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(54) BOTTLE COMPRISING AN ANTI-THEFT AND SECURITY MECHANISM EQUIPPED WITH ALARM SYSTEM

(57) A bottle (9) is described comprising a neck (10) and equipped with an anti-theft and safety mechanism (1), the mechanism (1) comprising: a casing (2) containing locking and unlocking means (3, 4, 5) placed on a support (2a); alarm means (6) configured to signal an attempt to remove the mechanism (1); the locking and unlocking means (3, 4, 5) being capable of

being operated, during the locking action, by simply inserting the mechanism (1) onto the neck (10) of the bottle (9), wherein the alarm means (6) comprise at least one switch (30) configured to change its position following an attempt to remove the mechanism (1), the switch (30) being capable of activating the alarm means (6) following the change in its position.

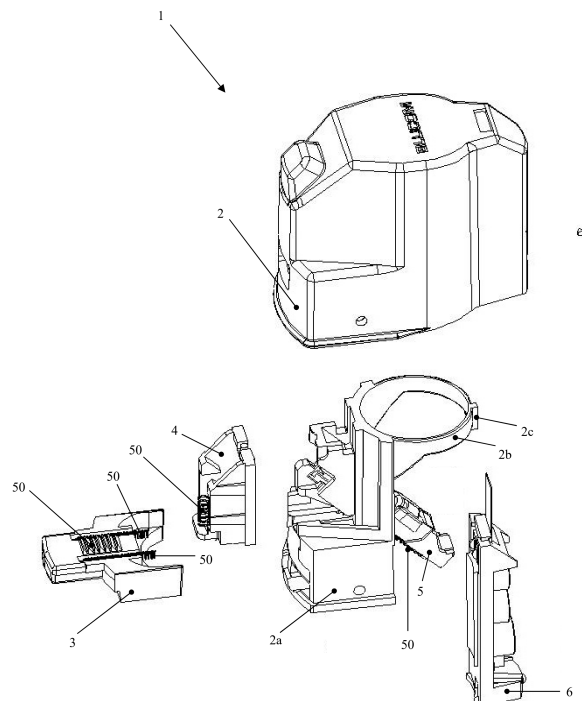


FIG. 1

Description

[0001] The present invention relates to a bottle comprising an anti-theft and security mechanism equipped with an alarm system.

[0002] There are well-known anti-theft mechanisms, typically magnetically operated, designed to contain objects offered for sale the as compact discs, DVDs, music cassettes, video cassettes and the like, or applied externally to various items the as, for example, glasses and clothing.

[0003] These mechanisms are typically activated on the product to be protected, when it is on display for sale, and are removed, generally using special mechanical, electronic, magnetic or electromagnetic devices, when the product itself is paid for.

[0004] However, these known mechanisms still have some drawbacks, one of which is that they can be removed relatively easily and with makeshift tools, inserted between the mechanism itself and the neck of the bottle, so as to disengage the locking mechanism.

[0005] Furthermore, an anti-theft and security mechanism for bottles, as described in WO-A1-2016098136 in the name of the applicant, is known in the art. This mechanism comprises locking and unlocking means that are magnetically attracted by external magnetic or electromagnetic means, thereby increasing security against unauthorized removal of the mechanism. However, this system is not capable of real-time detection of attempted theft, thus preventing timely intervention by security personnel to prevent damage to the bottles or the mechanism itself following attempts to remove it.

[0006] Documents WO-A1-2024/217318, US-A-5 464 109 and US-A-9 206 628 disclose prior art anti-theft mechanisms.

[0007] Object of the present invention is therefore solving the aforementioned prior art problems by providing a bottle comprising an anti-theft and security mechanism that allows for a considerable increase in security through an alarm system capable of signalling in real time any attempts to remove the mechanism itself.

[0008] Another object of the present invention is to provide a bottle comprising an anti-theft and security mechanism that can be applied extremely simply and quickly, even with just one hand.

[0009] The above and other objects and advantages of the invention, as will result from the following description, are achieved with a bottle comprising an anti-theft and security mechanism such as that described in claim 1. Preferred embodiments and non-trivial variants of the present invention form the subject of the dependent claims.

[0010] It is understood that all attached claims form an integral part of this specification.

[0011] It will be immediately obvious that countless variations and modifications can be made to what is described (for example relating to shape, dimensions,

arrangements and parts with equivalent functionality) without departing from the scope of protection of the invention as appears from the appended claims.

[0012] The present invention will be better described by some preferred embodiments, provided by way of example and not by way of limitation, with reference to the attached drawings, in which:

- FIG. 1 and 2 show exploded perspective views of one embodiment of the bottle security and anti-theft mechanism according to the present invention;
- FIG. 3 shows a perspective view of an embodiment of the alarm means of the bottle anti-theft and security mechanism according to the present invention;
- FIG. 4 shows a perspective view of one embodiment of the bottle anti-theft and security mechanism holder according to the present invention;
- FIG. 5 shows sectional views of an embodiment of the anti-theft and bottle security mechanism according to the present invention applied to a bottle and following a tampering attempt; and
- FIG. 6 shows side views of an embodiment of the anti-theft and bottle safety mechanism according to the present invention applied to a bottle and following a tampering attempt.

[0013] With reference to the Figures, the bottle 9 according to the invention comprises a neck 10, is equipped with an anti-theft and safety mechanism 1 according to the invention and comprises:

- a casing 2 containing locking and unlocking means, e.g. first 3, second 4 and third 5 locking and unlocking means, of the mechanism 1 on the bottle 9;
- a support 2a for the locking and unlocking means 3, 4, 5;
- alarm means 6 configured to signal an attempt to remove the mechanism 1;

the locking and unlocking means 3, 4, 5 are suitable to be operated, during the locking action, by simply inserting the mechanism 1 on the neck 10 of the bottle 9.

[0014] The operation of the locking and unlocking means 3, 4, 5 is comparable to that reported in the description of patent WO2016098136A1 in the name of the applicant, the contents of which are incorporated herein by reference. When the bottle 9 is subjected to, for example, an attempted theft, which requires the use of a significant force to attempt to remove the mechanism 1 from the bottle 9, the mechanism 1 is configured to allow the longitudinal translation of the entire mechanism 1 itself, the travel of which is however limited, for example, by the first locking and unlocking means 3, which can translate for a maximum length defined by the casing 2, for example through a slot made in the

casing 2 in correspondence with the first locking and unlocking means 3. This movement allows the alarm means 6 to be activated, comprising, for example, an electronic board equipped with a microcontroller capable of emitting a signal in real time that can be recognised by security personnel. The third locking and unlocking means 5 act as a constraint at the neck 10 of the bottle, allowing the aforementioned longitudinal translation of the mechanism 1. The alarm means 6 allow for immediate recognition of an attempt to remove the mechanism 1 from the bottle 9, ensuring real-time reporting of an attempt and the possibility of rapid intervention to avoid damage and/or the illicit theft of the bottle 9 itself.

[0015] The anti-theft and safety mechanism 1 for bottles 9 provides that the alarm means 6 comprise at least one switch 30 configured to change its position following an attempt to remove the mechanism 1, the switch 30 being capable of activating the alarm means 6 following the change in its position.

[0016] One possible configuration, by way of example and not limitation, provides that on the alarm means 6, for example at the upper end, two parallel switches 30 are arranged, slightly offset from each other. Following the locking of the mechanism 1 on the bottle 9, the two switches 30 are pressed simultaneously. Following an attempt to remove the mechanism 1 from the bottle 9, one of the two switches 30 changes its position. Advantageously, this change in the position of the switch 30 is recognized by the alarm means 6 as an attempt to remove the mechanism 1 from the bottle 9, allowing the immediate signaling of the attempt by the alarm means 6.

[0017] In a preferred embodiment of the invention, the anti-theft and safety mechanism 1 for bottles 9 provides that the alarm means 6 comprise acoustic signalling means configured to emit at least one sound signal following an attempt to remove the mechanism 1. Preferably, the acoustic signalling means comprise, for example, a buzzer configured to emit a distinctly and clearly perceptible sound signal, for example an 85 dB sound for 5 minutes, following an attempt to remove the mechanism 1. Advantageously, the emission of the sound signal allows for immediate recognition, even from a distance, of an attempt to remove the mechanism 1 from the bottle 9 identified by the alarm means 6.

[0018] In a preferred embodiment of the invention, the anti-theft and safety mechanism 1 for bottles 9 provides that the alarm means 6 comprise light signalling means configured to emit at least one light signal following an attempt to remove the mechanism 1. Preferably, the light signalling means comprise, for example, a LED capable of changing colour following recognition of an attempt to remove the mechanism 1 by the alarm means 6. For example, the LED can flash green under normal conditions and flash red following recognition of an attempt to remove the mechanism 1 by the alarm means 6. Advantageously, the light signalling means

allow the operator responsible for restoring the mechanism 1, following a signal of an attempt to remove the mechanism 1 by the alarm means 6, to easily recognise the correct repositioning of the mechanism 1 on the bottle 9, thus allowing the mechanism 1 to be reused.

[0019] In a preferred embodiment of the invention, the anti-theft and safety mechanism 1 for bottles 9 provides that said support 2a comprises at least one ring 2b configured to wrap around the neck 10 of said bottle 9. Advantageously, the ring 2b allows for easier positioning of the mechanism 1 on the bottle 9.

[0020] In a preferred embodiment of the invention, the anti-theft and safety mechanism 1 for bottles 9 provides that the support 2a comprises at least one tooth 2c configured to modify the position of the switch 30. Advantageously, the tooth 2c can come into contact with the switch 30, modifying its position following the longitudinal translation induced by an attempt to remove the mechanism 1, allowing easy recognition of the attempt to remove the mechanism 1 by the alarm means 6.

[0021] In a preferred embodiment of the invention, the anti-theft and safety mechanism 1 for bottles 9 provides that the locking and unlocking means 3, 4, 5 comprise elastic means 50 suitable for counteracting the retraction of the locking and unlocking means 3, 4, 5. Advantageously, the elastic means 50 allow the locking means 3, 4, 5 to be kept in position, preventing an involuntary detachment of the mechanism 1, for example due to an accidental impact.

[0022] In a preferred embodiment of the invention, the anti-theft and safety mechanism 1 for bottles 9 provides that the elastic means 50 comprise at least one helical spring.

[0023] In a preferred embodiment of the invention, the anti-theft and safety mechanism 1 for bottles 9 provides that the casing 2 comprises at least one guide 20 suitable for preventing accidental sliding of the support 2a. Advantageously, the guide 20 allows the insertion of the support 2a while preventing accidental sliding of the support 2a, due for example to the normal handling of the bottle 9 examined by a customer, since a force compatible with an attempt to remove the mechanism 1 is required to cause the longitudinal translation of the mechanism 1 and the consequent signaling by the alarm means 6.

[0024] In a preferred embodiment of the invention, the anti-theft and safety mechanism 1 for bottles 9 provides that at least one of said locking and unlocking means 3, 4, 5 is able to be magnetically attracted by magnetic or electromagnetic means external to said casing 2 to unlock the mechanism 1. Preferably, the unlocking of the mechanism 1 can be carried out with the external magnetic or electromagnetic means which, by acting, for example, on a non-highlighted ferromagnetic element, cause the retraction of at least one locking and unlocking means 3, 4, 5, with the consequent

unlocking of the mechanism 1 and its possible safe removal without activating the alarm means 6.

[0025] From the foregoing description, it is clear that the mechanism 1 according to the present invention can be applied to any type and shape of bottle in such a way as to prevent and impede any thefts, and above all to visually deter potential intruders. This mechanism 1 can be easily and quickly removed, as is the case with existing anti-theft mechanisms, using a specific detaching device, for example of a mechanical, electronic, magnetic or electromagnetic type. The mechanism according to the present invention is also suitable for preventing accidental or unauthorized consumption of the contents of a bottle, as in the case, for example, in which the contents are a harmful substance, a medicine or an alcoholic beverage: this mechanism is therefore also extremely useful, for example in a domestic context in which, unfortunately all too frequently, liquid detergents and various harmful substances, such as, for example, hydrocarbons, disinfectants, insecticides and/or alcohol are stored in anonymous bottles, to prevent accidental or unauthorized consumption or use of the substances.

Claims

1. Bottle (9) comprising a neck (10) and equipped with an anti-theft and safety mechanism (1), said mechanism (1) comprising:
 - a casing (2) containing locking and unlocking means (3, 4, 5) of said mechanism (1) on said bottle (9);
 - a support (2a) for said locking and unlocking means (3, 4, 5);
 - alarm means (6) configured to signal an attempt to remove said mechanism (1);
 said locking and unlocking means (3, 4, 5) being capable of being actuated, during the locking action, by simply inserting said mechanism (1) onto said neck (10) of said bottle (9),
 wherein said alarm means (6) comprise at least one switch (30) configured to change its position following an attempt to remove said mechanism (1), said switch (30) being capable of activating said alarm means (6) following said change in its position,
 wherein, when said bottle (9) is subjected to an attempted theft, said mechanism (1) is configured to allow longitudinal translation of the entire mechanism (1), the travel of which is limited by said first locking and unlocking means (3), designed to translate for a maximum length defined by said casing (2), said movement allowing said alarm means 6 to be activated, said third locking and unlocking means

(5) acting as a constraint at said neck (10) of said bottle (9), allowing said longitudinal translation of said mechanism (1), said alarm means (6) allowing an attempt to remove said mechanism (1) from said bottle (9) to be immediately recognised.

2. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to claim 1, wherein, on said alarm means (6), two parallel switches (30) are arranged, slightly offset from each other, wherein, following the locking of said mechanism (1) on said bottle (9), said two switches (30) are designed to be pressed simultaneously, and wherein, following an attempt to remove said mechanism (1) from said bottle (9), one of said two switches (30) is designed to change its position, said change in the position of said switch (30) being recognised by said alarm means (6) as an attempt to remove said mechanism (1) from said bottle (9), allowing the immediate reporting of said attempt by said alarm means (6).
3. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to claim 1 or 2, wherein said alarm means (6) comprise acoustic signalling means configured to emit at least one sound signal following an attempt to remove said mechanism (1).
4. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to any of the preceding claims, wherein said alarm means (6) comprise light signalling means configured to emit at least one light signal following an attempt to remove said mechanism (1).
5. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to any of the preceding claims, wherein said support (2a) comprises at least one ring (2b) configured to wrap around the neck of said bottle (9).
6. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to any of the preceding claims 2 to 5, wherein said support (2a) comprises at least one tooth (2c) configured to change the position of said switch (30).
7. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to any of the preceding claims, wherein said locking and unlocking means (3, 4, 5) comprise elastic means (50) suitable for counteracting the retraction of said locking and unlocking means (3, 4, 5).
8. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to claim 7, wherein said

elastic means (50) comprise at least one helical spring.

9. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to any of the preceding claims, wherein said casing (2) comprises at least one guide (20) suitable for preventing accidental sliding of said support (2a). 5
10. Bottle (9) equipped with an anti-theft and safety mechanism (1) according to any of the preceding claims, wherein at least one of said locking and unlocking means (3, 4, 5) is suitable for being magnetically attracted by magnetic or electromagnetic means external to said casing (2) to unlock said mechanism (1). 10 15

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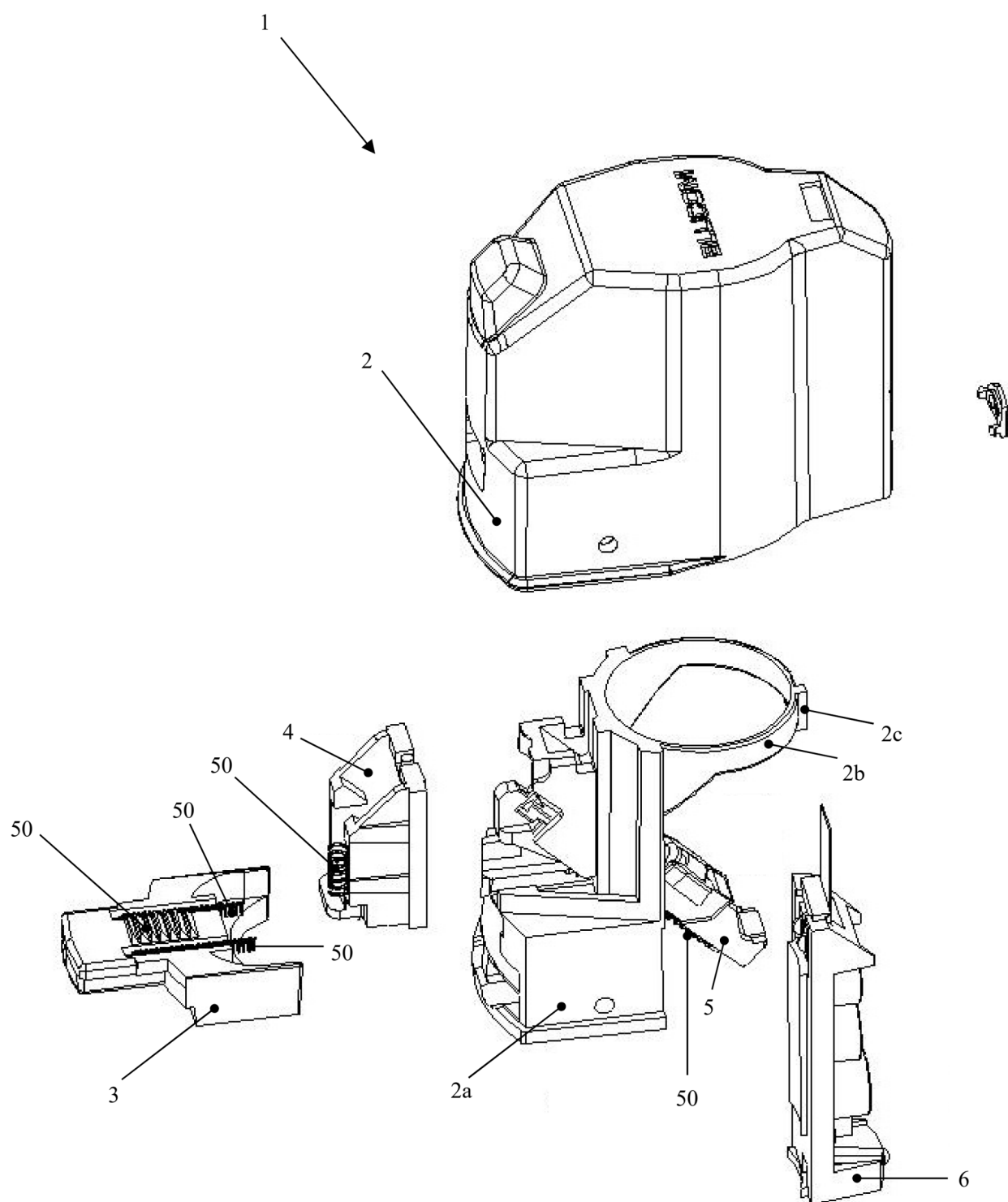


FIG. 1

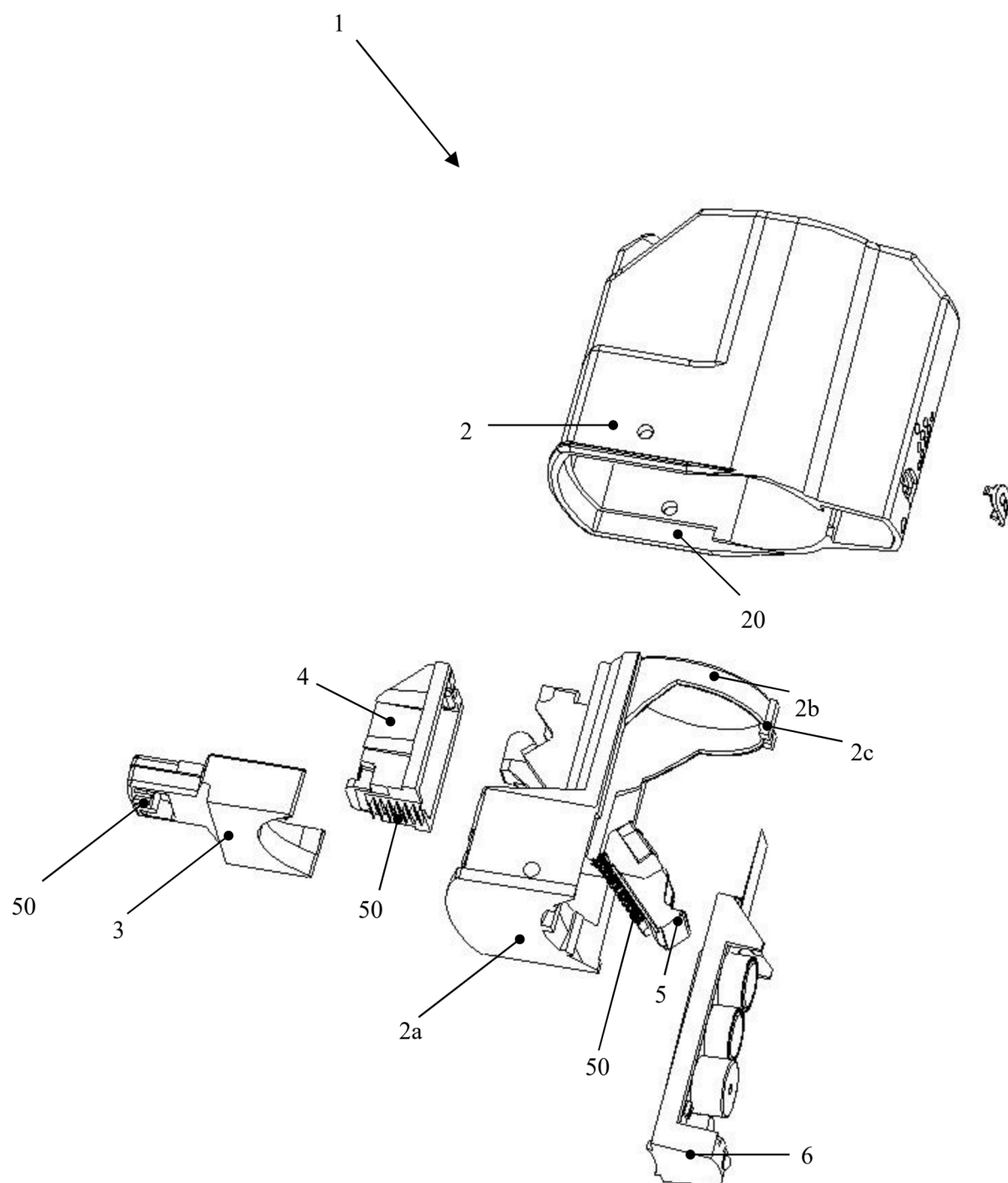


FIG. 2

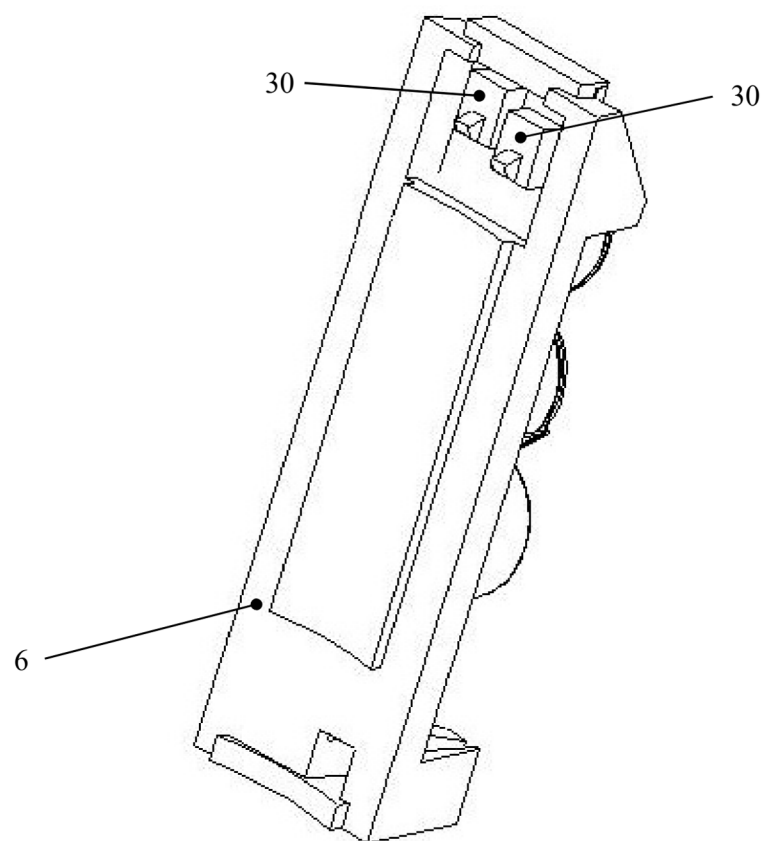


FIG. 3

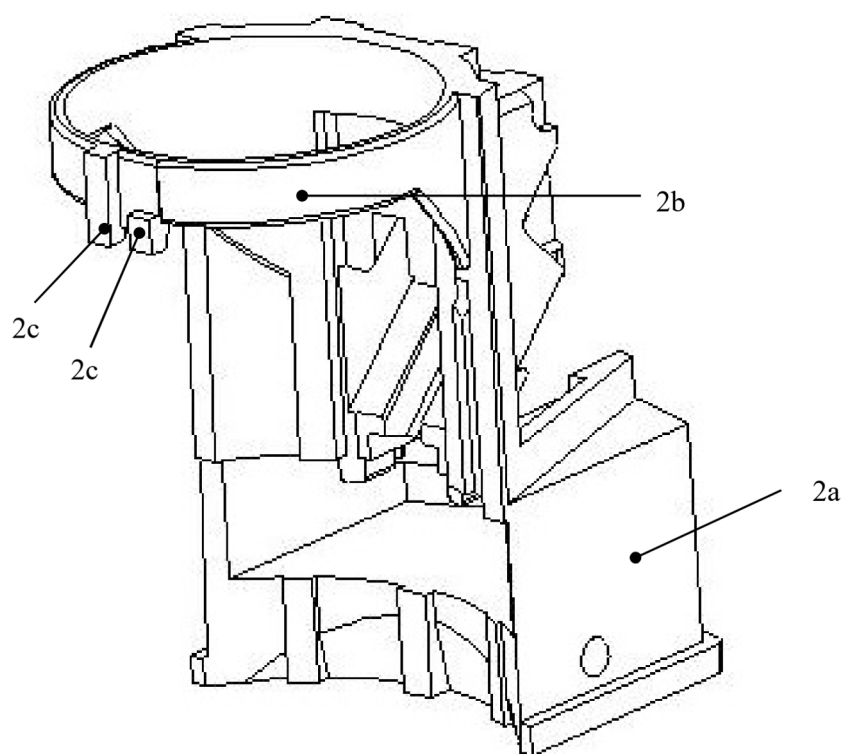


FIG. 4

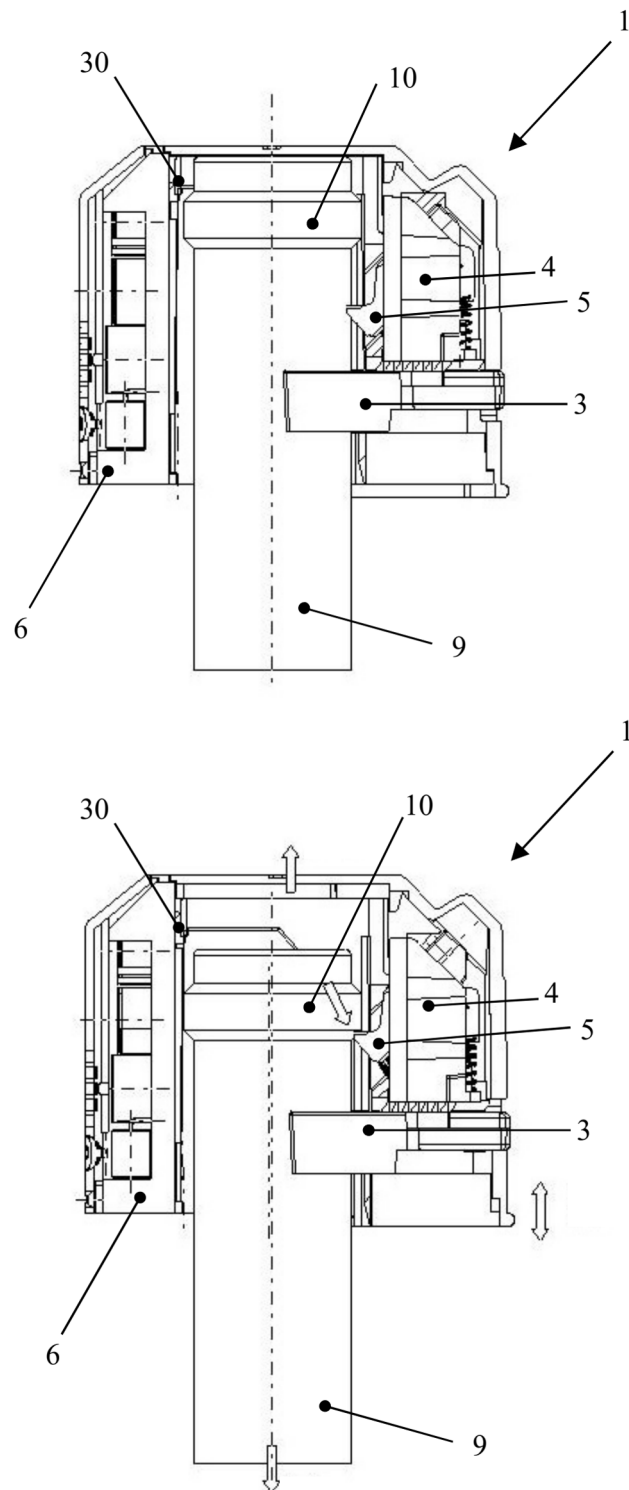


FIG. 5

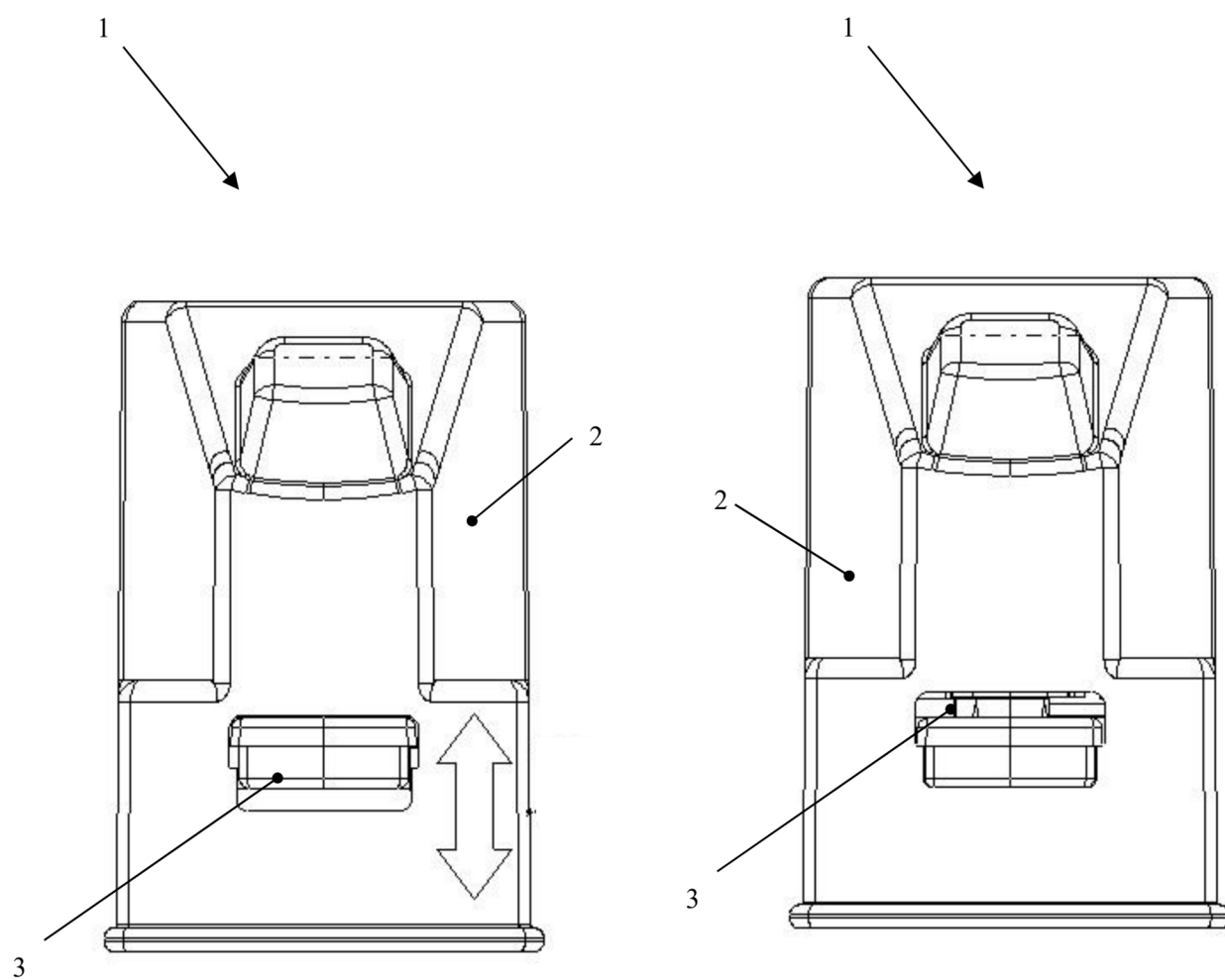


FIG. 6



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Application Number

EP 26 16 9009

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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		9 September 2026	Cruyplant, Lieve
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