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## (54) A rotatable adaptor module with signal for a fire extinguisher

(57) The invention is a rotatable adapter (1) for maintenance of a fire extinguishant (6) in a portable fire extinguisher (5) comprises:
A rotatable adapter (1) is arranged in a way that the fire extinguishant (6) in a portable fire extinguisher (5) is either manually (1A), semi-automatic (1B) or automatic (1C) maintained by induce outer forces, such as a movement, a hit, a shock or a vibration in a repeating sequence by time. In this way the intended functionality for the fire extinguishant (6) and the portable fire extinguisher (5) is maintained.

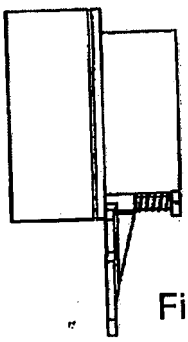

Fig. 4

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## Description

**[0001]** The invention relates to a rotatable adapter with signal for maintenance of a fire extinguishant in a portable fire extinguisher for maintaining the quality of the extinguishant by time.

## Prior art

**[0002]** The insurance industry claims that fire extinguishers should be turned and shaken at least 2-4 times a year.

**[0003]** Portable fire extinguishers are generally coming with a wall adaptor. A model of a wall adaptor may be arranged with a bottom anchor and a clamp device in the holder top. Another model of a wall adaptor for portable fire extinguishers may be arranged with a pin-hanger attachment as a simple pull-handle.

**[0004]** The consumer need to manually lift down the portable, but heavy, fire extinguisher and turn it up-side down. In this position the device should be shaken to, in this way, release the extinguishant that may have fastened inside the bottom of the bottle, as shown in Fig. 1.1. The shaking should go on until one can feel that the content responds to the external movement and takes a "fluidized form". Sometimes the content of the fire extinguisher may petrify so that more repetitions of the operation are needed. If the desired effect is not achieved the authority in charge and the insurance company urge to dispose the portable fire extinguisher and replace it.

**[0005]** DE 2723735 describes an obvious work-shop rack with a maintenance tool for refilling or emptying a fire extinguisher. The rack has a rotatable holder for a fire extinguisher and a refill container or a bag arranged opposite and axially to the fire extinguisher. The rack comprises a vibrator placed near the rotation axis arranged for vibrate the container to pour the powder easier from the one to the other container.

**[0006]** CN 201168363 describes a fire extinguisher arranged with an internal agitator. An outer steering wheel in the bottom of the extinguisher runs the agitator. The apparatus may be turned 45 degrees at the time at a rotating board.

**[0007]** EP 1527813A1 describes a portable rack on wheels, wherein the rack is arranged with a rotatable holder for temporary holding a fire extinguisher which then may be turned all the way around to the desired position. Further the rack is arranged with an oscillating arrangement comprising a vibrator with a hydraulic, pneumatic or electric arrangement. The fire extinguisher may then be vibrated in different orientations to shake and loosen sedimented powder. The oscillating is controlled from a unit in the mainframe which may also be a power supply for instance electrical energy, to the oscillating unit. The fire extinguisher has to be placed temporary in the maintenance rack.

**[0008]** The patent publication DE 4204335 relates to a portable arrangement for carrying out repairs and maintenance of fire extinguishers. The fire extinguisher is placed in a fastening device in a revolving stand. The revolving stand has a hole for a locking pin in a way that the apparatus may be turned and locked in a desired position.

**[0009]** KR200434980 (Y1) shows a bracket for a fire extinguisher. The fire extinguisher has a clevis hanger in the upper and the lower region so that it may be hung in its upright position or up-side down at the wall.

**[0010]** ES2006471 shows a portable mixing device for a cylindrical container for chemical solids. The container may be tilted and rolled in several positions using of a motor, and be vibrated using a piezoelectric motor. Small agitation bullets are added to the container helping the chemicals to be mixed.

## Problems related to prior art

**[0011]** A substantial problem by known art related to a wall mounted fire extinguisher is that the consumer manually has to lift the fire extinguisher down from the wall bracket to carry out the maintenance process. When the fire extinguisher is lifted off the bracket it should be turned upside down and shaken to the required effect is achieved. This may be difficult, especially for older persons to accomplish. This is most probably the reason of why recommended maintenance sequence is not always carried out.

**[0012]** Another substantial problem related to a wall mounted fire extinguisher as in prior art is that when the maintenance is not carried out as recommended for a wall mounted fire extinguisher the extinguishant may be influenced by gravity force and be turned into a petrified mass as shown in Fig. 1.1 The fire extinguisher will then not work as intended with following consequences.

**[0013]** A third substantial problem related to a wall mounted fire extinguisher as in prior art is that some designs comprise a clamping device from which it may be difficult to release the fire extinguisher.

**[0014]** If a free-standing rack should be used to move the fire extinguisher to utilize methods known in the art to shake loose the fire extinguishant, such an operation must be planned. The rack should be brought to the fire extinguisher at its location and be released from the bracket at the wall and be lifted and moved into the free-standing maintenance rack. Thus this is not a good solution for a simplified maintenance. If a physical agitator inside the fire extinguisher should be used to stir the fire extinguishant the already existing fire extinguishers have to be rebuild or the new ones should be designed in another way. The discussed prior art will therefore not solve the requirements of today in a proper way.

## Short summary of the invention

**[0015]** The invention relates to a rotatable adapter (1) for a portable fire extinguisher (5) wherein the adapter (1) comprises a wall bracket (2) for permanent mounting at a wall, a rotatable bearing (1.2,1.1,1.8,1.10) with a horizontal rotation axis (0) arranged on the wall bracket (2). a fastening bracket (3, 4) for the fire extinguisher (5) arranged at the rotatable bearing (1.2, 1.1, 1.8, 1.10) and wherein the new and characteristic features are that the rotatable bearing (1.2,1.1,1.8,1.10) comprises a ratchet mechanism (1.1, 1.9) comprising -a tension spring (1.9) arranged at a fixed shaft (1.8) in the rotatable bearing (1.2,1.1,1.8,1.10) and one or more shock transmitting teeth (1.19) arranged on a rotation disk (1.1) arranged to strain and release the tension spring (1.9) by rotating the fire extinguisher (5) and by that the rotation disk (1.1) around the rotation axis (0) and that the adapter (1) further comprises a signal unit (7) arranged to give one or more alarm signals (7.2).

**[0016]** The rotatable adapter is used for maintenance of a fire extinguishant in a portable fire extinguisher, manually, semiautomatic or automatic. The invention is here presented mounted at a wall by a wall bracket, rotatable adapter and a fastener for a portable fire extinguisher. The rotatable adapter comprises sequential shock transmitting stroke functionality which transmits to the fire extinguishant to prevent transformation into "petrified" mass.

## Advantages related to the invention

**[0017]** An advantage to the invention is that maintenance of the fire extinguishant may be carried out whenever desired since the adapter also is a permanent stand-by arrangement for the fire extinguisher. An advantage to the invention is that maintenance of the fire extinguishant is carried out totally without any other power transmission than the manual rotation movement until the fire extinguisher is rotated minimum 90° and preferably one or more revolutions.

**[0018]** In one embodiment the energy transmission is transferred to a by that tensioned spring which takes the fire extinguisher back to neutral position.

**[0019]** A further advantage by the invention is that all energy transmission with a balanced rotating movement transmits shock transmitting strokes/vibrations to the fire extinguishant by at least a spring and a gear rim.

**[0020]** An advantage by the invention is that relatively heavy portable fire extinguishers easily may be turned almost independent of the age or health of the operators.

**[0021]** An advantage by the invention is that the fire extinguisher is always ready to use since it is not removed from the rotatable adapter for maintenance.

**[0022]** An advantage by a manually operated embodiment of the invention is that the mechanism for rotation is not dependent on electric power supply but a manual energy transmission only.

**[0023]** The apparatus will be well suited for installation in zones classified with explosion risks if it is manufactured in materials that may not cause sparking when in use, and/or with the ratchet spring mechanism sealed and/or manufactured in a spark free material.

**[0024]** Another embodiment may have a motorized and eventually a remote controlled rotating mechanism with, or without, a time controller and by this will be well suited for fire extinguishers installed around in different departments or buildings of a larger operating unit as for instance at a farm, a factory, nursing home etc. A major advantage is then that one may not have manually control routines, but the maintenance of the fire extinguishers may be controlled by a time activated or a remote controlled activator from for instance a control room.

## Short figure captions

**[0025]** The invention is illustrated by the attached figures, wherein

Fig. 1 shows a side elevation of a portable fire extinguisher with an accompanying section illustrating the fire extinguishant, generally powder, and its transformation from a useful and effective mass in the section A-A, to a collapsed useless, ineffective and petrified mass in the sections B-B and C-C.

Fig. 2 shows a side elevation, a frontal view and a perspective elevation view, showing the invention with a wall bracket (2), the rotatable adapter (1), fire extinguisher bracket (3) and a portable fire extinguisher (5) assembled.

Fig. 3 shows a frontal view of the invention in the rotated positions: vertical ground position, 90°, 180° and in 225° with accompanying side elevation view wherein a balanced rotation movement is indicated by dotted lines.

Fig. 4a shows section cuts showing a portion of the invention, either for stroke, shock or vibration. By rotating the outer part of the rotation disc (1.1) the vibration spring is (1.9a, 1.9b 1.9c) tensioned to meet the shock transmitting tooth (1.19) and desired stroke, shock and vibration is transmitted to the fire extinguishant (6) in the portable fire

extinguisher (5). Fig. 4b is a side elevation of a spring tensioned trigger mechanism.

Fig. 5 shows a frontal view of the fire extinguisher in different rotated positions with accompanying side elevations and section views. The figure shows the function of the invention where a portable fire extinguisher (5) shows in selected rotation operating positions. The fire extinguishant is shown as shaded area (6) wherein the distance between the shad lines illustrates the functionality of the fire extinguishant. In the section A-A the illustration shows a fire extinguisher wherein the fire extinguishant is influenced by time and gravity force at the start of a collapsing/ compression stage. The operating sequence starts by rotation. The fire extinguishant (6) has a somewhat "fluid" consistency which freely follows the rotation (section cut B-B, C-C, D-D) and adjusts to the inside shape of the bottle. In this way the fire extinguishant (6) will be turned back into the original consistency and effect, as prescribed by the supplier.

Fig. 6 shows a frontal view of the fire extinguisher in different rotated positions with accompanying side elevations and section views. The figure shows the function of the invention where a portable fire extinguisher (5) shown selected rotation operating positions. The fire extinguishant is shown as shaded area (6) wherein the distance between the shade lines illustrates the functionality of the fire extinguishant (6). In the section A-A the illustration shows a fire extinguisher wherein the fire extinguishant is influenced by time and gravity force with considerable deformation (collapsing), and appears as an ineffective and "petrified" mass. The operating sequence starts (section cut A-A) by rotation and "petrified" fire extinguishant (6) hangs in the "roof". Shock transmitting strokes/vibrations is transmitted via a spring and a cogged wheel to the fire extinguishant (6), loosening and falling to the bottom as shown in the section cut C-C. In this way the fire extinguishant (6) will be turned back into the original consistency and effect as prescribed by the supplier.

Fig. 7a and b show the invention in detail perspective view, a section cut thereof and an exploded perspective view with accompanying section cut and sorted by different variants of operation units (1A, 1B) and by the bracket arrangements (3,4).

- Manual Rotation Disc (1A)
- Semi automatic rotation disk (1B)
- Fire extinguisher magnetic bracket (3)
- Fire extinguisher combination bracket (4)

Fig. 7c shows the invention in detail exploded perspective view of the automatic motorized operating rotating disc motor (1C)

Fig. 8 shows a perspective view of a manual rotatio disc (1A), a semi automatic rotation disc (1B), fire extinguisher magnetic bracket (3) and a fire extinguisher combination bracket (4) arranged at the wall bracket.

Fig. 9a shows a frontal view of an embodiment of the invention.

Fig. 9b shows a frontal view with a partial section view of an embodiment with a sensor/switch (7.1) and a signal unit (7).

Fig. 9c shows an embodiment of the invention in view from the back and shows among others the place for an alarm signal (7.2,7.3,7.4) and a sensor/switch (7.1).

Fig. 9d shows the vertical section view A-A in fig.9c and a partial view of an embodiment of the invention.

Fig. 9e shows a top section view in 3 different sizes with an attached fire extinguisher in 3 different sizes.

Fig. 10a is a view of a wall section with a fire extinguisher installed.

Fig. 10b is an equivalent wall section as shown in Fig. 10a without the fire extinguisher so that the wall bracket, and the adapter (1) is shown according to an embodiment of the invention in a frontal view.

Fig. 10c is the wall bracket and the adapter (1) enlarged from fig. 10b.

Fig. 10d is a top view of the wall bracket and the adapter (1) in Fig. 10c and shows an embodiment of the invention wherein the alarm signal is illustrated by an illuminated text display at the stationary part of the adapter.

Fig. 11a is a planar view and a partly section view of 4 different positions from the revolving movement with a break at the top.

Fig. 11b shows the equivalent positions alarm signals in 4 corresponding top section view of the same embodiment of the invention.

Fig. 12 shows a simple system sketch of an embodiment of the invention with a mounting bracket, a rotatable adapter and a fire extinguisher with a notification that is transmitted to a central placed notification central, command or control unit. The embodiment of the control unit/notification central is only illustrative.

**Description of embodiments of the invention**

**[0026]** The invention relates to a rotatable adapter (1) with the purpose og turning a portable fire extinguisher (1) with a fire extinguishant (6) to maintain and preserve the required quality of the fire extinguishant over time and by this prevent that the extinguishant turn into a useless and ineffective "petrified" mass.

**[0027]** The mounting bracket with the rotatable adapter according to the invention is vertically attached to a wall.

**[0028]** The fundamental principal of the invention is a rotatable adapter (1) comprising a rotation disc housing with a (stationary) inner section with a locking pin (1.2) attached to the mounted wall bracket (2). The outer cover (2) comprising a shock transmitting tooth (1.19) is connected to a rotation housing (1.2) via a center shaft (1.8), a spring for vibration (1.9) and a roller bearing (1.10). For this (1.2) is a fire extinguisher connection (3,4) connected to a portable fire extinguisher (5)

**[0029]** Revolving movement of the portable fire extinguisher (5) tension a spring for vibration (1.9) so that it collide with the shock transmitting teeth (1.19) in a sequence and influence on the fire extinguishant (6) with strokes, shock, or vibration, so that the fire extinguishant (6) maintain its intended functionality.

**[0030]** An embodiment of the invention is a rotatable adapter (1) for a portable fire extinguisher (5) wherein the adapter (1) comprises a wall bracket (2) for permanent mounting at a wall, a rotatable bearing (1.2,1.1,1.8,1.10) with a horizontal rotation axis (0) arranged on the wall bracket (2), a fastening bracket (3, 4) for the fire extinguisher (5) arranged at the rotatable bearing (1.2, 1.1, 1.8, 1.10) and wherein the new and characteristic features are that the rotatable bearing (1.2,1.1,1.8,1.10) comprises a ratchet mechanism (1.1, 1.9) comprising -a tension spring (1.9) arranged at a fixed shaft (1.8) in the rotatable bearing (1.2,1.1,1.8,1.10) and one or more shock transmitting teeth (1.19) arranged on a rotation disk (1.1) arranged to strain and release the tension spring (1.9) by rotating the fire extinguisher (5) and by that the rotation disk (1.1) around the rotation axis (0) and that the adapter (1) further comprises a signal unit (7) arranged to give one or more alarm signals (7.2). An advantage by a signal unit is that it might be used in a lot of different ways. In an embodiment the unit may show or tell when it is time to turn the apparatus either based on a desired period or a condition for the fire extinguisher and the fire extinguishant. In an embodiment or a combination with the embodiments mentioned above the signal unit may be used as a user manual as illustrated in Fig. 11a and 11b.

**[0031]** In another embodiment of the invention at least a tension spring (1.16) will be arranged at the bearing in a way that it, by revolving the fire extinguisher (5) it will be tensioned. When the fire extinguisher (5) is dropped the potential energy in the tension spring (Ep) will move the fire extinguisher (5) back to the position of origin while the shock transmitting teeth (1.19) transfer one or more strokes that results in that the fire extinguishant (6) in the powder condition will be shaken loose inside the fire extinguisher (5) without being influenced by any outer energy.

**[0032]** The fire extingusher may be connected to the rotatable adapter in different connectors. Please see Fig. 7 and 8 that shows a fire extinguisher magnet bracket (3) and a fire extinguisher combination bracket (4).

**[0033]** In an embodiment of the invention the rotatable adapter (1) comprises a motor which provides for rotation of the fire extinguisher and tensioning the tensioning spring (1.16) so that the rotation is carried out automatic or according to a pre-set interval or according to a need.

**[0034]** In an embodiment of the invention, where it is motorized or automated, it is two or more equivalent brackets with adapters connected in series and controlled by a central unit in for instance a home, an agricultural building, in an office building, industry locations, in arrangements at sea (fishing fleets, ships and petroleum installations).

**[0035]** An advantage by the invention is that relatively heavy manually handled fire extinguishers easily may be turned almost independent of the age or health of the operators.

**[0036]** In an embodiment of the invention a switch (7.1) in communication with a signal unit (7) will be arranged to sense the rotation of the fire extinguisher (5) and subsequent the rotation disk (1.1) around the rotation axis (0). Thus the signal unit may be used to give the correct signal dependent on which position the fire extinguisher has taken.

**[0037]** In an embodiment of the invention the one or more alarm signals is one or more light signals (7.3), one or more sound signal (7.4), one or more notifications (7.5) to a notification central (7.6) or combinations thereof. An advantage by this is that one may have a text panel showing which actions to be performed or will be executed at the same time as one may have a sound signal alarming the condition, and an action. For instance, that the apparatus is up-righted,

that it is time to rotate, that the apparatus will be turned within a specified period, that it is shortly out of power etc. An advantage is that those types of signals may be used one by one, or together in more complex embodiments.

**[0038]** In an embodiment of the invention the adapter (1) comprises a signal processing unit (8) arranged to receive, process and give signals. With that, the unit may control signals and actions based on received signals from for instance the sensor/switch or an external unit, a push button or a physical rotation or removal of the fire extinguisher.

**[0039]** In an embodiment of the invention the light signal will be given by the use of LED lightening (9).

**[0040]** In an embodiment of the invention the rotatable adapter (1) comprises an amplifier. An advantage by this is that it may, on its own or together with a light signal, attract the attention of an operator or a person passing by.

**[0041]** In an embodiment of the invention, the adapter (1) comprises a power supply (11). This may be a battery, a luminous cell (solar cell) or a power grid supply. It is necessary with one or another supply to run the alarm signals, and in an embodiment with automatics and a motor, the motor needs a power supply.

**[0042]** In an embodiment of the invention the adapter (1) comprises a motor (12) arranged to rotate the fire extinguisher (5), and by that the rotating disk (1.1) around the rotation axis (0). In this way the apparatus is turned without manual strength. It opens up for a fully automation and remote controll of the rotatable adapter. This is an advantage if the adapter will be used for several fire extinguishers at larger locations. It may also be an advantage if the adapter is used in private homes so that one do not have to carry out any manual handling of the apparatus other than at a given signal check/replace the power supply. When the adapter comprises a motor the embodiment will be somewhat larger than the embodiment without a motor, but otherwise the designs will be very similar to each other.

**[0043]** In an embodiment of the invention the motor (12) is arranged to stop and start at a signal given by the signal processing unit (8).

**[0044]** In an embodiment of the invention, to or more equivalent adapters (1) is connected in series and controlled by a central signal processing central (7.6) with a signal processing central (8.6). Such a processing central may be an operator room if such a room is available, in a technical room in the home, be connected to a home control central, controlled by a personal computer, be connected to a fire direction system with a suitable control unit etc.

**[0045]** In an embodiment of the invention the signal processing unit (8) comprises a timer (11). This timer may either be set and adjusted in the adapter locally, or by a central unit or remote control unit. An advantage by such a timer is that one may set the time for new rotation of the fire extinguisher.

**[0046]** For A rotatable adapter (1) according to an embodiment of the invention, the one or more of the alarm signals (7.2) is activated by the timer (11). Then it may be indicated by light, the type of incident, or which action to be taken, based on the time passed related to the action that has set the timer. It may give a signal to a control/notification central as well, which accordingly decides which actions to be carried out to the fire extinguisher. That might be rotating or replacing the fire extinguisher.

**[0047]** By that the invention, rotatable adapters (1) one embodiment automate (1c) the recommended maintenance by a sequential implementation during a pre-set time period, the odds for an operative fire extinguishant for a sudden need. When the invention is connected in series, and a control unit (PC) controls all the apparatus in an installation/ building/ship/rig etc., the functionality and safety improves.

**[0048]** For the invention to have a good design, an embodiment of the invention will have all sensors /switches, printed circuit boards, motors and batteries placed inside the rotatable adapter. If the rotatable adapter (1) will be used in a fire and explosion risk area the different components of the embodiment may be manufactured in different non sparking material. Examples of such materials are different plastics, composite, or ceramics.

**Componentslist**

1. Rotatable adapter (1)
2. Manual Rotation Disc (1A)

1. Rotation disc, semi automatic (1B)
2. Outer part Rotation Disc (1.1)
3. Rotation Disc housing (locked) with a locking pin (1.2)
4. Rotation Disc inner section with a connector (1.3)
5. Nut and disc for a center bolt (1.4)
6. Outer cover (1.5)
7. Screw for central shaft short (1.6)
8. Screw for central shaft long (1.7)
9. Central shaft (1.8)
10. Vibration spring (1.9)
11. roller bearing (1.10)
12. Adjuster sleeve (1.11)

(continued)

13. Gear rim/ cogged wheel for a motor (1.12)
14. Rotor for a motor/ cogged wheel(1.13)
15. Trip gear for locking pin (1.15)
16. Tensioning spring (1.16)
17. Tensioning spring outer ring (1.17)
18. Plate for guiding slots (1.18)
19. Shock transmitting tooth (1.19)
20. Wall bracket (2)
21. Fire extinguisher magnetic bracket (3)
22. MAgnet (3.1)
23. Friction plate (3.2)
24. Rubber belt (3.3)
25. Locking pin (3.4)
26. Collar bracket (3.5)
27. Fire extinguisher combination bracket (4)
28. Upper collar bracket (4.1)
29. Lower collar bracket (4.2)
30. Locking pin (4.3)
31. Locking slot (4.4)
32. Spring tensioned locking mechanism (4.5)
33. Rotation Disc base plate (4.6)
34. Upper telescoping bar (4.7)
35. Lower telescoping bar (4.8)
36. Portable fire extinguisher (5)
37. Fire extinguishant (6)
38. Motor casing (1.14)
39. Signal unit (7)
40. Alarm signal (7.2)
41. Light signal (7.3)
42. Sound signal (7.4)
43. Notification (7.5)
44. Notification central (7.6)
45. signal processing unit (8)
46. signal processing central (8.6)
47. LED lightening (9)
48. Sound amplifier (10)
49. Timer (11)

## Claims

**1.** A rotatable adapter (1) for a portable fire extinguisher (5) wherein the adapter (1) comprises
a wall bracket (2) for permanent mounting at a wall a rotatable bearing (1.2,1.1,1.8,1.10) with a horizontal rotation axis (0) arranged on the wall bracket (2)
a fastening bracket (3, 4) for the fire extinguisher (5) arranged at the rotatable bearing (1.2, 1.1, 1.8, 1.10) **characterized in**

- the rotatable bearing (1.2,1.1,1.8,1.10) comprises a ratchet mechanism (1.1, 1.9) comprising
- a tension spring (1.9) arranged at a shaft (1.8) in the rotatable bearing (1.2,1.1,1.8,1.10) and one or more shock transmitting teeth (1.19) arranged on a rotation disk (1.1) arranged to strain and release the tension spring (1.9) by rotating the fire extinguisher (5) and subsequent the rotation disk (1.1) around the rotation axis (0)
- that the adapter (1) further comprises a signal unit (7) arranged to give one or more alarm signals (7.2).

2. A rotatable adapter (1) according to claim 1, comprising at least a tension spring (1.16).

3. A rotatable adapter (1) according to claim 1 or 2 comprising
a switch (7.1) in communication with a signal unit (7), arranged to sense the rotation of the fire extinguisher (5) and subsequent the rotation disk (1.1) around the rotation axis (0).

4. A rotatable adapter (1) according to one of the preceding claims, wherein the one or more alarm signals is one or more light signals (7.3), on or more sound signal (7.4), one or more notifications (7.5) to a notification central (7.6) or combinations thereof.

5. A rotatable adapter (1) according to one of the preceding claims, wherein the adapter (1) comprises a signal processing unit (8) arranged to receive,process and give signals.

6. A rotatable adapter (1) according to one of the preceding claims, wherein the adapter (1) comprises LED lights (9).

7. A rotatable adapter (1) according to one of the preceding claims, wherein the adapter (1) comprises an amplifier (10).

8. A rotatable adapter (1) according to one of the preceding claims, wherein the adapter (1) comprises a power supply (11).

9. A rotatable adapter (1) according to one of the preceding claims, wherein the adapter (1) comprises a motor (12) arranged to rotate the fire extinguisher (5) and consequently the rotation disk (1.1) around the rotation axis (0).

10. A rotatable adapter (1) according to one of the preceding claims, wherein the motor (12) is arranged to stop and start at a signal given by the signal processing unit (8).

11. A rotatable adapter (1) according to one of the preceding claims, wherein to or more equivalent adapters (1) is connected in series and controlled by a central signal processing central (7.6) with a signal processing central (8.6).

12. A rotatable adapter (1) according to one of the preceding claims, wherein the signal processing unit (8) comprises a timer (11).

13. A rotatable adapter (1) according to one of the preceding claims, wherein one or more of the alarm signals (7.2) is activated by the timer (11).

14. A method for maintenance of the fire extinguishant (6), powder phased, in a portable fire extinguisher (5) by use of an adapter according to claim 1, comprising the steps:

- placing the fire extinguisher in the fastening bracket (3, 4)
- observe the alarm signal (7.2) - rotating the fire extinguisher (5) around the rotation axis (0)
- tension the tension spring (1.9) over the shock transmitting teeth (1.19)
- wherein the shock transmitting teeth (1.19) collide into the tension spring (1.9) and cause one or more shocks to the fire extinguisher (5) resulting in that the fire extinguishant (6) is loosened by shaking motion inside the fire extinguisher (5).

15. A method for maintenance of the fire extinguishant in a portable fire extinguisher according to claim 14 and using the adapter according to claim 2, comprising

- rotation of the fire extinguisher (5) which tension the tension spring (1.16)
- the fire extinguisher is dropped and the potential energy of the tension spring (Ep) rotates the fire extinguisher (5) back close to the starting position.

16. A method for maintenance of the fire extinguishant in a portable fire extinguisher according to claim 14 or 15, wherein the movement of the fire extinguisher to the various positions is at least partly executed by a motor.

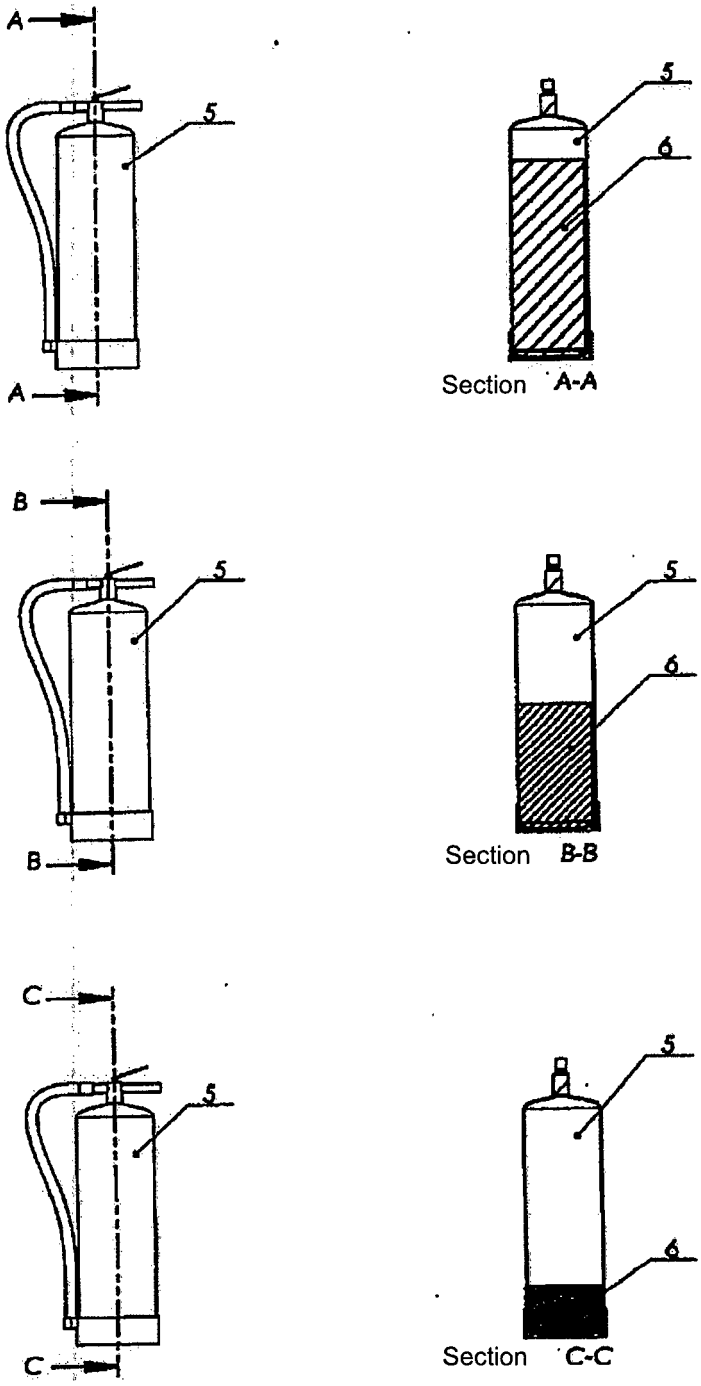



Fig. 1

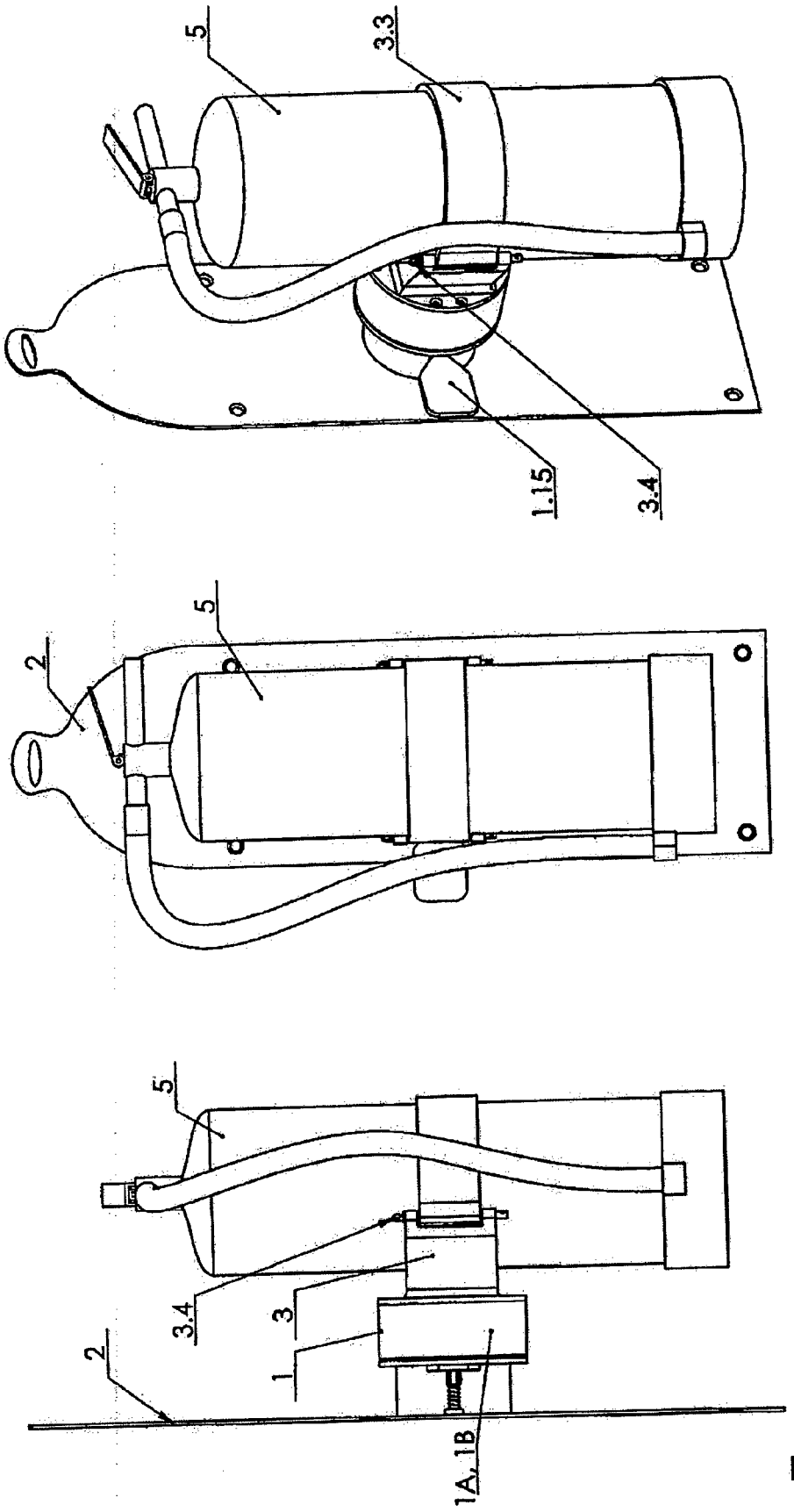



Fig. 2

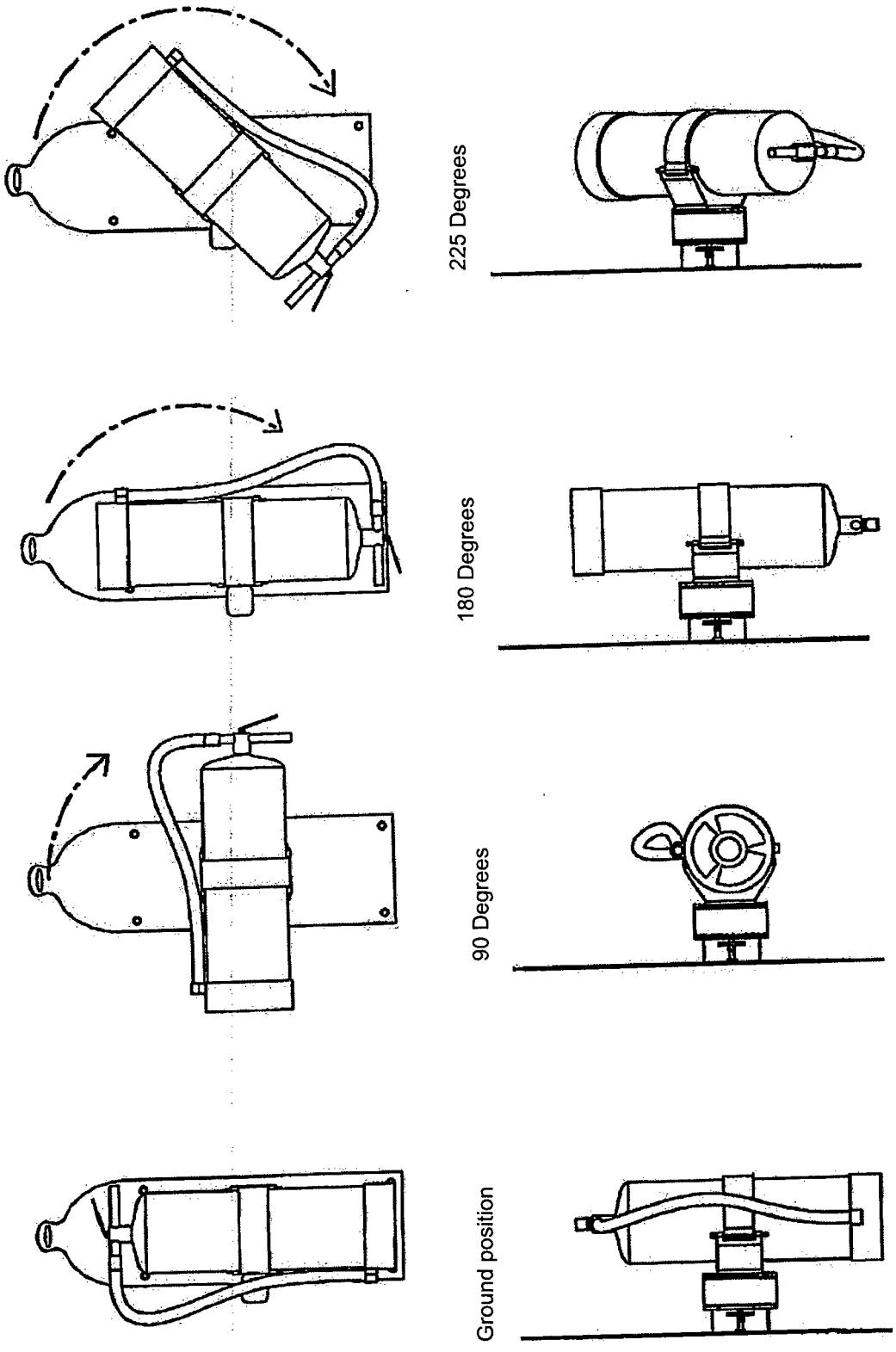



Fig. 3

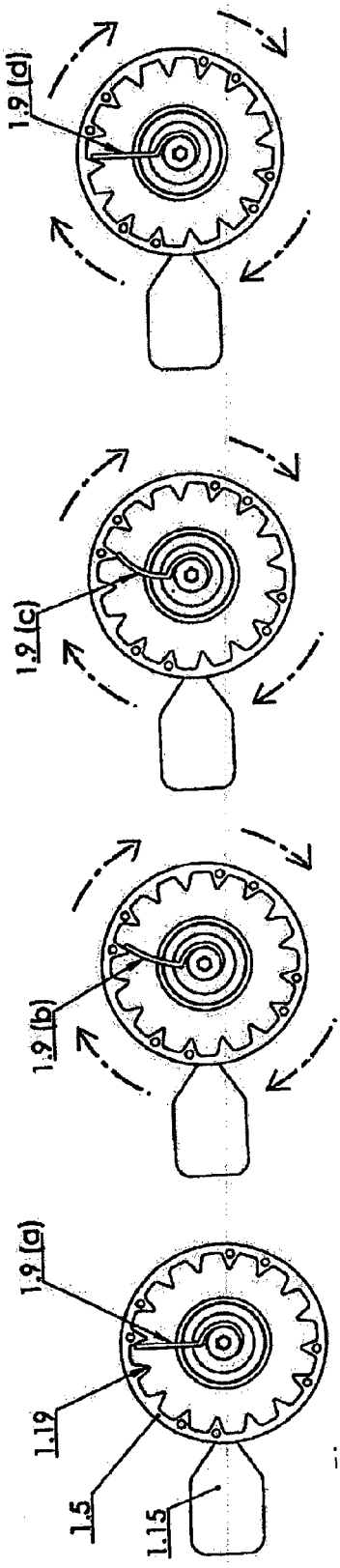



Fig. 4a

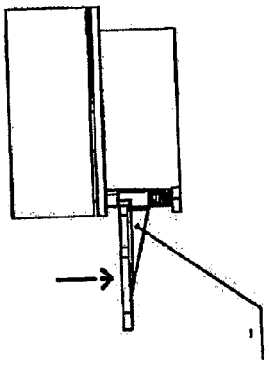


Fig. 4b

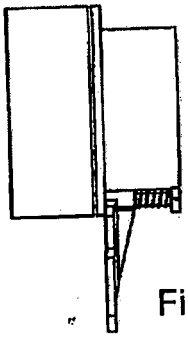


Fig. 4

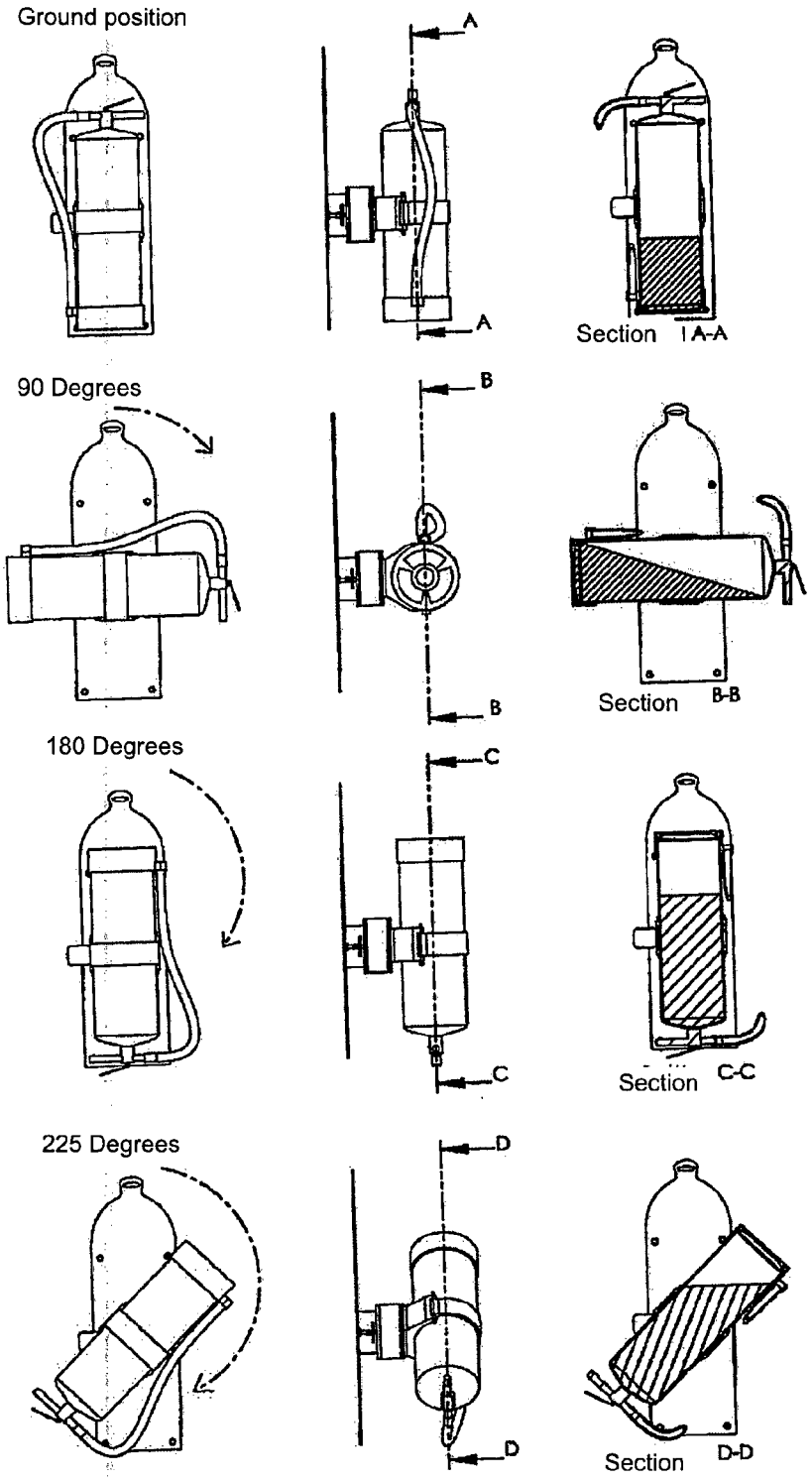

Ground position
A
A
Section 1A-A
90 Degrees
B
B
Section B-B
180 Degrees
C
C
Section C-C
225 Degrees
D
D
Section D-D

Fig. 5

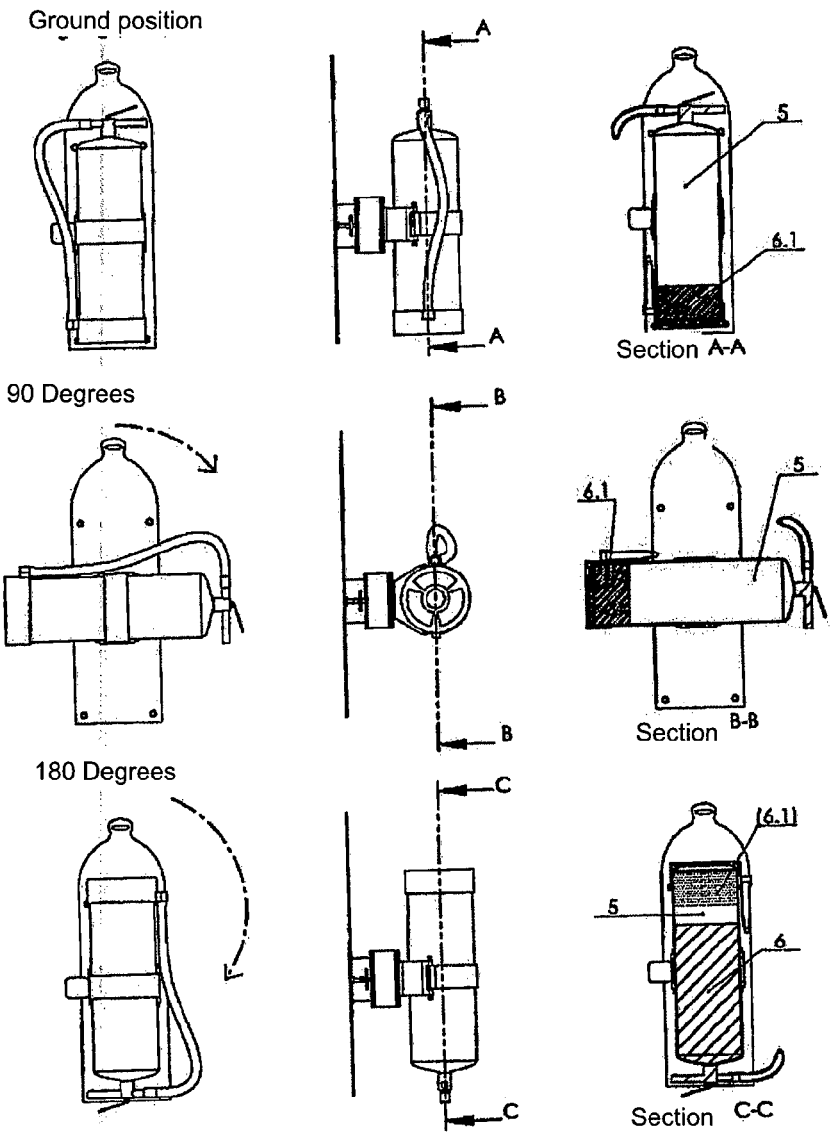

Ground position
A
A
5
6.1
Section A-A
90 Degrees
B
B
6.1
5
Section B-B
180 Degrees
C
C
6.1
5
6
Section C-C

Fig. 6

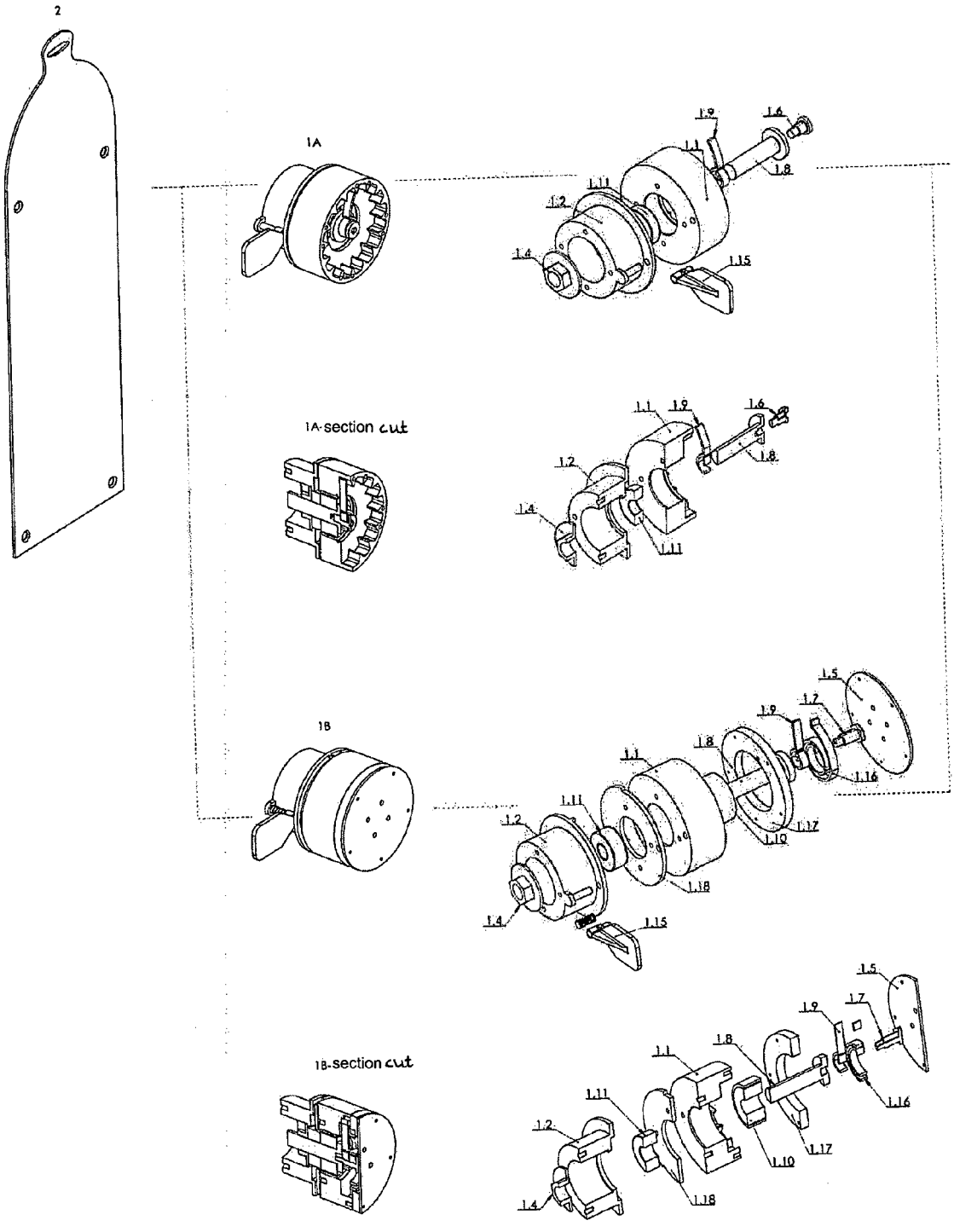



Fig 7.a

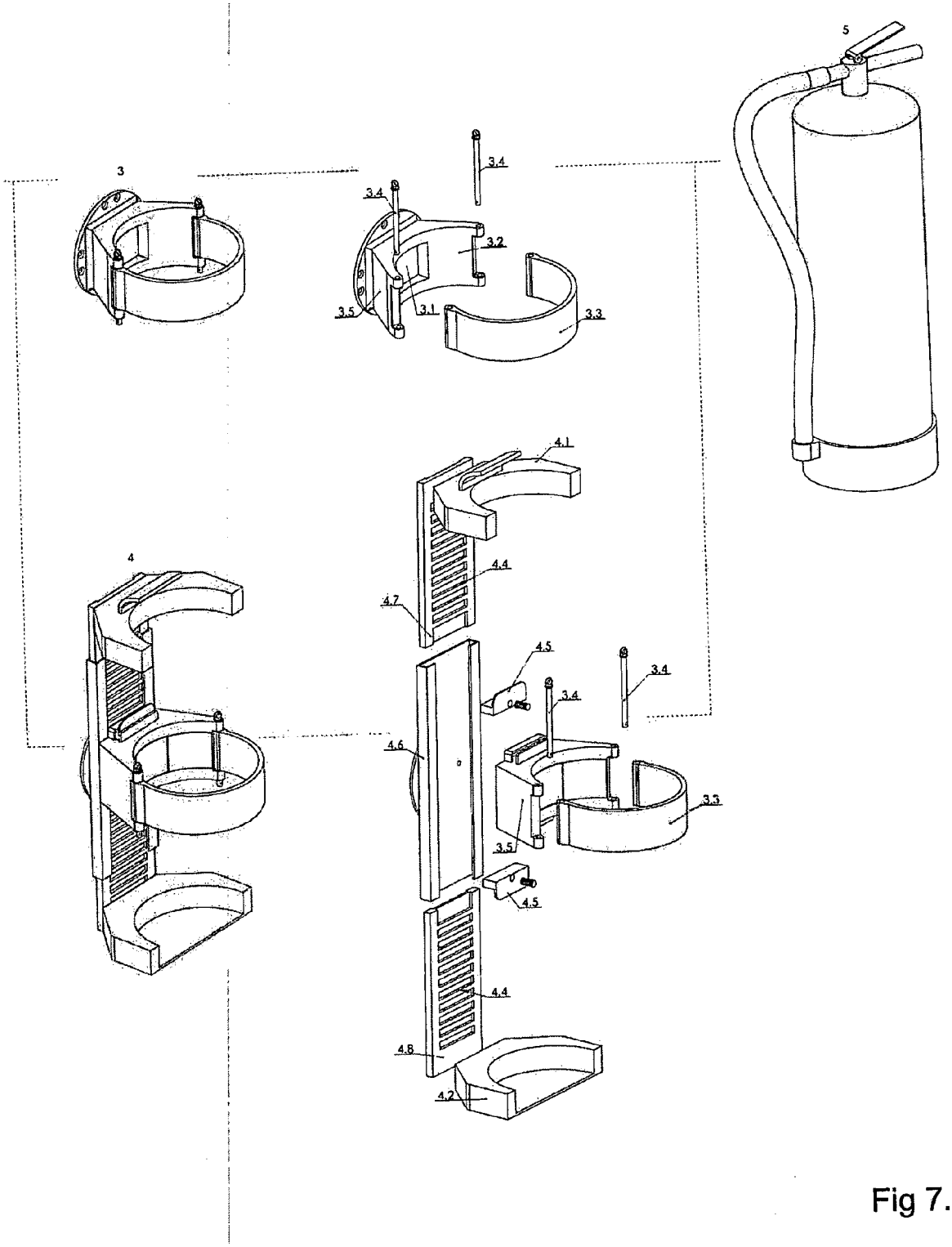



Fig 7.b

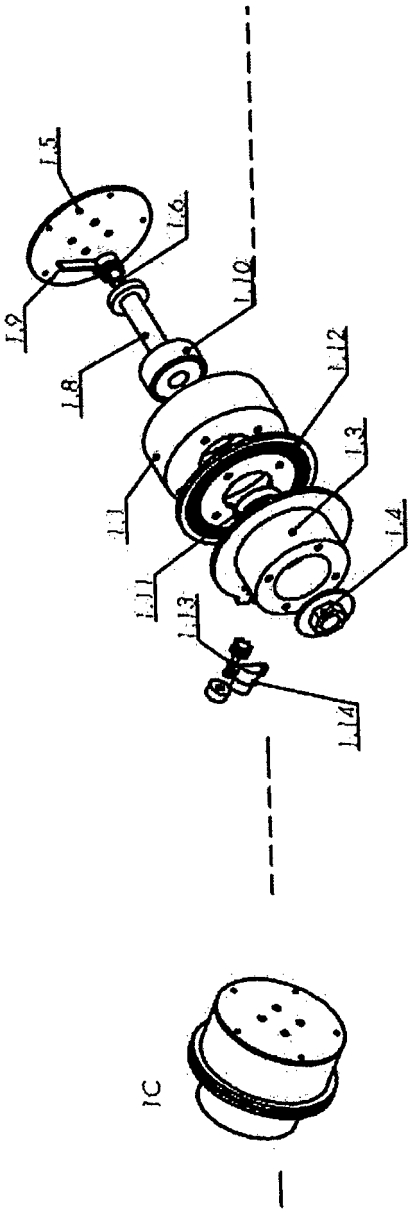



Fig. 7 c

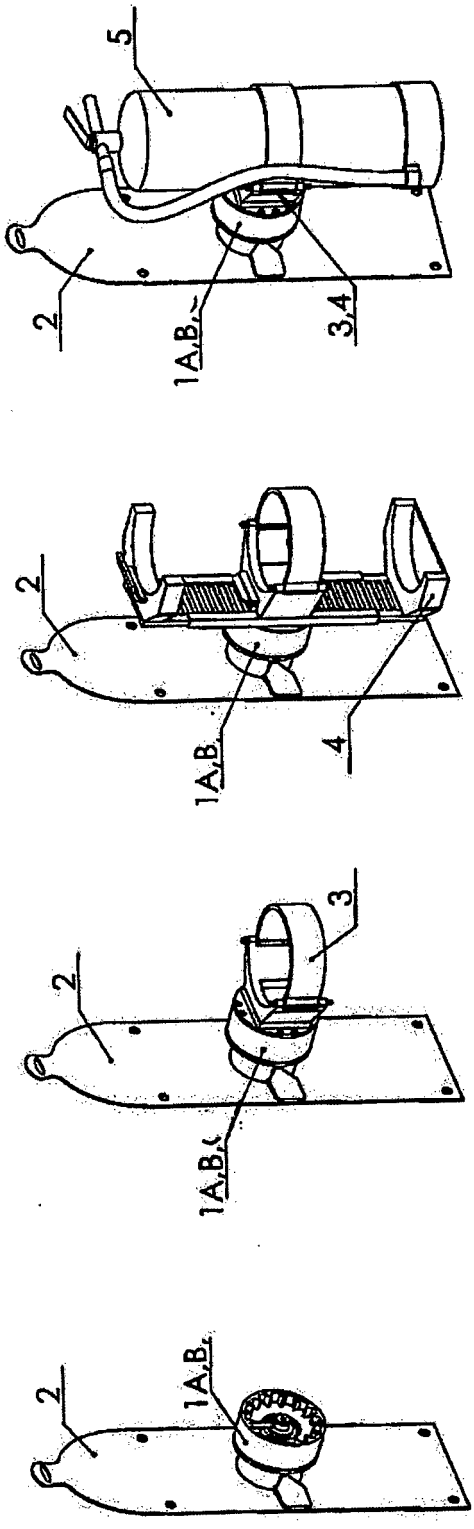
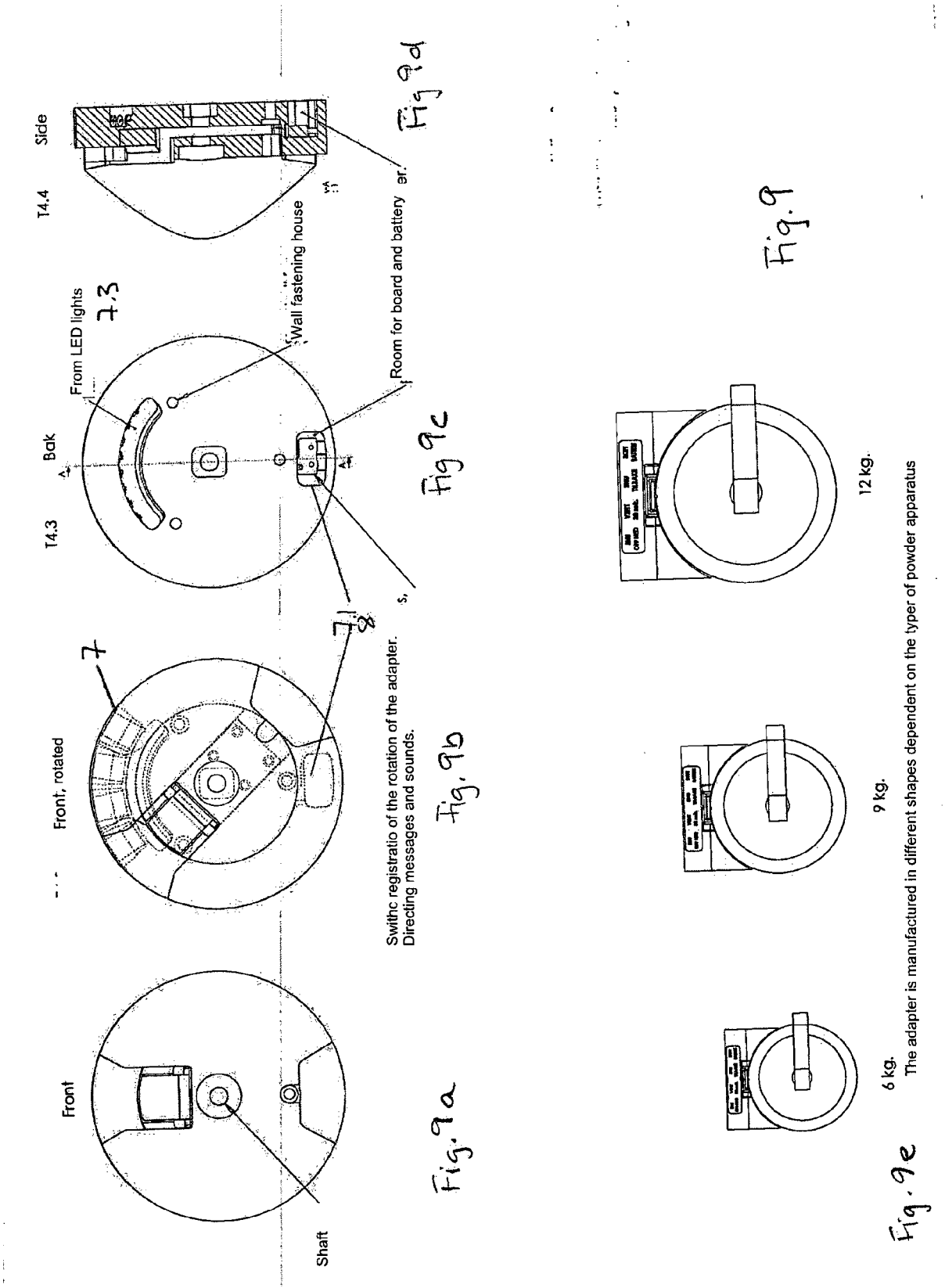



Fig. 8


Front
Front, rotated
Bak
Side
From LED lights
Wall fastening house
Room for board and battery
Shaft
Swithc registratio of the rotation of the adapter.
Directing messages and sounds.
6 kg.
9 kg.
12 kg.
The adapter is manufactured in different shapes dependent on the typer of powder apparatus

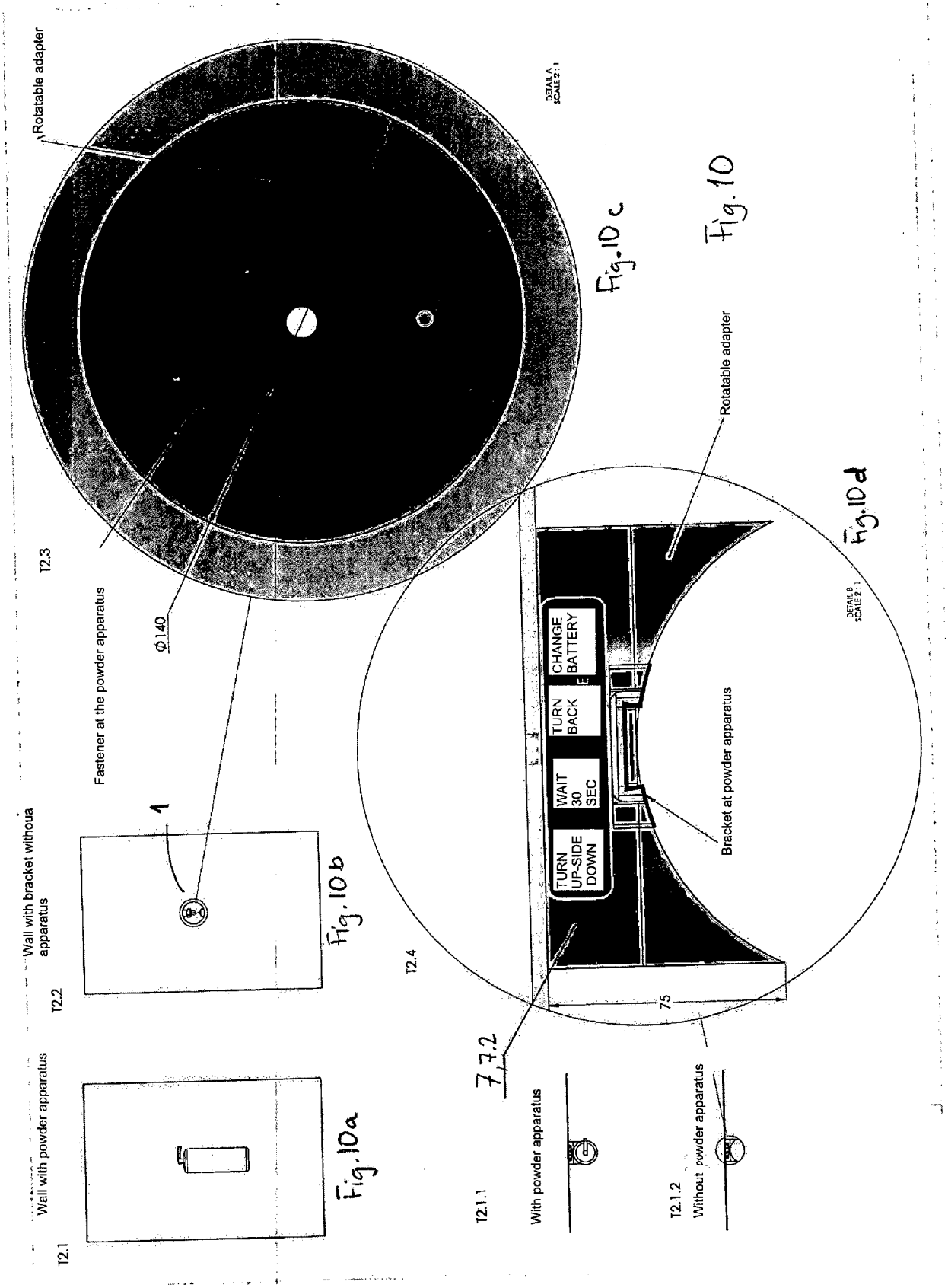



Fig.10a

Fig.10b

Fig.10c

Fig.10d

Fig.10

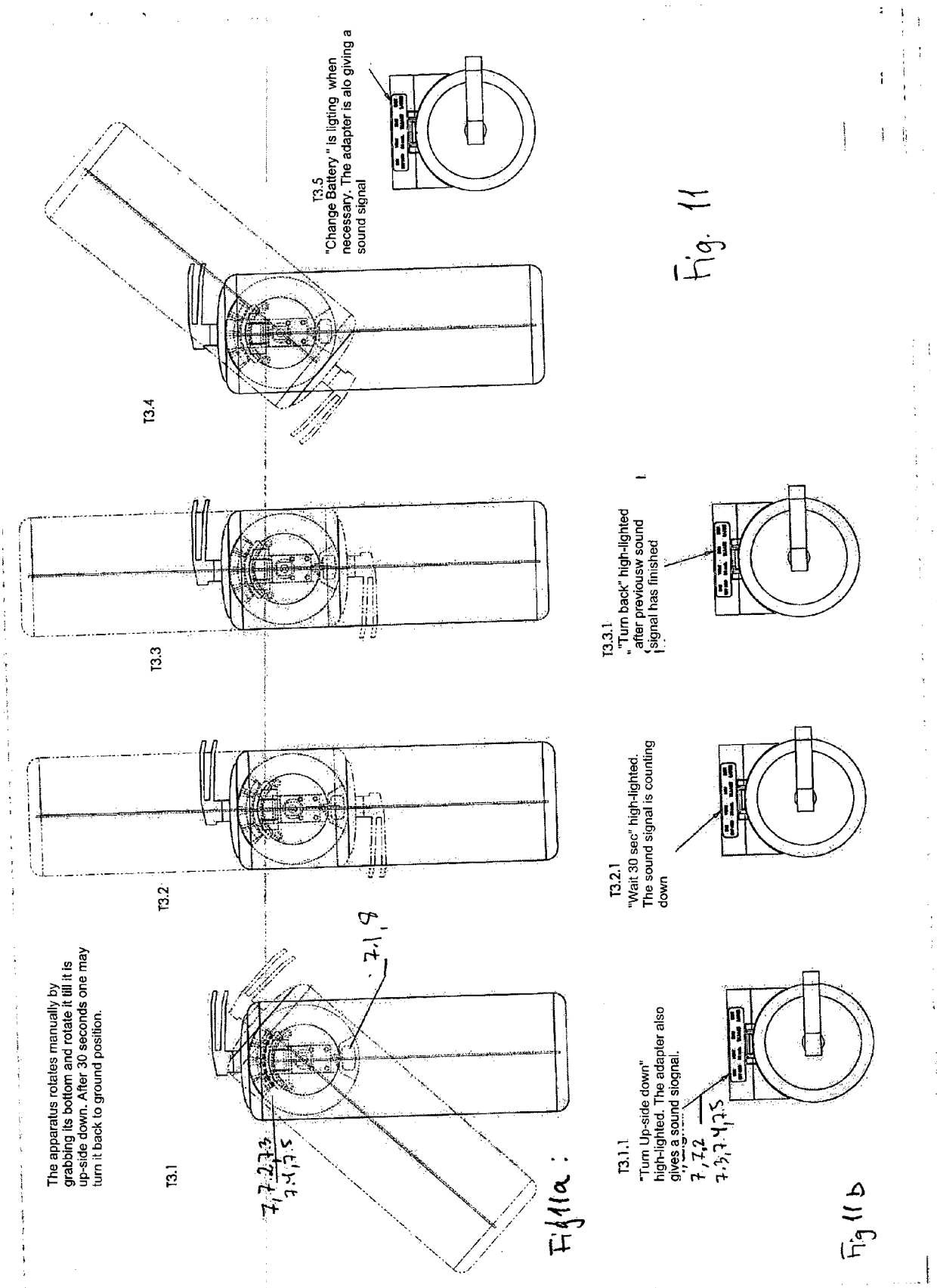

The apparatus rotates manually by grabbing its bottom and rotate it till it is up-side down. After 30 seconds one may turn it back to ground position.
T3.1
T3.2
T3.3
T3.4
T3.5
"Change Battery" is ligting when necessary. The adapter is alo giving a sound signal
T3.3.1
"Turn back" high-lighted after previousw sound signal has finished
T3.2.1
"Wait 30 sec" high-lighted. The sound signal is counting down
T3.1.1
"Turn Up-side down" high-lighted. The adapter also gives a sound siognal.

Fig. 11

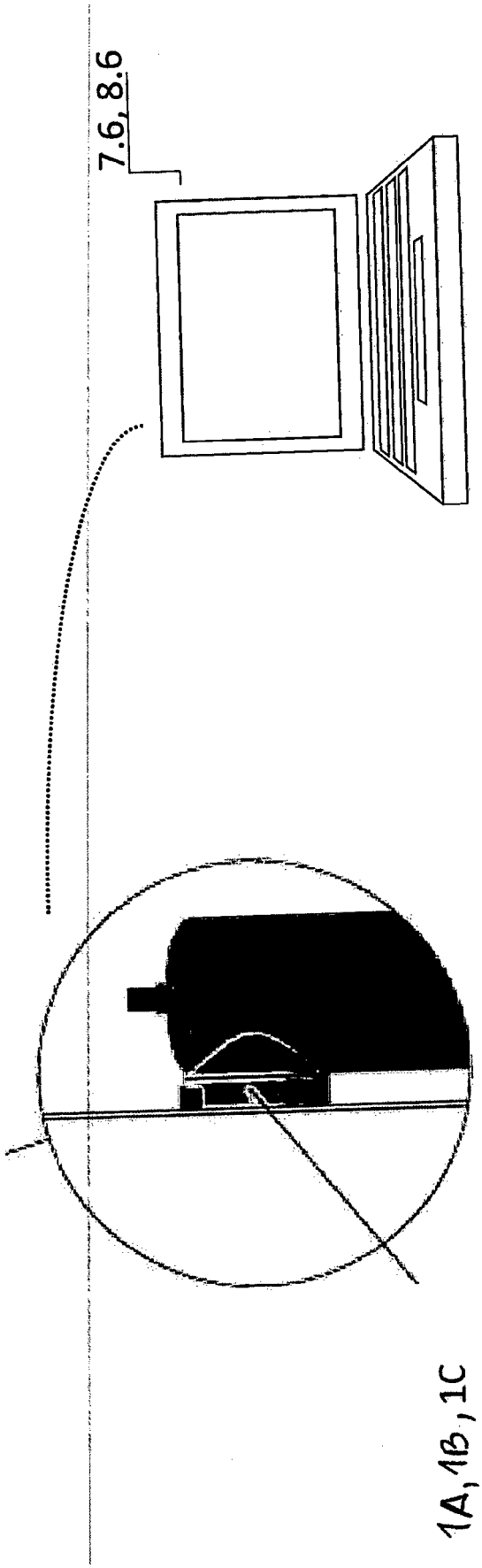



Fig. 12

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


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- CN 201168363 **[0006]**
- EP 1527813 A1 **[0007]**
- DE 4204335 **[0008]**
- KR 200434980 Y1 **[0009]**
- ES 2006471 **[0010]**