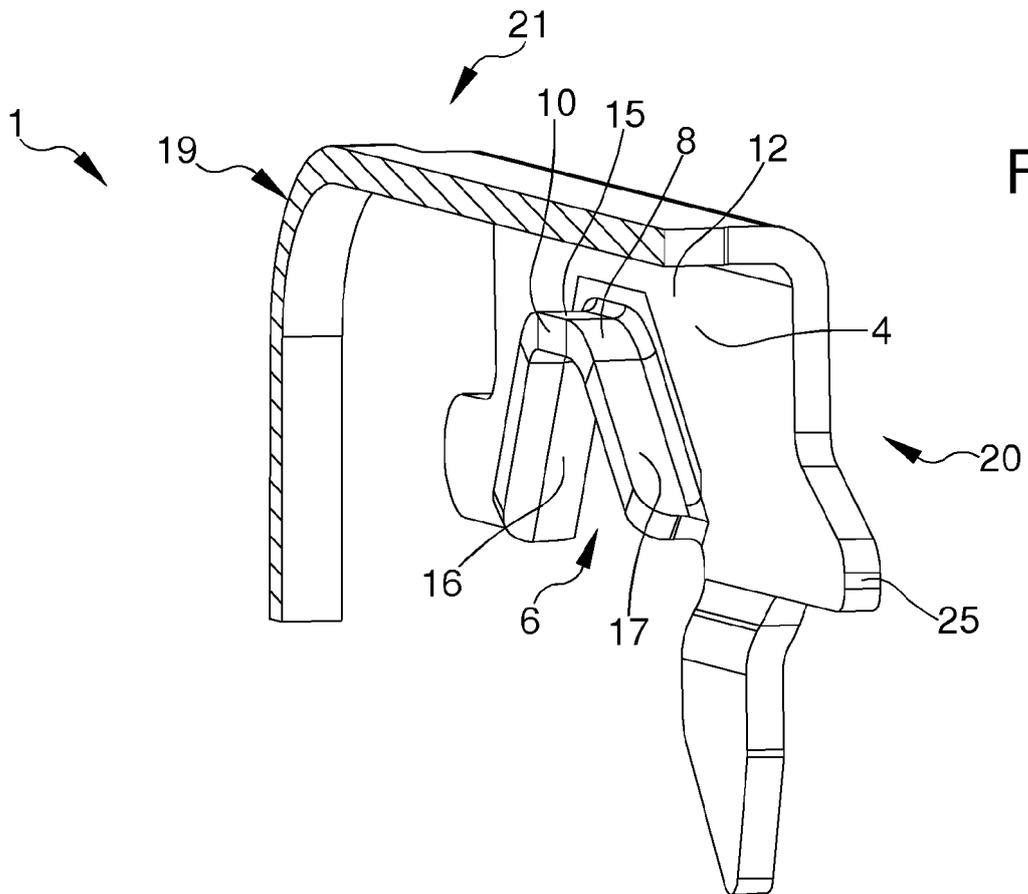
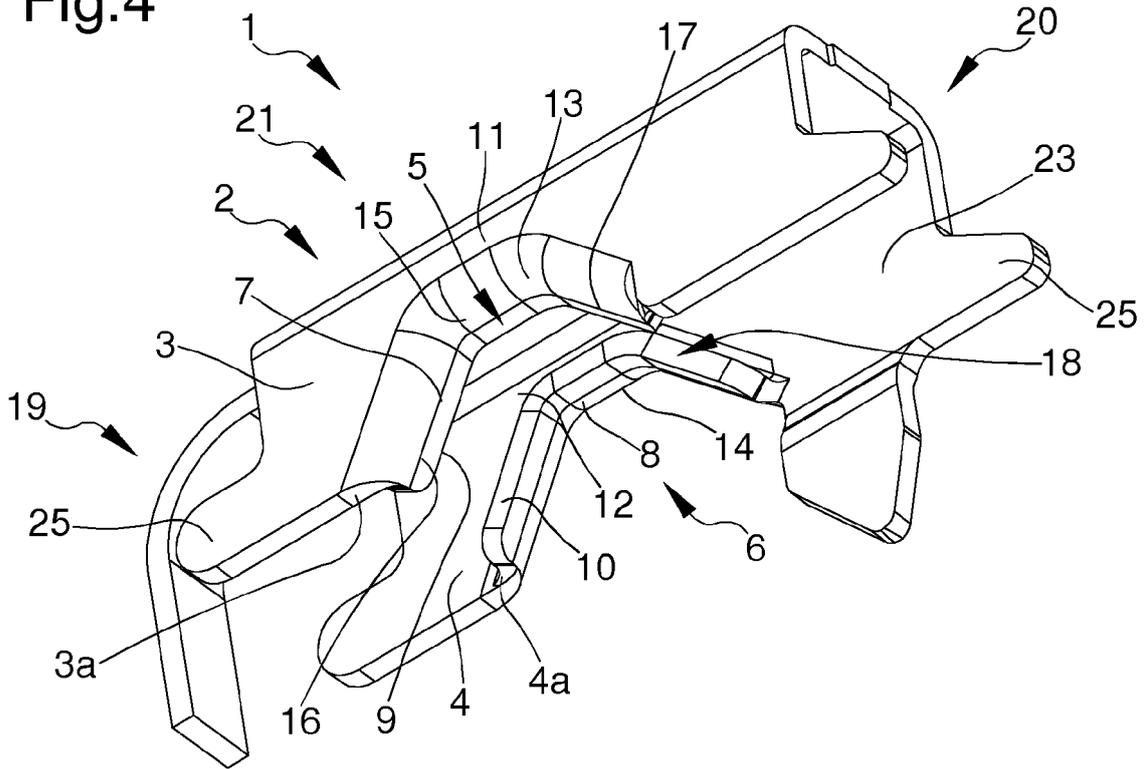


Fig.5

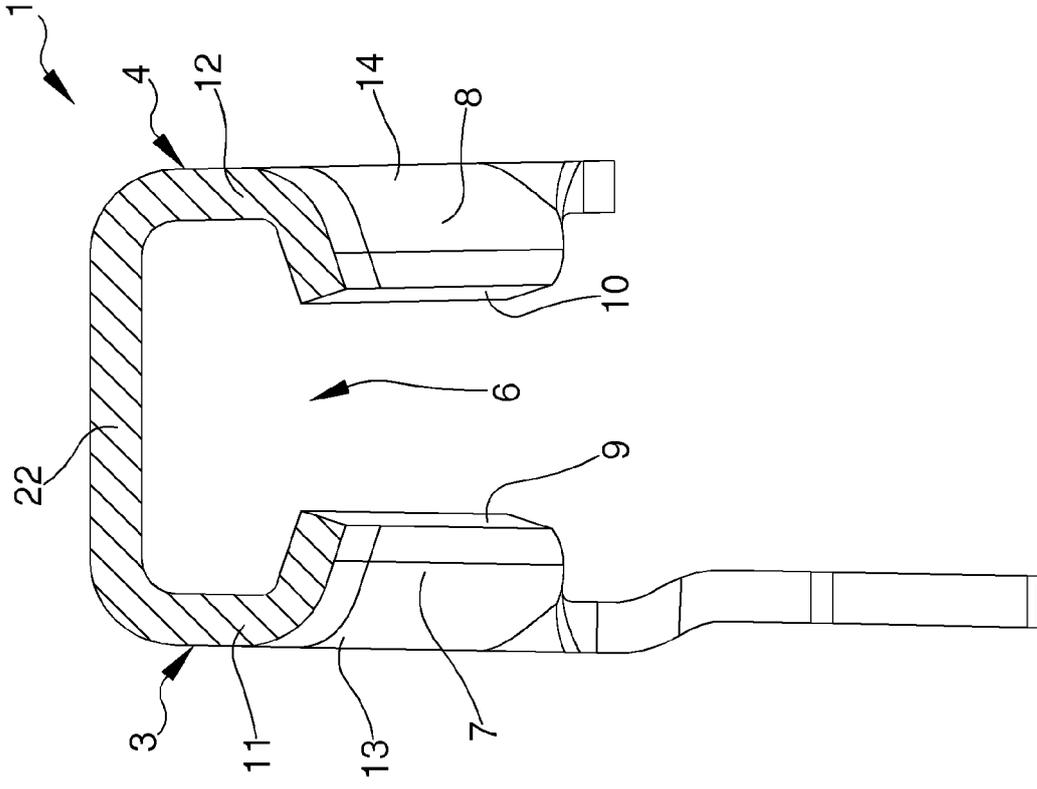


Fig. 6

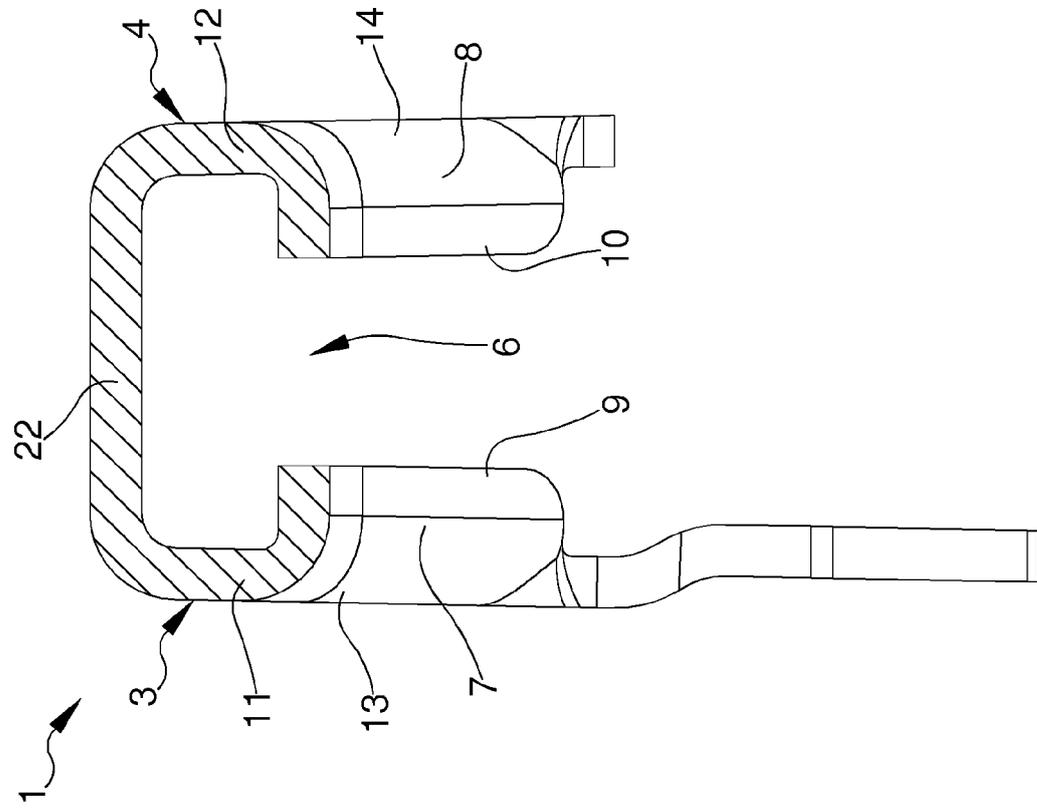


Fig. 7

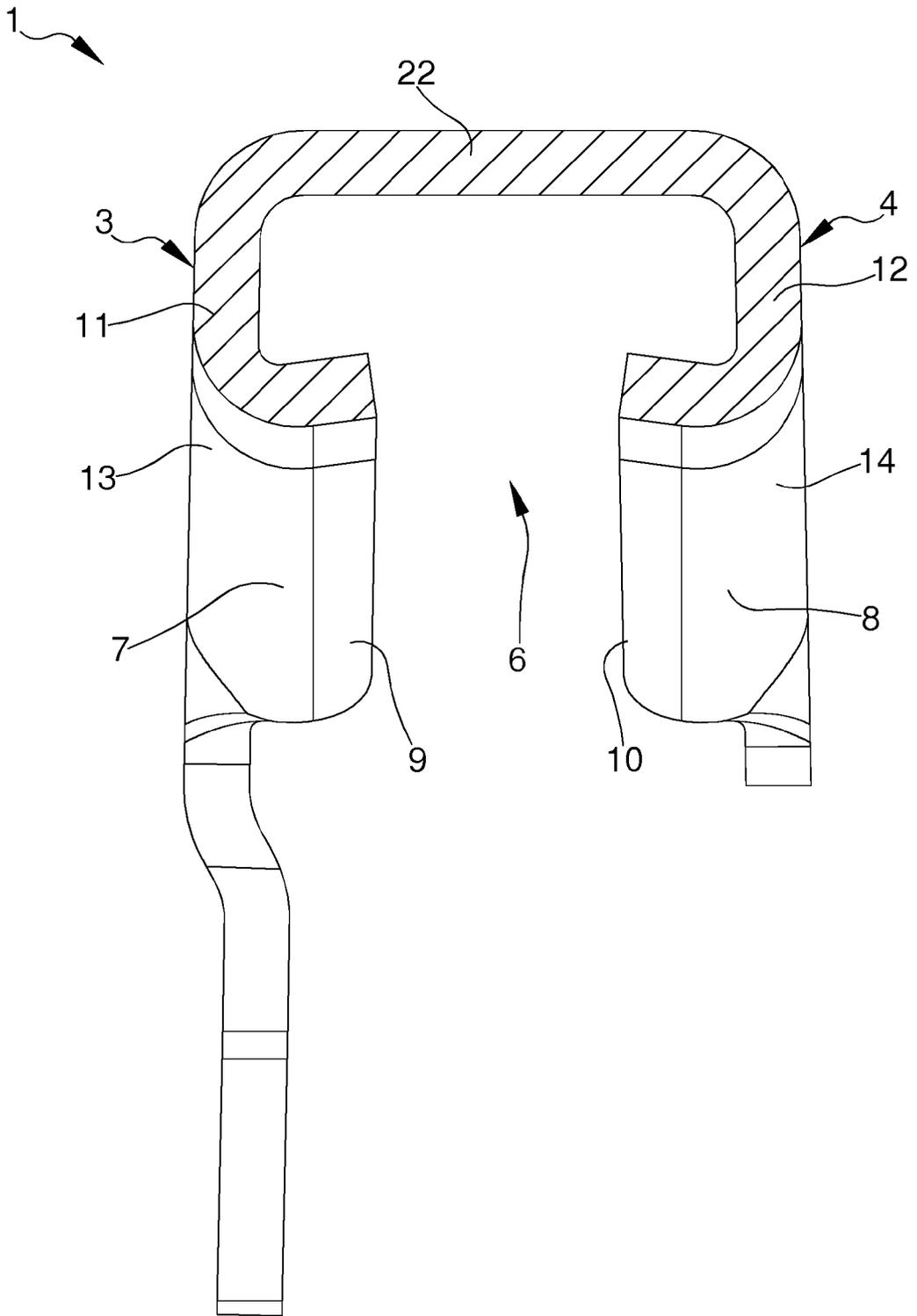


Fig.8



EUROPEAN SEARCH REPORT

Application Number

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The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>30 August 2023</b>	Examiner <b>Dal Bó, Paolo</b>
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

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