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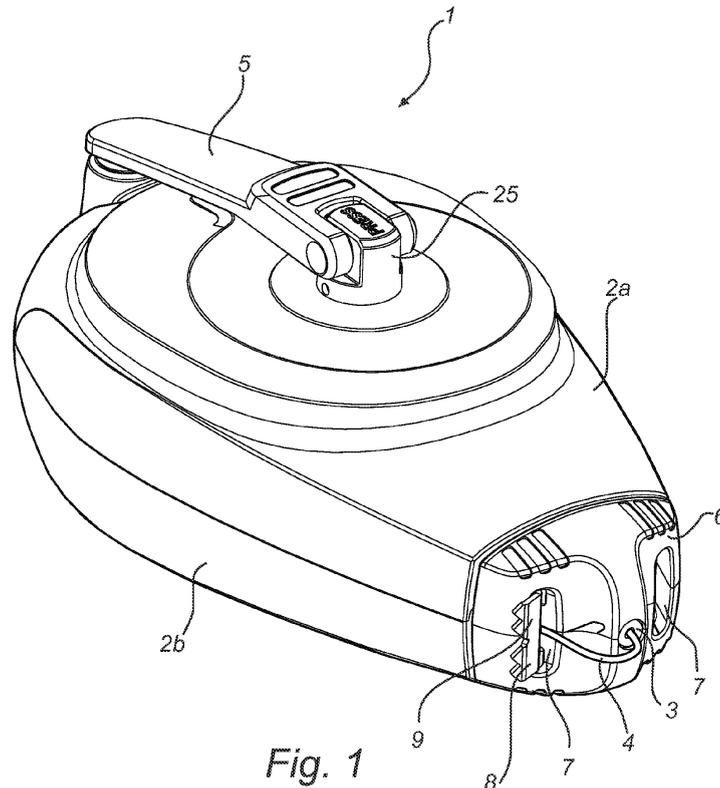
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**(54) A chalk line device with an end clip storage**

(57) The invention relates to a chalk line device (1), comprising a housing (2a, 2b), a spool which is rotatably arranged inside the housing (2a, 2b), a chalk line (4) which is attached to said spool and which may either be coiled onto or uncoiled from said spool, an end cap (6) through which said chalk line (4) protrudes and, an end

clip (8), which is secured to the free end of said chalk line (4). Said chalk line device (1) comprises an end clip storage (7), wherein said end clip storage (7) comprises a hole (10) in said end cap (6) adapted to receive at least a part of said end clip (8) in said end cap (8) when not used.



*Fig. 1*

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## Description

### Field of the Invention

**[0001]** The present invention relates to a chalk line device, comprising a housing, a spool which is rotatably arranged inside the housing, a chalk line which is attached to said spool and which may either be coiled onto or uncoiled from said spool. The invention further relates to an end cap trough which said chalk line protrudes and, an end clip, which is secured to the free end of said chalk line.

### Technical Background

**[0002]** Chalk line devices are widely used during building construction for marking lines on floors, walls and the like. For example, it can be used where cuts shall be made or where cabinets, shelves and other built-in furnishings are to be installed. A chalk line is wound on a reel or spool and coated with dry chalk. The free end of the chalk line is held at a predetermined location and the chalk line is stretched to the opposite end of a line to be marked. The ends of the chalk line are placed against the surface to be marked and the length of the chalk line there between is stretched taut. The center of the chalk line is then drawn outwardly from that surface and released. The resiliency of the chalk line causes the line to rebound against the surface to be marked, thereby causing a linear chalk marking to be formed upon a wall or floor.

**[0003]** At the free end of the chalk line is often a clip or an end hook arranged which allows the line to be temporarily attached to a structure during use. The clip is sometimes secured to the chalk line device in order to avoid that the clip gets caught somewhere during transportation and storing.

**[0004]** US 5,644,852 discloses a chalk line reel including an opening in a housing that permits access to a powered chalk storage area. A movable door is mounted on the housing and the door is movable to a closed position in which the door obstructs the opening. A first element on the door releasably couples the chalk line clip to the door and a second element on the housing releasably couples the chalk line clip to the housing. When handling the chalk line device the securing arrangement for the end clip and/or the end clip may be in the way of the hand of the user.

**[0005]** Hence, there is still a need to improve the chalk line device in such a way that the handling of the chalk line device gets easier.

### Summary of the Invention

**[0006]** An object of the present invention is to provide a chalk line that overcomes the above issues.

**[0007]** The invention relates to a chalk line device, comprising a housing, a spool which is rotatably arranged

inside the housing, a chalk line which is attached to said spool and which may either be coiled onto or uncoiled from said spool, an end cap trough which said chalk line protrudes and, an end clip, which is secured to the free end of said chalk line. Said chalk line device comprises an end clip storage, wherein said end clip storage comprises a hole in said end cap adapted to receive at least a part of said end clip in said end cap when not used. By storing the end clip in the end cap, the end clip and its storage is out of the way for the hand of the user when handling the chalk line device. This since the end cap usually is arranged in one end of the chalk line device, i.e. where the chalk line is protruding out of. The user will grasp the chalk line device around its housing, not over the end cap. Hence, the end clip and its storage will not be in the way of the user.

**[0008]** According to at least one exemplary embodiment said hole extends into said end cap in the same direction as said chalk line protrudes out of said end cap. This way the end clip storage may be positioned close to the chalk line outlet, which allows the end clip and the chalk line to be close to the chalk line outlet, which reduces the distance of the exposed chalk line when the end clip is arranged in the storage. It is desired that the exposed chalk line is as short as possible in order to prevent the chalk line from getting caught during storage or transportation in surrounding objects, such as for example tools.

**[0009]** According to at least one exemplary embodiment said hole is a through hole allowing said end clip to protrude into said housing. This way the end cap does not have to be as large/thick as the whole length of the end clip.

**[0010]** According to at least one exemplary embodiment said end clip storage continues into said housing. This allows the end clip to protrude through the end cap and into the housing, for example if the end clip has an elongated shape. The housing itself may be the end clip storage, together with the hole in the end cap.

**[0011]** According to at least one exemplary embodiment said end clip storage further comprises a receiving cavity in said housing which is arranged in connection to said hole allowing said end clip to protrude through said end cap and into said receiving cavity. This way the end clip may be protected from chalk which is stored inside the housing. As an alternative, the end cap may comprise a protective cover which protects the end clip inside the housing.

**[0012]** According to at least one exemplary embodiment said end clip storage comprises rotation protecting means in at least two directions in said housing which prevent said end cap from rotating on said housing when said end clip is arranged into said housing. This is an advantage if the end cap is arranged to the housing of the chalk line device by a screw connection or a bayonet coupling. The end cap is then further secured by the end clip when it is arranged into the end clip storage. The rotation protecting means may be protrusions or it may

be the walls of the receiving cavity in said housing, or the housing itself.

**[0013]** According to at least one exemplary embodiment said end clip storage comprises at least one holding mechanism for holding said end clip. The holding mechanism may fix the end clip in its storage so that it does not unintentionally fall out. The holding mechanism may be a securing mechanism which locks the end clip in the end clip storage.

**[0014]** According to at least one exemplary embodiment said holding mechanism comprises at least one resilient element which presses against at least a part of said end clip, when said end clip is arranged in said end clip storage. This is an easy way to fix the end clip in the housing. The resilient protruding element may be formed together with the end cap or the housing, and then no extra parts are necessary. As an alternative, the resilient element may be a separate part which is attached to the housing or the end cap.

**[0015]** According to at least one exemplary embodiment said holding mechanism further comprises at least an element which holds said end clip against said resilient protruding element. This element may be a protruding element incorporated in the housing or in the chalk line device or a separate attached part, which together with the resilient element locks/holds the end clip. The opening of the hole may also be made larger, which allows easier insertion of the end clip into the storage and more space is accomplished if the end of the end clip, where the chalk line is arranged, is the end which shall be inserted into the end clip storage.

**[0016]** According to at least one exemplary embodiment said holding mechanism is arranged to hold said end clip at its outer contour. This way space is created allowing the end of the end clip, where the chalk line is attached to be inserted into the end clip storage. The chalk line knot is usually in the middle at one end of the end clip, i.e. the opposite end of end clip where it may be temporarily attached to a structure. The end clip may then be inserted into the storage without the knot getting stuck in the holding mechanism. It might be desirable to insert the end of the end clip comprising the knot if the end clip has a hook on one end.

**[0017]** According to at least one exemplary embodiment said holding mechanism is arranged in said end clip storage in said housing. According to at least one exemplary embodiment said holding mechanism is arranged in said end cap.

**[0018]** According to at least one exemplary embodiment said end clip storage has an extension which allows said end clip to protrude outside said end cap. For instance, the depth of the end clip storage may be shorter than the length of the end clip. By letting a part of the end clip protrude outside the end cap, the user may easily grasp the end clip and release it from its storage, i.e. pulling it out when the chalk line device shall be used. Alternatively, a pushing mechanism may be arranged in the end clip storage. For example, if the end clip shall be

released it is pushed into the storage and the pushing mechanism releases and pushes the end clip out of its storage. Alternatively, a separate mechanism for example a button releases the pushing mechanism.

**[0019]** Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc]" are to be interpreted openly as referring to at least one instance of said element, device, component, means, step, etc., unless explicitly stated otherwise.

**[0020]** Other objectives, features and advantages of the present invention will appear from the following detailed disclosure, as well as from the drawings.

#### Brief Description of the Drawings

**[0021]** The above, as well as additional objects, features and advantages of the present invention, will be better understood through the following illustrative and non-limiting detailed description of exemplary embodiments of the present invention, with reference to the appended drawings, where the same reference numerals will be used for similar elements, wherein:

Fig. 1 shows a chalk line device according to an embodiment of the invention in perspective.

Fig. 2 shows the chalk line device in Fig. 1 in a partially cross-sectional top view.

Fig. 3 shows the chalk device in Fig. 1 in a partially cross-sectional view in perspective.

Fig. 4 shows the end clip storage in Fig. 2 in cross-sectional view made in section I-I in Fig. 2.

**[0022]** All the figures are highly schematic, not necessarily to scale, and they show only parts which are necessary in order to elucidate the invention, other parts being omitted or merely suggested.

#### Detailed Description of Exemplary Embodiments

**[0023]** An embodiment of the invention will be described in more detail in the following with reference to the accompanying drawings.

**[0024]** Fig. 1 shows a chalk line device 1 comprising a housing 2a, 2b with a top part 2a and a bottom part 2b. The two parts are connected to each other by fastening means, for example screws (not shown). The chalk line device 1 has an oval-like cross-sectional shape, where a spool (not shown) is arranged on one end and a chalk line outlet 3 in the other end, the chalk line outlet is comprised in an end cap 6, in order to guide a chalk line 4 on an effective way out from the chalk line device 1 after it is uncoiled from the spool. The thickness of the chalk line device 1 is usually dependent on the dimensions of the parts which are arranged inside the housing 2a, 2b. A retracting device 5 is linked to the spool (not shown). The

spool is mounted inside the housing 2a, 2b for rotation and for retaining the chalk line 4. The chalk line 4 has opposite ends. One end is secured to the spool in a conventional manner. The other end of the chalk line emanates from the housing 2a, 2b through the chalk line outlet 3. An end clip 8 is arranged at the free end of the chalk line 4 to allow the chalk line 4 to be temporarily attached to a structure during use. The chalk line 4 may either be coiled onto the spool by the retracting device 5 or uncoiled from the spool. The housing 2a, 2b also has the function to make up the chalk cavity, i.e. where the chalk is stored during use.

**[0025]** The retracting device 5, here exemplified as a crank 5 for rewinding said chalk line onto to the spool, is arranged onto the chalk line device 1 via a drive shaft 25 protruding through the top part 2a of the housing 2a, 2b into the cavity of the housing 2a, 2b.

**[0026]** The end cap 6 may be a one part end cap or an end cap of several parts. The end cap 6 is removable from the housing 2a, 2b in order to allow chalk to be introduced into the cavity of the housing. The end cap 6 is arranged to the housing 2a, 2b by a fastening means, it may for example be a bayonet coupling, screw coupling or a quick snap coupling known in the art (not shown).

**[0027]** The end cap 6 has two end clip storages 7, i.e. an end clip storage 7 for storing the end clip 8 of the chalk line 4 when the chalk line device 1 is not being used. However, the chalk line device is not limited to have two end clip storages, it may be only one or more. The end clip storage 7 is a hole, which protrudes into the end cap 6, here exemplified as having a rectangular cross-section with rounded corners. The shape of the cross-section of the hole may, however, take any suitable shape to store the end clip 8. The hole may also be conical at the top of the opening to easier guide the end clip 8 into the hole.

**[0028]** The end clip 8 is a flat end clip with a bent end having a "hooking" feature, i.e. a hooking part 9, which allows the end clip 8 to be temporarily attached to a structure during use. On the other end the chalk line 4 is attached to the end clip 8 for example by tying the chalk line 4 to a hole in the end clip (see Fig. 2 and Fig. 3). The end clip 8 is arranged into the end clip storage 7 with its end comprising the securing area for the chalk line 4, i.e. the end clip 8 is pushed into the end clip storage 7. A part of it, i.e. the bent end/the hooking part 9, is protruding outside the chalk line device 1, i.e. outside the end cap 6 so that the end clip can easily be grasped and removed from its storage. However, the end clip 8 could be arranged into the end clip storage 7 the other way around. The cross section of the opening of the end clip storage 7 would then be larger in order to be able to push the hooking part 9 of the end clip 8 into the end clip storage 7.

**[0029]** Figs. 2 and 3 will be described together and they show how the end clip 8 is stored in the end clip storage 7 inside the chalk line device 1. The end clip storage 7, which is here exemplified, comprises of a through hole 10 in the end cap 6 and a receiving cavity 11 in the housing 2a, 2b.

**[0030]** Both the top part 2a and the bottom part 2b of the housing has a base 15 and an outer wall 16, and when the top part 2a and the bottom part 2b are arranged together they form a cavity for the spool and other necessary parts for rewinding the chalk line 4 onto the spool (not shown). In the walls 16 is an opening 12, which allows the end cap 6 to be arranged to the chalk line device 1. The opening, when the end cap 6 is removed may be used in order to fill the chalk line device 1 with chalk. In the end cap 6, as said above, the end clip storage 7 is in the shape of a through hole 10, which allows the end clip 8 to protrude into the chalk line device 1, i.e. the housing 2a, 2b. At the area where the end clips storage 7 in the end cap 6 ends, i.e. the through hole 10, a receiving cavity 11 is arranged in the housing 2a, 2b. It is arranged in the two housing parts 2a, 2b, and the end clip receiving cavity 11 allows the end clip 8, which has an elongated body, to protrude into it, after it has passed the end clip storage 7 i.e. the hole, in the end cap 6.

**[0031]** The end clip receiving cavity 11, is formed in the two housing parts 2a, 2b when they are connected to each other. The following will only be described in relation to the bottom part 2b, however the same features are shaped in the top part 2a. The end clip receiving cavity 11 is defined by the base 15, the outer wall 16, and inner walls 13a, 13b. One of the inner walls is a bottom wall 13a, which is arranged opposite the opening where the end clip 8 protrudes into the end clip receiving cavity 11 and the other wall is a side wall 13b, which is opposite the outer wall 16 and the end clip when the end clip is arranged in the receiving cavity. Both inner walls 13a, 13b protrudes from the base 15 in the same direction as the outer wall 16. The cavity 11, when the two housing parts are arranged to each other, is slightly larger than the end clip 8. The end clip 8 and the end clip storage 7 are so arranged in the chalk line device 1 that the flat side of the end clip 8 is facing the side where the two housing parts connect each other. The end clip 8 and the end clip storage 7 may however be arranged in a different direction. The inner walls may then be arranged differently and further walls might be necessary to get a receiving cavity.

**[0032]** In order to secure the end clip 8 from falling out from its storing position the end clip receiving cavity 11 in the housing 2a, 2b is provided with a holding mechanism 14. The holding mechanism 14 comprises four resilient elements 17 (two in the top part 2a and two in the bottom part 2b), which presses against the end clip 8 (see also Fig. 3). Each resilient element 17 is here a thin protruding member, protruding in an angle out from said side wall 13b into the receiving cavity 11. However, the resilient element 17 may be arranged so that it protrudes from the outer wall 16. The resilient element 17 works as a flat spring which presses against the end clip 8 when it is arranged in the end clip storage 11. Two further protruding elements 18 are arranged on the same side, in order to position the end clip 8 in relation to the opposite side.

**[0033]** At the opposite side of and at a distance from the resilient element 17 and on the other side of the end clip, which here is the outer wall 16, protruding elements 19 are arranged, which hold the end clip 8 against the resilient elements 17. Due to these protruding elements 19 the opening of the end clip storage 11 may be larger, which allows easier insertion of the end clip 8 into the storage 7 and more space is accomplished which allows the end of the end clip 8 where the chalk line is tied to be inserted. The base 15 on both the bottom part 2b and the top part 2a holds the end clip in place in the transversal direction of the end clip. This has the advantage that if the end cap 6 is arranged to the housing 2a, 2b of the chalk line device 1 by a screw connection or a bayonet coupling the end cap 6 is then further secured by the end clip 6 when it is arranged into the end clip storage 11.

**[0034]** When releasing the end clip 8 from the end clip storage the user only has to pull out the end clip 8.

**[0035]** As an alternative the holding mechanism 14 may comprise only the protruding elements 18, 19 on both sides, i.e. facing each other. They may both have a height which makes that they overlap each other at their ends. Since they are at a distance from each other they together create a curved path. The end clip and the holding mechanism, in the shape of protruding elements and the housing may be so design that they flex a bit allowing the end clip to be arranged between the protruding elements and hold by them.

**[0036]** As an alternative the holding mechanism 14 may be arranged in the end cap 6 instead of in the receiving cavity inside the housing 2a, 2b. The holding mechanism may be a locking mechanism which secures/locks the end clip to the chalk line device.

**[0037]** The receiving cavity 11 has been described as a closed cavity which only is open in one end, i.e. in the end cap 6 direction. However, the receiving cavity may have openings in its bottom walls 13a and its side wall 13b, or instead of walls it may only be protrusions shaping the cavity.

**[0038]** The bottom wall 13a, which is on the opposite side of the opening may not be there at all. The advantage of having walls is that a closed cavity may be created, wherein the end clip 8 is protected from chalk, which is loosely stored inside the housing 2a, 2b. The bottom wall 13a may also work as an end clip stopper, in case the end clip 8 is a flat end clip without a hook shaped feature at one end, which will prevent that the end clip is not pushed too far into the end clip storage.

**[0039]** Above, it has only been described that the end clip storage 7 is both in the end cap 6 and in the chalk line housing 2a, 2b. However, as an alternative the end clip storage 7 may only be in the end cap 6. This is especially an advantage if the end clip 7 is a short end clip.

**[0040]** Fig. 4 shows part of the end clip storage 7 at the cross-section I-I in Fig. 2. It shows that the resilient elements 17 and the protruding elements 18, 19 are arranged to hold the end clip 8 at its outer contour. This way space is created allowing the end of the end clip,

where the chalk line is attached to be inserted into the end clip storage. If the end clip is a flat end clip, comprising a hole to be arranged around a nail, it is allowed to be inserted in any of the two directions, i.e. where the chalk line is attached or the other end. If the end clip has a hook on one end and the chalk line knot on the other end, the end having the knot may be inserted without the knot getting stuck in the holding mechanism.

**[0041]** The invention has mainly been described above with reference to a few embodiments. However, as is readily appreciated by a person skilled in the art, other embodiments than the ones disclosed above are equally possible within the scope of the invention, as defined by the appended patent claims.

## Claims

1. A chalk line device (1), comprising
  - a housing (2a, 2b),
  - a spool which is rotatably arranged inside the housing (2a, 2b),
  - a chalk line (4) which is attached to said spool and which may either be coiled onto or uncoiled from said spool,
  - an end cap (6) through which said chalk line (4) protrudes and,
  - an end clip (8), which is secured to the free end of said chalk line (4), **characterised in that** said chalk line device (1) comprises an end clip storage (7), wherein said end clip storage (7) comprises a hole (10) in said end cap (6) adapted to receive at least a part of said end clip (8) in said end cap (6) when not used.
2. A chalk line device (1) according to claim 1 wherein, said hole (10) extends into the end cap (6) in the same direction as the chalk line (4) protrudes out of said end cap (6).
3. A chalk line device (1) according to any one of preceding claims wherein, said hole (10) is a through hole allowing said end clip (8) to protrude into said housing (2a, 2b).
4. A chalk line device (1) according to any one of preceding claims, wherein said end clip storage (7) further comprises a receiving cavity (11) in said housing (2a, 2b), which is arranged in connection to said hole (10) allowing said end clip (8) to protrude through said end cap (6) and into said receiving cavity (11).
5. A chalk line device (1) according to claim 3 or 4, wherein said end clip storage (7) further comprises rotation protecting means in at least two directions in said housing (2a, 2b) which prevent said end cap (6) from rotating on said housing (2a, 2b) when said end clip (8) is arranged into said housing (2a, 2b).

6. A chalk line device (1) according to any one of preceding claims, wherein said end clip storage (7) comprises at least one holding mechanism (14) for holding said end clip. 5
7. A chalk line device (1) according to claim 6, wherein said holding mechanism (14) comprises at least one resilient element (17), which presses against at least a part of said end clip (8), when said end clip (8) is arranged in said end clip storage (7). 10
8. A chalk line device (1) according to claim 7, wherein said holding mechanism (14) further comprises at least a protruding element (19), which holds said end clip (8) against said resilient protruding element (19). 15
9. A chalk line device (1) according to claim 6, 7 or 8, wherein said holding mechanism (14) is arranged to hold said end clip (8) at its outer contour. 20
10. A chalk line device (1) according to claim 6, 7, 8 or 9 in combination with claims 3 or 4, wherein said holding mechanism (14) is arranged in said housing (2a, 2b). 25
11. A chalk line device (1) according to claim 6, 7, 8 or 9, wherein said holding mechanism (14) is arranged in said end cap (6). 30
12. A chalk line device (1) according to any one of the preceding claims, wherein said end clip storage (7) has an extension which allows said end clip (7) to protrude outside said end cap (6). 35

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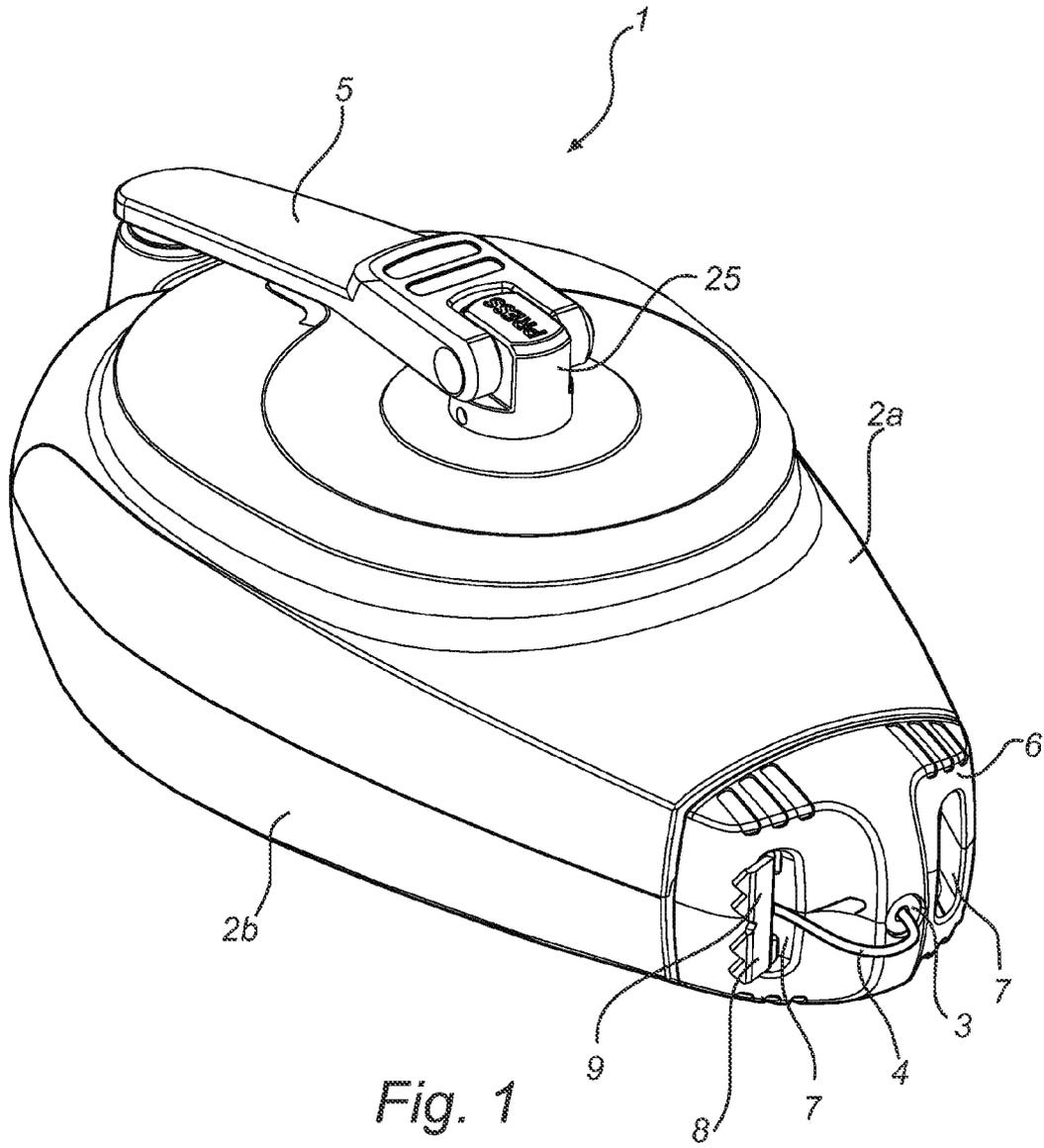
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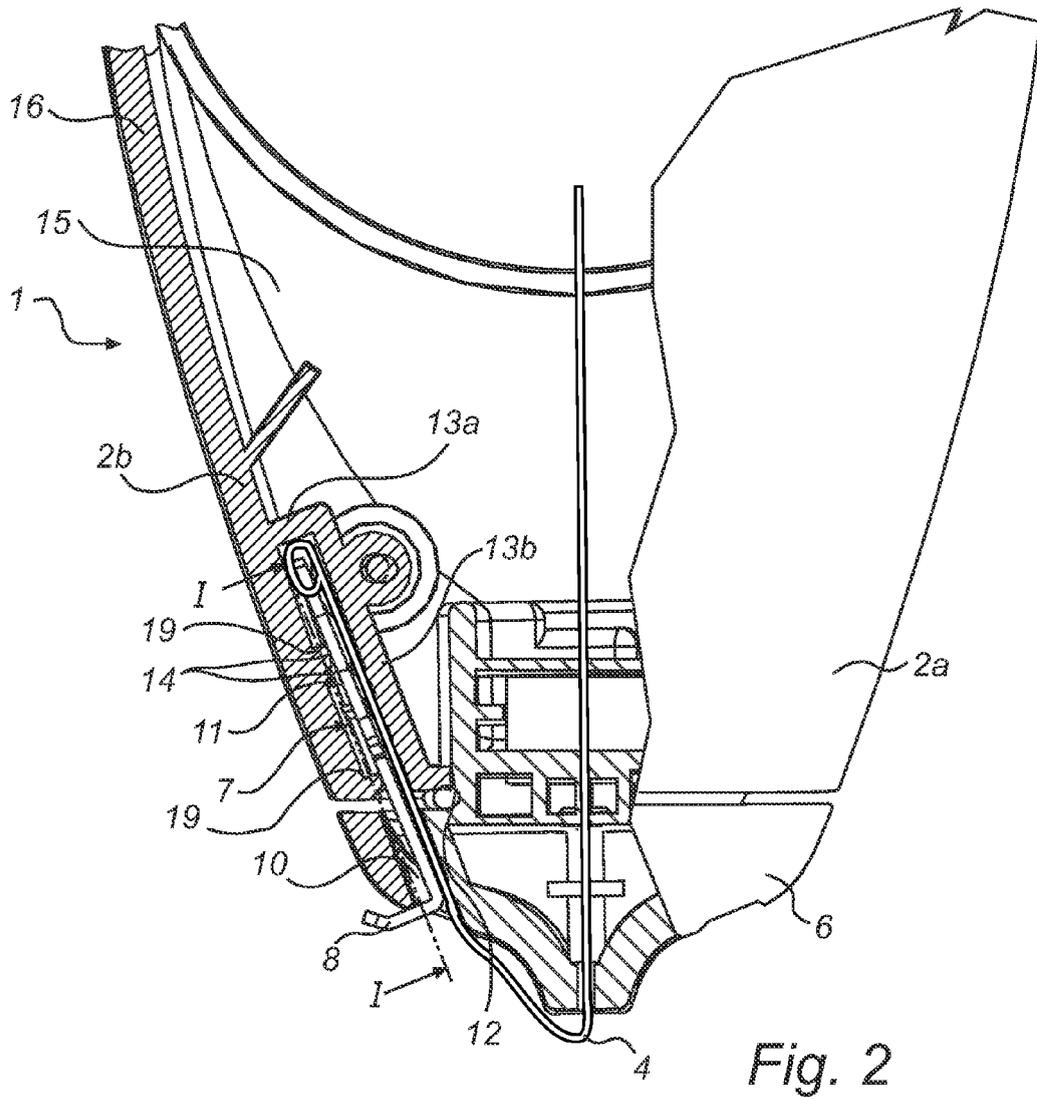
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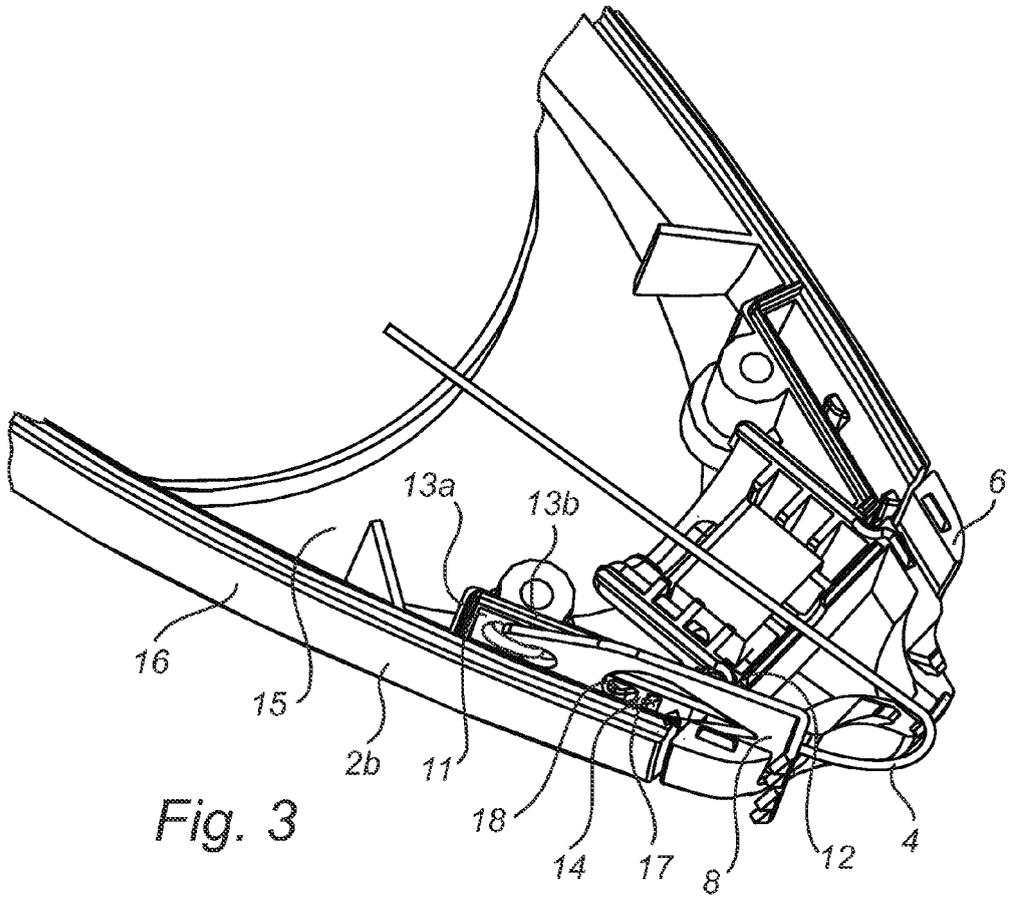


Fig. 3

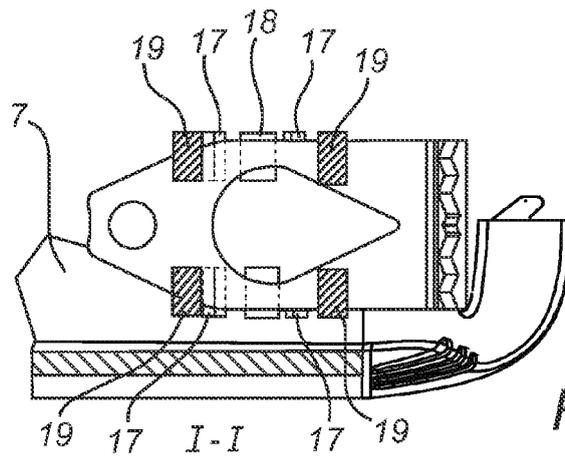


Fig. 4



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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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