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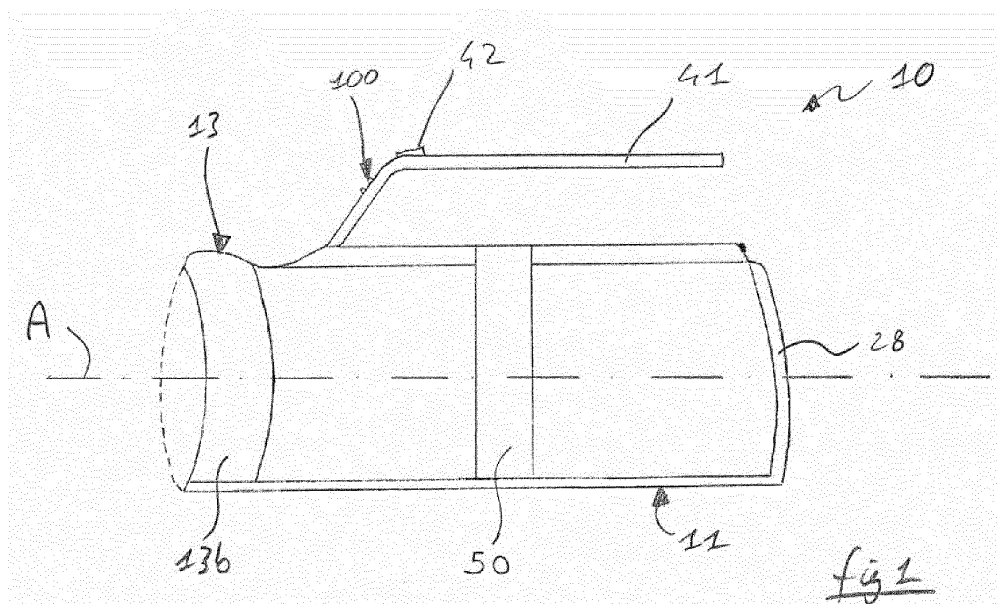
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(54) **Collection device**

(57) A collection device (10), comprising:
- a box-shaped containment body (11) equipped with an entry mouth (13);
- an inner body (14) slidably housed in the containment body (11) and equipped with a front opening (16) and with a lower opening (17);
- at least one hatch (18a, 18b) hinged to the inner body (14) and able to close the front opening (16) of the latter;
- a blade (21) slidably connected to the inner body (14) and engaging the lower opening (17) of the latter;
- first motor means (19) to actuate the sliding of the inner body (14) with respect to the containment body (11) between a first position, in which the inner body (14) extends from the entry mouth (13) of the containment body (11),

and a second position, in which the inner body (14) is housed in the containment body (11);
- kinematic means (20) to actuate the hatch (18a, 18b) to move into an open position, when the inner body (14) slides from the second position to the first position, and into a closed position, when the inner body (14) slides from the first position to the second position;
- second motor means (22) to actuate the sliding of the blade (21) with respect to the inner body (14) between a third position, in which the blade (21) is distanced from the front opening (16) of the inner body (14), and a fourth position, in which the blade (21) is substantially in abutment on the lower edge of the hatch (18a, 18b) with the latter being in the closed position.



Description

Field of application

[0001] The present invention concerns a collection device, according to the preamble of the independent claim.

[0002] The collection device according to the present invention is intended to be advantageously used for collecting and for bagging filth from the ground and in particular for collecting solid faeces of pets.

[0003] The collection device according to the invention is especially intended to be used by owners of dogs or other pets for collecting solid faeces dropped, particularly, in public areas.

[0004] Therefore, the present invention belongs to the field of devices for collecting faeces of pets.

State of the art

[0005] Nowadays, faeces of pets are collected with hand shovels, like those that are used at home for collecting rubbish, or with plastic bags with the use of gloves, or with other material at hand and in most cases the filth is not collected but rather left where it is. Through the experience of their daily routine, animal owners have become dissatisfied, after picking up filth, concerning the feeling of dirtiness and poor hygiene and the fear of unpleasant smells, probably related to the risk of getting infections; the same also goes for the low practicality of classic shovels, which once used become dirty, do not follow cleaning and hygiene standards, in addition to the fact that they are inconvenient to clean. Therefore there is almost direct contact with the filth, with the hands and often the feeling of unease and of being dirty has led to the filth being left where it is, with the risk of even getting a fine, due to the higher respect for the environment nowadays. Currently, on the market, there are complex devices, such as a device with pincers, at one end, on the jaws of which a collection bag is fitted and mounted at the end of a stick equipped with a handle that acts upon the pincers for collecting the filth. This device has been found, in practice, to be impractical, bulky to carry around and not effective when collecting, with the risk of having to carry out the operation many times in order to obtain a full cleaning.

[0006] A last recent finding is a suction device for collecting faeces in a bag. Such a device has the drawbacks of being structurally complex and bulky. Moreover, when picking up the filth, the front part of this device comes into contact with the faeces of the animal thus becoming dirty and leading to a consequent inconvenience, since once the collection operation has finished the device must be cleaned for hygiene purposes, for a correct operation for the subsequent use.

[0007] Moreover, the suction device, in everyday use, leads to the impregnation of odours and micro-filth inside the device itself.

[0008] Patent FR 2839325 describes a further collec-

tion device of the known type, comprising a hollow containment body that is equipped, at the front, with a front opening, and a drawing body which is slidably inserted inside the containment body and that is able to be actuated to come out from the latter through the aforementioned front opening, to draw the faeces from the ground, and to go back into the containment body itself so as to deposit the drawn faeces.

[0009] The collection device, moreover, comprises a holding stick that is mounted vertically on the containment body and carrying, mounted at its upper end, a control lever, which is connected to the drawing body, by means of a connection cable passing inside the stick, and is able to be actuated by a user so as to move the drawing body itself.

[0010] In particular, the drawing body has the shape of a hollow box and is equipped, on its bottom, with a lower opening, facing towards the ground, through which the faeces to be collected are inserted inside it when the drawing body is extracted from the containment body.

[0011] Operatively, in order to collect the faeces from the ground, the user must, by means of the control lever, make the drawing body come out from the containment body, and therefore rest the collection device on the ground with the drawing body positioned above the faeces so as to insert them inside the drawing body through the lower opening of the latter. Subsequently, the user must, by means of the control lever, make the drawing body go back inside the containment body, so that the drawing body pushes the faeces inside the containment body itself.

[0012] One drawback of the collection device described in patent FR 2839325 comes from the fact that it is not practical to use, since it is necessary, in particular, to make the drawing body move many times and to lift and rest the device back on the ground so as to collect the faeces.

[0013] A further drawback of this collection device of the known type is related to the fact that it is bulky and not easy to transport, in particular, since it requires a holding stick to be transported and used.

[0014] A further drawback of this device of the known type is due to the fact that it is constructively complex and costly to make.

Presentation of the invention

[0015] In this situation, the problem forming the basis of the present invention is therefore that of avoiding the drawbacks shown above by devising a collection device that allows the user to not come into direct contact with the material to be collected.

[0016] A further purpose of the present invention is that of devising a collection device that makes it possible to freely bring animals to public and private places, feeling perfectly at ease, since it is easy to use and handle, clean and hygienic.

[0017] A further purpose of the present invention is that

of devising a collection device that makes it possible to make the removal of faeces of a pet, needing to evacuate in public areas, easy and convenient, also avoiding the risk of receiving fines for having soiled the environment.

[0018] These and yet other purposes are achieved with a collection device, object of the present invention according to the claims below.

Brief description of the drawings

[0019] The technical characteristics of the finding, according to the proposed purposes, can be clearly seen in the content of the claims below and the advantages thereof shall become clearer from the detailed description of a preferred, but not exclusive embodiment, of a collection device according to the finding, illustrated as an example and not for limiting purposes, in the attached drawing tables, in which:

- figure 1 illustrates a collection device according to the present invention in a perspective side view;
- figure 2 illustrates a detail of the collection device of figure 1, concerning the entry mouth of the containment body for fitting the bag, in a perspective side view;
- figure 3 illustrates a detail of the collection device of figure 1, concerning the entry mouth of the containment body, in a perspective front view;
- figure 4 illustrates a detail of the collection device of figure 1, concerning the containment body, in a perspective view from below;
- figure 5 illustrates a detail of the collection device of figure 1, concerning the inner body, in a perspective view from one side;
- figure 6 illustrates a detail of the collection device of figure 1, concerning the inner body, in a perspective sectioned side view;
- figure 7 illustrates a cross-section view of the inner body of the collection device object of the present invention;
- figure 8 illustrates the collection device of figure 1 with some parts removed so as to better highlight others;
- figure 9 illustrates a detail of the collection device of figure 1, concerning the blade, in a perspective view from above;
- figure 10 illustrates the blade of figure 9 in a top side view;
- figure 11 illustrates a perspective schematic view of the collection device of figure 1 with some parts removed so as to better highlight others;
- figure 12 illustrates a detail of the collection device of figure 1, relative to the actuation motors of the blade and of the inner body, in a top side view;
- figure 13 illustrates the collection device of figure 1 in a longitudinal section view;
- figure 14 illustrates a detail of the collection device of figure 1 concerning the containment body, seen

in a perspective view from above;

- figures 15 to 20 illustrate, in a schematic manner, successive operation steps of the collection device of figure 1.

Detailed description of a preferred embodiment

[0020] With reference to the attached drawings reference numeral 10 wholly indicates a collection device that is intended to be advantageously used for collecting and bagging filth to be removed from the ground and in particular for collecting solid faeces of pets. The collection device 10 is especially able to be used by the owners of dogs or other pets for collecting solid faeces that are dropped by the latter in public areas, like for example in public parks, on the pavement, etc.

[0021] In accordance with the present invention the collection device 10 comprises a box-shaped containment body 11, that is equipped with an end wall 12, with an entry mouth 13 and that is elongated in a main direction of extension A.

[0022] The end wall 12 has a recess 12a that extends from the entry mouth 13 parallel to the direction of extension A.

[0023] The collection device 10 moreover, comprises an inner body 14 that is at least partially housed in the containment body 11 to which the inner body 14 is mechanically connected in a sliding relationship along the direction of extension A.

[0024] In other words, the inner body 14 is able to slide in the containment body 11. Advantageously, the inner body 14 is slidably connected to the containment body 11 by means of guide means that are placed between the two bodies 11, 14 themselves and that are suitable for guiding the sliding of the inner body 14 parallel to the direction of extension A. In particular, such guide means comprise at least one pair of longitudinal ribbings 44 (illustrated in the embodiment of figure 3) which project out from the inner surface of the containment body 11 at opposite sides of the latter, project parallel to the direction of extension A and are slidably inserted in homologous longitudinal grooves 43 (illustrated in the embodiment of figure 11) formed on the outer surface of the inner body 14.

[0025] The inner body 14 is equipped with an inner cavity 15, with a front opening 16 and with a lower opening 17, which is arranged above the recess 12a of the end wall 12 of the containment body 11 and extends along the inner body 14 from the front opening 16 parallel to the direction of extension A.

[0026] Moreover, the collection device 10 comprises at least one hatch 18a, 18b that is hinged to the inner body 14 and that is able to close the front opening 16. Preferably, in accordance with the preferred, but not exclusive embodiment, illustrated in the attached figures, the collection device 10 comprises two hatches 18a and 18b that face one another and that are each hinged to one side of the inner body 14.

[0027] The collection device 10 also comprises first motor means 19 to actuate the sliding of the inner body 14 with respect to the containment body 11 parallel to the direction of extension A of the containment body 11.

[0028] In particular, the first motor means 19 are able to actuate a sliding of the inner body 14 with respect to the containment body 11 between a first position in which the inner body 14 extends from the entry mouth 13 of the containment body 11, to a second position in which the inner body 14 is housed inside the containment body 11.

[0029] In other words, operationally the first motor means 19 are able to selectively actuate the extension of the inner body 14 from the containment body 11 or the drawing of the inner body 14 inside the containment body 11.

[0030] The function of the inner body 14, as shall become clearer from what is described in the rest of the description, is that of extending from the containment body 11 so as to collect filth and subsequently go back inside the containment body 11 to collect the filth in the latter.

[0031] In accordance with the present invention, the collection device 10 also comprises kinematic means 20 to actuate the hatches 18a and 18b and in particular to move the latter between an open position, when the inner body 14 slides from the second position to the first position, and a closed position, when the inner body 14 slides from the first position to the second position.

[0032] In the closed position, the hatches 18a and 18b advantageously close the front opening 16 of the inner body 14, on the other hand, in the open position the hatches 18a and 18b are separated and the front opening 16 is free.

[0033] The collection device 10 moreover comprises a blade 21 that is mechanically connected to the inner body 14. In detail, the blade 21 slidably engages, parallel to the direction of extension A, the lower opening 17 of the inner body.

[0034] Moreover, the collection device 10 according to the present invention comprises second motor means 22 to actuate the sliding of the blade 21 with respect to the inner body 14 parallel to the direction of extension A between a third position, in which the blade 21 is distanced from the front opening 16 of the inner body 14, and a fourth position in which the blade 21 is substantially in abutment on the lower edge of the hatches 18a and 18b, wherein said hatches are in the closed position.

[0035] Preferably, the collection device 10 also comprises a bag 23, preferably made from biodegradable material, which is housed in the inner cavity 15 of the inner body 14 and has a filling opening 24 that is mechanically fixed in a removable manner to a front lip 25 of the blade 21 in a way such as to be closed by the blade 21 cooperating with the hatches 18a and 18b when the blade 21 is in the fourth position.

[0036] The collection device 10, moreover, advantageously comprises means for closing the filling opening 24 of the bag 23 which comprise:

- at least one string 26 that is mechanically associated with the filling opening 24 and is able to close it by throttling and
- a small winch 27 for winding the string 26, which is fixed to the containment body 11 and that can be actuated by third motor means 45 to pull the string 26 so as to close the bag 23.

[0037] More in detail, the containment body 11 preferably has a tubular structure and is advantageously equipped with a rear lid 28 on which the small winch 27 is fixed, so that when the small winch 27 (actuated by the third motor means 45) has pulled the string 26 and has thus closed the bag 23, the user can open the rear lid 28 and extract the closed bag 23 from the collection device 10.

[0038] Moreover, the entry mouth 13 of the containment body 11 is advantageously provided with a slit 13a in which to insert the filling opening 24 of the bag 23 and with a convex portion 13b on which to fold back the filling opening 24 itself, so that, during the extension of the inner body 14 from the containment body 11, i.e. when passing from the second to the first position of the inner body 14, the hatches 18a and 18b, which are open, insinuate between the bag 23 and the containment body 11 and slip the filling opening 24 out from the entry mouth 13 bringing the filling opening 24 itself towards the filth to be collected.

[0039] The kinematic means 20 advantageously comprise a shaft 29 for each hatch 18a and 18b having one end that is articulated to the relative hatch 18a and 18b and mechanically connected to the containment body 11 in sliding relationship with the sliding parallel to the direction of extension A. The containment body 11 is preferably equipped with two end stops 30a and 30b that are able to limit the sliding of the shafts 29 along the containment body 11.

[0040] In particular, of these end stops 30a and 30b, the first one 30a, is able to block the sliding of the shaft 29 with respect to the containment body 11 when the inner body 14 is near to the first position, to close the hatches 18a and 18b.

[0041] The second end stop 30b is able to block the sliding of the shaft 29 with respect to the containment body 11 when the inner body 14 is near to the second position to open the hatches 18a and 18b.

[0042] Advantageously, the second end stop 30b is equipped with damping means 32, preferably made up of a spring, that are able to dampen the stopping of the shaft 29 when it reaches the second end stop 30b itself.

[0043] In other words, operationally the shafts 29 bring the hatches 18a and 18b into the closed position when the inner body 14 is in the first position, i.e. when it is extended from the containment body 11, and vice versa bring the hatches 18a and 18b into the open position when the inner body is in the second position, i.e. when it is retracted inside the containment body 11.

[0044] The kinematic means 20 preferably also comprise elastic elements 31, preferably springs, for coun-

teracting the passage of the hatches 18a and 18b between the open position and the closed position, to stably keep the hatches 18a and 18b selectively in the open position or in the closed position.

[0045] More in detail, the elastic elements 31 are advantageously able to stably keep the hatches 18a and 18b in the open position while the inner body 14 slides from the second position (in which it is retracted inside the containment body 11) to the first position (in which it is extended from the containment body 11), and similarly are able to stably keep the hatches 18a and 18b in the closed position while the inner body 14 slides from the first to the second position.

[0046] The first motor means 19 advantageously comprise a first reversible electric motor 33, that is fixed to the containment body 11 and is operatively coupled with at least one first gear wheel 34 that is engaged with at least one first rack toothing 35 that is mechanically fixed to the inner body 14. The first electric motor 33 is able to be actuated to make the inner body 14 slide between the aforementioned first and second position so as to actuate the extension and the retraction with respect to the containment body 11.

[0047] The second motor means 22 preferably comprise a second reversible electric motor 36, that is fixed to the containment body 11 and is operatively coupled with at least one second gear wheel 37 that is engaged with at least one second rack toothing 38 that is mechanically fixed to the blade 21. The second electric motor 36 is able to be actuated to make the blade 21 slide between the third and the fourth position i.e. to bring it in contact with the closed hatches 18a and 18b or to retract it, distancing it from the latter. Preferably, moreover, the collection device 10 comprises light emission means 39, preferably LEDs, to illuminate at the front of the entry mouth 13 of the containment body 11 so as to facilitate the collection of filth even in poor lighting conditions, like for example in the evening or at night time.

[0048] Moreover, the collection device 10 advantageously also comprises:

- a control device 40 that is electrically connected to the electric motors 33 and 36 and to the light emission means 39 to control its operation;
- electric power supply batteries 200 that are electrically connected to the control device 40, to the electric motors 33, 36, to the third motor means 45, and to the light emission means 39 to electrically feed them.

[0049] The control device 40 is preferably also connected to the third motor means 45 of the small winch 27, which advantageously comprise a third electric motor 46 that is driven by the control device 40 so as to actuate the small winch 27 in the way that shall be described in greater detail in the rest of the description.

[0050] Advantageously, the collection device 10 is equipped with a handle 41 that is fixed to, or is integral

with, the containment body 11, said handle 41 preferably having means 100 for indicating the charge level of the aforementioned batteries 200 fixed to it, said indicator means 100 advantageously being made up of an array of LEDs.

[0051] The handle 41 is preferably equipped with a button 42 that is operatively connected to the control device 40 so as to drive it.

[0052] Moreover, the containment body 11 advantageously has an upper seat 300 in which the control device 40 and the batteries 200 are advantageously housed.

[0053] The containment body 11, the inner body 14 and the blade 21 are preferably made from plastic material.

[0054] Advantageously, the collection device 10 also has a band 50 for supporting leashes, fixed to the containment body 11.

[0055] The collection device 10, object of the present invention and described so far, mostly in terms of its structure, is operationally intended to operate as shall be specified in the rest of the description.

[0056] The collection device 10 is held by the handle 41, the bag 23 is fitted from the entry mouth 13 with the fold of the bag 23 inserted in the slit 13a of the convex portion 13b and in the front lip 25 of the blade 21, the rear lid 28 is opened and the string 26 of the bag 23 is fitted in the small winch 27.

[0057] Then, the rear lid 28 is closed and the small winch 27 is pulled by the third electric motor 46 so as to keep the bag 23 in place.

[0058] With particular reference to figures 15 to 20, in order to collect the filth S the user places the collection device 10 on the ground in front of the filth S, then he actuates the control device 40 (preferably through the button 42), which will start up the two electric motors 33 and 36, which begin to push the inner body 14 outside the containment body 11, and the blade 21.

[0059] By coming out from the containment body 11, the hatches 18a and 18b (carried by the inner body 14) and the blade 21 hook the bag 23 accompanying it outside the containment body 11 itself.

[0060] The inner body 14 is pushed out until its first position has been reached, in which it has the maximum extension from the containment body 11. At this point, the shafts 29 close the hatches 18a and 18b and, in turn, also the bag 23.

[0061] The elastic elements 31 keep the hatches 18a and 18b of the inner body 14 in place, when these begin to go back and collect the filth. The blade 21, that is suitable for having an advancing movement that is behind with respect to the hatches 18a and 18b, continues to advance towards the closed hatches 18a and 18b, so that, while the hatches 18a and 18b move back, the blade 21 moves forwards.

[0062] When the blade 21 goes into abutment against the hatches 18a and 18b, both the blade 21 and the hatches 18a and 18b begin to return together inside the containment body 11. Advantageously, the return movement

of the inner body 14 and of the blade 21 inside the containment body 11 is carried out in an automatic manner by the control device 40. In particular, after the containment body 14 has reached its first position (extended) and after that the hatches 18a and 18b have been brought back into the closed position, the control device 40 automatically actuates the two electric motors 33 and 36 so as to bring the inner body 14 and the blade 21 back inside the containment body 11. Before the complete return of the inner body 14 inside the containment body 11, the shafts 29 actuate the opening of the hatches 18a and 18b, which occurs in a dampened and slow manner so that, during the closing step, the bag 23 is not released too quickly or does not become damaged.

[0063] At this stage, the control device 40 actuates the third electric motor 46 of the small winch 27 that begins winding the string 26 of the bag 23, bringing the dirty parts back inside the bag 23 itself and thus preventing it from getting dirty in the subsequent removal of the bag 23 from the containment body 14.

[0064] Then the control device 40 drives the small winch 27 to release the string 26 and the user can extract the bag 23 from the collection device through the rear lid 28.

[0065] In practice it has been seen how a collection device according to the finding reaches the task and the proposed purposes.

Claims

1. Collection device (10) **characterised in that** it comprises:

- a containment body (11) equipped with an end wall (12), an entry mouth (13) and elongated in a main direction of extension (A), said end wall (12) having a recess (12a) that extends from said entry mouth (13) parallel to said direction of extension (A);
- an inner body (14) at least partially housed in said containment body (11) to which said inner body (14) is slidably connected along said direction of extension (A), said inner body (14) being equipped with an inner cavity (15), with a front opening (16) and with a lower opening (17) which extends from said front opening (16) parallel to said direction of extension (A);
- at least one hatch (18a, 18b) hinged to said inner body (14) and able to close said front opening (16);
- a blade (21) engaging said lower opening (17), overlapping said end wall (12) and slidably connected to said inner body (14) parallel to said direction of extension (A);
- first motor means (19) to actuate the sliding of said inner body (14) with respect to said containment body (11) parallel to the direction of

extension (A) of said containment body (11), between a first position in which said inner body (14) extends from the entry mouth (13) of said containment body (11), and a second position in which said inner body (14) is housed in said containment body (11);

- kinematic means (20) to actuate said at least one hatch (18a, 18b) between an open position and a closed position,

- second motor means (22) to actuate the sliding of said blade (21) with respect to said inner body (14) parallel to said direction of extension (A) between a third position, in which said blade (21) is distanced from said front opening (16) of said inner body (14), and a fourth position in which said blade (21) is substantially in abutment on the lower edge of said at least one hatch (18a, 18b), with the latter being in said closed position.

2. Collection device (10) according to claim 1, **characterised in that** it comprises a bag (23) housed in the inner cavity (15) of said inner body (14) and having a filling opening (24) mechanically fixed in a removable manner to a front lip (25) of said blade (21) and to the entry mouth (13) of said containment body (11).

3. Collection device (10) according to claim 2, **characterised in that** it comprises closing means of the filling opening (24) of said bag (23) comprising:

- at least one string (26) mechanically associated with said filling opening (24) and able to close it by throttling, and
- a small winch (27) for winding said string (26), fixed to said containment body (11) and able to be actuated by third motor means (45) to pull said string (26) to close said bag (23).

4. Collection device (10) according to any one of the previous claims, **characterised in that** it comprises two of said hatches (18a, 18b) facing one another and each hinged to a side of said inner body (14).

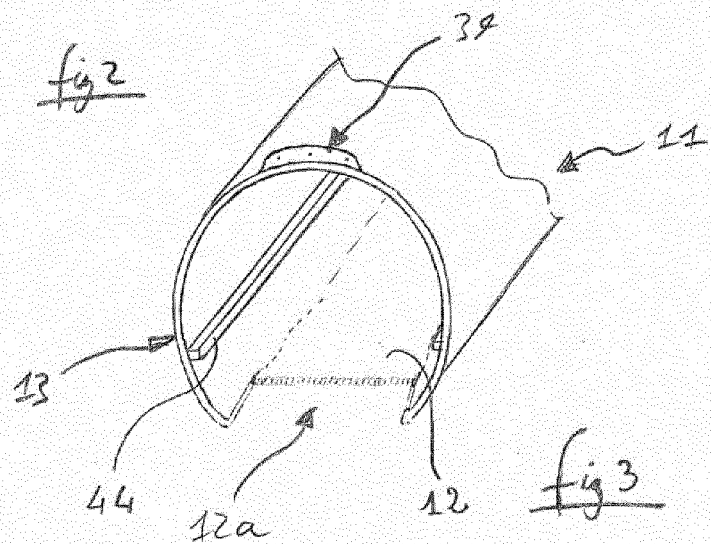
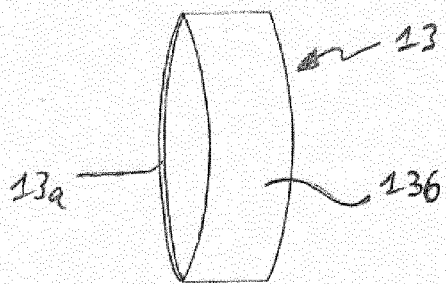
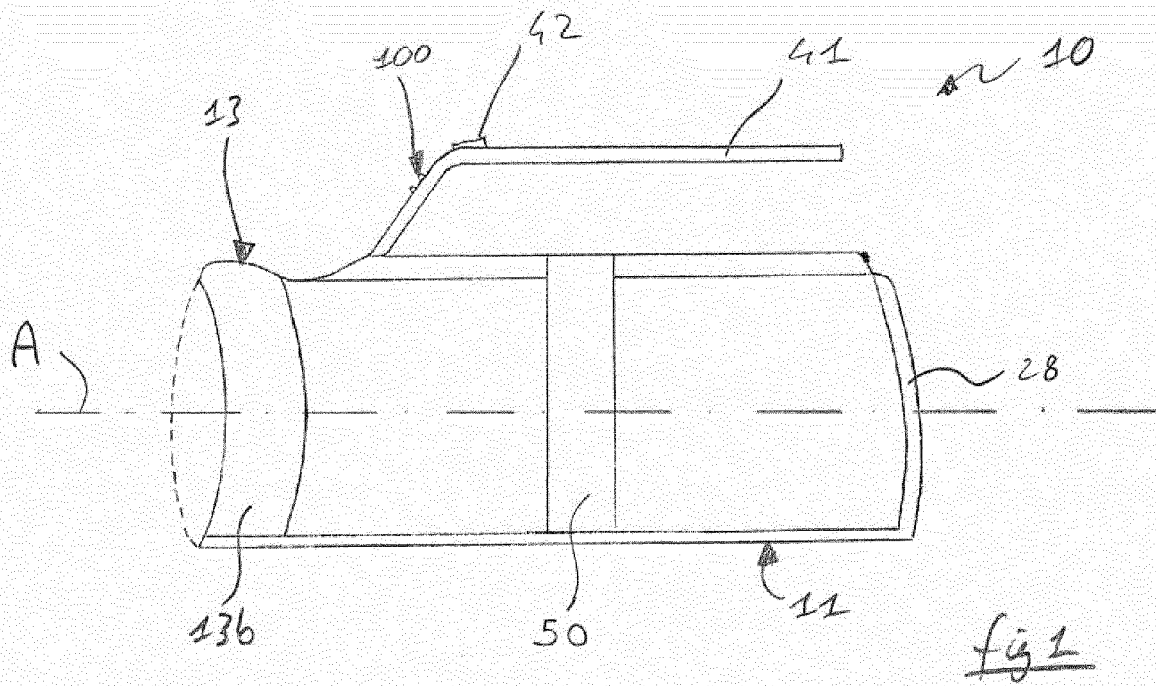
5. Collection device (10) according to any one of the previous claims, **characterised in that** said kinematic means (20) comprise, for each of said at least one hatch (18a, 18b), a shaft (29) having an extremity articulated to said at least one hatch (18a, 18b) and slidably connected to said containment body (11) parallel to said direction of extension (A), said containment body (11) being equipped with two end sliding stops (30a, 30b) for said shaft (29) of which:

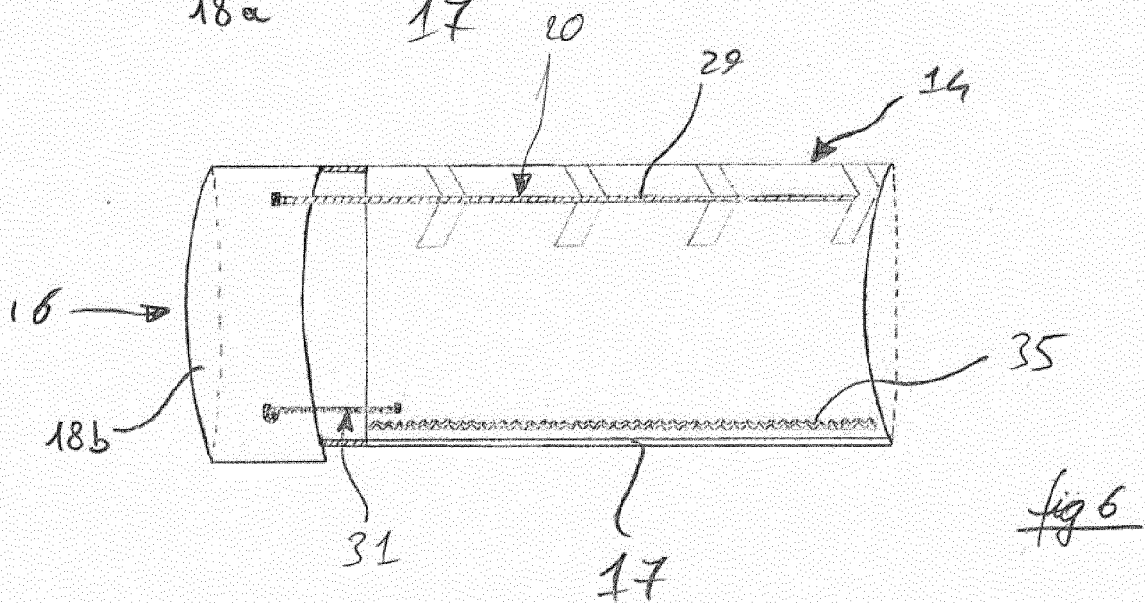
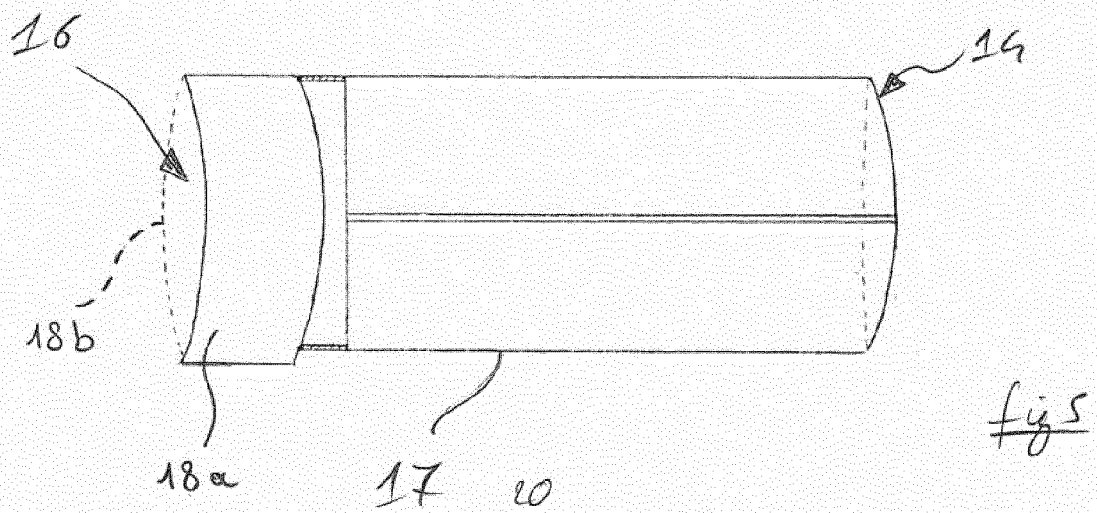
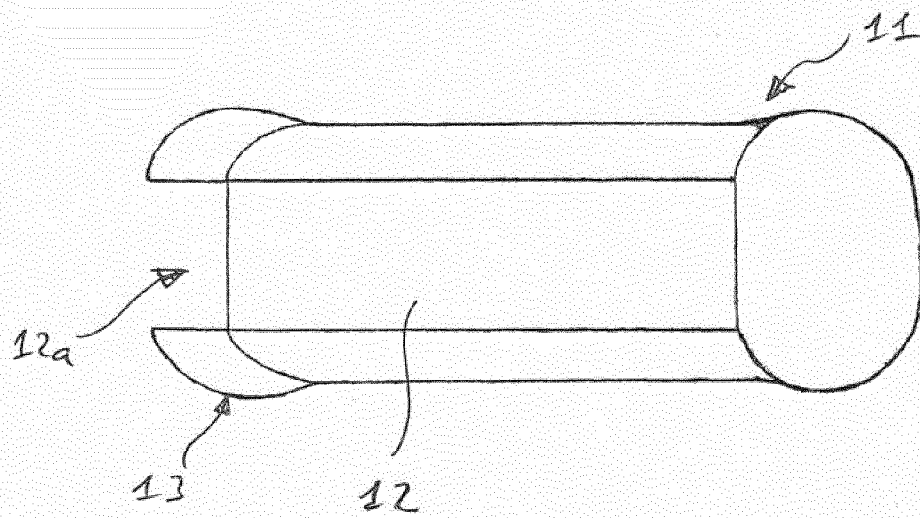
- a first end stop (30a) able to block the sliding of said shaft (29) with respect to said containment body (11) with said inner body (14) near to said first position to actuate said at least one

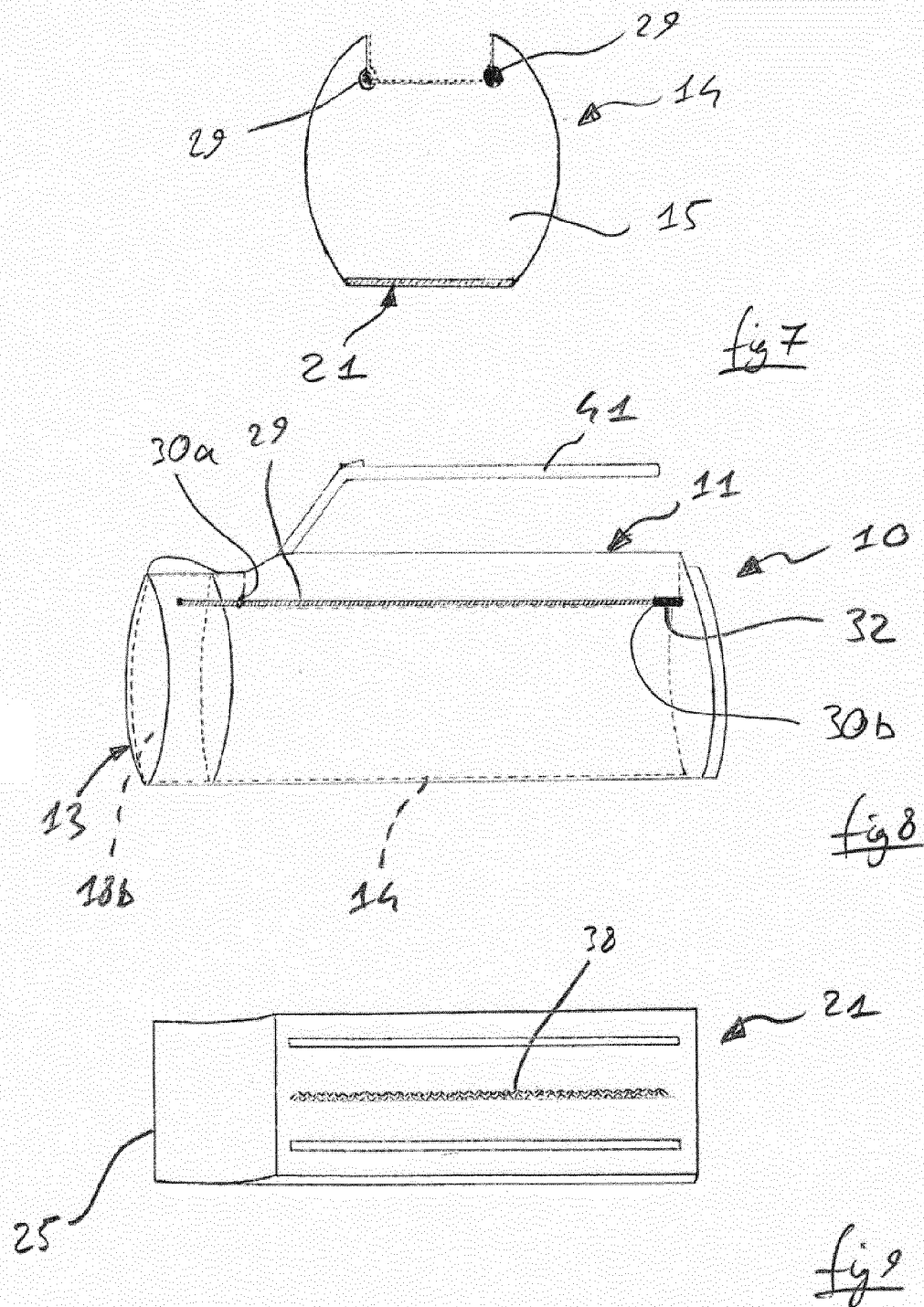
hatch (18a, 18b) closed;

- a second end stop (30b) able to block the sliding of said shaft (29) with respect to said containment body (11) with said inner body (14) near to said second position to actuate said at least one hatch (18a, 18b) open. 5

6. Collection device (10) according to any one of the previous claims, **characterised in that** said kinematic means (20) comprise elastic elements (31) for counteracting the passing of said at least one hatch (18a, 18b) between said open position and said closed position, to stably keep said hatch (18a, 18b) selectively in said open position or in said closed position. 10 15
7. Collection device (10) according to any one of the previous claims, **characterised in that** said first motor means (19) comprise a first reversible electric motor (33) fixed to said containment body (11) and operatively coupled with at least a first gear wheel (34) engaged with at least a first rack toothing (35) mechanically fixed to said inner body (14), said first electric motor (33) being able to be actuated to make said inner body (14) slide between said first position and said second position. 20 25
8. Collection device (10) according to any one of the previous claims, **characterised in that** said second motor means (22) comprise a second reversible electric motor (36) fixed to said containment body (11) and operatively coupled with at least a second gear wheel (37) engaged with at least a second rack toothing (38) mechanically fixed to said blade (21), said second electric motor (36) being able to be actuated to make said blade (21) slide between said third position and said fourth position. 30 35
9. Collection device (10) according to any one of the previous claims, **characterised in that** it comprises light emission means (39) to illuminate the front of the entry mouth (13) of said containment body (11). 40
10. Collection device (10) according to claims 3, 7, 8 and 9, **characterised in that** it comprises: 45
 - a control device (40) electrically connected to said electric motors (33, 36), to the third motor means (45) of said winch (27), and to said light emission means (39) to control them; 50
 - electric power supply batteries (200) electrically connected to said control device (40), to said electric motors (33, 36), to said third motor means (45) and to said light emission means (39) to electrically feed them. 55







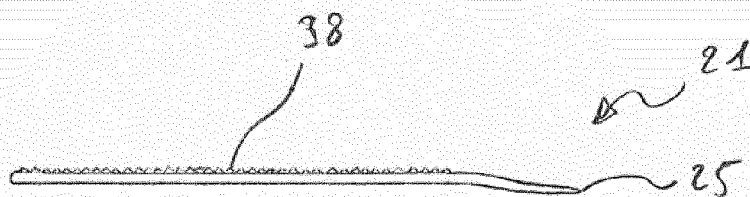


fig 10

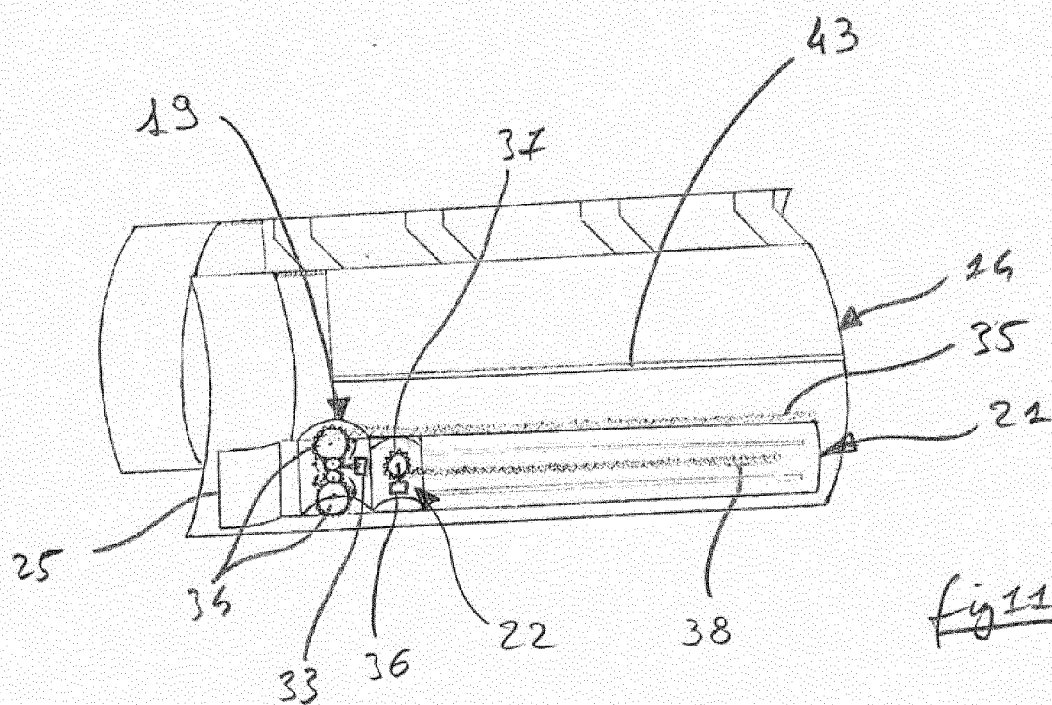


fig 11

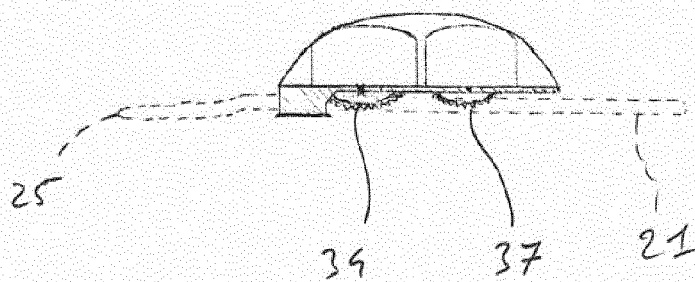
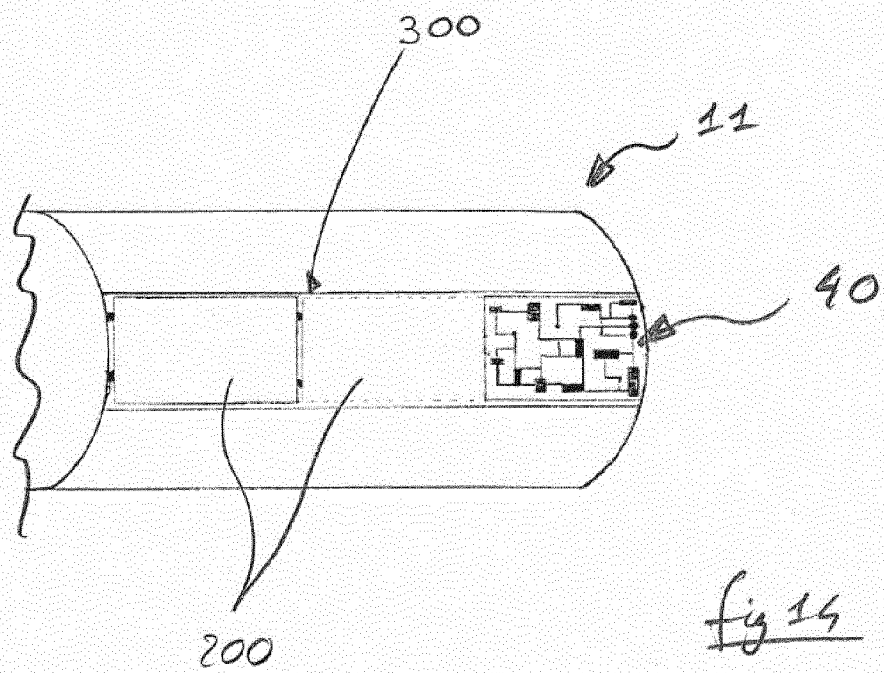
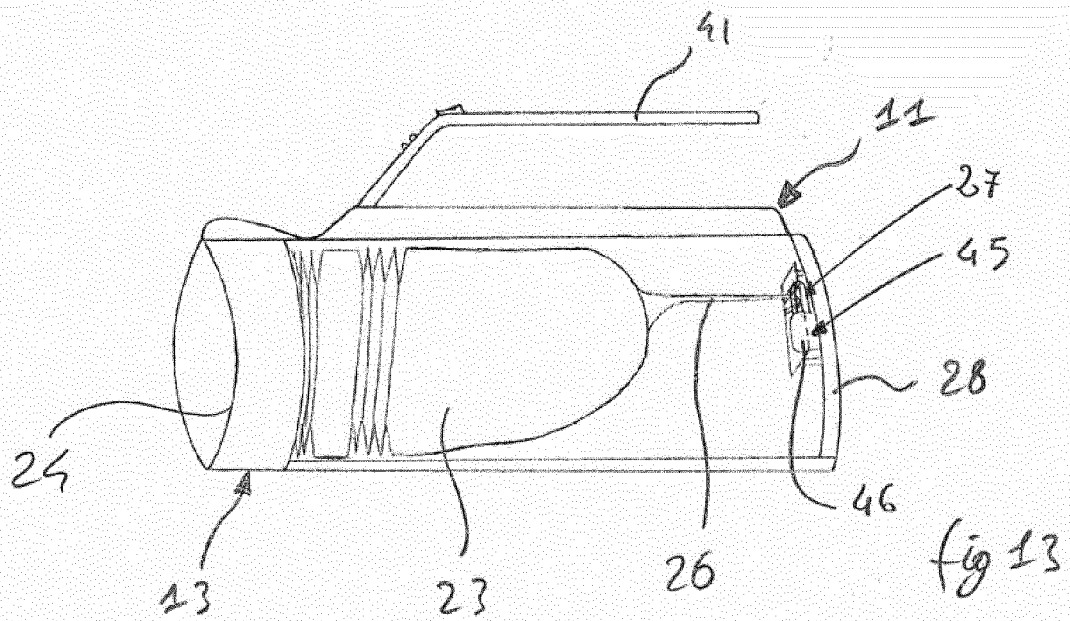
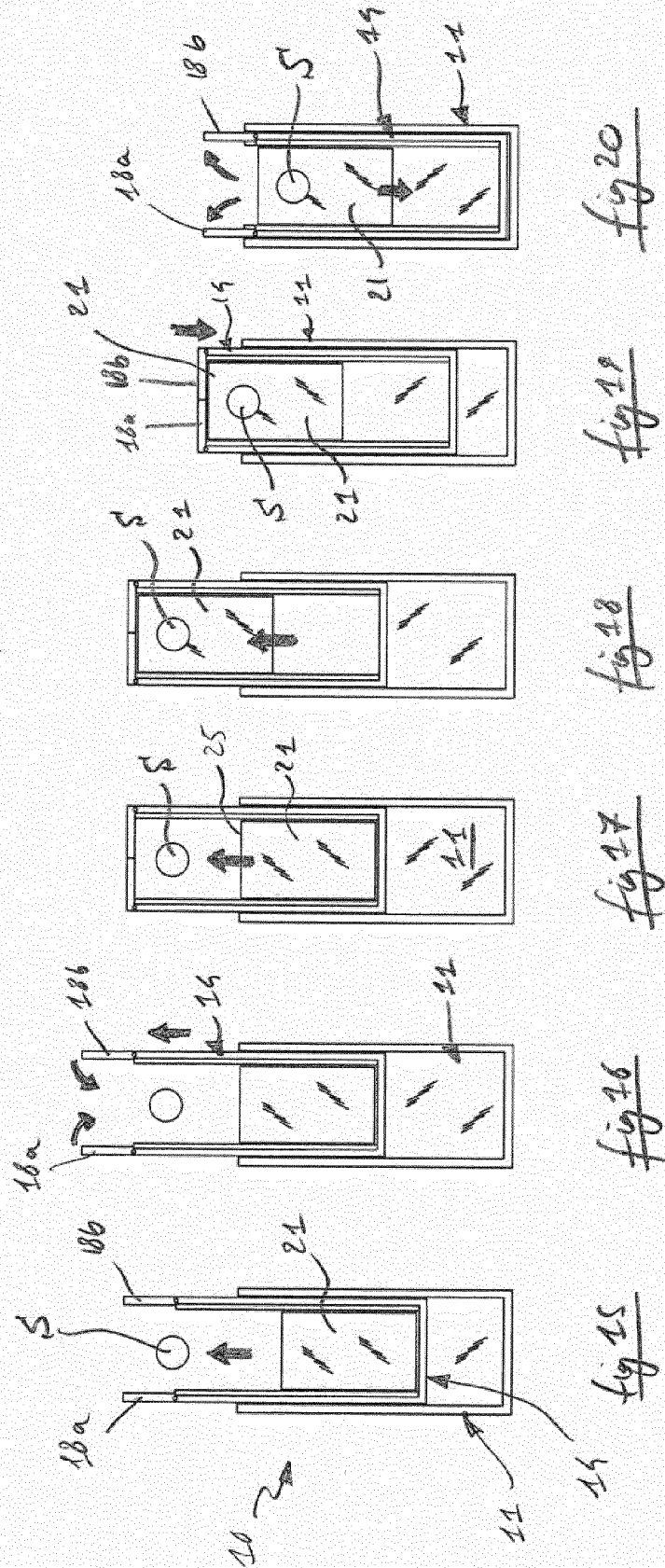


fig 12







EUROPEAN SEARCH REPORT

Application Number
EP 13 17 1092

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			E01H
Place of search		Date of completion of the search	Examiner
Munich		27 September 2013	Saretta, Guido
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27-09-2013

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