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(54) LUMINAIRE

(57) The present invention relates to a luminaire (1) for street and/or road lighting. The luminaire (1) comprises a support (3) being connectable to a post (2) and being provided for carrying a lighting head (4), and a fastening portion (100, 200, 300, 400, 500, 600) being adapted for being provided on the post (2) and/or being provided on the support (3) and configured to bring the post (2) and the support (3) from an unfastened state, in which the support (3) is unfastened from the post (2), in/to a fastened state, in which the support (3) is fastened with the post (2). The fastening portion (100, 200, 300, 400, 500, 600) is configured to bring the post (2) and the support (3) from the unfastened state in/to the fastened state without additional tools.

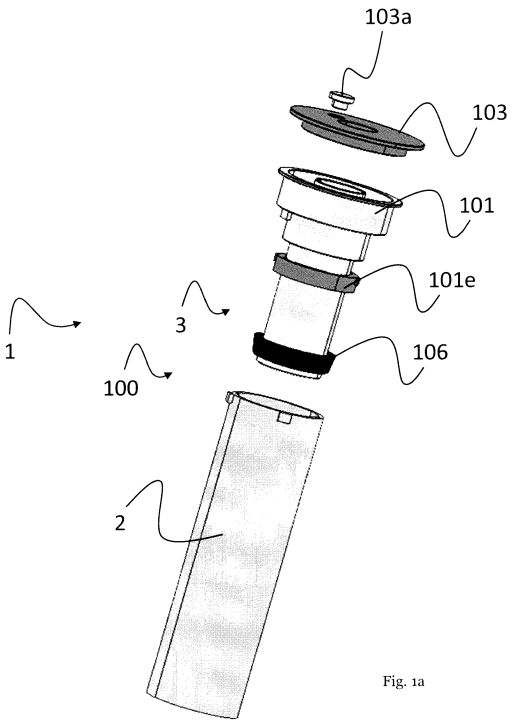

Fig. 1a

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Description

1. Field of the invention

[0001] The present invention relates to a luminaire for street and/or road lighting.

2. Technical background

[0002] In the prior art, luminaires for street and/or road lighting are well known. Usually, such luminaires are provided along streets or roads for lighting or illuminating the street or road during dark conditions such as during night. Such luminaires usually comprise a post and a lighting head mounted on the post. The post usually has a height ranging from about 3 m to about 12 m. For fastening the lighting head with the post, an operator usually connects the lighting head with the post and uses additional fasting elements such as screws and/or bolts for fastening the lighting head with the post. These fastening elements need to be fixed by additional tools such as screw drivers so that the fastening element securely fastens the lighting head with the post. Additionally, the operator must stand at the interface of the post and the lighting head, which is a height corresponding to the height of the post and, thus, a high height. Using the fasting elements and the corresponding additional tools for assembling the lighting head with the post is very time-consuming and cumbersome. In particular, using the additional fixing elements and tools at the relatively high height of the post requires also additional measures of protection for protecting the operator from falling from such a high height and for preventing the additional fasting elements and tools from falling from the height. In summary, the prior art luminaires for street and/or road lighting are relatively inefficient with respect to the ease and the time of assembling the luminaire, i.e., assembling the lighting head with the post. Furthermore, the additional fixing elements are usually mounted from outside of the luminaire and, thus, visible.

[0003] Therefore, it is an object of the present invention to provide a luminaire for street and/or road lighting, which increases the ease of assembling the luminaire. In particular, it is an object of the present invention to provide a more efficient way of fastening a lighting head with a post.

[0004] These and other objects, which become apparent upon reading the following description, are solved by the subject-matter of the independent claim. The dependent claims refer to prefer embodiments of the invention.

3. Summary of the invention

[0005] According to the invention, a luminaire for street and/or road lighting, which optionally comprises a post, and which comprises a support being connected/connectable to the post and being provided for carrying a lighting head, and a fastening portion being provided or being adapted for being provided on the post and/or being provided on the support. The fastening portion is configured to bring the post and the support from an unfastened state, in which the support is unfastened from the post, in/to a fastened state, in which the support is fastened with the post. The fastening portion is configured to bring the post and the support from the unfastened state in/to the fastened state without additional tools, i.e., by means of the fastening portion only.

[0006] With other words, the present invention proposes to provide a more efficient way of fastening the support/lighting head with the post by providing the fastening portion by way of the support and/or post and by configuring/designing the fastening portion such that the fastening portion alone can fasten the support with the post. As such, an operator does not require any additional fastening elements (e.g., screws) or tools for fastening the support with the post when the support has been previously connected with (and lifted to the distal end of) the post. Thus, the ease and also time of fastening the support and therefore the lighting head with the post is significantly increased. For example, the fastening portion is provided in a module with the post and/or the support before connecting the support with the post. Therefore, for the final step of assembling, i.e., in particular, fastening the post with the support, no additional tools or fastening elements are required. The fastening portion alone is therefore configured and designed such that manipulating the fastening portion can effect the required fastening force between the support and the post. The required fastening force is therefore triggered by the fastening portion only. It is maybe required that for unfastening the post and the support tools maybe provided, e.g., when the fastening force is relatively high. However, triggering the fastening force for bringing the post and the support from the unfastened state in/to the fastened state can be affected by the configuration and the design of the fastening portion only. The fastening portion provided on the post and/or the support furthermore achieves a more aesthetic design, since additional fixing elements to be mounted from outside of the luminaire are not required anymore.

[0007] According to a preferred embodiment, the fastening portion comprises a cavity holding a liquid adhesive bond, and a manipulating element. The manipulating element is configured to allow the adhesive bond to flow from the cavity into a gap being formable between or being between the post and the support, so that the adhesive bond solidifies in the gap for bringing the post and the support from the unfastened state in/to the fastened state. As such, by manipulating

the manipulating element only, the support is fastened with the post. Following this manipulation, the liquid adhesive bond automatically flows from the cavity into the gap, so that the operator does not need to do any further operations for fastening the post with the support. This is particularly advantageous for the ease of fastening the support with the post.

[0008] The support is preferably adapted to extend or preferably extends into the post for forming the gap between the post and the support. As such, the total surface for the adhesive force between the adhesive bond and the post and between the adhesive bond and the support is significantly increased, thus, providing a secure fastening of the support with the post.

[0009] The distal end of the support, i.e., the free end of the support inside of the post, preferably comprises a gasket for sealing the gap and preventing the adhesive bond from flowing behind the distal end of the support. As such, loss of the liquid adhesive bond is prevented and precise dosing of the bond inside of the gap is achieved.

[0010] According to a further preferred embodiment, the fastening portion comprises a snap fit. According to a first alternative, the snap fit is provided for snapping into a wall of the support or the post for bringing the post and the support from the unfastened state in/to the fastened state. In the unfastened state, the support may simply be connected to the post, wherein pushing of the support in the direction of the post effects snapping of the snap fit into the wall of the support or the post. Therefore, since the operator only needs to push the support in a direction of the post, no further/additional tools are required for bringing the post and the support from the unfastened state in/to the fastened state. Furthermore, the snap fit effects an exact (i.e., correct) position and orientation of the support on the post.

[0011] Preferably, the snap fit comprises a snap tab (catch) being provided on the support, and wherein the support is adapted to be inserted or is inserted in the post such that in the fastened state the snap tab (after snapping into the post or the support) engages with the post for fastening the post with the support. The snap tab preferably engages with a hole in the post for fastening the post with the support. With the snap tab being provided on the support, preferably being provided integrally on the support, the parts of the fastening portion are reduced. Therefore, the efficiency of fastening the support with the post is further increased. The snap tab may also be provided on the post, so that the aforementioned applies correspondingly.

[0012] According to a second alternative of the snap fit, the snap fit may be provided for snapping into or behind an adaptor (adapter) being adapted to be provided or being provided in the support or the post for bringing the post and the support from the unfastened state in/to the fastened state. The adaptor therefore provides a solution for fastening a great variety of posts and supports with each other. Preferably, the adaptor is adapted to (frictionally) engage or (frictionally) engages with the support or the post. As such, no further fastening elements are required for fastening the adaptor with the support or the post and, thus, also the efficiency of fastening the support with the post is increased. Preferably, the snap fit comprises a snap tab being provided on a separate insert, wherein in the fastened state the separate insert is inserted inside of the support such that the snap tab extends through a hole of the support to engage with the adaptor for fastening the post with the support. Therefore, the support is fastened with the post by means of the adaptor, the separate insert and the hole in the support only. Therefore, when in the unfastened state the support is connected to the post, an operator only needs to push the separate insert inside of the support in the direction of the hole so that the snap tab snaps through the hole of the support to engage with the adaptor, i.e., snaps into or behind the adaptor, for fastening the post with the support. This increases, in particular, the efficiency of fastening the post with the support, since fastening requires the separate insert to snap through the hole only, i.e., without additional tools.

[0013] According to a further preferred embodiment, the fastening portion comprises an expandable element being able to expand and contract, and a manipulating element.

[0014] The manipulating element is configured to expand and/or contract the expandable element for bringing the post and the support from the unfastened state in/to the fastened state, in which the expandable element engages with the support and/or the post for fastening the post with the support. Therefore, fastening the post with the support requires manipulating the manipulating element only without any additional tools.

[0015] The expandable element is preferably adapted to be provided or is preferably provided between the manipulating element and the support or the post and inside of the post and/or the support. The manipulating element is provided to expand the expandable element for bringing the post and the support from the unfasten state in/to the fasten state, in which the expandable element engages with the support and/or the post for fastening the post with the support. Since a significant part of the fastening portion, i.e., the expandable element, is provided inside of the post and/or the support, the appearance of the luminaire is optimized. Furthermore, due to the arrangement of the expandable element inside of the post and/or the support, the space of the luminaire is efficiently used, so that the size of the luminaire is reduced while the ease of fastening the support with the post is increased.

[0016] The expandable element may comprise a deformable piece (preferably a single deformable piece), wherein the manipulating element is configured such that a movement of the manipulating element is able to expand or expands the deformable piece in a direction along and/or towards a wall, in particular an inner wall, of the post for bringing the post and the support from the unfastened state in/to the fastened state, in which the deformable piece engages with the wall of the post and/or a wall of the support for fastening the post with the support. In other words, the deformable (e.g., elastic) structure of the deformable piece effects the expanding and contracting movement of the expandable element.

As such, the manipulating element may be brought in contact with the deformable piece so that the force of the manipulating element acting on and contacting the deformable piece effects that the deformable piece expands in the direction along and/or towards the wall of the post for arriving the fastened state. Providing the deformable piece as a single deformable piece effects, amongst others, an easier assembly of the fastening portion, since the number of the parts of the fastening portion is reduced. Moreover, the deformable piece, e.g. a rubber block, increases the ease of fastening the post with the support.

[0017] The expandable element may also comprise at least one clamping jaw and a first transmission mechanism, wherein the first transmission mechanism is configurable or is configured to translate a movement of the manipulating element in a movement of the at least one clamping jaw in a direction along and/or towards a wall, in particular an inner wall, of the post for bringing the post and the support from the unfastened state in/to the fastened state, in which the at least one jaw engages with the wall of the post and/or a wall of the support for fastening the post with the support. The expandable element therefore expands by moving the at least one clamping jaw having a preferably rigid structure. In other words, the expandable element may have a main axis (e.g., along the extending direction of the post), wherein the at least one clamping jaw is capable of being moved by means of the first transmission mechanism with respect to this axis, i.e., away from the axis, in order to expand/contract the expandable element. Preferably, the expandable element comprises at least two clamping jaws being moveable to each other in order to expand/contract the expandable element, so that the clamping jaws can be brought in a position, in which the jaws engage with the wall of the post and/or the wall of the support. With the at least one clamping jaw and the transmission mechanism, an advantageous lever ratio is effected so that the ease of fastening the post with the support is even further increased.

[0018] The manipulating element may comprise a manipulating part for manipulating the manipulating element, a contact part for contacting the expandable element, and a second transmission mechanism, preferably a screw shaft. The second transmission mechanism is configured to translate a manipulating movement of the manipulating part in a movement of the contacting part so that the expandable element is able to expand or expands along and/or towards the wall of the post for bringing the post and the support from the unfastened state in/to the fastened state. The (second) transmission mechanism of the manipulating element achieves, in particular, that an operator does not require a high manipulating force for bringing the post and the support from the unfastened state in/to the fastened state. In other words, the second transmission mechanism translates a manipulating movement, e.g., a turning movement, in a movement of the contact part, e.g., a linear movement, so that the contact part moves towards the expandable element for expanding the expandable element, e.g., in a direction perpendicular to the linear movement of the contact part. This particularly increases the ease of fastening the post with the support by means of manipulating the manipulating element.

[0019] The expandable element may also be an elastic, preferably slitted hood being adapted for extending or extending from one of the support or the post and (for) (partially) surrounding the other one of the post or the support, wherein the manipulating element is provided to elastically deform the hood for expanding or contracting the hood for bringing the post and the support from the unfastened state in/to the fastened state, in which the hood engages with the post or the support. As such, the support is fastened with the post by means of frictional forces between the hood and the post or the support. Therefore, a very easy way of fastening the support and the post is achieved. For example, the hood may integrally provided with the support and surround the post, so that an inner wall of the hood frictionally engages with an outer wall of the support.

[0020] In the aforementioned embodiment, the manipulating element may comprise a fastening element, preferably a screw, which spans over the slit of the slitted hood so that manipulating the fastening element contracts the hood for bringing the post and the support from the unfastened state in/to the fastened state, in which the hood engages with the post. The preassembled fastening element therefore provides a means for easily contracting (and expanding) the hood so that the hood engages with the post. Additionally or alternatively, the manipulating element may comprise a clamp, which is pivotably provided for elastically deforming, in particular contracting, the hood for bringing the post and support from the unfastened state in/to the fastened state, in which the clamp engages with the hood so that the hood engages with the post. The clamp, in particular a lever of the clamp pivoting about the pivot point of the clamp, provides a means for easily deforming the hood and, thus, for easily fastening the post and the support without any additional tools.

[0021] Preferably, the expandable element comprises a surface for engaging with the support and/or the post, wherein the surface comprises a defined surface texture for increasing the friction between the surface and the support and/or between the surface and the post. As such, a high frictional force is achieved between the surface and the support and/or the post, in particular, a wall of the support and/or the post, by means of a relatively small normal force of the surface acting on the support and/or the post. Therefore, an operator does not require a high manipulating force for fastening the support and the post. Furthermore, the ease of fastening the support and/or the post is even further increased.

[0022] According to a further preferred embodiment, the fastening portion comprises a preferably conical boss being provided on or being adapted for being provided on the post, and a preferably conical protrusion being provided on the support. By inserting the protrusion in the boss the protrusion frictionally engages with the boss, preferably forms a press fit with the boss, for bringing the post and the support from the unfastened state in/to the fastened state. Therefore, since the operator only needs to push the support and, thus, the protrusion in a direction of the post, i.e., inside of the boss,

no further/additional tools are required for bringing the post and the support from the unfastened state in/to the fastened state. In particular the conicity of the boss and the protrusion, respectively, which is prefereably about 2%, effects an advantageous transmission ratio for translating a small pushing force acting on the protrusion into a high frictional force between the boss and the protrusion.

[0023] In the fastened state, the protrusion may protrude from the boss into a channel being provided or being adapted for being provided in the post and being accessible through an opening from outside of the post so that a tool, preferably a conical tool, can access the channel for contacting the protrusion to move the protrusion out of the boss and, thus, to bring the post and the support in the unfastened state. Thus, an easy way of disengaging the protrusion from the boss for bringing post and the support in the unfastened state is provided.

[0024] Additionally or alternatively, the boss and/or the protrusion may comprise a surface for engaging the boss with the protrusion, wherein the surface comprises a defined surface texture for increasing the friction between the boss and the protrusion. As such, a high frictional force is achieved at the surface between the boss and the protrusion by means of a relatively small normal force of the surface acting on the boss and/or the protrusion. Therefore, an operator does not require a high manipulating force for fastening the support and the post, which is advantageous for the ease of fastening the support and/or the post.

[0025] The luminaire may further comprise a lighting head. The lighting head may be connected, preferably removeably connected, with the support. For example, the lighting head may be connected with the support by means of a bold connection. This particularly increases the modularity of the luminaire, since one single support may be provided for a great variety of lighting heads. That is, the lighting head may be replaced without unfastening the support. Thus, the ease of assembling the luminaire, in particular maintaining the luminaire, is increased. Alternatively, the lighting head may also be integrally formed with the support. This is particularly advantageous for easily fastening the lighting head with the post. The assembling steps for connecting the lighting head with the support are also reduced.

4. Description of preferred embodiments

[0026] In the following, the invention is described exemplarily with reference to the enclosed Figures, in which

Figure 1a	is an exploded view of a luminaire according to a first preferred embodiment of the invention;
Figure 1b	is a cross-sectional view showing the luminaire shown in Figure 1a;
Figure 1c	is a schematic cross-sectional view showing the luminaire shown in Figure 1a in the unfastened state;
Figure 1d	is a schematic cross-sectional view showing the luminaire shown in Figure 1a in the fastened state;
Figure 1e	is a detailed view showing the cavity and the gap of the luminaire shown in Figure 1;
Figure 2a	is an exploded view of a luminaire according to a second preferred embodiment of the invention;
Figure 2b	is a detailed view showing the fastening portion of the luminaire shown in Figure 2a;
Figure 2c	is a perspective cross-sectional view of the luminaire shown in Figure 2a taken along the section line A-A;
Figures 2d and 2e	are perspective views of a part of the fastening portion of the luminaire shown in Figure 2a;
Figure 2f	is a cross-sectional view of the part of the fastening portion shown in Figure 2d taken along the section plane A-A;
Figure 3a	is an exploded view according to a further example of the second embodiment of the invention;
Figure 3b	is a cross-sectional view showing the fastening portion of the luminaire shown in Figure 3a;
Figure 3c	is a detailed view showing a part of the fastening portion of the luminaire shown in Figure 3b;
Figure 4	is a cross-sectional view of a luminaire according to a third preferred embodiment of the invention;

Figure 5a	is a cross-sectional view of a luminaire according to a fourth preferred embodiment of the invention;
Figure 5b	is a cross-sectional view of the luminaire shown in Figure 4a taken along the section line A-A;
Figures 6a and 6b	are side elevations of a luminaire according to a fifth preferred embodiment of the invention;
Figure 6c	is a schematic cross-sectional view showing the luminaire shown in Figure 6a and 6b with a further example of the manipulating element;
Figure 6d	is a plan view of the luminaire shown in Figure 6c;
Figures 7a and 7b	are schematic cross-sectional views showing a luminaire according to a sixth preferred embodiment of the invention.
Figures 8a to 8c	are detailed cross-sectional views showing preferred surface textures for a surface of fastening portions according to the present invention;

[0027] The enclosed Figures show different examples of preferred embodiments of a luminaire 1 for street and/or road lighting. The luminaire 1 optionally comprises a post 2 having, e.g., a height of 3 m to about 12 m. The post 2 may have one end, which is fixed to the ground besides a street and/or a road. The post 2 may have any cross-sectional area such as a circular, rectangular or elliptical cross-sectional surface. The diameter of the post 2 may be 42 mm, 60 mm, 76 mm or any other diameter ranging from about 20 mm to about 120 mm, preferably from about 42 mm to about 76 mm. The luminaire 1 further comprises a support 3 being connected to the post 2 and being provided for carrying a lighting head or lantern 4. The support 3 is preferably provided on top of the post 2. The lighting head 4 preferably comprises a plurality of light sources such as LEDs for emitting light for street and/or road lighting. The light sources are preferably provided in a housing 4a of the lighting head 4. A protection means 4b such as a cover or a lens may be connected to the housing 4a for protecting the light sources inside of the housing 4a. The lighting head 4 maybe connected, preferably removeably connected, with the support 3, e.g. by means of a bold connection. As such, the support 3 may comprise an integrally provided flange 3a (see Figures 1h and 2f) having a plurality of holes 3b, through which bolds of the lighting head 4 may extend for fixing the lighting head 4 on the support 3. As can be seen in Figure 1h, the flange 3a and the holes 3b provided on the flange 3b may be designed such that by means of the flange 3a the position and/or orientation of the support 3 and/or of the lighting head 4 can be varied. The lighting head 4 may also be connected with the support 3 by other means, e.g., by means of a corresponding connection such as a snap fit or the like. Alternatively, the lighting head 4 may also be formed integrally with the support 3. For example, the housing 4a of the lighting head 4 may form a monolith structure with the support 3. The post 2 may be made of metal such as aluminum and/or steel. The post 2 may also be made of or comprise plastic material. The support 3 may be an injected part, e.g., made of plastic material. The material of the support 3 may also be made of metal, e.g., steel and/or aluminum.

[0028] As can be seen in the Figures, the luminaire 1 comprises a fastening portion 100, 200, 300, 400, 500, 600 provided on the post 2 and/or the support 3 and configured to bring the post 2 and the support 3 from an unfastened state, in which support 3 is unfastened from the post 2, in a fastened state, in which the support 3 is fastened with the post 2. The fastening portion 100, 200, 300, 400, 500, 600 is configured to bring the post 2 and the support 3 from the unfastened state in/to the fastened state without additional tools, i.e., by means of the fastening portion 100, 200, 300, 400, 500, 600 only. In other words, the fastening portion of the present invention does not require any further tools for securely fastening the post 2 with the support 3. It may, however, required to use additional tools for unfastening the support 3 from the post 2, i.e., to bring the post 2 and the support 3 from the fastened state in/to the unfastened state.

[0029] In Figures 1a to 1h, a first preferred embodiment of the luminaire is shown. The fastening portion 100 comprises a cavity 101 for holding a liquid adhesive bond 102. The cavity 101 may be provided on the post 2 or the support 3. In the preferred embodiment shown in the Figures, the cavity 101 is provided on the post 3. Preferably, the cavity 101 is integrally provided on the support 3. The cavity 101 may run around the circumference of the support 3. The cavity 101 may be designed such that placing of the cavity 101 on the post 2 effects an exact position (and orientation) of the cavity 101 and of the support 3 on the post 2. Preferably, the cavity 101 comprises a first chamber 101a and a second chamber 101b being connected to each other. The diameter, i.e., the inner and outer diameter, of the first chamber 101a is preferably greater than the diameter, i.e., the inner and outer diameter, of the second chamber 101b.

[0030] Preferably, the cavity 101 comprises a (first) step 101c, being provided at the transition of the first chamber 101a to the second chamber 101b, i.e., for connecting the diameter of the first chamber 101a with the diameter of the second chamber 101b. The step 101c may be provided for placing, preferably exactly positioning and/or orientating, the cavity 101 and the support 3 on the post 2. As such, the second chamber 101b may have an outer diameter corresponding to an inner diameter of the post 2 (e.g., a post 2 having a diameter of 60 mm). Thus, an easy way of connecting the

support 3 with the post 2 (in the unfastened state) is provided.

[0031] Preferably, the cavity 101 comprises a (second) step 101g being connected to a distal end of the first chamber 101a. The step 101g may be provided for placing, preferably exactly positioning and/or orientating, the cavity 101 and the support 3 on the post 2. As such, the first chamber 101a may have an outer diameter corresponding to the inner diameter of the post 2 (e.g., a post 2 having a diameter of 76 mm). Having steps 101a and 101g thus provides a cavity 101, which can be used for posts having different inner diameters (e.g., a post 2 having a diameter of 76 mm and a post 2 having a diameter of 60 mm), in particular for a post 2 having an inner diameter corresponding to the outer diameter of the first chamber 101a and a post 2 having an inner diameter corresponding to the outer diameter of the second chamber 101b.

[0032] Preferably, the cavity 101 comprises a (third) step 101h being the bottom of the second chamber 101b. The step 101h may be provided for placing, preferably exactly positioning and/or orientating, the cavity 101 and the support 3 on the post 2. As such, the second chamber 101b may have an outer diameter being greater than the inner diameter of the post 2 (e.g., a post 2 having a diameter of 42 mm). The step 101h may be connected to a (outer) wall of the support 3 having an outer diameter corresponding to the inner diameter of the post 2 (e.g., a post 2 having a diameter of 42 mm). As such, the support 3 can be fastened on the post 2 by (only) inserting the support 3 in the post 2, i.e., e.g., by a frictional engagement between the outer diameter of the support 3 and the inner diameter of the post 2. Having further step 101h thus provides a cavity 101, which can be used for posts having different inner diameters (e.g., also for a post 2 having a diameter of 42 mm), in particular also for a post 2 having an inner diameter being smaller than the outer diameter of the second chamber 101b.

[0033] The cavity 101 holds a liquid adhesive bound 102. The liquid adhesive bond 102 may be, e.g., a glue such as a two-component adhesive bond, which in the solidified state effects an adhesive force between the post 2 and the support 3, which is capable of preventing pulling out the support 3 out of the post 2.

[0034] The fastening portion 100 may also comprise a lid 103 being connected with the cavity 101, preferably with the step 101g, for sealingly closing the cavity 101 so that solidifying, in particular oxidating, of the liquid adhesive bond 102 is prevented. The lid 103 may have a structure corresponding to the cavity 101, in particular the first chamber 101a, for connecting the lid 103 with the cavity 101. The lid 103 may comprise an outlet 103a for inserting the liquid adhesive bound inside of the cavity 101. In the closed state of the cavity 101, in which the lid 103 sealingly closes the cavity 101, the outlet 103 may be moved between a sealing position, in which the outlet 103 sealingly closes the lid, and an opening position, in which the liquid adhesive bond 102 can be added to the cavity 101. The first chamber 101a may have a volume corresponding to the volume of the second chamber 101b, preferably such that the ratio of the inner diameter of the first chamber 101a to the inner diameter of the second chamber 101b is 7,6:6.

[0035] As can be seen in Figure 1e in greater detail, the fastening portion 100 comprises a manipulating element 104, which is configured to allow the adhesive bond 102 to flow from the cavity 101, in particular the second chamber 101b, into a gap 105 between the post 2 and the support 3. The manipulating element 104 may comprise a pin 104a, which can be brought in a sealing contact with a hole 101d of the cavity 101, which is preferably provided in the step 101h, wherein the hole 101d opens the cavity 101, in particular the second chamber 101b, to the gap 105. As such, the liquid adhesive bond 102 may flow from the cavity 101 through the hole 101d into the gap 105. A membrane 101e may be provided between the hole 101d, and preferably the step 101h, and the gap 105 for facilitating the flow of the adhesive bond 102 from the cavity 101 into the gap 105. The membrane 101e may be supported on a protrusion 101f of the post 2 and in contact with the cavity 101. The manipulating element 104 may further comprise a manipulating portion 104b for moving the pin 104b between a position, in which the pin 104b sealingly closes the hole 101d and preferably also the membrane 101e, and a position, in which the pin 104a allows a flow from the liquid adhesive bond 102 from the cavity 101 through the hole 101d (and the membrane 101e) into the gap 105. The manipulating portion 104b may be integrally provided with the pin 104a or may also be provided at a distance from the pin 104b for facilitating manipulating of the manipulating element 104 remotely, e.g., by an operator standing on the street. In a particularly preferred embodiment, the manipulating portion 104b is a button being connected, e.g., integrally connected, with the pin 104a. As such, pushing or pulling of the manipulating portion 104b may allow the adhesive bond 102 to flow from the cavity 101 into the gap 105. In case the cavity 101 is placed on the post 2 by way of the step 101h (e.g., when using a post 2 with a small diameter), i.e. in particular when the support 3 is fastened with the post 2 by inserting the support 3 in the post 2, the membrane 101e may be removed beforehand.

[0036] When the manipulating element 104 allows the adhesive bond 102 to flow from the cavity 101 into the gap 105, the adhesive bond 102 accumulates in the gap 105. The accumulated liquid adhesive bond 102 inside of the gap 105 is then ready for being solidified inside of the gap 105 and, thus, for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state. The unfastened state is exemplarily shown in Figure 1c. In this unfastened state, the liquid adhesive bond 102 is provided in the cavity 101 only. In the fastened state, which is exemplarily shown in Figure 1d, the gap 105 is fully filled with the bond 102 being already solidified. Solidification of the liquid adhesive bond 102 inside of the gap 105 maybe effected by oxidation.

[0037] As can be seen, in particular, in Figures 1b, 1c and 1d, the support 3 preferably extends into the post 2 for

forming the gap 105 between the post 2 and the support 3. As such, the support 2 is hollow inside. The gap 105 may extend around the circumference of the part of the support 3 extending into the post 2 for forming the gap 105. Part of the gap 105 may be formed by the inner wall of the post 2 and the outer wall of the first chamber 101a and/or the second chamber 101b, when the first step 101c or the second step 101g is placed on the post 2.

[0038] The distal end of the support 3, i.e., the end of the support 3 inside of the post 2, preferably comprises a gasket 106 for sealing the gap 105 and preventing the adhesive bond 102 from flowing behind the distal end of the support 3. The gasket 106 may extend from the distal end of the support 3 in a direction towards the post 2 by an amount being greater than the width of the gap 105, so that the gasket 106 pushes against the post 2 for sealing the gap 105 between the post 2 and the support 3. Preferably, the gasket 106 extends from the distal end of the support 3 by an amount, which is the multiple of the width of the gap 105, so that the gasket 106 being provided on the distal end of the support 3 can be used for a variety of posts 2 with different diameters. As can be seen by way of example in Figure 1g, when the support 3 is disassembled from the post 2, i.e., in the unstressed state of the gasket 106, the distal end of the gasket 106 may extend at least to or through a vertical plane extending from the outer diameter of the cavity 101, e.g., the outer diameter of the first chamber 101a. In case the cavity 101 is placed on the post 2 by way of the step 101h (e.g., when using a post 2 with a small diameter), i.e. in particular when the support 3 is fastened with the post 2 by inserting the support 3 in the post 2, the gasket 106 may be removed beforehand.

[0039] For bringing the post 2 and the support 3 from the fastened state in/to the unfastened state, the support 3 may be simply pulled out of the post 2, e.g., by means of a pulling force being greater than the adhesive force for fastening the post 2 with the support 3. Alternatively or additionally, also other means for unfastening the support 3 from the post 2 may be used, such as heating means for liquifying the solidified bond in the gap.

[0040] In Figures 2a to 2f, a second preferred embodiment of the luminaire 1 is shown. According to this preferred embodiment, the fastening portion 200 is a snap fit for snapping into a wall of the support 3 or into a wall of the post 2 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state. In the example shown in Figures 2a to 2c, the snap fit is provided to snap into a wall of the post 2. The unfastened state is exemplarily shown in Figure 2a. The fastened state is exemplarily shown in Figure 2b. As can be seen in this Figures, the snap fit comprises at least one, preferably three, snap tab(s) 201. The at least one snap tab or clip 201 is provided, preferably integrally provided, on the support 3. For example, the elasticity of the snap tab 201 may be effected by slitting the support 3, i.e., a wall of the support 3. As can be seen, in particular, in Figure 2b, the snap tab 201 also comprises a slope at the front end for contacting and running on the post 2, so that pushing the support 3 inside of the post 2 facilitates elastically deforming the snap tap 201. In the fastened state, which is exemplarily shown in Figures 2b and 2c, the snap tab engages with the post 2, preferably with a hole 202 in the post 2, for fastening the post 2 with the support 3. Preferably, the number of holes 202 corresponds to the number of the snap tabs 201, i.e., the number of the holes 202 is preferably three. For preventing that the snap tab 201 moves further than the hole 202, the support 3 may comprise a protrusion 203, which preferably extend around the circumference of the support 3, for contacting a distal end of the pole 2.

[0041] As can be seen in Figures 2d to 2f, the support 3 may further comprise at least one, preferably three, centering protrusions 204 for centering the support 3 inside of the pole 2, so that the at least one snap tab 201 can easily catch the hole 202. Preferably, the at least one centering protrusion 204 is guided in a corresponding recess in the post 2. The at least one centering protrusion 204 may have a triangular shape or any other shape suitable for being guided in the corresponding recess.

[0042] In Figures 3a, 3b and 3c, a second alternative of the second embodiment is shown. In this alternative, the fastening portion 200 is a snap fit for snapping into or behind an adaptor 205 being provided in the support 2 or the post 3 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state. In Figure 3a, 3b and 3c, the adaptor 205 is provided inside of the post 2. As can be seen in Figures 3b and 3c by way of example, the snap fit snaps behind the adaptor 205, i.e., engages with a free end of the adaptor 205 being provided inside of the post 2. Alternatively, the snap fit may also snap into the adaptor 205, e.g., in a hole or recess of the adaptor 205.

[0043] Therefore, in order that the support 3 is securely fastened with the post 2, the adaptor 205 engages with the post 2, e.g. by frictionally engaging with the post 3, in particular, by way of a press fit between the post 2 and the adaptor 205.

[0044] The snap tab 201 may alternatively also be provided on a separate insert 206, which in the fastened state (Figure 3b) is inserted inside of the support 3, and preferably inside of the post 2, such that the snap tab 201 extends through a hole 207 of the support 3 to engage with the adapter 205, e.g. a recess, hole or free end of the adaptor 205, for fastening the post 2 with the support 3. Preferably, an outer wall of the separate insert 206 forms a press fit with an inner wall of the support 3 so that the fit between the separate insert 206 and the pole 3, the engagement of the snap tab 201 with the adaptor 205, and the engagement of the adaptor 205 with the post 2 fastens the support 3 with the post 2. In this embodiment, the protrusion 203 prevents the hole 207 from moving too far away from the adaptor 205, so that engagement of the snap tab 201 through the hole 207 with the adaptor 205 is ensured.

[0045] For bringing the post 2 and the support 3 from the fastened state in/to the unfastened state, the snap fit / snap tab(s) 201 may simply be pushed (e.g., by means of an operator's hands and/or fingers) against their snapping/biasing force. For example, the fastening portion 200 may comprise means, which facilitate a force for pushing against the

snapping/biasing force and, thus, for unfastening the support 3 from the post 2. Alternatively or additionally, the snap fit may also be provided such that unfastening is effected by destroying the snap fit connection, e.g., by means, which facilitate destroying of the snap fit and, thus, unfasten the support 3 from the post 2.

[0046] In Figure 4, a third preferred embodiment of the luminaire 1 is shown. The fastening portion 300 comprises an expandable element 301 being able to expand and contract, and a manipulating element 302 for expanding and contracting the expandable element 301 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state, in which the expandable element 301 engages with the support 3 and/or the post 2 for fastening the post 2 with the support 3. Preferably, the expandable element 301 is provided between (a part of) the manipulating element 302 and the support 3. Furthermore, the expandable element 301 is preferably provided inside of the post 2, more preferably inside of the post 2 and the support 3. The manipulating element 302 is preferably provided to expand the expandable element 301 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state. In the preferred embodiment shown in Figure 4, the expandable element 301 is or comprises a preferably single deformable piece 303 such as a rubber block. The material of the deformable piece 303 maybe a plastic deformable material such as EPDM (ethylene propylene diene monomer (M-class) rubber). The manipulating element 302 is configured such that a movement of the manipulating element 302, e.g. a turning movement, expands the deformable piece 303 in a direction towards a wall, in particular an inner wall, of the post 2 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state, in which the deformable piece 303 engages with the wall of the post 2 and/or a wall of the support 3 for fasting the post 2 with the support 3. As such, in the unfastened state, the deformable piece 303 may already be in an engaging contact with the wall of the support 3. The process of bringing the deformable piece 303 in engaging contact with at least the post 2 is exemplarily shown in Figure 5. Manipulating (here: turning) the manipulating element 302 effects a normal force F_n between the deformable piece 303 and the post 2, and, preferably, a normal force between the support 3 and the post 2. Preferably, a normal force between the deformable piece 303 and the support 3 is also effected.

[0047] The manipulating element 302 may comprise a manipulating part 302a, e.g., a wing screw, for manipulating the manipulating element 302, a contact part 302b, e.g., a nut, for contacting and expanding (and compressing) the deformable piece 303, and a transmission mechanism 302c, preferably a screw shaft, for translating a manipulating movement of the manipulating part 302a and a movement of the contacting part 302b so that the deformable piece 303 expands towards the post 2, i.e. the wall of the post 2, for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state. Preferably, the manipulating part 302a is provided inside of the support 3, wherein the transmission mechanism 302c extends from the manipulating part 302a through a hole 305 of the support 3 into the post 2, wherein the contacting part 302b is provided on the part of the transmission mechanism 302c being provided inside of the post 2. The transmission mechanism 302c is preferably designed such that a movement of the transmission mechanism 302c effects a movement, in particular a rising and sinking movement, of the contacting part 302b along the transmission mechanism 302c (and alongt the post 2) in order to, in particular, contact and press on the deformable piece 303 and, thus, expand the deformable piece in a direction towards the post 2. The deformable piece 303 may automatically contract into its original shape by effecting a movement of the contacting part 302b in a direction away from the deformable piece 303. Preferably, the transmission mechanism 302c extends through the deformable piece 303, i.e. through a hole in the single deformable piece 303. In particular, the contacting part 302b and/or the deformable piece 303 may comprise a structure for frictionally engaging of the contacting part 302b and the deformable piece 303 in order to prevent a rotating movement of the contacting part on the deformable piece 303. Thus, the transmission mechanism 302c may be screwed into the contacting part 302b and, thus, the contacting part 302b moves along the transmission mechanism 302c according to the screwing motion. A securing means 302d may be provided on the transmission mechanism 302c for preventing the contacting part 302b of being moved behind the distal end of the transmission mechanism 302c and, thus, of falling from the transmission mechanism 302c. The manipulating part 302a and the transmission mechanism 302c may be integrally formed. The material of the manipulating part 302a, the contacting part 302b and/or the transmission mechanism 302c may be steel, in particular stainless steel.

[0048] For bringing the post 2 and the support 3 from the fastened state in/to the unfastened state, the manipulating element 302 may simply be manipulated in a manner corresponding to the manner explained above. In particular, the manipulating element 302 may simply be manipulated in a direction being opposite to the direction of the manipulating movement, which brings the post 2 and the support 3 in/to the fastened state.

[0049] In Figures 5a and 5b, a fourth preferred embodiment of the luminaire 1 is shown. The fastening portion 400 comprises an expendable element 401 being able to expand and contract, and a manipulating element 402. The manipulating element 402 is configured to expand and contract the expandable element 401 for bringing the post 2 and the support 3 from the unfastened state (see Figure 4a) in/to the fastened state (see Figure 4b), in which the expandable element 401 engages with at least the post 2 for fastening the post 2 with the support 3. As can be seen in Figure 4a, the expendable element 401 is preferably provided inside of the post 2, wherein the manipulating element 402, i.e. a part of the manipulating element 402, is provided to expand the expandable element 401 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state, in which the expandable element 401 engages with the

support 3 and/or the post 2 for fastening the post 2 with the support 3. In the preferred embodiment, the expendable elements 401 comprises at least one, preferably two, clamping jaw(s) 403. The at least one clamping jaw 403 is provided to be moveable in a direction along and towards a wall, in particular an inner wall, of the post 2. For example, movement of the at least one clamping jaw 403 along and towards a wall of the post 2 may be effected by guiding the at least one clamping jaw 403 on a (first) transmission mechanism 404 being capable of translating a one-dimensional movement of the manipulating element 402 into a two-dimensional movement of the at least one clamping jaw 403 in a direction along and towards the wall of the post. The transmission mechanism 404 may be provided, preferably integrally provided, on the support 3. In the preferred embodiment, the transmission mechanism 404 is a wedge having a slope corresponding to the moving direction of the at least one clamping jaw 403. Preferably, two clamping jaws 403 are provided for engaging with the wall of post 2 such that the vertical movement component of the jaws 403 is inverse.

[0050] The transmission mechanism 404 is therefore configured to translate a movement of the manipulating element 402 in a movement of the at least one clamping jaw 403 in a direction along and towards a wall of the post 2 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state. The manipulating element 402 may comprise a manipulating part 402a, e.g., a wing screw, for manipulating the manipulating element 402, a contact part 402b, e.g., a nut, for contacting and expanding the expandable element 401, and a (second) transmission mechanism 402c, preferably a screw shaft, for translating a manipulating movement of the manipulating part 402 in a movement of the contacting part 402b so that the expandable element 401, i.e. the at least one clamping jaw 403, expands by means of the transmission mechanism 404 along and towards the wall of the post for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state (see Figure 4a). The contacting part 402b may loosely hold the at least one clamping jaw 403a, 403b inside of the post 2 for being moved along and towards the wall of the post 2. The manipulating part 402a is preferably provided inside of the support 3. The transmission mechanism 402c preferably extends from the manipulating part 402a through a hole 405 being provided in the support 3 into the post 2, wherein the part of the transmission mechanism 402c being provided inside of the post 2 holds the contacting part 402b. The transmission mechanism 402c is preferably designed such that a movement of the transmission mechanism 402c effects a movement, in particular a rising and sinking movement, of the contacting part 402b along the transmission mechanism 402c (and along the post 2) in order to move the at least one clamping jaw 403 in a direction towards the post 2. The manipulating part 402a and the transmission mechanism 402c may be integrally formed. The material of the manipulating part 402a, the contacting part 402b and/or the transmission mechanism 402c may be steel, in particular stainless steel.

[0051] In the fastened state, which is exemplarily shown in Figure 5b, the at least one clamping jaw 403 is clamped between the transmission mechanism 404 and the wall of the post 2 in order to effect the engagement or engaging force between the post 2 and the support 3.

[0052] For bringing the post 2 and the support 3 from the fastened state in/to the unfastened state, the manipulating element 402 may simply be manipulated in a manner corresponding to the manner explained above. In particular, the manipulating element 402 may simply be manipulated in a direction being opposite to the direction of the manipulating movement, which brings the post 2 and the support 3 in/to the fastened state.

[0053] In Figures 6a and 6b, a fifth preferred embodiment of the luminaire 1 is shown. As can be seen, the fastening portion 500 comprises an expandable element 501 being able to expand and contract, and a manipulating element 502 for expanding and contracting the expandable element 501 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state, in which the expandable element 501, in particular an inner wall of the expandable element 501, engages with the post 2 for fastening the post 2 with the support 3. As such, the expandable element 501 may be integrally provided with the support 3. In the preferred embodiment shown in Figures 6a and 6b, the expandable element 501 is an elastic hood 503 extending from the support 3 and surrounding (an upper part of) the post 2. The elasticity of the hood 503 may be effected by way of a slit 504 in the hood 503, so that a silted hood 503 is provided. In this embodiment, the manipulating element 502 is provided to elastically deform the hood 503 for contracting the hood 503 for bringing the hood 503, in particular an inner wall of the hood 503, in a preferably frictional engagement with (an outer wall of) the post 2 or an adapter 506 being provided on the post, e.g., by means of a press fit, in order to bring the post 2 and the support 3 in/to the fastened state. In particular, the manipulating element 502 may comprise a fastening element 502a, which spans over the slit 504 of the hood 503 so that manipulating, e.g., turning, the fastening element 502 contracts the hood 503 for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state, in which the hood 503 engages with the post 2. The fastening element 502a may be connected to a manipulating part 502b, e.g., a lever, for manipulating the manipulating element 502 and, thus, contracting the hood 503. At an end of the fastening element 502a being opposite the end on which the manipulating part 502b is connected, a contact part 502c may be provided, e.g., a nut, for translating the manipulating movement of the manipulating part 502b into the movement of the manipulating element 502 for contracting the elastic hood 503.

[0054] In Figures 6c and 6d, and alternative for the afore-mentioned manipulating element 502 is shown. As an additional or alternative feature of the afore-mentioned manipulating element 502, the fastening portion 500 may comprise a manipulating element 502 comprising a clamp 505a. As can be seen in Figure 6d, the clamp 505a is pivotably provided for elastically deforming, in particular contracting, the hood 503. The clamp 505a may be pivotably provided by means

of a bearing 505b having a rotational axis extending in a direction essentially perpendicular to the contracting direction of the hood 503. The diameter of the part of the clamp 505a engaging with the hood 503 is preferably smaller than the diameter of the hood 503 in its relaxed state. That is, the diameter of the part of the clamp 505a engaging with the hood 503 preferably effects contracting of the hood 503 so that the inner wall of the hood 503 frictionally engages with an outer wall of the post 2 or the adapter 506 being provided on the post 2, e.g., by means of a press fit. For the ease of bringing the clamp 505a into its clamping position with the hood 503, the manipulating element 502 may comprise a lever 505c for pivoting and, thus, moving the clamp 505a between the clamped position and the unclamped position, in particular, for bringing the hood 503 and, thus, the support 3 and the post 2 from the unfastened state in/to the fastened state.

[0055] For bringing the post 2 and the support 3 from the fastened state in/to the unfastened state, the manipulating element 502 may simply be manipulated in a manner corresponding to the manner explained above. In particular, the manipulating element 502 may simply be manipulated in a direction being opposite to the direction of the manipulating movement, which brings the post 2 and the support 3 in/to the fastened state.

[0056] In Figures 7a and 7b, a sixth preferred embodiment is shown. The fastening portion 600 comprises a preferably conical boss 601 being provided on the post 2, e.g., directly on the post 2 or by means of an adaptor 602 being connected to the post 2 (Figure 8b). Connecting of the adaptor 602 with the post 2 may be effected by means of fastening elements and/or a form fit and/or frictional connection such as a press fit and/or an adhesive bond between the adaptor 602 and the post 2. The fastening portion 600 further comprises a preferably conical protrusion 603 being provided, e.g., integrally provided, on the support 3. In particular, the protrusion 603 has a form corresponding to the boss 601 so that by inserting the protrusion 603 in the boss 601, the conical surface of the protrusion 603 frictionally engages with the conical surface of the boss 601, preferably forms a press fit with the boss 601, for bringing the post 2 and the support 3 from the unfastened state in/to the fastened state. The conicity of the conical boss 601 and the conical protrusion 603 may be about 2%. That is, the conical surface of the conical boss 601 and the conical protrusion 603, respectively, may have a slope of about 2% with respect to the vertical.

[0057] For unfastening the support 3 from the post 2, i.e., for disengaging the protrusion 603 from the boss 601, the post 2 may comprise a channel 604 being accessible for a tool 605 through an opening from outside of the post 2. In the fastened state, the protrusion 603 protrudes from the boss 601, e.g., by way of an opening 604a, into the channel 604. As such, the tool 605, which is preferably a conical (hunt) tool, can access the channel 604 for contacting the protrusion 603 to move the protrusion 603 out of the boss 601 in order to effect that the post 2 and the support 3 are brought in the unfastened state. By way of this movement, the support 3 is moved in the same direction as the protrusion 603. In case a conical tool is used for contacting the protrusion, movement of the conical tool inside of the channel 604 effects that the protrusion 603 runs on the conical surface of the conical tool 605 and is, thus, being moved out of the boss 601 in an easy way. Additionally or alternatively, the support 3 may comprise handling means such as handle bars for lifting the protrusion 603 and, thus, disengaging the protrusion 603 from the boss 601 in order to bring the post 2 and the support 3 in the unfastened state.

[0058] As can be seen in Figures 4a to 6c, the expandable element 301, 401, 501, in particular the deformable piece 303, the at least one clamping jaw 403, and the hood 503, may comprise a (peripheral) surface S for engaging with the support 3 and/or the post 2. As can be seen in Figures 7a and 7b, the surface S may also be a surface of the boss 601 and/or the protrusion 603 for engaging the boss 601 with the protrusion 603. In Figures 7a, 7b and 7c, preferred defined surface structures/textures for the surface S are shown, which are provided for increasing the friction between the surface S and the support 3 and/or between the surface S and the post 2 or between the boss 601 and the protrusion 603. Preferably, the defined surface structure is a regular surface structure being evenly distributed over the surface S. According to Figure 7a, the defined surface structure may comprise a plurality of nipples for frictionally engaging with the support 3 or the post 2. According to Figure 7b, the defined surface texture may comprise a plurality of slopes for frictionally engaging with the post 2 or the support 3. According to Figure 7c, the defined surface texture of the surface S may comprise a plurality of hooks or barbs for frictionally engaging with the post 2 or the support 3.

[0059] In all embodiments, the luminaire 1 may comprise a cable C, which is at least provided for supplying the luminaire with voltage and/or current. The cable C may also comprise cables for controlling the luminaire 1, in particular, the lighting head 4. The cable C may have one end connected with the lighting head 4 and one end connected with a voltage and/or current supply and/or with a control unit or the like being preferably provided inside of the post 2. The fastening portion 100, 200, 300, 400, 500, 600 has a structure, which allows that the cable C can be guided from the support 3, in particular from the lighting head 4, to the post 2. For example, the fastening 100, 200, 300, 400, 500, 600 may comprise at least one hole 3c, preferably provided in the flange 3a of the support 3, for guiding the cable C from the support 3 to the post 2, wherein the post 2 and the support 3, respectively, have a hollow structure for housing the cable C. In particular with respect to the fastening portion 600, the protrusion 603 may comprise a hole 606, in particular a through hole, through which the cable C coming from the support 3, the lighting head 4, respectively, can be guided.

[0060] It should be clear to the skilled person that the embodiments shown in the Figures are only preferred embodiments, but that, however, also other designs of the luminaire 1 can be used. In particular, specific elements such as

the expandable element and the boss as well as the protrusion can be provided on both the support 3 and the post 2. Moreover, the afore-mentioned fastening portions can be also used in any combination.

Claims

1. Luminaire (1) for street and/or road lighting, wherein the luminaire (1) comprises

- a support (3) being connectable to a post (2) and being provided for carrying a lighting head (4), and
- a fastening portion (100, 200, 300, 400, 500, 600) being adapted for being provided on the post (2) and/or being provided on the support (3) and configured to bring the post (2) and the support (3) from an unfastened state, in which the support (3) is unfastened from the post (2), in/to a fastened state, in which the support (3) is fastened with the post (2), wherein

the fastening portion (100, 200, 300, 400, 500, 600) is configured to bring the post (2) and the support (3) from the unfastened state in/to the fastened state without additional tools.

2. Luminaire (1) according to claim 1, wherein the fastening portion (100) comprises

- a cavity (101) holding a liquid adhesive bond (102), and
- a manipulating element (104), wherein

the manipulating element (104) is configured to allow the adhesive bond (102) to flow from the cavity (101) into a gap (105) being formable between the post (2) and the support (3), so that the adhesive bond (102) solidifies in the gap (105) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, wherein the support (3) is preferably adapted to extend into the post (2) for forming the gap (105) between the post (2) and the support (3), and wherein the distal end of the support (3) preferably comprises a gasket (106) for sealing the gap (105) and preventing the adhesive bond (102) from flowing behind the distal end of the support (3).

3. Luminaire (1) according to claim 1 or 2, wherein the fastening portion (200) comprises a snap fit for snapping

- into a wall of the support (3) or the post (2) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, or
- into or behind an adapter (205) being adapted to be provided in the support (3) or the post (2) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, wherein, preferably, the adapter (205) is adapted to frictionally engage with the support (3) or the post (2).

4. Luminaire (1) according to claim 3, wherein

- the snap fit comprises a snap tab (201) being provided on the support (3), and wherein the support (3) is adapted to be inserted in the post (2) such that in the fastened state the snap tab (201) engages with the post (2), preferably with a hole (202) in the post, for fastening the post (2) with the support (3), or wherein
- the snap fit comprises a snap tab (201) being provided on a separate insert (206), and

wherein in the fastened state the separate insert (206) is inserted inside of the support (3) such that the snap tab (201) extends through a hole(207) of the support (3) to engage with the adapter (205) for fastening the post (2) with the support (3).

5. Luminaire (1) according to any one of the preceding claims, wherein the fastening portion (300, 400, 500) comprises

- an expandable element (301, 401, 501) being able to expand and contract, and
- a manipulating element (302, 402, 502),

wherein the manipulating element (302, 402, 502) is configured to expand and/or contract the expandable element (301, 401, 501) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, in which the expandable element (301, 401, 501) engages with the support (3) and/or the post (2) for fastening the post (2) with the support (3), wherein the expandable element (301, 401, 501) preferably comprises a surface (S) being adapted for engaging with the support (3) and/or the post (2), wherein the surface (S) comprises a defined surface texture for increasing the friction between the surface (S) and the support (3) and/or between the surface

(S) and the post (2).

6. Luminaire (1) according to claim 5, wherein the expandable element (301, 401) is adapted to be provided

- between the manipulating element (302, 402) and the support (3) or the post (2), and
- inside of the post (2) and/or the support (3), and wherein

the manipulating element (302, 402) is provided to expand the expandable element (302, 402) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, in which the expandable element (302, 402) engages with the support (3) and/or the post (2) for fastening the post (2) with the support (3).

7. Luminaire (1) according to claim 5 or 6, wherein the expandable element (301) comprises

- a preferably single deformable piece (303), and wherein

the manipulating element (302) is configured such that a movement of the manipulating element (302) is able to expand the deformable piece (303) in a direction along and/or towards a wall, in particular an inner wall, of the post (2) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, in which the deformable piece (303) engages with the wall of the post (2) and/or a wall of the support (3) for fastening the post (2) with the support (2).

8. Luminaire (1) according to any one of claims 5 to 7, wherein the expandable element (401) comprises

- at least one clamping jaw (403) and
- a first transmission mechanism (404), wherein

the first transmission mechanism (404) is configurable to translate a movement of the manipulating element (402) in a movement of the at least one clamping jaw (403) in a direction along and/or towards a wall, in particular an inner wall, of the post (2) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, in which the at least one jaw (403) engages with the wall of the post (2) for fastening the post (2) with the support (3).

9. Luminaire according to any one of claims 5 to 8, wherein the manipulating element (302, 402) comprises

- a manipulating part (302a, 402a) for manipulating the manipulating element (302, 402),
- a contact part (302b, 402b) for contacting and expanding the expandable element (302, 402), and
- a second transmission mechanism (302c, 402c), preferably a screw shaft, wherein

the second transmission mechanism (302c, 402c) is configured to translate a manipulating movement of the manipulating part (302a, 402a) in a movement of the contact part (302b, 402b) so that the expandable element (302, 402) is able to expand along and/or towards the wall of the post (2) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state.

10. Luminaire (1) according to claim 5, wherein the expandable element (501) is an elastic, preferably slitted hood (503) being adapted for extending from one of the support (3) or the post (2) and for surrounding the other one of the post (2) or the support (3), and wherein the manipulating element (502) is provided to elastically deform the hood (503) for expanding or contracting the hood (503) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, in which the hood (503) engages with the post (2) or the support (3).

11. Luminaire (1) according to claim 10, wherein the manipulating element (502) comprises

- a fastening element (502a), preferably a screw, which spans over the slit (504) of the slitted hood (503) so that manipulating the fastening element (502a) contracts the hood (503) for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, in which the hood (503) engages with the post (2), and/or

wherein the manipulating element (502) comprises

- a clamp (505a), which is pivotably provided for elastically deforming, in particular contracting, the hood (503)

for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state, in which the clamp (505a) engages with the hood (503) so that the hood (503) engages with the post (2).

12. Luminaire (1) according to any one of the preceding claims, wherein the fastening portion (600) comprises

- a preferably conical boss (601) adapted for being provided on the post (2), and
- a preferably conical protrusion (603) being provided on the support (3), wherein by inserting the protrusion (603) in the boss (601) the protrusion frictionally engages with the boss (601), preferably forms a press fit with the boss (601), for bringing the post (2) and the support (3) from the unfastened state in/to the fastened state.

13. Luminaire (1) according to claim 12, wherein in the fastened state the protrusion (603) protrudes from the boss (601) into a channel (604) adapted for being provided in the post (2) and being accessible through an opening from outside of the post (2) so that a tool (605), preferably a conical tool, can access the channel (604) for contacting the protrusion (603) to move the protrusion (603) out of the boss (603) and, thus, to bring the post (2) and the support (3) in/to the unfastened state, and/or wherein
the boss (601) and/or the protrusion (603) comprises a surface (S) for engaging the boss (601) with the protrusion (603), wherein the surface (S) comprises a defined surface texture for increasing the friction between the boss (601) and the protrusion (603).

14. Luminaire (1) according to any one of the preceding claims, further comprising a lighting head (4), wherein the lighting head (4) is

- connected, preferably removeably connected, with the support (3), e.g., by means of a bolt connection, or
- integrally formed with the support (3).

15. Luminaire (1) according to any one of the preceding claims, further comprising a post (2).

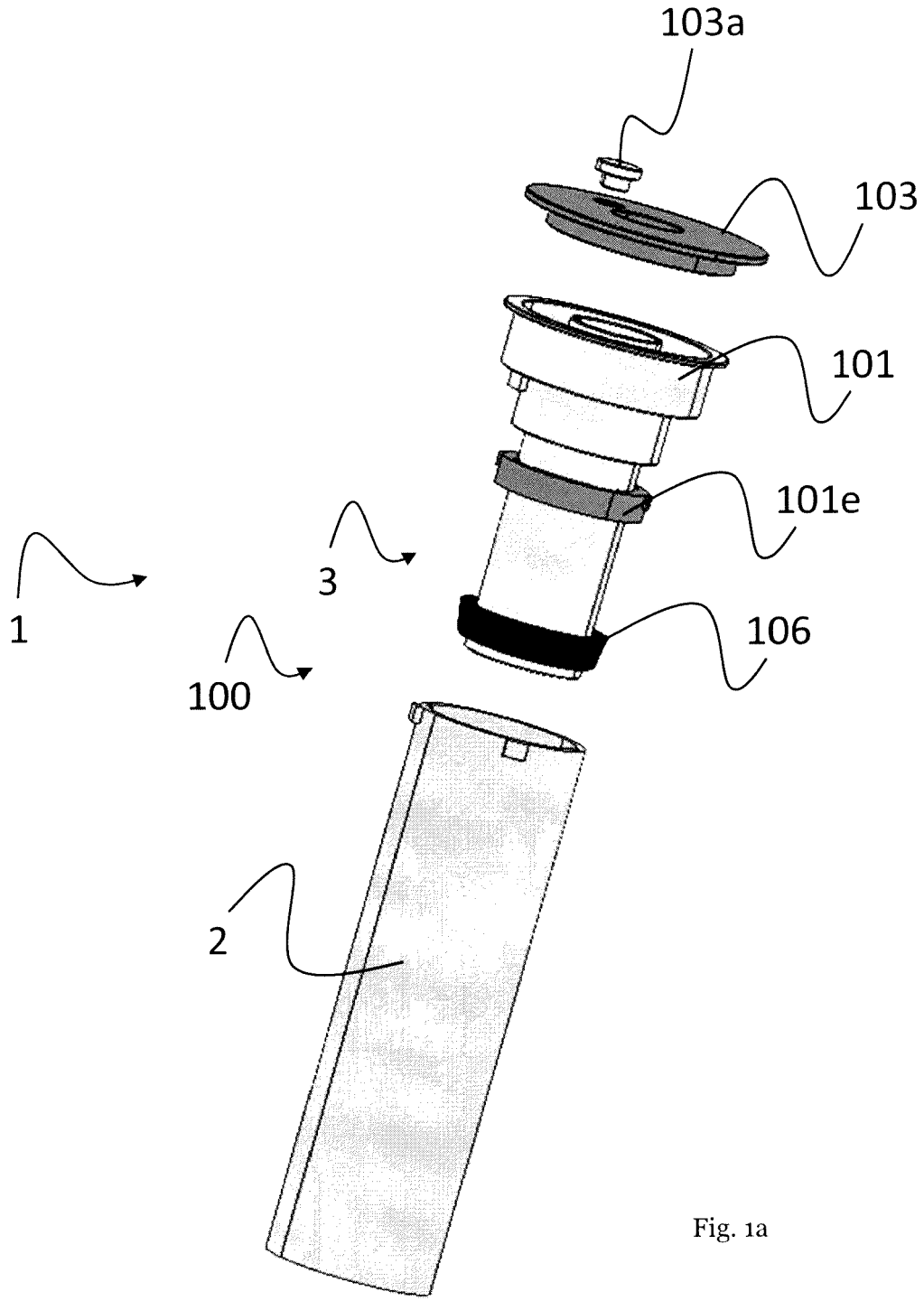


Fig. 1a

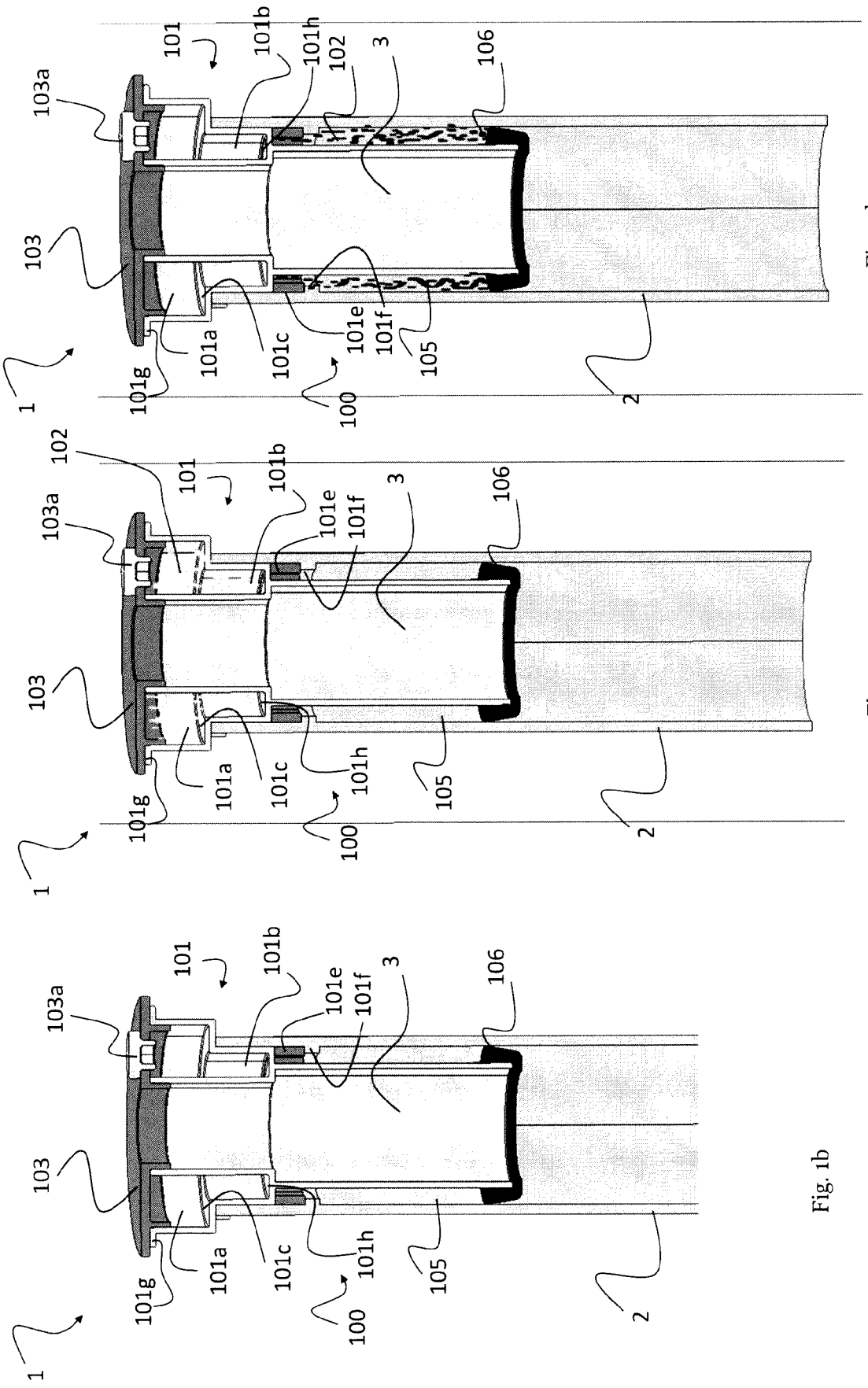
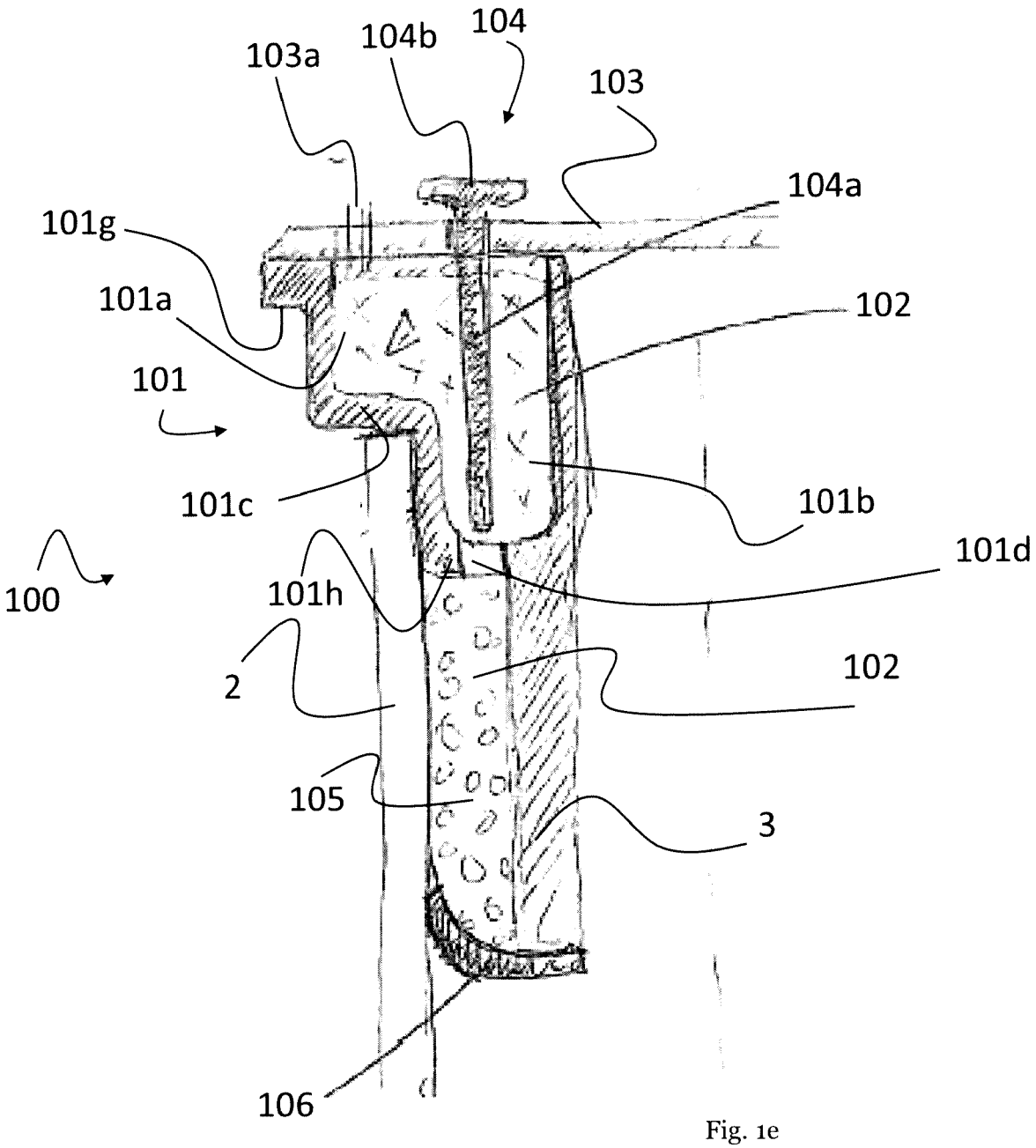


Fig. 1d

Fig. 1c

Fig. 1b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101c
101b
101d
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101h
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102
105
3
106

Fig. 1e

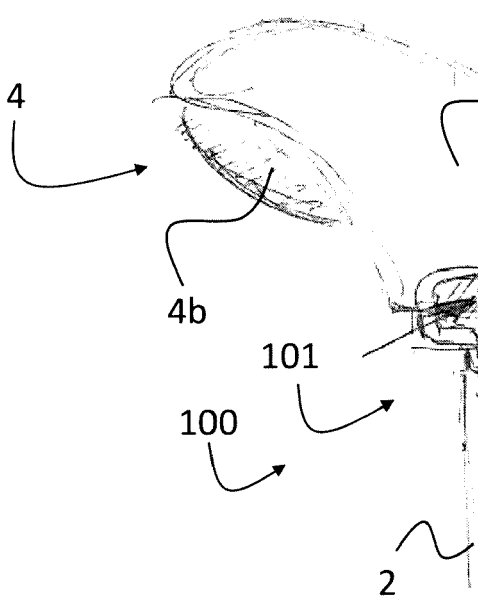

Fig. 1f

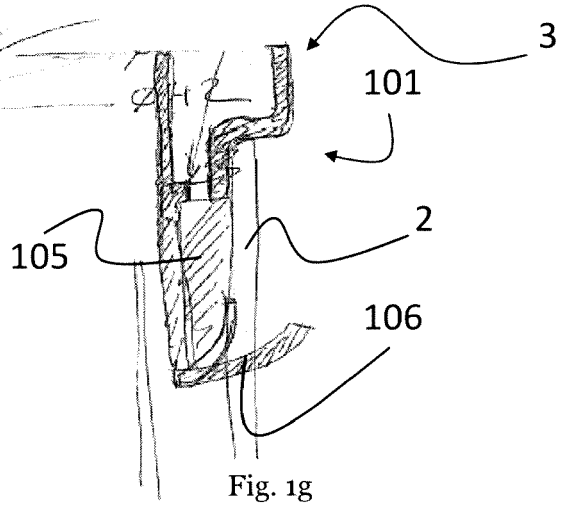

Fig. 1g

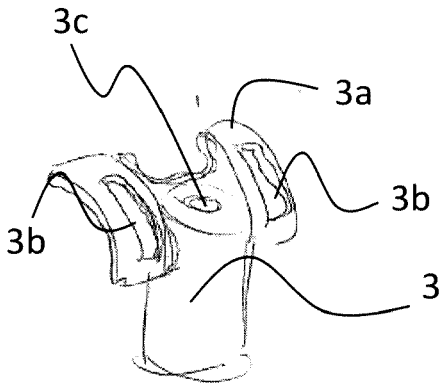

Fig. 1h

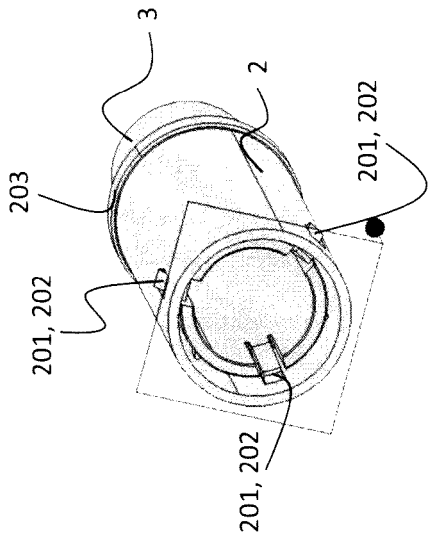

Fig. 2c

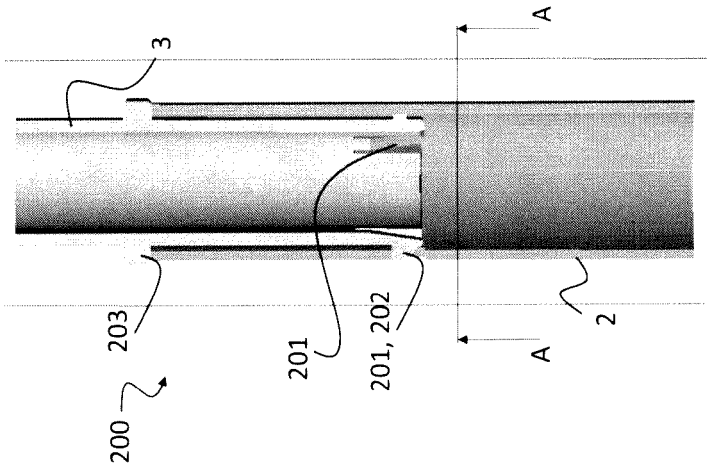

Fig. 2b

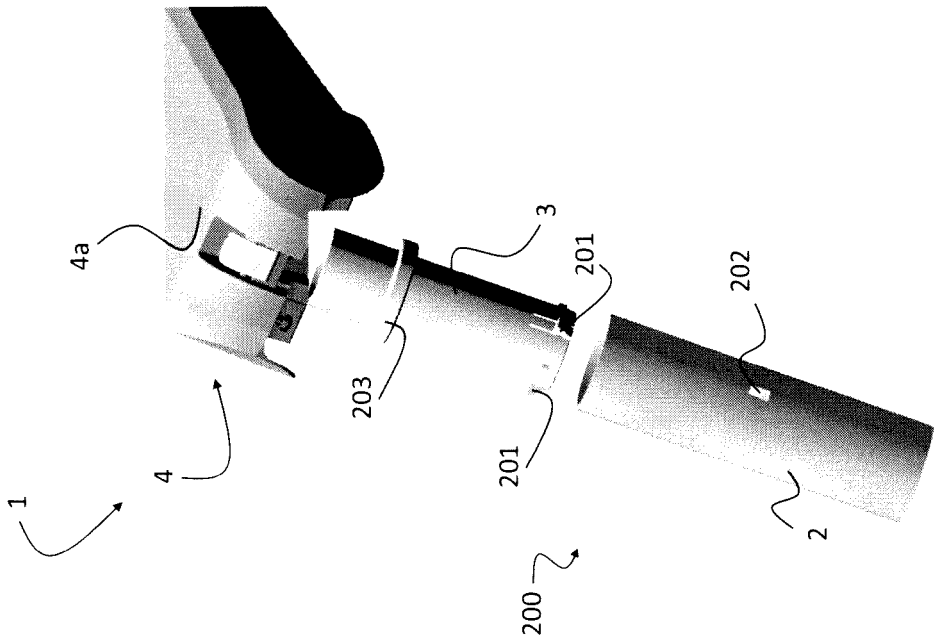

Fig. 2a

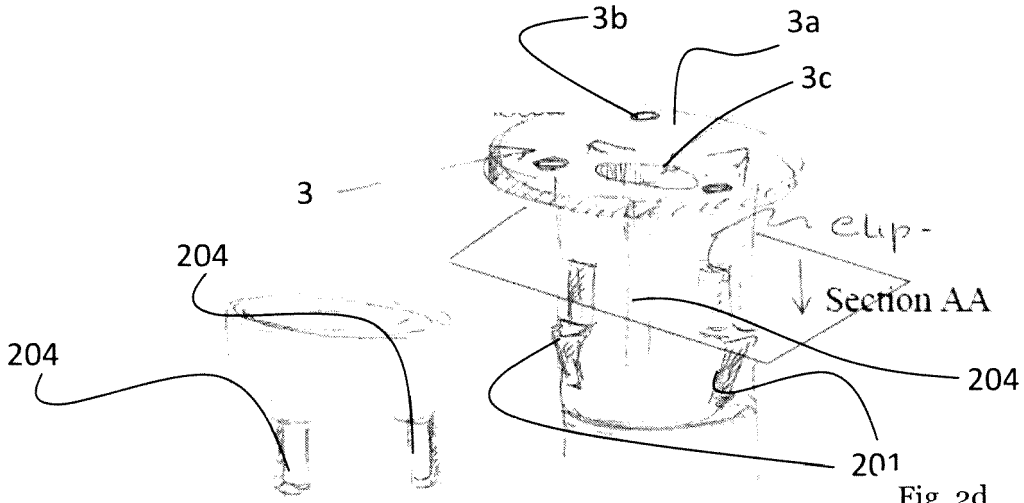

Fig. 2e

Fig. 2d

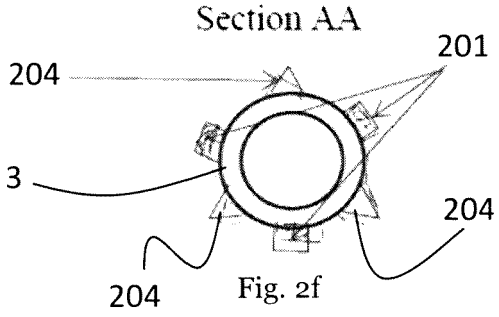

Fig. 2f

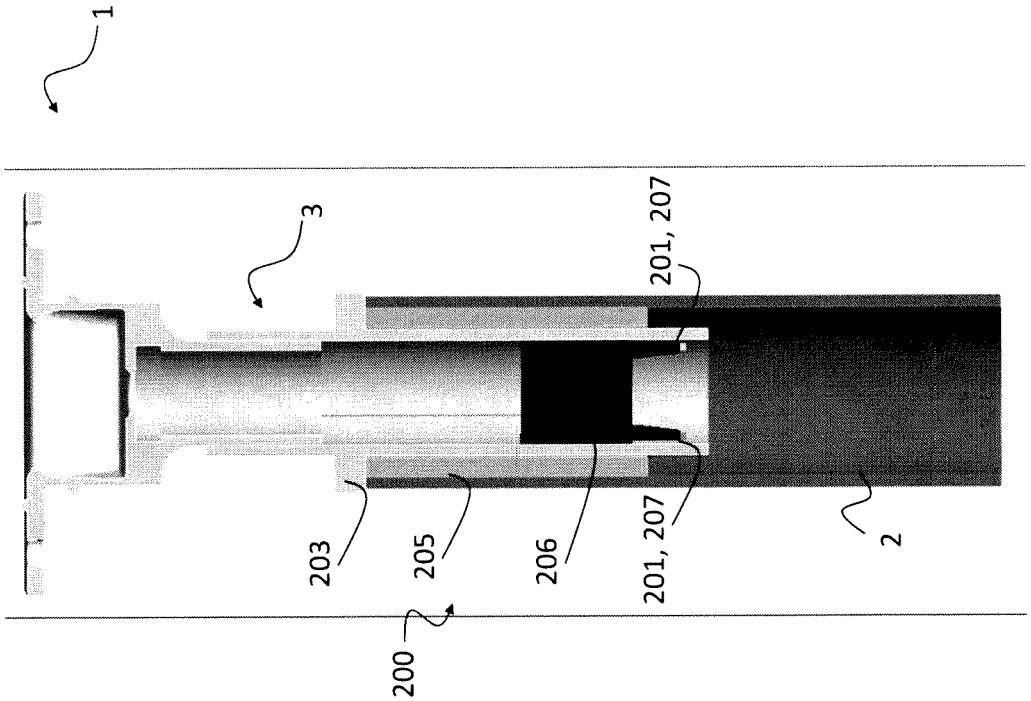

Fig. 3b

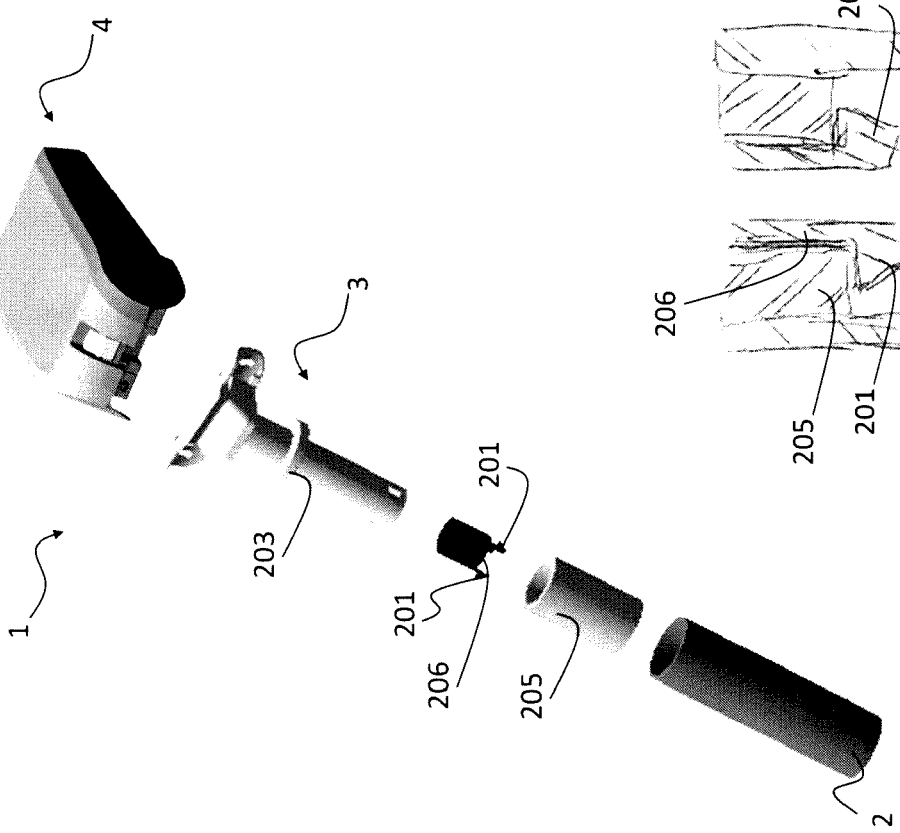

Fig. 3a

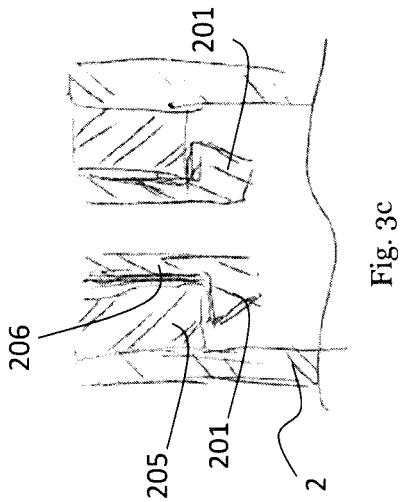

Fig. 3c

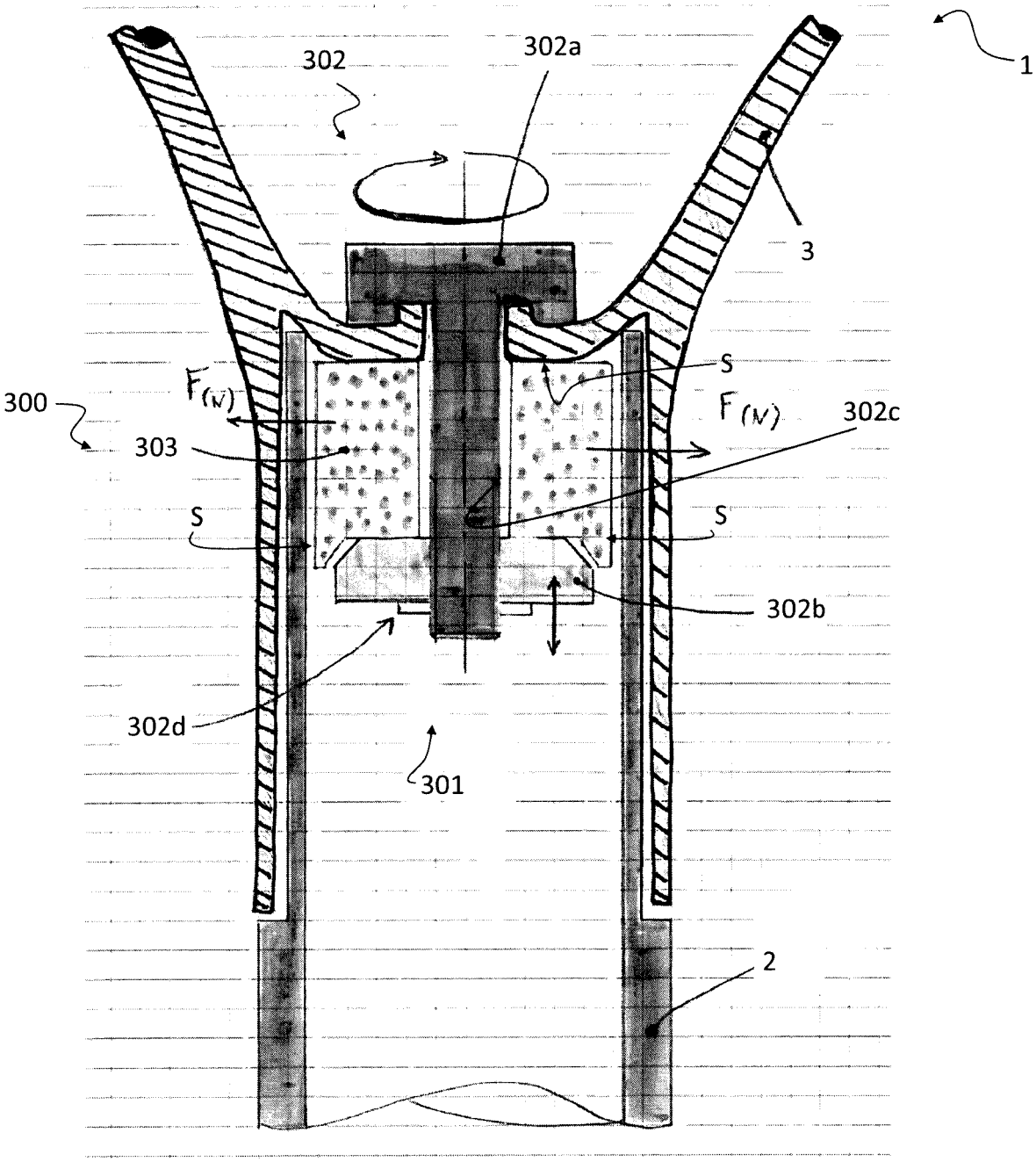

Fig. 4

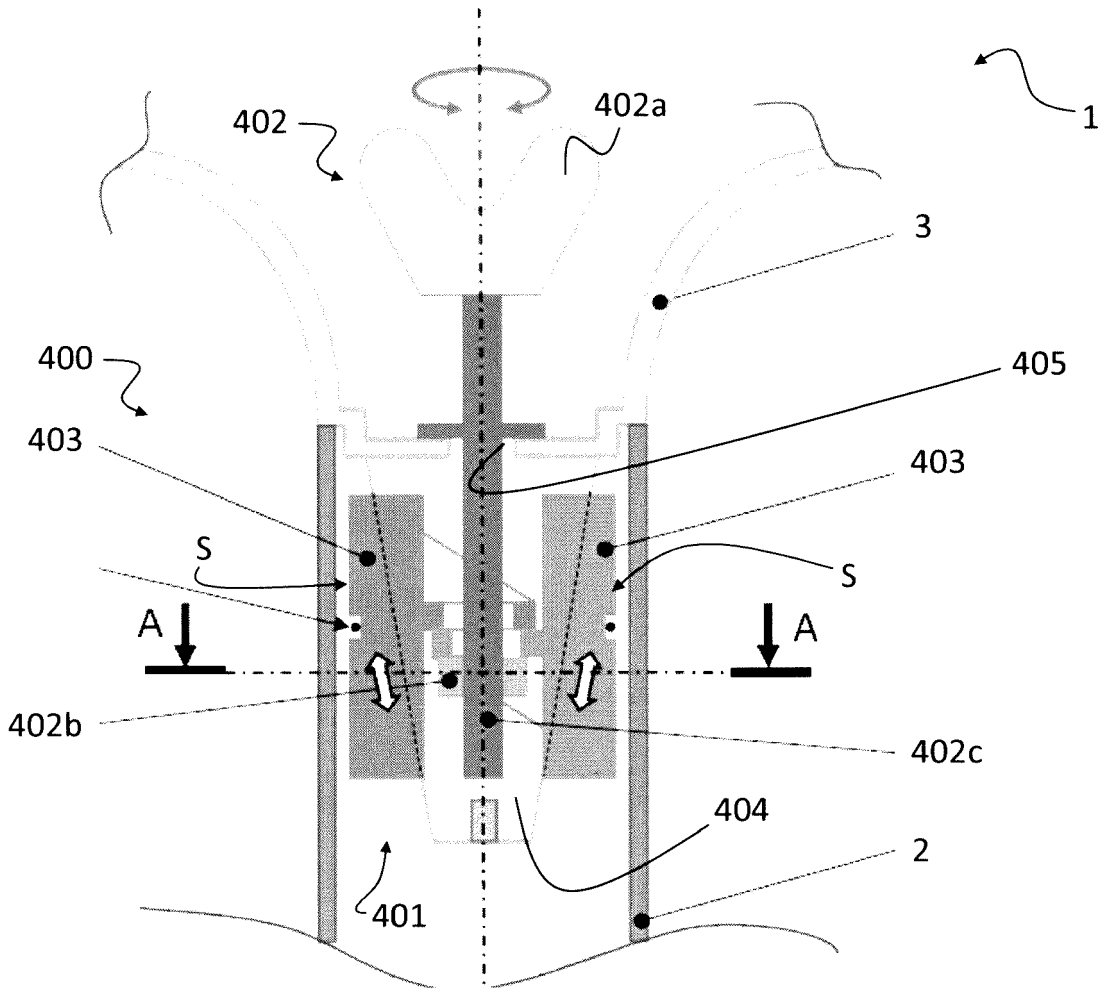
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Fig. 5a

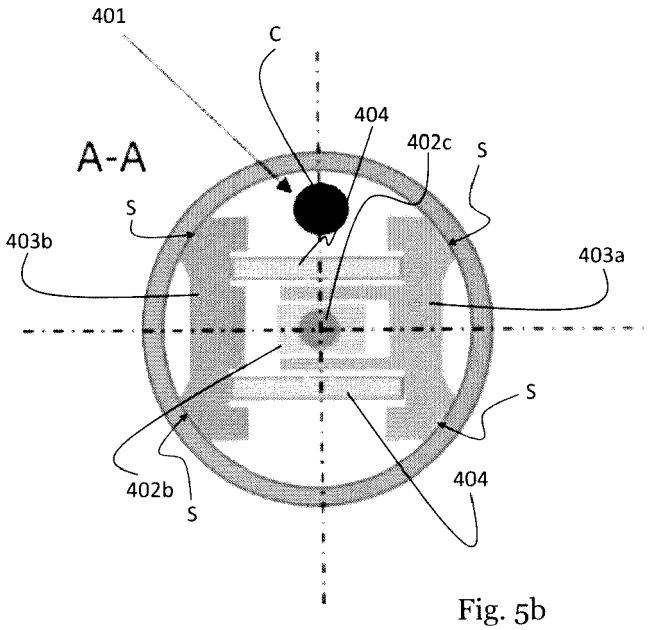
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Fig. 5b

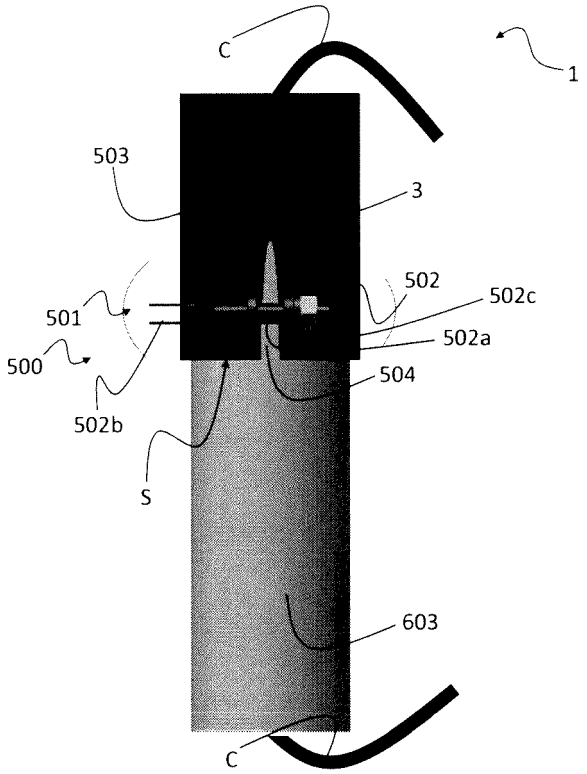

Fig. 6a

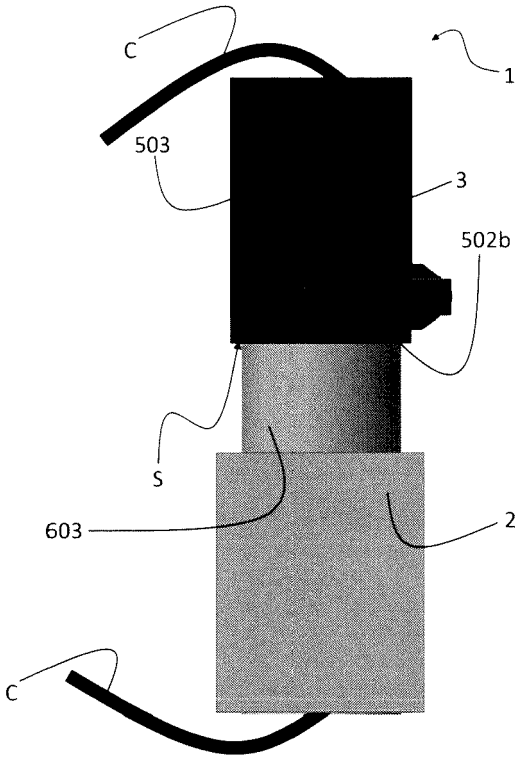

Fig. 6b

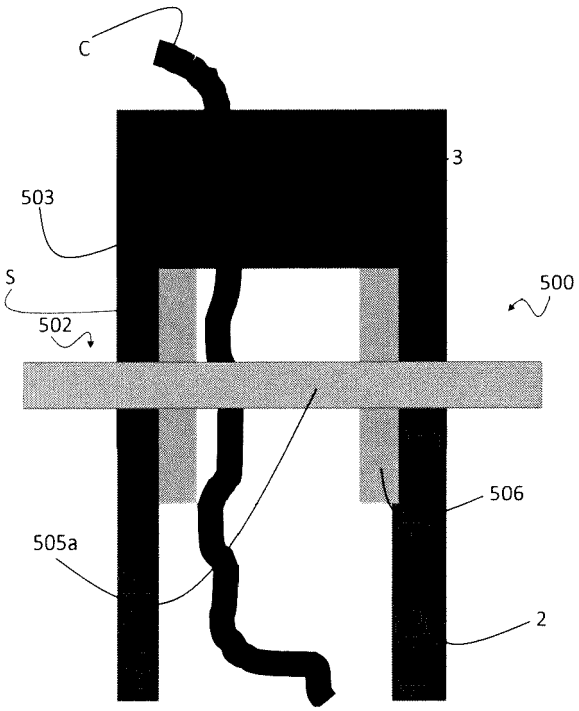

Fig. 6c

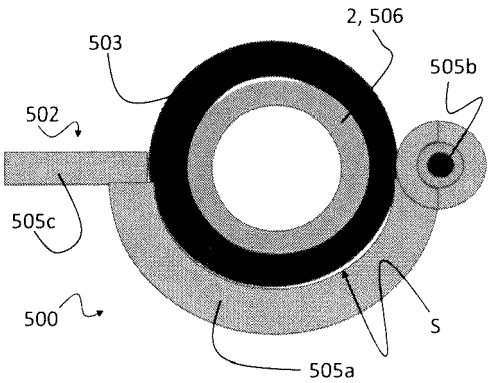

Fig. 6d

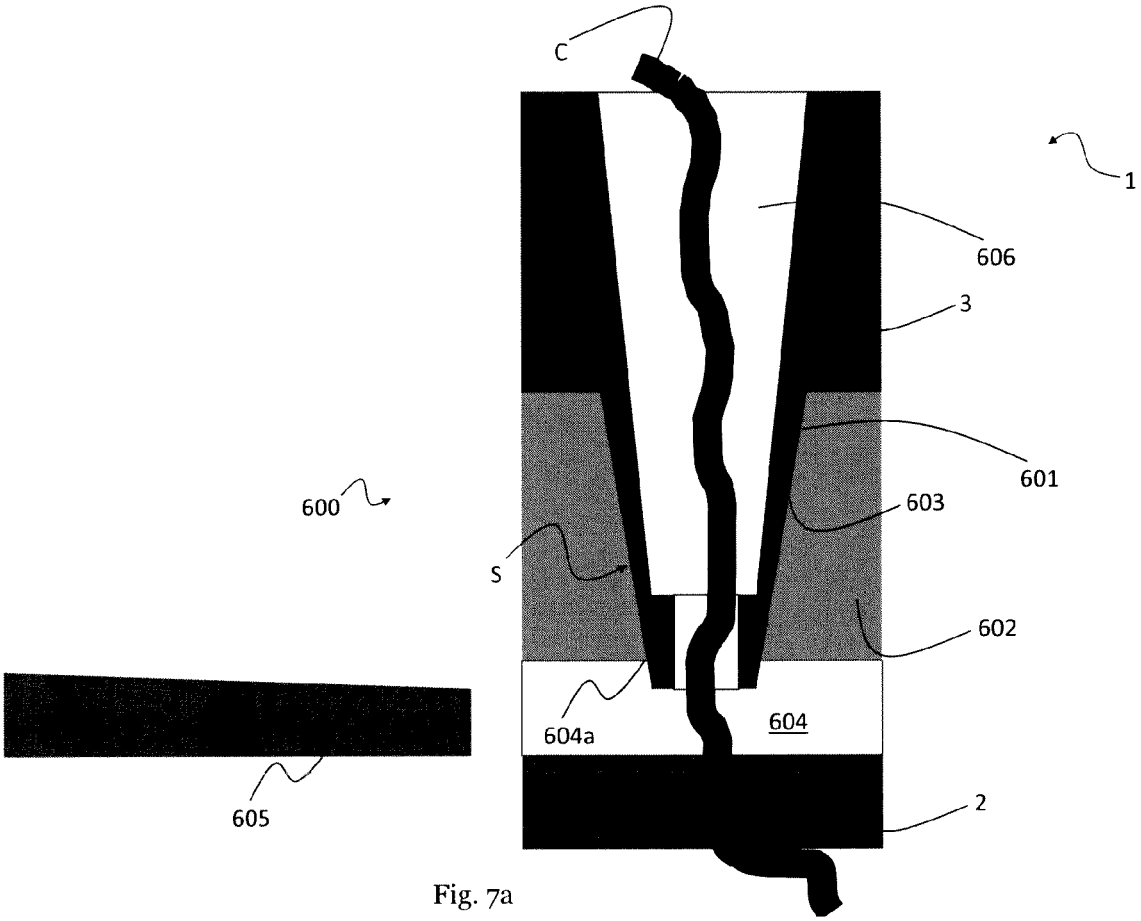
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Fig. 7a

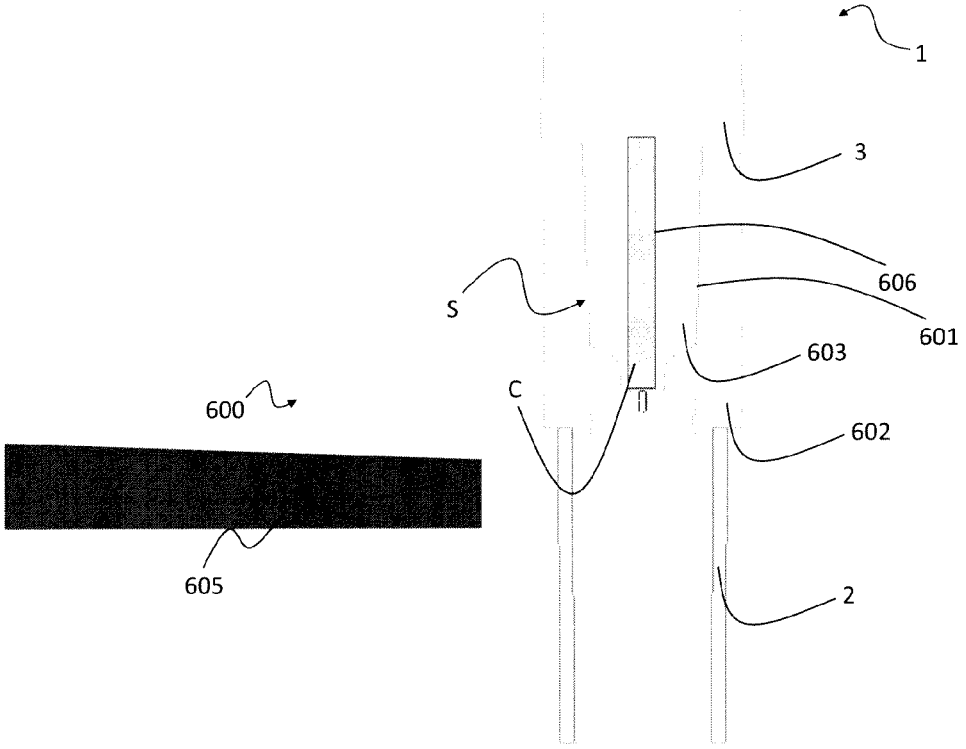
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Fig. 7b

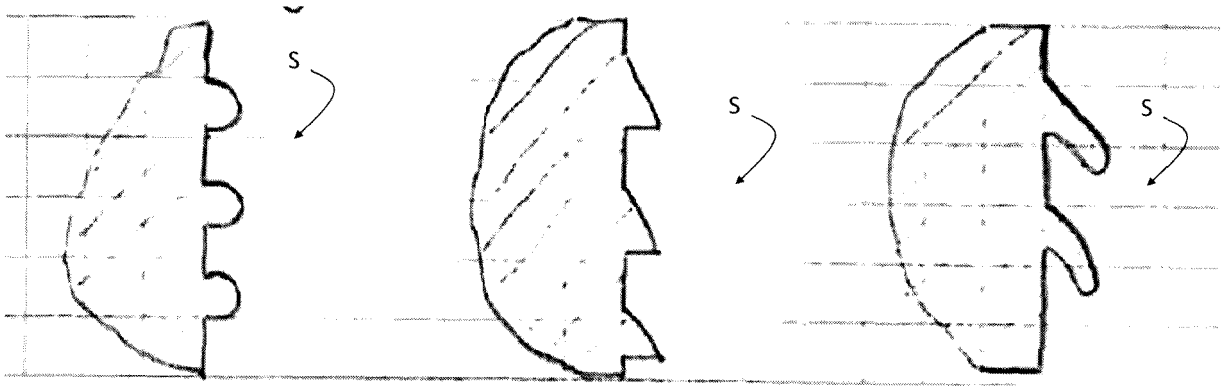

Fig. 8a Fig. 8b Fig. 8c

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EUROPEAN SEARCH REPORT

Application Number
EP 17 29 0121

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	4 January 2018	Vida, Gyorgy

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