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(54) Method of servicing a fire extinguisher, and servicing device

(57) The present invention relates to a method of servicing a fire extinguisher (2) and to a servicing device used for this purpose. The invention is characterized by arranging the fire extinguisher in a servicing device (1) using securing elements (6), and thereafter providing oscillation in the servicing device by switching on an oscillation means (9) therein. The oscillation proceeds to the fire extinguisher in the servicing device, whereby the extinguishing medium therein is subjected to multi-directional shaking. The shaking allows releasing the crystals of the extinguishing medium clodded in the fire extinguisher from one another and to dissolve the extinguishing medium to be ready for use again.

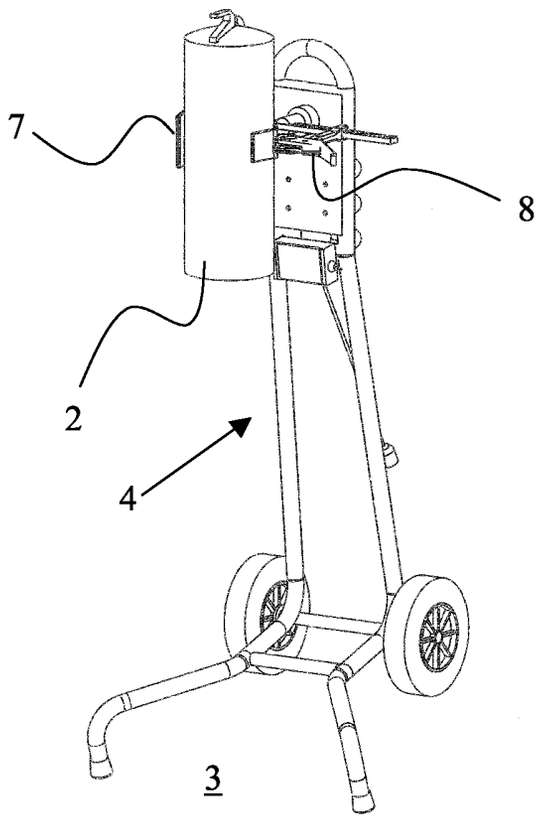

FIG. 5

EP 1 527 813 A1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a method of servicing a fire extinguisher according to the preamble of claim 1.

[0002] The present invention also relates to a servicing device according to the preamble of claim 3.

[0003] Such a method and servicing device are applicable to be used when for one reason or another the user wishes to dissolve the medium in the container without opening the container itself. The servicing device is particularly applicable for fire extinguishers, such as portable fire extinguishers, for dissolving the extinguishing medium.

PRIOR ART

[0004] What is mainly required to reliably dissolve the extinguishing medium in different containers is to open the container and to drain the extinguishing medium from the container for further treatment.

[0005] When treating for instance the extinguishing medium provided in the container of a fire extinguisher, the medium is conventionally poured into a particular treatment device that is separate from the container so as to break the lumps formed in the medium and to restore the original almost liquid form of the extinguishing medium. However, a problem in such an arrangement is the structural change of the crystals forming the extinguishing medium provided by the mechanical refining motion. Then again the structural change of the crystals means that the adhesion of the crystals decreases, which in turn reduces the extinguishing power of the fire extinguisher.

[0006] Known arrangements for dissolving extinguishing medium are also dusty and require space, in which case the dissolution must be performed on specific premises designed for this purpose.

BRIEF DESCRIPTION OF THE INVENTION

[0007] It is an object of the present invention to reduce the drawbacks associated with the prior art, to provide a completely new solution for servicing a fire extinguisher and for the structure and operation of a servicing device.

[0008] This object is achieved with a servicing method and a servicing device provided with the characteristic features defined in the claims in accordance with the present invention. Particularly the problems associated with the servicing method may be solved by combining the characteristic features as shown in the characterizing part of claim 1. The problems associated with the servicing device may in turn be solved by combining the characteristic features as shown in the characterizing part of claim 3.

[0009] The preferred embodiments of the invention are disclosed in the dependent claims.

[0010] In the specification, the term "extinguishing medium" refers to the different, mainly chemical, compositions found in current fire extinguishers. Such mediums include foams, powders, carbonic acid etc.

[0011] Significant advantages can be achieved with the invention. Therefore the present servicing method and the servicing device enable to considerably simplify the servicing work of fire extinguishers, for example. At the same time as the regular maintenance of fire extinguishers can be carried out more reliably than before, the decrease of adhesion properties in the extinguishing medium specific to known solutions can be avoided by maintaining the crystal structure of the medium better than before.

[0012] Since the oscillation provided in the servicing device is adjustable, it is possible to make sure that a correct oscillation is directed towards the container in the servicing device. The servicing device also allows the oscillation directed towards the container to always be similar, thus ensuring the high quality of the servicing work.

[0013] The structure of the servicing device allows turning the container into almost any arbitrary position and always finding the best possible servicing position.

[0014] When servicing containers provided with pressure gauges the present invention may ensure the operation of the pressure gauge. Thus, an indicator of the pressure gauge that is possibly stuck is released when an external oscillation is directed towards the container.

[0015] Additional advantages of the invention are described in the following detailed description of the preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] In the following a preferred embodiment of the invention will be described in greater detail with reference to the accompanying drawing, in which

Figure 1 shows a front view of a device,
Figure 2 shows a side view of the device,
Figure 3 shows an oblique front view of the device,
Figure 4 shows a rear view of the device,
Figure 5 shows a front view of the device, in which a fire extinguisher to be serviced is vertically arranged in the securing elements, and
Figure 6 shows a side view of the device, in which the fire extinguisher is horizontally arranged in the securing elements.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0017] In the following, a preferred embodiment of the present servicing device is described with reference to the above Figures. Thus, a servicing device 1 comprises

the structural parts shown in the Figures provided with reference numerals that correspond with the reference numerals used in this specification.

[0018] The Figures show in particular the servicing device 1 used for servicing cylindrical fire extinguishers 2, such as portable fire extinguishers. However, it should be noted that the device can be used for servicing differently shaped and differently used container-like objects.

[0019] The Figures thus show the servicing device 1 provided with a frame 4 resting on a base 3 such as a floor. In this example the frame is provided with wheels 5 for moving the device between different servicing points. However, nothing prevents the manufacturer from making such a frame that rests firmly on the base or that is firmly fastened to a worktop or workbench, for example.

[0020] This frame 4 is provided with projecting securing elements 6 that allow gripping the specifically container-like unit 2 subjected to service. The securing elements are arranged to be placed at a conventional working height or they can be separately arranged at an appropriate working height by moving them in relation to the frame. The securing elements comprise in accordance with this embodiment a counterpart 7 and a press 8 that is movable in respect of the counterpart. The device is further provided with means 9 that allow providing oscillation to at least the securing elements and to the container-like unit placed therein. The oscillation achieved with such an oscillation means may be provided with either even frequency or varying frequency. Consequently, the frequency may be fixedly arranged or the frequency may be selected using a separate control unit.

[0021] The oscillation means 9 preferably comprise a vibrating apparatus known as such, which may be a hydraulically, pneumatically or electrically controllable apparatus. For example, Figure 2 shows that the oscillation means according to the present embodiment are fastened to the frame 4 in the immediate vicinity of the securing elements 6. The oscillation means may naturally also be arranged in connection with one or more parts of the securing element. The oscillation means in the present embodiment are electrical and achieve a substantially even standard frequency oscillation conveyed from the frame to the securing elements.

[0022] The securing elements 6 used for gripping the container-like unit 2 are preferably arranged to be turnable in respect of the frame 4, the turning motion being arranged to take place substantially in the vertical direction in the present embodiment. Thus, the container placed in the servicing device is turnable into almost any position for receiving the oscillation conveyed by the securing elements as shown in Figures 5 and 6. Although the turning motion in this embodiment is restricted to take place substantially in the vertical direction, nothing prevents providing a turning motion in another direction that is placed at an angle in relation to the horizontal level.

[0023] Naturally it is also possible to fit the securing elements 6 to the frame with bearings so that the oscillation achieved with the oscillation means 9 arranged specifically at the securing elements is not transferred to the frame 4 of the device.

[0024] The servicing device 1 according to the present embodiment operates as follows. The servicing device is brought to the target that requires servicing. The securing elements 6 are opened so that the press 8 is transferred further from the counterpart 7, and a fire extinguisher is arranged between the two in a freely selectable position. After this, the press is placed against the surface of the fire extinguisher and the fire extinguisher is locked into the servicing device using the pressure from the securing elements. The oscillation means 9 is switched on and the oscillation achieved proceeds to the fire extinguisher through the frame 4 and/or securing elements 6 of the device. Turning the fire extinguisher 2 into different positions in relation to the frame 4 causes the extinguishing medium in the fire extinguisher to shake in as many directions as possible. Shaking allows releasing the crystals of the extinguishing medium clodded in the fire extinguisher from one another and to dissolve the extinguishing medium, thus making the fire extinguisher ready for use again or improving the service condition thereof prior to the servicing.

[0025] When the fire extinguisher 2 is arranged in the securing elements 6, other necessary servicing measures can also be carried out easily.

[0026] The servicing device 1 according to the present embodiment further comprises a storage space 10 for the tools required in the servicing work, thus significantly simplifying the servicing work performed in large spaces.

[0027] The servicing device 1 according to Figure 1 to 6 thus comprises in accordance with the above the frame 4 provided with a substantially vertically arranged main frame 11 and a lower frame 12 supported against the base 3. In addition to the wheels 5 the lower frame is also provided with supporting elements 13 extending to the base, which together with the wheels maintain the main frame in the upright position.

[0028] The main frame 11 is preferably at the upper end thereof provided with means 9 through a planar surface that allow achieving oscillation in the container-like unit arranged in the servicing device. The function of these oscillation means is controlled by a control centre 14 placed on the main frame, from which centre the electric current required by the oscillation means is transferred in this embodiment to the oscillation means. In addition to the current feed of the oscillation means, the control centre also attends to the oscillation frequency and the oscillation power thereof.

[0029] A joint 15 is arranged at the upper end of the main frame in the vicinity of the oscillation means 9 in which joint the securing elements 6 projecting from the

main frame are arranged. The securing elements are used to grip the container-like unit 2 subjected to service. The securing means then comprise a T-shaped element provided with a base arranged in the joint 15 and a counterpart 7 parallel to the base is substantially arranged at the end of the second arm thereof. A press 8 projecting from the arm is arranged to move along the opposite arm. The press can be locked anywhere on the branch of the arm, thus preventing the removal of the container arranged in the securing elements. Consequently, the securing elements turn in relation to the joint 15, but can be firmly locked in relation to the frame 4 using a friction lock controlled by the locking arm 16 provided in the securing elements.

[0030] The upper end of the main frame is preferably provided with a handle 17 facilitating the transportation of the servicing device 1.

[0031] It is to be understood that the above specification and the Figures associated therewith are merely intended to illustrate the present solution. The solution is therefore not only limited to the above or to the embodiment defined in the claims, but various variations and modifications thereof will be apparent for those skilled in the art that can be implemented within the scope of the idea defined in the appended claims.

Claims

1. A method of servicing a fire extinguisher (2), **characterized by**

   arranging the fire extinguisher (2) in a servicing device (1) using a press (8) and a counterpart (7) forming securing elements (6) in such a manner that the securing elements are opened by moving them further apart from one another and the fire extinguisher is arranged between the two in a freely selectable position,

   placing thereafter the press (8) against the surface of the fire extinguisher and locking the fire extinguisher into the servicing device using the press of the securing elements (6), and thereafter

   providing oscillation in the servicing device by switching on an oscillation means (9), in which case the oscillation achieved by the oscillation means proceeds to the fire extinguisher through a frame (4) and/or the securing elements (6) in the servicing device,

   turning the fire extinguisher (2) into different positions in relation to the frame (4) causes the extinguishing medium in the fire extinguisher to shake in as many directions as possible, whereby the shaking allows releasing the crystals of the extinguishing medium clodded in the fire extinguisher from one another and to dissolve the extinguishing medium, thus making the fire extinguisher ready for use again or improving the service condition thereof prior to the servicing.

2. A method of servicing a fire extinguisher (1) as claimed in claim 1, **characterized in that** the oscillation means (9) are used to provide oscillation of different frequencies.

3. A servicing device (1), **characterized by** comprising

   a frame (4),

   the frame being provided with securing elements (6) for gripping an especially container-like unit (2), and

   oscillation means (9) for directing the oscillation to the container-like unit arranged in the servicing device.

4. A servicing device (1) as claimed in claim 3, **characterized in that** the container-like unit (2) comprises a fire extinguisher.

5. A servicing device (1) as claimed in claim 3 or 4, **characterized in that** the securing elements (6) are arranged to be turnable in relation to the frame (4).

6. A servicing device (1) as claimed in any one of claims 3 to 5, **characterized in that** the frame (4) stands freely on the base (3), and the securing elements (6) are thus arranged to be placed at a conventional working height.

7. A servicing device (1) as claimed in any one of claims 3 to 6, **characterized in that** the frame (4) is substantially fixedly arranged to a worktop.

8. A servicing device (1) as claimed in any one of claims 3 to 7, **characterized in that** the oscillation means (9) comprise a vibrating apparatus.

9. A servicing device (1) as claimed in any one of claims 3 to 8, **characterized in that** the oscillation means (9) comprise a hydraulic, pneumatic or electric device.

10. A servicing device (1) as claimed in any one of claims 3 to 9, **characterized in that** the oscillation means (9) may be used to form oscillation of different frequencies.

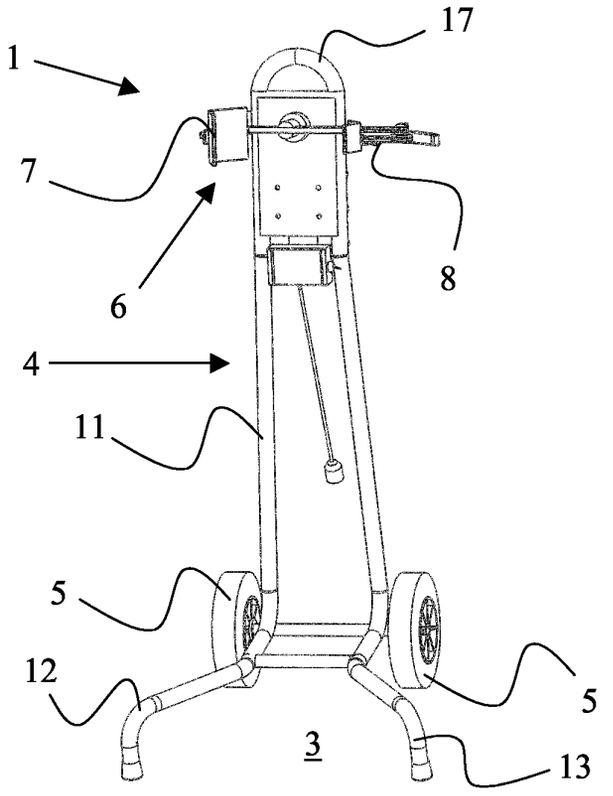

FIG. 1

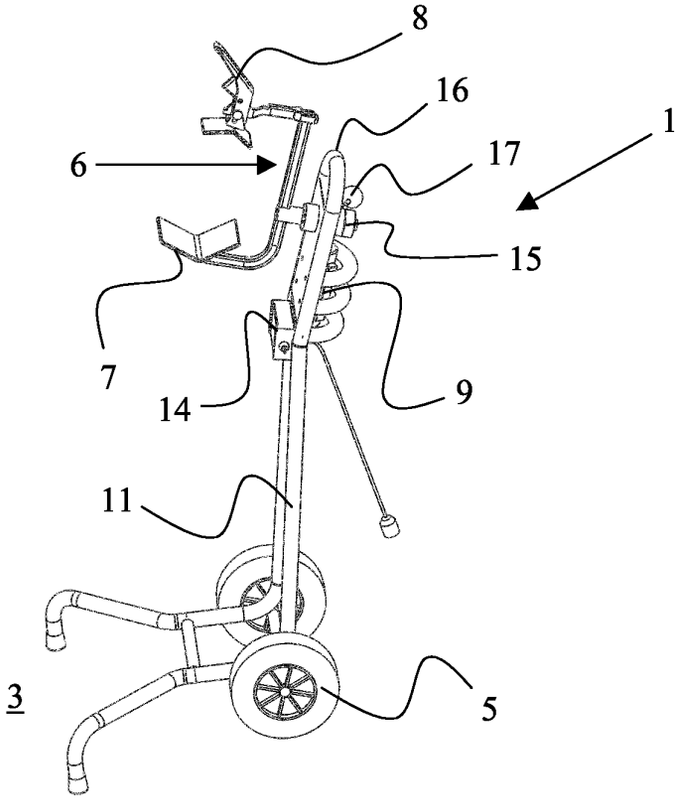

FIG. 2

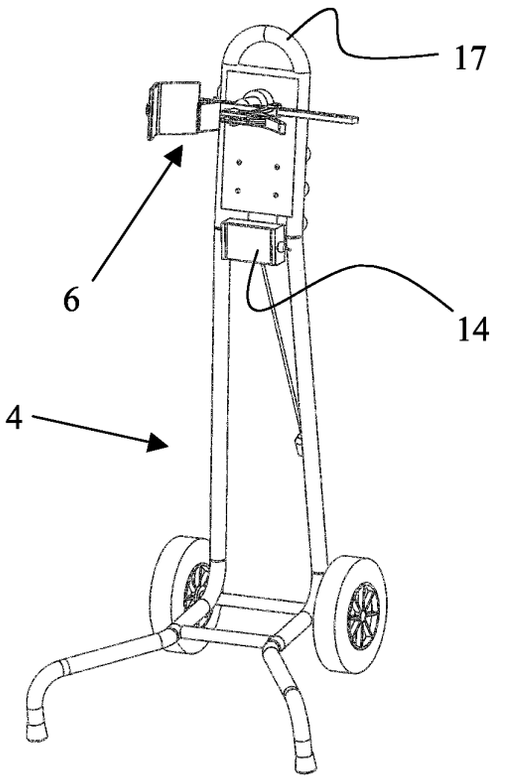

FIG. 3

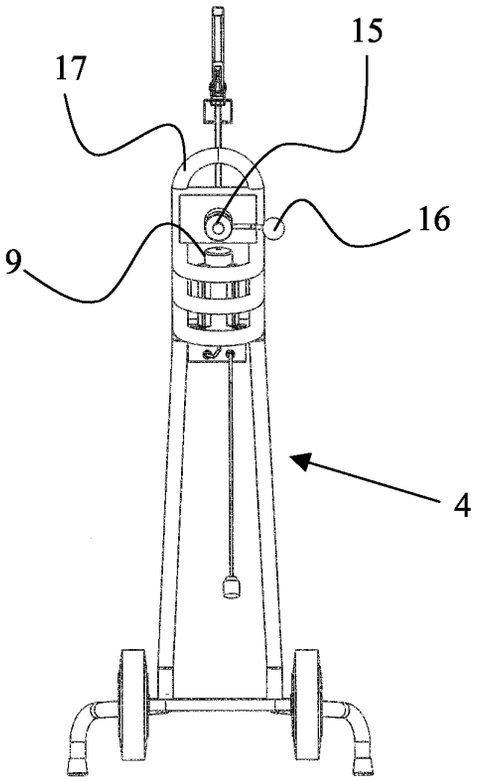

FIG. 4

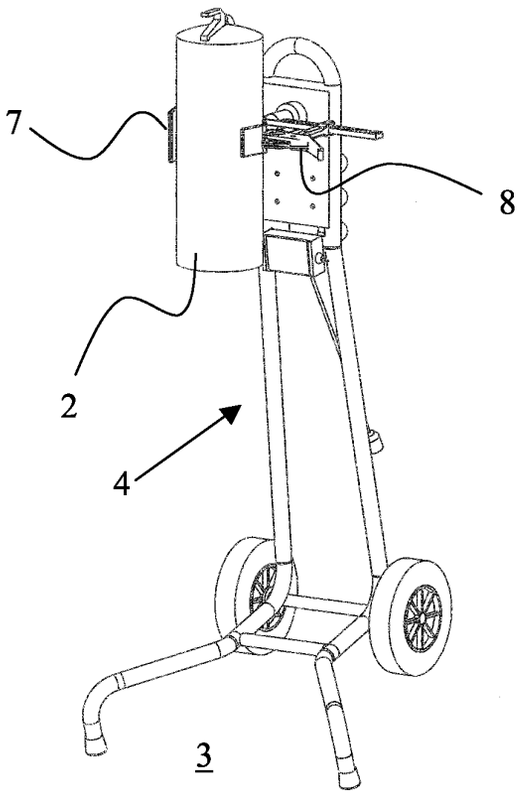

FIG. 5

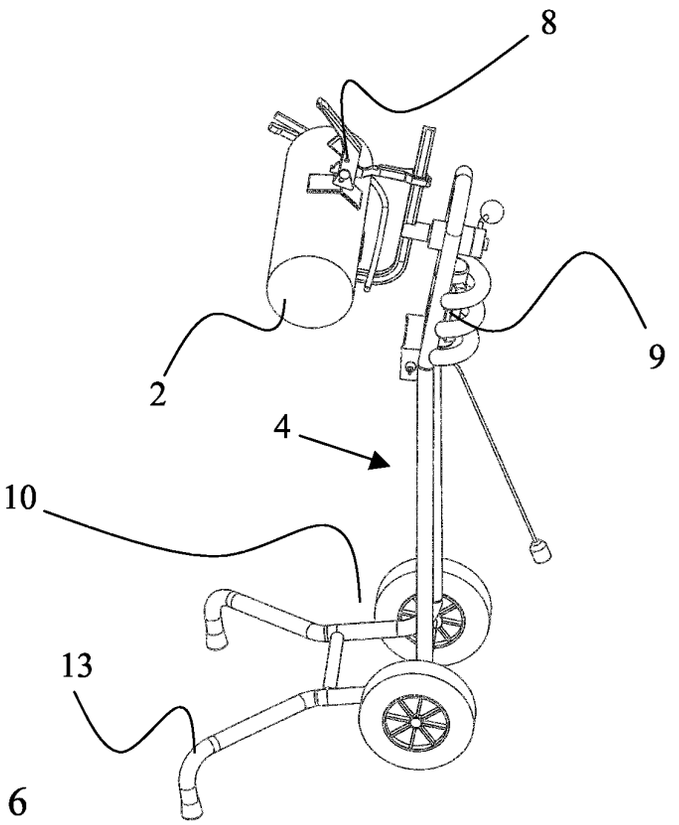

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 04 10 5325

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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
Munich	26 January 2005	Schut, T

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 10 5325

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