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(54) **A chalk line device having a chalk line outlet defined by two parts**

(57) The invention relates to a chalk line device (1), comprising a housing (2a, 2b), a spool (4) which is rotatably arranged inside the housing (2a, 2b), a chalk line which is attached to said spool (4) and which may either be coiled onto or uncoiled from said spool (4), a first outlet defining part (8) and a second outlet defining part (9), which together define an outlet (3) through which said chalk line protrudes, wherein said first outlet (3) defining part (8) extends a distance from said outlet (3) in a direction towards the opposite end of the chalk line device (1) and said distance is shorter that the distance between said outlet (3) and said opposite end of the chalk line device (1), and wherein said first outlet defining part (8) is reconnectably arranged to said second outlet defining part (9) allowing said outlet (3) to be accessible when said first outlet defining part (8) is at least partly separated from said second outlet defining part (9) in order to arrange said chalk line in said outlet (3).

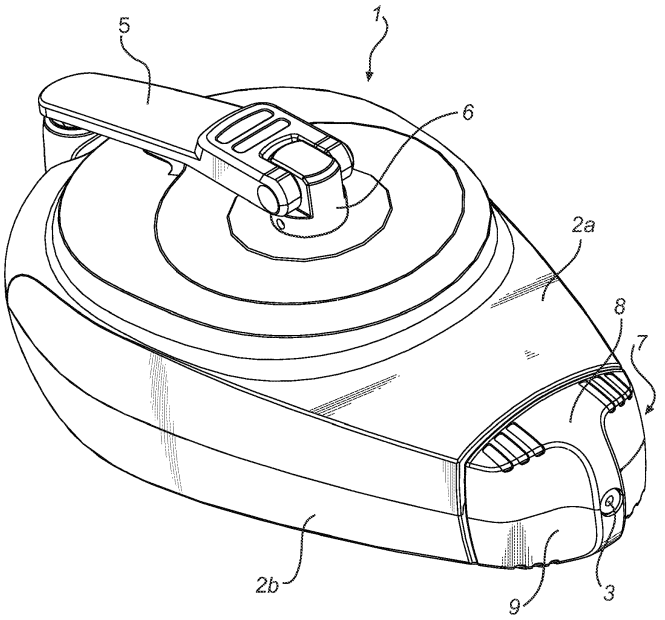

Fig 1

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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 first outlet defining part and a second outlet defining part which together define an outlet through which said chalk line protrudes.

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 centre 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. The chalk is stored loosely inside the chalk line cavity which is restricted by the chalk line housing, which usually is a two part housing comprising a top part and a bottom part. The chalk line protrudes out of an outlet. If the chalk line breaks during for example use, storage or transportation etc. inside the chalk line device the chalk line has to be rearranged in the chalk line device so that it can be used again. When rearranging the chalk line in the chalk line device so that it protrudes outside the chalk line device, the two house parts are separated. Since these two parts also hold the chalk, the risk is very high that chalk may be spilled out.

[0003] Hence, there is still a need for a chalk line device which allows easy rearrangement of the chalk line in case of breakage without risking getting chalk all over the place.

Summary of the Invention

[0004] The object of the present invention is to provide a chalk line that overcomes the above issues.

[0005] The invention is based on the insight that by having at least one part which defines an outlet in the chalk line device, reconnectably arranged to the another part which also defines the outlet, the chalk line may be arranged into the chalk line device in case of breakage without spilling chalk.

[0006] 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, a first outlet defining part and a second outlet defining part, which together define an outlet through which said chalk line protrudes, wherein said first outlet defining part extends a distance from said outlet in a direction towards the opposite end of the chalk line device and said distance is shorter than the distance between said outlet and said opposite end of the chalk line device, and wherein said first outlet defining part is reconnectably arranged to said second outlet defining part allowing said outlet to be accessible when said first outlet defining part is at least partly separated from said second outlet defining part in order to arrange said chalk line in said outlet. An arrangement like this reduces the risk of chalk coming out of the chalk line device when rearranging the chalk line, in case of breakage of the chalk line inside the chalk line device. The whole chalk line device does not have to be opened up, instead only a part of it, where the chalk line protrudes, may be opened up.

[0007] According to at least one exemplary embodiment said first outlet defining part and said second outlet defining part form a removable end cap which is rearrangeable to said housing. By letting the first outlet defining part and the second outlet defining part form an end cap, the end cap can be a separate part from the rest of the chalk line device, i.e. housing. Chalk line devices usually have an oval cross-section shape, where the spool is arranged on one end and the chalk line outlet in the other end in order to guide the chalk line on an effective way out from the chalk line device after it is uncoiled from the spool. Hence, the end cap is preferably arranged at one end of the chalk line device. Further, by having a separate end cap, which is arrangeable to the housing, the opening in the housing when the end cap is removed from the housing may be used for other purposes, for example for refilling the chalk line device with chalk.

[0008] According to at least one exemplary embodiment said first outlet defining part and/or said second outlet defining part are parts of said housing. This may e.g. be provided on a chalk line device lacking an end cap, and having some other chalk refill port.

[0009] According to at least one exemplary embodiment said first outlet defining part and said second outlet defining part are two separate parts. By having the two parts as two separate parts the chalk line may easily arranged between them. The two parts may be identical, which allows them to be manufactured in the same mould. However, as an alternative, they may differ.

[0010] According to at least one exemplary embodiment said first outlet defining part and said second outlet defining part are articulated relative to one another. The risk of losing one part is reduced when removing the parts from the chalk line device.

[0011] According to at least one exemplary embodiment said first outlet defining part and said second outlet defining part are reconnectably arranged to each other by mutually matching means. Mutually matching means may for example be a protrusion in one part which may

be fitted in a mutually matching recess in the other part or a snap catch which may snap into a recess in the other part. These are easy connections where no special tools are needed in order to separate the two parts. The two parts may however be connected to each other for example by using screws.

[0012] According to at least one exemplary embodiment said first outlet defining part and said second outlet defining part are reconnectably arranged to each other by a clamping device. As an alternative or as a further securing arrangement a clamping device may be arranged around the two parts.

[0013] According to at least one exemplary embodiment said clamping device is an o-ring. By using an o-ring, the o-ring may have further functions apart from holding the two parts together. It may for example seal between the housing and the two outlet defining parts.

[0014] According to at least one exemplary embodiment said outlet is part of a passage extending from said outlet in the direction towards said other end of said chalk line device. This passage may guide the chalk line in the right direction and it may form up an area for positioning and holding a chalk line protecting pipe, which may be used to protect the chalk line from the edges established between the two parts and also protect the outlet from being damaged by the chalk line in use.

[0015] According to at least one exemplary embodiment said extension of said first outlet defining part is between said outlet and the outer periphery of said spool.

[0016] According to at least one exemplary embodiment said first outlet defining part and/or said second outlet defining part are reconnectable to an opening in said housing. The opening in the housing when the first outlet defining part and/or said second outlet defining part is removed from the housing may be used for other purposes, for example for refilling the chalk line device with chalk.

[0017] According to at least one exemplary embodiment said opening allows chalk to be refilled through said opening.

[0018] According to at least one exemplary embodiment said first outlet defining part and/or said second outlet defining part are arranged into or onto the housing.

[0019] According to at least one exemplary embodiment said first outlet defining and/or said second outlet defining part are/is arranged to the housing by a bayonet coupling or a screw connection or a snap locking connection.

[0020] 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.

[0021] 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

[0022] 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 a part of the chalk line device in Fig. 1 in a cross-sectional view in perspective.
Fig. 3 shows the chalk line device in Fig. 1 in an exploded view.
Fig. 4 shows the end cap according to one embodiment in an exploded view and in perspective.
Fig. 5 shows an end cap according to a second embodiment.

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). A retracting device 5 is linked to a spool (not shown). The spool is mounted inside the housing 2a, 2b for rotation and for retaining a chalk line. The chalk line 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 an outlet 3. A clip/end hook (not shown) is usually arranged at the free end of the chalk line to allow the chalk line to be temporarily attached to a structure during use. The chalk line 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 6 protruding through the top part 2a of the housing 2a, 2b into the cavity of the housing 2a, 2b.

[0026] The outlet 3 through which the chalk line protrudes is arranged in an end cap 7 which is a two part end cap. The end cap 7 is arranged to an opening in the

housing 2a, 2b which may be used for filling chalk into the cavity of the housing. In order to accomplish this, the end cap 7 is removably connected to the housing 2a, 2b by a fastening means, may for example be a bayonet coupling, screw coupling or a quick snap coupling known in the art. As said above, the end cap 7 is a two part end cap with a first outlet defining part 8 and a second outlet defining part 9, interconnected to each other by for example mutually matching means. The outlet 3 is defined by the two outlet defining parts 8, 9 and is thereby arranged in the transition between them.

[0027] Fig. 2 shows only the bottom part 2b of the housing, however the top part 2a has similar features and will therefore be described together with Fig. 2 even though it is not shown. Both the bottom part 2b and the top part 2a has a base 15 and outer walls 16, and when the top part 2a and the bottom part 2b are arranged together they form a cavity 14 for arranging the spool and other necessary parts for rewinding the chalk line onto the spool. The cavity 14 is also a chalk cavity 14, i.e. for retaining the chalk. In the walls is an opening 13 arranged which allows chalk to be filled into the chalk cavity 14. The end cap 7 closes the housing 2a, 2b and prevents thereby the chalk to come out. As an alternative, chalk may be introduced into the chalk line device from a second opening which is not connected to the end cap.

[0028] Only one part of end cap 7 is shown, i.e. the second outlet defining part 9. However, the first outlet defining part is identical to the second outlet defining part 9, except for the mutually matching means and will therefore be described together with Fig. 2 even though it is not shown. It is not necessary that the two parts are identical, they may differ. The two pats may be identical also when it comes to the mutually matching means. The advantage by having the two parts totally identical is that they may be moulded in the same mould.

[0029] The outlet 3 is part of a passage 12, which stretches from the outlet in a direction, which is into the chalk line device when the end cap 7 is arranged to the housing. The passage 12 is arranged in both outlet defining parts 8, 9. When the first outlet defining part 8 and the second outlet defining part 9 are removed from the housing 2a 2b and separated, the chalk line may be arranged into the passage 12 and passing through the outlet 3. As shown in Fig. 2 the passage 12 and the outlet 3 are shaped in both parts. However, as an alternative, they could be almost contained in one part and only closed with the second part, i.e. a U-shaped recess in one part and a flat plat part closing the recess so that they together forms the outlet 3 and the passage 12. The passage 12 is here exemplified only with as short distance, it may however extend longer into the end cap.

[0030] The two outlet defining parts 8, 9 have each a T-shaped cross-section where the two parts join together. The end cap 7, when the two parts are attached together, has a mushroom shape with a head 17 and a foot 18 (see Fig. 3). The outer contour of the head 17 follows the contour of the housing 2a, 2b before it narrows off into a tip where the outlet 3 is arranged (see Fig. 1). This tip helps to arrange the outlet in a correct position to the parts which shall be marked. The head 17 may however take any possible shape appropriate for the desired function. Onto the head 17 is the foot 18 arranged which functions as an attachment part which attaches the end cap 7 to the housing 2a, 2b. The foot is arranged into the housing 2a, 2b and it is provided with features, which together with mutually matching features in the housing 2a, 2b works as a bayonet coupling. This will be further described with regard to Fig. 3. As an alternative to the bayonet coupling a screw coupling or a snap fit coupling may be used. The end cap 7, i.e. the foot 18 of the end cap 7 is positioned into the housing 2a, 2b, however, the end cap may be arranged to fit onto, i.e. around the chalk line device. In the transition between the head and the foot is a recess 19 arranged which reaches all around the two part end cap 7. A sealing 11, for example an o-ring, is seated into the recess 19 around the foot 18. However, the end cap 7 is not limited to have a recess 19, the o-ring 11 may be arranged around the foot 18 anyway. The o-ring 11 works as a sealing between the housing 2a, 2b and the end cap 7 so that chalk cannot penetrate/leak through. It also works as a further connection part, i.e. a clamping device, connecting the two outlet defining parts 8, 9 of the end cap. As an alternative, the o-ring does not have to be positioned on the end cap at all. It may for example be arranged into the housing 2a, 2b in order to seal between the housing 2a, 2b and the end cap 7. The sealing is not limited to be an o-ring. It may be any kind of suitable sealing, for example a flat gasket. Inside each outlet defining part 8, 9 (only the second outlet defining part is shown here, however, the first outlet defining part has the same features) several protrusions 20 are provided circumferentially around the inside of the outlet defining parts 8, 9. These protrusions 20 provide an area for inserting filters 24 into the end cap. These filters 24 serve to remove excess chalk from the line and to avoid that chalk comes out from the outlet 3. By having the end cap 7 in two outlet defining parts 8, 9 the filters 24 may be easily arranged into the end cap 7 and when arranging the chalk line into the end cap 7, for example when manufacturing the chalk line device 1 or if the chalk line breaks inside the chalk line device 1, the chalk line does not have to be threaded through the filter/filters. The chalk line may instead be easily arranged between the filters 24.

[0031] The first and the second outlet defining parts 8, 9 extend a distance from said outlet 3 in a direction towards the opposite end of the chalk line device 1 and said distance is shorter than the distance between said outlet 3 and said opposite end of the chalk line device 1. Here, they extend from said outlet 3 and to said chalk reservoir 14 in said housing 2a, 2b. They may however extend into the chalk reservoir or anywhere between said outlet 3 and the outer periphery of said spool 4 (not shown) so that it can not come in contact with the spool.

[0032] Fig. 3 shows the end cap 7 with the bayonet

coupling arranged on the end cap 7 and in the housing (2a, 2b). On the foot 18 of the end cap 7, on both outlet defining parts 8, 9 is a recess 21 arranged which protrudes from the end of the foot 18 parallel with the axis of the end cap 7 towards the head 17 of the end cap 7, before it turns in the radial direction of the foot 18. In the housing, in both parts 2a, 2b, is a protruding member 22 arranged, which fits into and follows the extension of the recess 21 when the end cap 7 is inserted into the housing 2a, 2b and thereby locking the end cap 7 to the housing 2a, 2b. Around the end cap 7 is the o-ring 19 attached which further keeps the two outlet defining parts 8, 9 together and seals between the housing 2a, 2b and the end cap 7.

[0033] Fig. 4 shows the two end cap halves and their mutually matching means 23. The second outlet defining part 9 comprises protruding attachment portions 25 and the first outlet defining part 8 comprises mutually matching recesses 26 into which the protruding attachment portions 25 of the second outlet defining part 9 fits into. As an alternative both outlet defining parts 8, 9 may comprise both recesses and protruding attachment portions, then both outlet defining parts 8, 9 may be manufactured from the same mould. The chalk line (not shown) may be arranged into a small pipe 27 which may be arranged into the end cap 7, into the passage 12 and the outlet 3 in order to protect the chalk line from the edges when the two outlet defining parts 8, 9 are connected together, and also to protect the outlet 3 and the passage 12 from the chalk line.

[0034] If the chalk line breaks inside the chalk line device 1, the user remove the end cap 7 from the chalk line device 1, removes the o-ring 19 and separate the two outlet defining parts 8, 9 from each other. The chalk line may then be arranged in one of the outlet defining parts 8, 9, before reassembly of the two outlet defining parts 8, 9. If a protective pipe 27 as shown in Fig. 4 is used, the chalk line is threaded through the pipe 27 before the pipe 27 and the chalk line is arranged between the two outlet defining parts 8, 9. The end cap 7 can after being provided with the o-ring be replaced to the chalk line device 1.

[0035] Fig. 5 shows a second embodiment of the end cap 7'. The end cap 7' still has a first and a second outlet defining part 8', 9'. However, the two outlet defining parts 8', 9' are articulated relative to one another, having a closed and an open position, allowing the chalk line to be arranged between when it is in an open position. The end cap may be a one part end cap, for example moulded in one piece or a several part end cap, where the two outlet defining part 8', 9' are articulately connected through a hinge 30. When connected together the o-ring may be arranged around the end cap 7' in order to lock it further.

[0036] As an alternative, to the above described chalk line device with its end cap comprising a first outlet defining part 8 and a second outlet defining part 9, one of the outlet defining parts 8, 9 may be part of the housing. For example the second outlet defining part 9 in fig. 1 may be moulded with the bottom part 2b and thereby they together form the bottom part and the second outlet defining part. The first outlet defining part may then be reconnectably arranged to bottom part 2b comprising the second outlet defining part 9. It may be a separate part or it may be hinged to the housing.

[0037] 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 (4) which is rotatably arranged inside the housing (2a, 2b),
a chalk line which is attached to said spool (4) and which may either be coiled onto or uncoiled from said spool (4),
a first outlet defining part (8) and a second outlet defining part (9), which together define an outlet (3) through which said chalk line protrudes, wherein
said first outlet (3) defining part (8) extends a distance from said outlet (3) in a direction towards the opposite end of the chalk line device (1) and said distance is shorter than the distance between said outlet (3) and said opposite end of the chalk line device (1), and wherein
said first outlet defining part (8) is reconnectably arranged to said second outlet defining part (9) allowing said outlet (3) to be accessible when said first outlet defining part (8) is at least partly separated from said second outlet defining part (9) in order to arrange said chalk line in said outlet (3).

2. A chalk line device (1) according to claim 1, wherein said first outlet defining part (8) and said second outlet defining part (9) form a removable end cap which is rearrangeable to said housing (2a, 2b).

3. A chalk line device (1) according to claim 1, wherein said first outlet defining part (8) and/or said second outlet defining part (9) are parts of said housing (2a, 2b).

4. A chalk line device (1) according to any one of preceding claims,
wherein said first outlet defining part (8) and said second outlet defining part (9) are two separate parts.

5. A chalk line device (1) according to any one of preceding claims,

wherein said first outlet defining part (8) and said second outlet defining part (9) are articulated relative to one another.

6. A chalk line device (1) according to any one of preceding claims,
wherein said first outlet defining part (8) and said second outlet defining part (9) are reconnectably arranged to each other by mutually matching means (10).

7. A chalk line device (1) according to any one of preceding claims,
wherein said first outlet defining part (8) and said second outlet defining part (9) are reconnectably arranged to each other by a clamping device.

8. A chalk line device (1) according to claim 7, wherein said clamping device is an o-ring (11).

9. A chalk line device (1) according to any one of preceding claims,
wherein said outlet (3) is part of a passage (12) extending from said outlet (3) in the direction towards said other end of said chalk line device (1).

10. A chalk line device (1) according to any one of claims one of preceding claims, wherein said extension of said first outlet defining part (8) is between said outlet (3) and the outer periphery of said spool (4).

11. A chalk line device (1) according to any one of preceding claims,
wherein said first outlet defining part (8) and/or said second outlet defining part (9) are/is reconnectable to an opening in said housing (2a, 2b)

12. A chalk line device (1) according to claim 11, wherein said opening (13) allows chalk to be refilled through said opening (13).

13. A chalk line device (1) according to any one of preceding claims, wherein said first outlet defining part (8) and/or said second outlet defining part (9) are/is arranged into or onto the housing (2a, 2b).

14. A chalk line device (1) any one of preceding claims, wherein the said first outlet defining part (8) and/or said second outlet defining part (9) are/is arranged to the housing by a bayonet coupling or a screw connection or a snap locking connection.

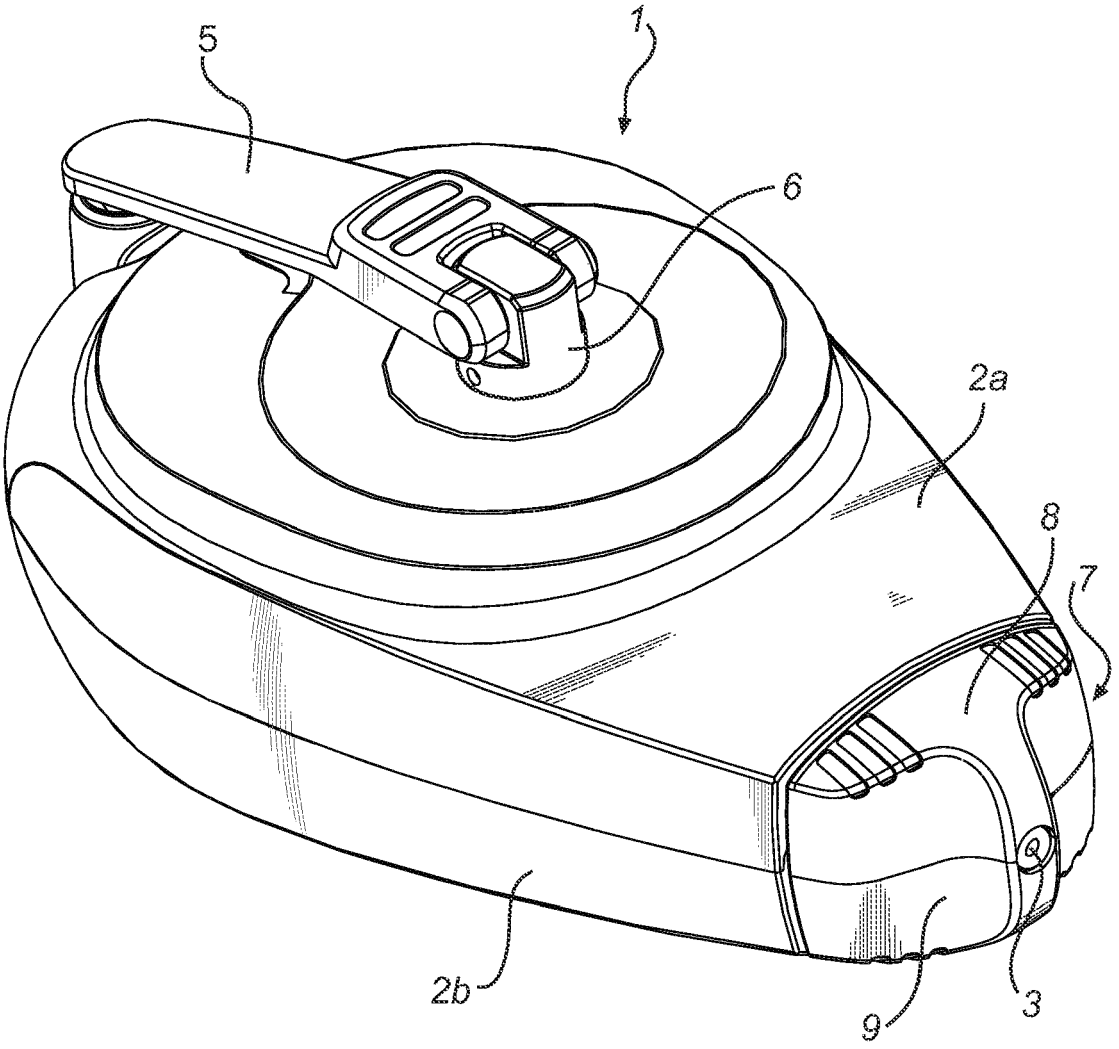

Fig 1

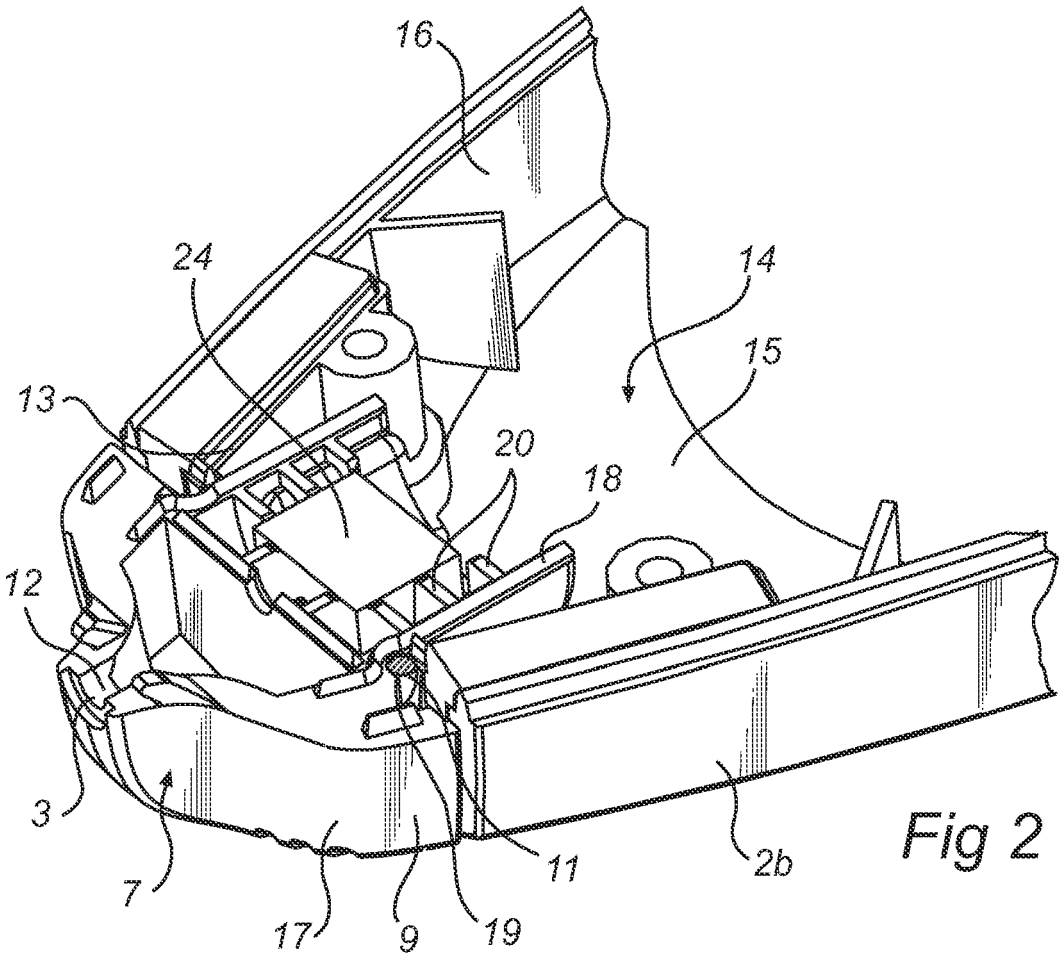

Fig 2

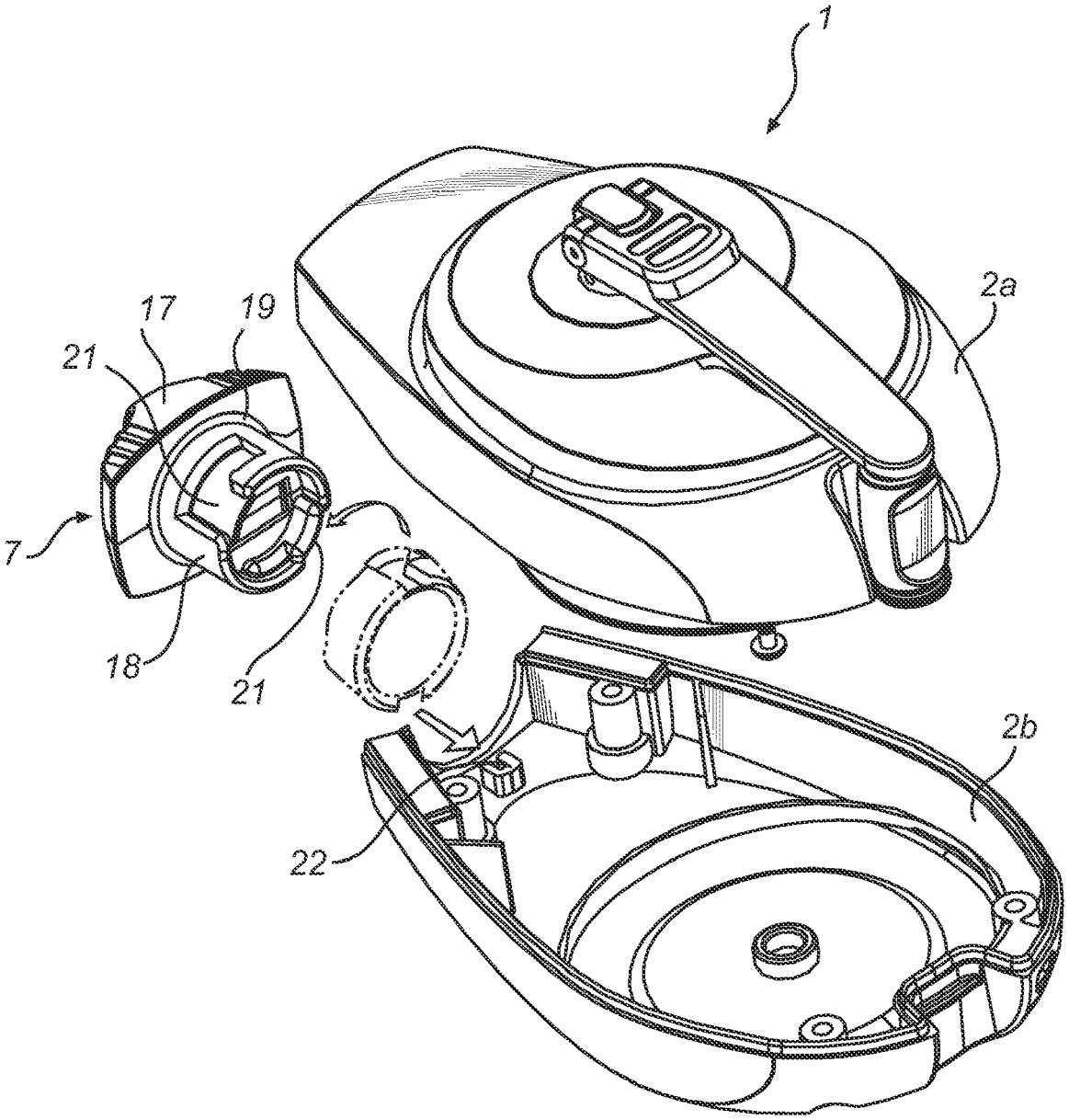

Fig 3

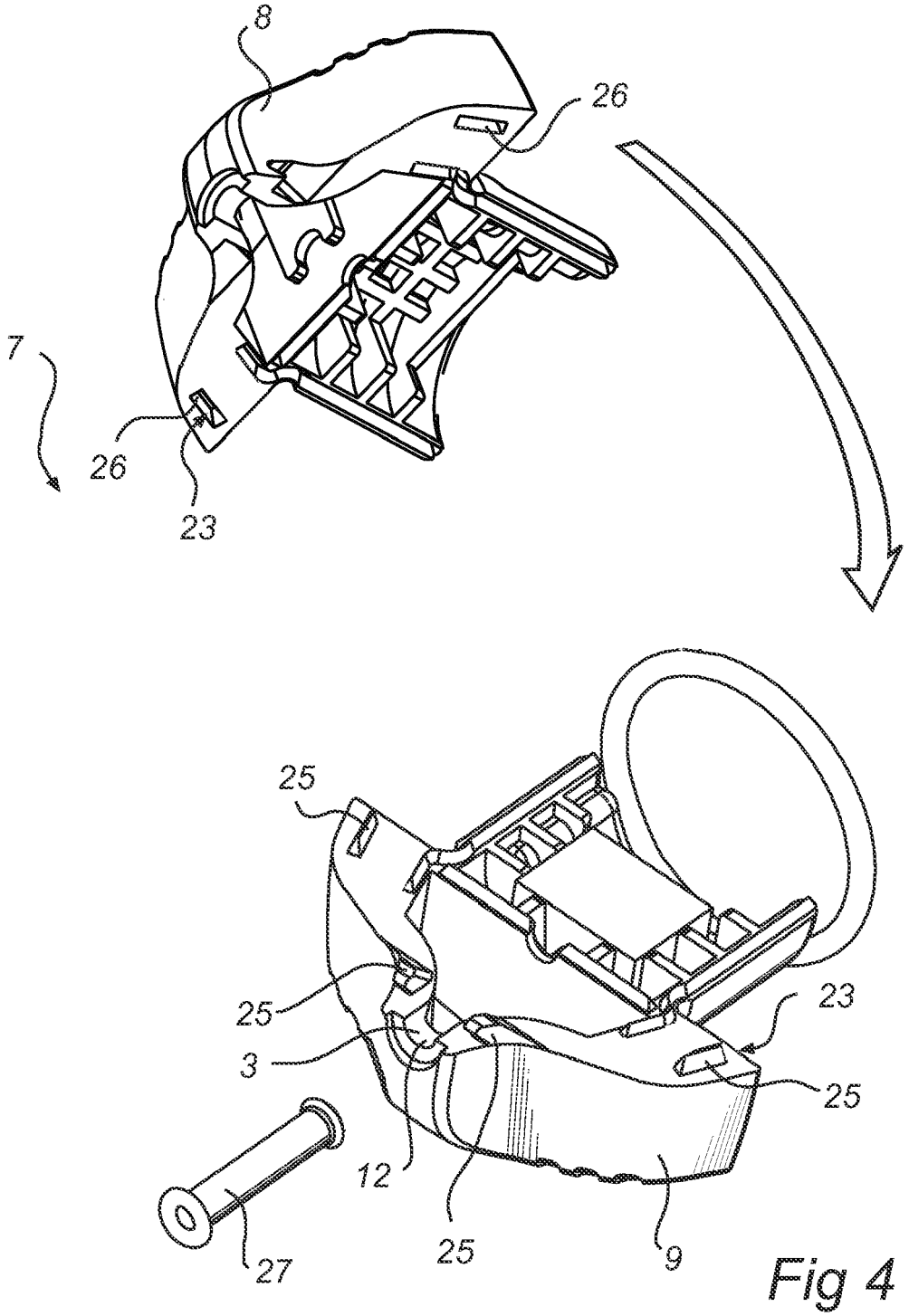

Fig 4

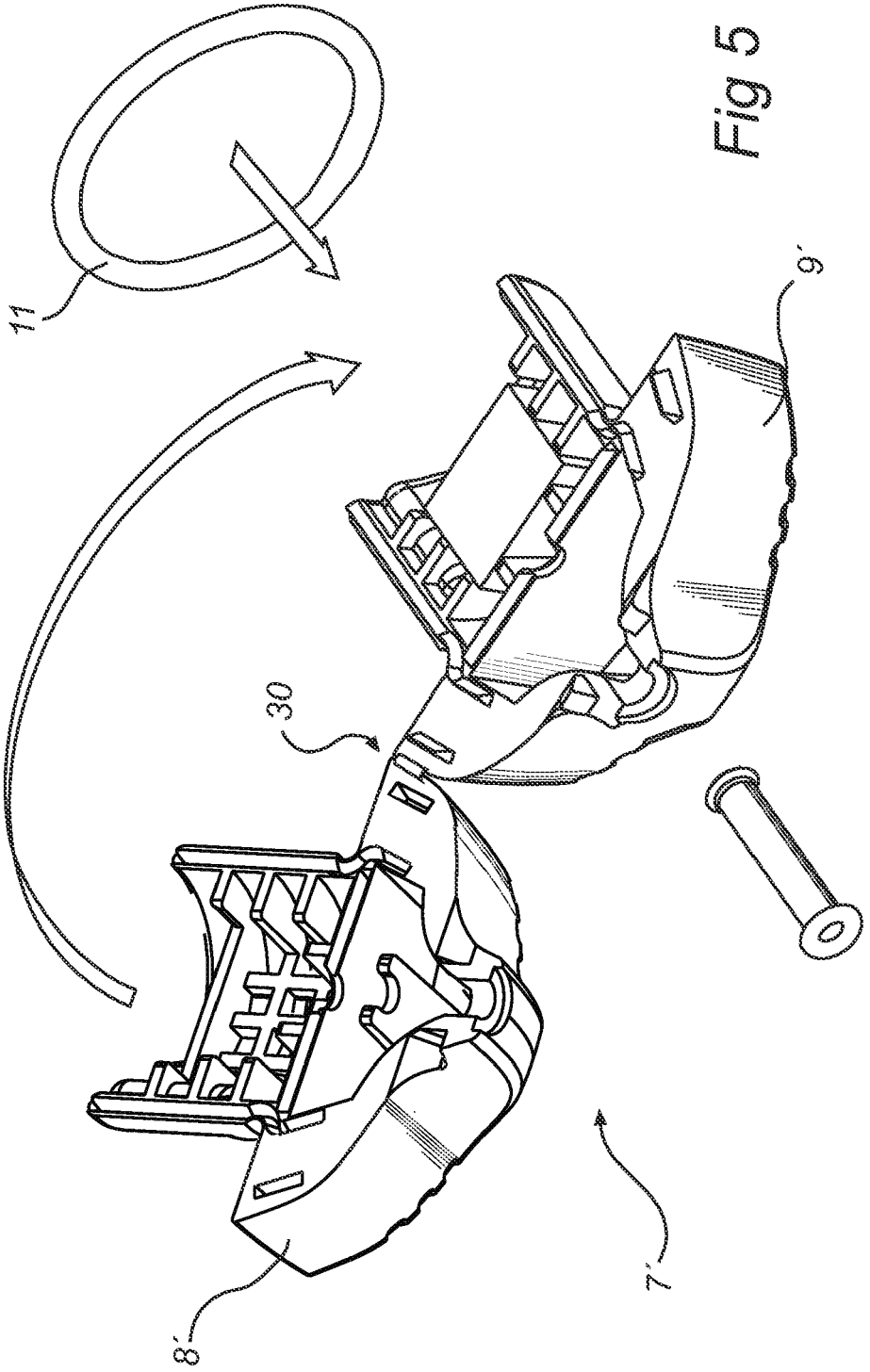

Fig 5

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EUROPEAN SEARCH REPORT

Application Number
EP 10 17 3276

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

B44D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 November 2010	Björklund, Sofie

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 17 3276

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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