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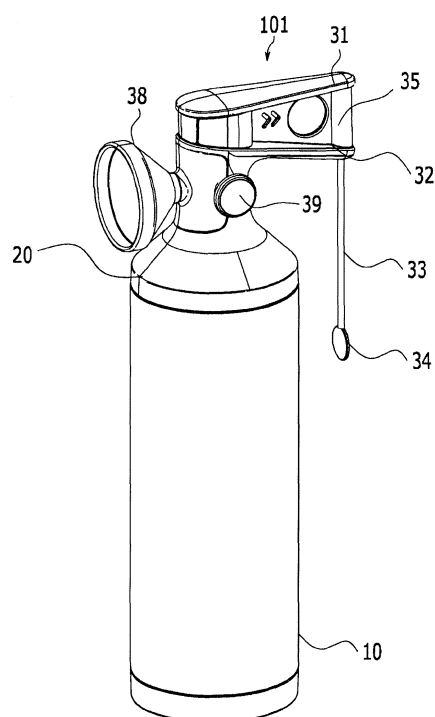
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(54) **FIRE EXTINGUISHER**

(57) The invention described in this document provides an extinguishing device that can prevent breakage.

A fire extinguishing system that is in one side of this invention includes a container filled with an extinguishing agent, a head coupled to an upper portion of the container to discharge the extinguishing agent, and a protective cover installed between the container and head to fix the head and insert the lower part of the head.

Fig. 1



Description

[Area of the Technology]

5 **[0001]** The current invention is for fire extinguishing equipment to put out a fire.

[Background Technology]

10 **[0002]** Generally, fire extinguishing equipment refers to portable or moveable fire-fighting equipment that can put off a fire using materials that disturb the chemical reaction that causes flames or materials that cool off the combusting substance and separate flames from oxygen.

[0003] Such fire extinguishing equipment has a cylinder-shaped body and in the body is fire-fighting powder, or sodium bicarbonate powder, with nitrogen, carbon dioxide, etc. They forcefully expel the content through the highpressure gas of nitrogen or carbon dioxide to fight fire.

15 **[0004]** A body that contains fire extinguishing chemicals, a head that attaches to the top of the body to keep the chemicals from getting out, and a emission hose which comprises the emission path for the fire extinguishing chemicals are all components of the previous fire extinguishing devices. At the same time, a handle is installed at the head, which consists of a lower handle and an upper head, which attaches to the lower handle with a hinge. A safety pin is installed through the lower handle and the upper handle.

20 **[0005]** We install a safety pin to prevent the pressure from being applied to the upper handle by accident. Therefore, to emit the chemical in case of a fire, it must be removed first, and after removing it, the pressing pin contacting the upper handle moves downward, thusly opening the valve.

[0006] However, the previous fire extinguishing equipment have damaging hazard as the head part is exposed. Moreover, due to the difficulties of removing the safety pin, it's been a problem that it is not easy to remove the safety pin for a person in a panic. Plus, the safety pin of the previous fire extinguishers is made of metal, which can be degraded and damaged over time, making it harder to remove.

25 **[0007]** Also, most of the fire extinguishers have the structure wherein they can emit the charged fire extinguishing chemical by destroying an internal percussion lock. If it uses nitrogen as the fire extinguishing substance, it emits the substance at a high pressure of 52.7kg/cm² in a burst. It is problematic also that the body for the fire extinguishing substance is not strong enough to endure the internal and external pressures.

[Detailed Explanation of the Invention]

[Technical Problems]

35 **[0008]** The current invention aims to solve the aforementioned problems - to provide fire extinguishing equipment that can resist getting damaged and, by replacing the safety pin, which is hard to remove quickly, with a safety bar, can enable swift removal in case of a fire and make it easier to check whether it has been removed or not.

40 **[0009]** Also, the current invention provides a fire extinguishing device that emits the fire extinguishing liquid in all directions to extinguish a fire quickly through emitting the liquid at once across a large space by removing the previous hose of fire extinguishers and using a trumpet-shaped nozzle.

[0010] Also, the current invention makes it easy to disassemble and reassemble each component - especially, it provides fire extinguishing equipment with a safety bar to reduce the economic waste of replacing the entire fire extinguisher when the fire extinguishing liquid expires as the body, which contains the liquid, can easily be replaced by disassembling the protective cover, and the trumpet-shaped nozzle, based on the safety bar.

45 **[0011]** Also, the current invention, by providing a sealing sticker that will be destroyed following usage, offers a type of fire extinguishing equipment of which usage can easily be verified.

[0012] Also, the current invention offers a protective cover and a type of protective cover based fire extinguishing equipment to protect the fire extinguisher from external pressures.

50 **[0013]** Also, the current invention offers a fire extinguisher that brings about economic benefit by replacing only the body thanks to the detachable cover structure when the fire extinguishing liquid has been used up.

[0014] Also, the current invention offers a protective cover for the fire extinguishing equipment and the protective cover based fire extinguisher so that whether the extinguisher has been used or not can be checked automatically externally.

55 [Technical Solutions]

[0015] The fire extinguishing equipment, according to an aspect of the current invention, includes a body filled with fire extinguishing chemicals, a head connected at the upper part of the aforementioned body to emit the aforementioned

fire extinguishing chemical, and a protective cover that is installed between the aforementioned body and aforementioned head to fix the aforementioned body and aforementioned head, while to which the lower part of the aforementioned head is attached. Here, the aforementioned protective cover may include a lower support that wraps around the upper part of the aforementioned body; it's a support rib that wraps the lower part of the aforementioned head, which is projecting outward toward the aforementioned head from the aforementioned lower support, and an inner supporting part that supports the lower part of the aforementioned head, while being exposed to the inside from the upper part of the aforementioned lower support.

[0016] Here, the aforementioned head may include a discharge pipe inserted into the inside of the aforementioned body, an upper and lower handle located above the aforementioned discharge pipe, and a safety bar inserted between the aforementioned upper handle and aforementioned lower handle. Also, for the aforementioned safety bar, a support wire can be fix-installed that connects the aforementioned safety bar and the aforementioned lower handle inserted in the support hole formed at the aforementioned lower handle. Also, at the lower part of the aforementioned support wire, a pendant that is wider than the bore of the aforementioned support hole.

[0017] Also, the aforementioned safety bar further includes a fixture where the aforementioned support wire is inserted, and the aforementioned fixture may be formed continuously toward the vertical direction of the aforementioned safety bar. Also, the aforementioned upper handle includes a No. 1 handle plate and a cylinder projecting downward from the aforementioned No. 1 handle plate which gets inserted with the lower handle, while the aforementioned safety bar may include a ring that surrounds the aforementioned cylinder and a safety plate connected with a ring. Also, the aforementioned safety bar includes a support node inserted to the support groove on the aforementioned cylinder, and the aforementioned support node may be formed in the direction of the height of the aforementioned ring.

[0018] Also, the aforementioned ring includes a No. 1 curved plate and a No. 2 curved plate. Also, the aforementioned ring may include part No. 1 where the gap between the No. 1 curved plate and No. 2 curved plate increases and the part No. 2 which is made so that it can be elastically transformed as the distance between the No. 1 curve plate and No. 2 curve plate decreases. Also, a sealing tape shall be adhered to the aforementioned ring while the aforementioned sealing tape may be attached to the No. 1 curve plate and No. 2 curve plate. Also, the aforementioned head may include a valve assembly that is connected with the aforementioned emission pipe and controls the opening of the body and an emission nozzle that is directly fixed to the aforementioned valve assembly and in a horn tube shape.

[0019] The fire extinguishing equipment, according to another aspect of the current invention, includes a body filled with the fire extinguishing chemical inside and a head connected to the upper part of the aforementioned body to emit the aforementioned fire extinguishing chemical, while the aforementioned head includes a emission pipe inserted in the aforementioned body, upper handle and lower handle located at the upper part of the aforementioned emission pipe, and a safety bar inserted between the aforementioned upper handle and aforementioned lower handle and is made in a plate shape. Here, the aforementioned upper handle includes the No. 1 handle plate and a cylinder that is projected downward from the aforementioned No. 1 handle plate to be inserted in the lower handle, and the aforementioned safety bar may include a ring the wraps the aforementioned cylinder and a safety plate connected to the ring.

[0020] Also, the aforementioned safety bar include a support bump that gets inserted to the support furrow formed on the aforementioned cylinder, while the aforementioned support bump may be formed continued in the direction of the height of the aforementioned ring. Also, the aforementioned ring includes No. 1 curve plate and No. 2 curve plate, and the aforementioned ring may include part No. 1 where the gap between No. 1 curve plate and No. 2 curve plate increases and part No. 2 which is formed in a way it can elastically transformed as the distance between the No. 1 curve plate and No. 2 curve plate decreases. Also, a sealing tape is to be adhered to the aforementioned ring, while the sealing tape may also be attached to the No. 1 curve plate and No. 2 curve plate. Also, the aforementioned safety bar can be formed in a way that its height gets gradually decreased to the direction toward the aforementioned cylinder.

[0021] Also, a support wire that is inserted to the support hole formed on the aforementioned lower handle to connect the aforementioned safety bar and the aforementioned lower handle at the aforementioned safety bar. Also, at the bottom of the aforementioned support wire a pendant that is wider than the bore of the aforementioned support hole can be fix-installed. Also, the aforementioned safety bar further includes the fixture where the aforementioned support wire is installed, and the aforementioned fixture can be formed continuously to the direction of the height of the aforementioned safety bar.

[0022] Meanwhile, the fire extinguishing equipment according to the yet another aspect of the current invention includes a body container, a safety bar and upper lever that is formed at the gap between the upper lever and the lower lever formed at the upper part of the body container in the corresponding shape, and a loss proof part that is consisted of a wire that connects the safety bar and lower lever in order and a fixture that prevents the wire connected to the lower lever from getting away.

[0023] Here, the wire, of which upper end is inserted to the upper fixing furrow at the upper lever, goes through the upper attaching hole in the wire attachment part of the safety bar and lower attaching hole in sequence, then lower attaching hole of the lower lever, forming a structure that connects the upper lever and the lower lever while the safety bar is assembled in the center, while it can be connected with a fixture at the lower end. Also, the fire extinguishing

equipment has a structure that can be separated from the body container, which may further include a protective cover which, in a hemisphere shape, can form an area where the fixture for the introduction pipe can go through. Also, the fixture can be formed in the form of either a ring or a disk.

[0024] Also, the fire extinguishing equipment is formed wrapping the frontal outer layer of the lower level support part, is equipped with a hole for the emission pipe to pass through, may further include a connection part with the emission part that is toward the emission pipe from the outer side and provides a structure that can assembled with the trumpet-shaped emission part, while the trumpet-shaped emission part can emit the fire extinguishing liquid to all directions, formed in a cone-shape where the both ends are cut.

[0025] Also, the fire extinguishing equipment moves the fire extinguishing liquid in the body container to the upper part through the vertical pressure occurred by the provision of the outer power on the upper lever and lower lever, while can further include an introduction pipe that make the liquid to be emitted through the trumpet-shaped emission part connected to the emission hole.

[0026] Also, the fire extinguishing equipment may further include a sealing sticker formed between the upper lever and lower lever, which is to be adhered on the upper lever supporting part that connects the upper lever and the lower lever, so that when the upper lever and lower lever go through a pumping motion by the physical strength of the user the sealing sticker can be damaged automatically to be checked whether it is used or not, while the sealing sticker can be formed as a destructive label that cannot be taken off without damaging it as it breaks itself automatically when taking it off.

[0027] Also, the aforementioned safety bar may include a wire connection part which creates a hole at the center of the inner part, a linear vertical frame which has a structure that forms a plane in the perpendicular direction with the floor side where the body container is put while being attached as the upper lever of the safety bar, and an elastic frame which is made in a form of two curved plates facing each other in the shape of a tweezer at the end of the linear vertical frame, connected with the linear vertical frame.

[0028] Here, the elastic frame can be fixed after the safety bar is installed in the shape of wrapping the installation area of the supportive end where the installation furrows, at the upper lever, touches each other at the plate-shape-formed upper lever in the direction vertical with the lower lever from the both sides, while the installation area can be formed from the horizontal direction to the area of which diameter is smaller than the entire diameter of the upper lever supporting end. Also, as for the wire connection end, the upper connection hole and the lower connection hole of which diameter is diversified in the vertical direction of up and down at the central inner area, while it can be connected with the elastic frame that can be installed and separated through the upper lever.

[0029] Also, as for the fire extinguishing device from the yet another aspect of the current invention, the protective cover has a structure that can be separated from the body container, forming an area where the introduction pipe fixture can pass through and be fixed at the center as it is a hemisphere shape, and is a cone shape with its top and bottom end cut where its bottom end gets connected to the container installation end and the top has cover body that has the structure of connected to the multiple connection method set, which is comprised of installation curve, gauge insertion furrow, emission hole pass through furrow, connecting end fixing ring insertion furrow, and support curve, being able to protect the upper part of the main body container by protecting the introduction pipe fixture, which coffers a route through which the fire extinguishing liquid, through the introduction pipe in the body container, moves to the top through the vertical pressure provided by the outer power on the upper lever and lower lever, and be emitted through the trumpet-shaped emission part connected with the mission hole.

[0030] Also, the fire extinguishing equipment is a cone shape where the cut height is short at the bottom ends and may further include container installation ends formed to be fixed by wrapping the upper outer part of the main body container. Also, the fire extinguishing equipment, at the top end of the frontal central area, or where it meets with the back of the emission part, is formed with emission hole pass through furrows, while at the upper end of the left and right area may be further included are installation curve where the half of the gauge insertion furrow and the emission hole pass through furrow is made. Also, the fire extinguishing device may further include gauge insertion furrows where the inspection end of the insertion gauges are inserted, while it may still further include emission hole pass through furrow that provides a structure where the emission hole equipment type lower lever connection end installed from the lower part to the top part. Also, the fire extinguishing device may further include connection ends fixing ring insertion furrows that provides a structure where the fixing rings at the emission hole equipment type lower lever connection end holes gets installed from the down to the up.

[The Effects of the Invention]

[0031] The current invention, with a protective cover between the head and the body container to not only protect the lower part of the head but also prevent the connection part between the head and the container from getting destroyed, while a safety bar is inserted between the upper handle and the lower handle for easier removal. Also, it offers an effect of easily checking whether the safety bar has been seceded from compared to the safety pin during storage.

[0032] Also, the current invention, through the trumpet-shaped emission structure, can put off a fire quickly as the fire extinguishing liquid get emitted to the wide range of area at once, can easily be assembled and disassembled and especially can reduce the economic waste of exchanging the entire fire extinguisher as the fire extinguishing liquid inside gets expired as it is possible to exchange the main body container can be exchanged time to time, and by providing a sealing sticker, it offers an effect of easy checking of the usage as it gets damaged upon using of the fire extinguisher or upon manual detaching.

[0033] Also, the current invention, through the structural design of the protective cover, offers an effect of protecting the fire extinguisher from the outer pressure of the fire extinguisher and an economic effect by replacing only the main body container through the cover detachable structure when the fire extinguishing liquid inside is used up, and an effect to check the usage of the fire extinguisher easily by designing it in a way that the usage of the fire extinguisher can automatically be checked from the outside.

[Simple Explanations of the Figures]

[0034]

Figure 1 is a perspective view illustrating the fire extinguishing equipment according to the No. 1 embodiment of the current invention.

Figure 2 is a disassembled perspective view illustrating the fire extinguishing equipment according to the No. 1 embodiment of the current invention.

Figure 3 is a disassembled perspective view illustrating the head of the fire extinguishing equipment according to the No. 1 embodiment of the current invention.

Figure 4 is a perspective view illustrating the safety bar of the fire extinguishing equipment according to the No. 1 embodiment of the current invention.

Figure 5 is a blueprint illustrating the state where the safety bar of the fire extinguishing equipment is disassembled according to the No. 1 embodiment of the current invention.

Figure 6 is a partial perspective view illustrating the fire extinguishing equipment according to the No. 2 embodiment of the current invention.

Figure 7 is a perspective view illustrating the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 8 is a blueprint illustrating the structure of the safety bar of the fire extinguishing equipment with more detail according to the No. 3 embodiment of the current invention.

Figure 9 is a blueprint explaining the assembly structure of the upper lever, lower lever, safety bar, and loss proof end of the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 10 is a blueprint explaining the assembly structure of the main body container, protective cover, and insertion pipe of the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 11 is a blueprint explaining the assembly structure of the trumpet-shaped emission part, emission part connection end, and lower lever of the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 12 is a blueprint explaining the assembly structure of the lower lever and the emission hole equipped lower lever connection end of the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 13 is a blueprint explaining the internal structure of the upper lever connection end and the horizontal shaft of the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 14 is a blueprint displaying the state where the safety bar and the loss prevention end is disassembled according to the No. 3 embodiment of the current invention.

Figure 15 is a blueprint explaining the disassembling feature of the safety bar from the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 16 is a blueprint explaining the installation structure of the installation bump of the safety bar and the installation furrow of the upper lever from the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 17 is a blueprint displaying the state of sealing sticker attached between the upper lever and the lower lever of the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 18 is a blueprint explaining the notion of the sealing sticker of the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

Figure 19 is a perspective view illustrating the entire fire extinguishing equipment according to the No. 4 embodiment of the current invention.

Figure 20 is a blueprint to explain the disassembling structure of the protective cover.

Figure 21 and Figure 22 are perspective views of the e; Figure 23 and Figure 24 are the floor plan and the bottom

view of the protective cover; Figure 25 and Figure 26 are the front view and the rear view of the protective cover; Figure 27 and Figure 28 are the left and right side view.

Figure 29 is a blueprint showing the structure of the structures of the safety bar, emission hole equipped lower lever connection end, and the lower lever of the fire extinguishing equipment according to the No. 4 embodiment of the current invention.

Figure 30 is a graph showing the experiment result for the fire extinguishing device according to the No. 4 embodiment of the current invention before and after attaching the protective cover.

[Forms for the Enactment of the Invention]

[0035] Below is the explanation on the fire extinguishing device according to the No. 1 embodiment of the current invention.

[0036] Figure 1 is the perspective view illustrating the fire extinguishing equipment according to the No. 1 embodiment of the current invention, and Figure 2 is a disassembled perspective view illustrating the fire extinguishing equipment according to the No. 1 embodiment of the current invention.

[0037] Referring to the Fig. 1 and Fig. 2, according to the current embodiment the fire extinguishing equipment (101) includes a container (10) with fire extinguishing chemical filled inside, a head (30) connected at the top part of the container (10) to emit the fire extinguishing chemical, and the protective cover (20) installed between the container (10) and the head (30). The container (10) can be shaped into a cylinder shape, and the opening hole (12) is formed on the top. However, the current invention is not limited to this shape, and the container (10) can be in several different shape including a trigonal prism or a square pillar.

[0038] In the container (10) are the fire extinguishing chemicals, which can be comprised of the powder of sodium bicarbonate, etc., or as a liquid. Also, gas such as nitrogen, carbon dioxide, and the halogens can be included along with the fire extinguishing chemicals in the container (10).

[0039] The protective cover (20) is installed between the container (10) and the head (30) to fix the container (10) and the head (30), protecting the head (30) by inserting its (30) lower part. The protective cover (20) includes a lower support part (21) that wraps around the upper part of the container (10), a support rib that projects toward the head (30) from the top of the lower support part (21) and wraps around the lower part of the head (30), and an inner support part (23) which is projected from the upper part of the lower support part (21) toward the inside to support the lower part of the head (30). The protective cover (20) is formed into a pipe shape with inner space.

[0040] The lower support part (21) increases its bore as it goes lower, attached to the container (10) inserting the upper part of it (10). The support rib (22) inserts the lower part of the head (30) continued to the direction of the circumference of the lower support part (21) projected from the upper part of the lower support part (21). The lower support part (21) and the support rib (22) may have a circular longitudinal section. The inner support part (23) supports the lower part of the head (30) being projected from the upper part of the lower support part (21) to the inside, of which (23) center is a hole (23) where the hose (36) is to be inserted.

[0041] As like the current embodiment once the protective cover (20) is installed not only protect the link between the head (30) and the container (10) while preventing the bottom part of the head (30) from damaging.

[0042] Figure 3 is a disassemble perspective view of the head of the fire extinguishing device according to the No. 1 embodiment.

[0043] Referring to the Fig. 2 and Fig. 3, the head (30), according to the current embodiment, is inserted between the hose (36) inserted in the container (10), upper handle (31) and lower handle (32) located above the hose (36), and the upper handle (31) and the lower handle (32), and includes a safety bar (35) made in a plate shape, valve assembly (37) which controls the opening and the closing, and the emission nozzle (38) connected to the valve assembly (37).

[0044] The hose (36) can be made of a syphon pipe, and is connected with the valve assembly (37) inserted in the container. Valve assembly (37), connected with the hose (36), controls the opening and closing of the container (10). Valve assembly (37) is equipped with a spring and a pressure pin (371), opening the container (10) when the pressure pin (371) is pressured, and closing the container (10) when the pressured state is over. In the valve assembly (37) is a pressure gauge (39) gauging the pressure in the container (10).

[0045] The emission nozzle (38) can be realized as a horn tube shape where the bore gradually increases as it approaches forward, and is directly attached to the valve assembly (37). When the emission nozzle (38) is directly attached to the valve assembly (37) without going through a hose it can emit the fire extinguishing chemicals more easily.

[0046] The upper handle (31) is connected to the lower handle (32) and valve assembly (37) with a hinge so that it can be rotated and moved. The upper handle (31) includes the No. 1 handle plate (311) and a cylinder (312) projected downwards from the No. 1 handle plate (311) and inserted into the lower handle (32). The No. 1 handle plate (311) can be realized as a long continued flat plate, while there is a support furrow (313) continued to the direction of the height at where the cylinder (312) is heading toward the safety bar (35).

[0047] The lower handle (32) includes the No. 2 handle plate (321) and the storage part (322) that is projected downward

from the No. 2 handle plate (321) and wraps the upper part of the valve assembly (37). At the No. 2 handle plate (321) is an assembly hole (323) where the cylinder (312) is inserted and the support hole (325) where the support wire (33) is inserted.

[0048] When the user presses the upper handle (31) while the safety bar (35) is removed, the bottom part of the upper handle (31) presses the pressure pin (371), thus enabling the emission of the fire extinguishing chemical in the container (10).

[0049] Figure 4 is a perspective view of the safety bar of the fire extinguishing equipment according to the No. 1 embodiment of the current invention, and Figure 5 is a blueprint illustrating the state where the safety bar of the fire extinguishing equipment is dispatched according to the No. 1 embodiment of the current invention.

[0050] Referring to the Fig. 4 and Fig. 5, the safety bar (35) is installed between the upper handle (31) and the lower handle (32) by inserting it in, preventing the upper handle (31) from rotating and moving.

[0051] The safety bar (35) includes the ring (352) wrapping the cylinder (312), a safety plate (351) connected to the ring (352), and a fixture (353) to insert and fix the support wire (33). The ring (352) is connected and formed at a one end of the safety plate (351) in the direction of the length, while the fixture (353) is connected and formed on the another end of the safety plate (351) in the direction of the length. The ring (352) includes the No. 1 curve plate (3521) and No. 2 curved plate (3522) facing each other, which (3521 and 3522) are installed for each to wrap the cylinder (312) partially. The fixture (353) is formed continued to the direction of the height of the safety bar (35), and includes a hole continued to the direction of the height of the safety bar (35) and to insert a support wire (33).

[0052] The ring (352) includes the section No. 1 (S1) where the distance between the No. 1 curved plate (3521) and the No. 2 curve plate (3522) increases, and the section No. 2 (S2) where their (3521 and 3522) distance decreases so that they can elastically transformed. The section No. 2 (S2) gives support so that the safety bar (35) can be attached to the ring, and is elastically transformed when the safety bar (35) is lost from the cylinder (312).

[0053] The safety plate (351) is placed standing between the upper handle (31) and the lower handle (32) in the way that it touches the bottom part of the upper handle (31) and the upper part of the lower handle (32). The safety plate (351) and ring (352) are formed in a way that the height may be gradually decreased as it goes toward the cylinder (312), while the safety bar (35) is formed in a way so that its height may be gradually increased as it goes toward the cylinder (312). Thus, the safety bar (35) can easily be inserted into and removed from between the upper handle (31) and the lower handle (32).

[0054] The safety bar (35) includes a support bump (354) which gets inserted to the support furrow (313) formed on the cylinder (312), which (354) is formed continued to the height direction of the ring (352). Thus, the safety bar (35) and be installed more stably at the cylinder (312). At the safety plate (351), a gripping hole (356) is formed so that the user can support the safety plate (351) with their finger in it.

[0055] At the safety bar (35), a support wire (33), which is inserted to the support hole (325), is fixed, while a pendant (34) is fixed at the bottom of the support wire (33). The support wire (33) is made of a flexible rope, and installed and fixed in the fixing part (353). The pendant (34) is wider than the bore of the support hole (325) so that it won't pass through the support hall (325), and can be realized as various forms including a ball, plate, etc. One end of the support wire (33) is attached to the fixture (353) and the other end is attached at the pendant (34), which (34) is located beneath the support hole (325).

[0056] Thus, the support wire (33) may pass through the support hole (325), but the pendant (34) cannot go through the support hole (325), supporting the safety bar (35) through the lower handle (32) when the safety bar (35) is removed. As like this, when we prepare a support wire (33) and pendant (34), we can prevent the safety bar (35) from getting lost even when it (35) leaves the upper handle (31) and the lower handle (32).

[0057] Following is the explanation of the fire extinguishing equipment according to the No. 2 embodiment.

[0058] Figure 6 is a partial perspective view illustrating the fire extinguishing equipment according to the No. 2 embodiment of the current invention.

[0059] Referring to Fig. 6, the fire extinguishing equipment (102) according to the current No. 2 embodiment includes a container (10), protective cover (20), head (30), and sealing tape (50). As the fire extinguishing equipment according to the No. 2 embodiment (102) has the same structure with the aforementioned fire extinguishing equipment (101) except for the adhering of the sealing tape (50), the overlapping explanation of the same structure is omitted.

[0060] The sealing tape (50) is attached to the ring of the safety bar (35) all the while it (50) is attached to the No. 1 curve plate and No. 2 curve plate. The sealing tape (50) is realized through a rectangular tape, and in its (50) length direction one end is attached to the No. 1 curve plate and the other end is attached to the No. 2 curve plate. Thus, when the safety bar (35) is detached from the upper handle (31) and the lower handle (32), the sealing tape (50) will be tore, making it easier to check whether the fire extinguishing equipment (102) is used or not.

[0061] Following is the explanation of the fire extinguishing equipment according to the No. 3 embodiment of the current invention.

[0062] Figure 7 is a perspective view illustrating the fire extinguishing device according to the No. 3 embodiment of the current invention, Figure 8 is a blue print that illustrates the structure of the safety bar from the fire extinguishing

equipment according to the No. 3 embodiment of the current invention in more details, Figure 9 is a blueprint explaining the assembly structure of the upper lever, lower lever, safety bar, and the loss proof end according to the No. 3 embodiment of the current invention, Figure 10 is a blueprint explaining the assembly structure of the main body container, protective cover, and the introduction pipe according to the No. 3 embodiment of the current invention, Figure 11 is a blueprint explaining the assembly structure of the trumpet-shaped emission part, emission part connection end, and lower lever according to the No. 3 embodiment of the current invention, Figure 12 is a blueprint explaining the assembly structure of the lower lever and emission hole equipped type lower lever connection end according to the No. 3 embodiment of the current invention, and Figure 13 is a blueprint explaining the internal structure of the upper lever connection end and the vertical shaft according to the No. 3 embodiment of the current invention.

[0063] Referring to from Fig. 7 to Fig. 13, the safety bar based fire extinguishing equipment with trumpet-shaped nozzle includes a safety bar (110), loss proof end (120), protective cover (130), main body container (140), trumpet-shaped nozzle (150), emission nozzle connection end (160), upper lever (170), lower lever (180), and introduction pipe (190) as major components.

[0064] The safety bar (110) is equipped with wire connection end (111), upper attachment hole (112), lower attachment hole (113), elastic frame (114), installation bump (115), and linear frame (116), and is realized not with metal but with flame retardant materials. Here the wire connection end (111) is a cylinder shaped, where the upper attachment hole (112) and lower attachment hole (113), of which diameter is differentiated, are formed in the internal central area in vertical direction, and have a structure connected with the elastic frame (114), which can be detached from the upper lever (170), with a I-shaped linear vertical frame (116).

[0065] The linear vertical frame (116) has the structure where its structure while installed to the upper lever (170) of the safety bar (110) is a plane perpendicular with the upper plane of the container support (140a) realized at the bottom end of the main body container (140). Also, the linear frame (116) is equipped with a finger insertion hall, and may be equipped with other ventilation holes.

[0066] The elastic frame (114) is formed in a way that the two curve plates face each other like a tweezer at the end of the linear vertical frame (116), in a form of wrapping the installation area of the support end (170b) that meets the plate-shaped upper lever (170) to the lower lever (180), so that it can perform the function of fixing the safety bar (110) when it's installed. Here the installation area (170b) is realized with the area less wider with the entire width of the support end in horizontal direction. The loss proof end (120) is consisted of the total of a wire (121) and a fixture (122).

[0067] The wire (121) gets inserted to the upper fixation furrow (171) of which upper end is formed at an end of the upper lever (170), pass through the upper installation hole (112) in the wire connection end (111) in the safety bar (110) and the lower installation hole (113) in order, and formed by passing through the lower fixation hole (181) formed at an end of the lower lever (180). In short, the wire (121) is used to connect the upper lever (170) and lower lever (180) while the safety bar (110) is installed in between, while the lower end is connected with a fixture (122).

[0068] Here, the fixture (122) can be formed in a shape such as a ring and a disk. Through such structure, when the safety bar (110) is separated from the between of the upper lever (170) and the lower lever (180), the fixture (122), connected with the wire (121) which is fixed at the upper fixation furrow (171) or the upper lever (170) can move upward to where the lower fixation furrow (181) is on the lower side of the lower lever (180) preventing the wire (121) from getting through the lower fixation hole (181), thus preventing it from getting away from the fire extinguishing equipment (100).

[0069] The protective cover (130) has a structure that can be separated from the main body container (140), and is hemisphere shaped with an area where the introduction pipe fixture (195) can pass through and be fixed in the middle. Here, the introduction pipe fixture (195), along with being inserted at the central hole, is fixed as the introduction pipe (190) is inserted through the bottom end, and has the structure fixed through the connection of the upper lever connection end (170a) through the central axis (c) which is wrapping around the elastic object to provide elastic force to the inserted introduction pipe (190). And toward the outside of the central axis (c) that connects the introduction pipe fixture (195) and upper lever connection end (170a), it has the structure wrapped with the emission hole equipped type lower lever connection end (180a).

[0070] Meanwhile, there is a structure fixed with a horizontal shaft (170c) at the area near the emission hole so that the inner revolution terminal of the upper lever connection end (170a) and the outer revolution terminal of the emission hole equipped lower lever connection end (180a) can be connected through. And the horizontal shaft (170c) has a structure fixated inserted to the support end fixing hole (180b-1) of the lower lever support end (180b). The emission part connection end (160) is formed wrapping around the outer frontal side of the lower lever support end (180b), and by preparing a hall for the emission hole to pass through, provides a structure where it can be joined with the trumpet-shaped emission part (150) outside toward the nozzle.

[0071] The main body container (140) is cylinder shaped and contains accumulator type fire extinguishing powder. The upper side is shaped in hemisphere so that it can overlap with the lower part of the protective cover, and at the bottom there can be a container support (140a) to protect the container from outer forces.

[0072] The trumpet-shaped emission nozzle (150) is in the shape of a cone where the upper and lower end is cut rather than the previous fire extinguishing hose so that the fire extinguishing liquid may be emitted to all the directions.

Through this structure, the outer force is provided to the upper lever (170) and the lower lever (180) through the introduction pip (190), creating vertical pressure which moves the fire extinguishing liquid upward so that it can be emitted through the trumpet-shaped emission part (150) connected with the emission nozzle.

[0073] Meanwhile, the pressure gauge (130a) is formed where the emission part connection end (160) meets the lower lever support end (180b), and is able to measure and display the pressure of the fire extinguishing liquid that passed through the internal introduction pipe fixture (195). Here, the pressure gauge (130a) can be formed either as analog or digital.

[0074] Figure 14 is a blueprint which shows the state where the safety bar (110) and loss proof end (120) are disassembled from the fire extinguishing equipment (100) according to the No. 3 embodiment of the current invention. Referring to the Fig. 14, the safety bar (110) can be removed from and attached to the fire extinguishing equipment (100), and the upper lever (170), lower lever (180), trumpet-shaped emission nozzle (150), emission part connection end (160), and protective cover (130) can each be dismantled. Especially, by disassembling the protective cover (130), it can provide a benefit of providing the main body container (140) as a refill format.

[0075] Figure 15 is a blueprint to explain the removal and attachment of the safety bar (110) from the fire extinguishing equipment (100) according to the No. 3 embodiment of the current invention, and Figure 16 is a blueprint to explain the installation structure of the installation bump (115) of the safety bar (110) of the safety-bar-based fire extinguishing equipment (100) with trumpet-shaped emission structure according to the No. 3 embodiment of the current invention and the installation furrow (172) at the upper lever (170). As the elastic frames (114) that are in the form of two curved plate facing one another spreads horizontally to the installation area of the upper lever (170) being installed, perform the role of fixing the safety bar (110). Here, the installation bump (115) formed in the middle of the two elastic frames (114) which are curved plates facing each other gets fixed as it gets inserted in the installation furrow (172) formed at the installation area (170b) of the support part at the upper lever (170), fixing the safety bar (110) free from shaking.

[0076] Figure 17 is a blueprint showing the sealing with the sealing sticker (200) between the upper lever (170) and the lower lever (180) of the fire extinguishing equipment (100) according to the No. 3 embodiment of the current invention. Just as the blueprint of Fig. 17b which is with the sealing sticker (200) attached to Fig. 17a, by adhering the sealing sticker (200) at the upper lever support end that connects the upper lever (170) and lower lever (180), the user can check whether the equipment has been used or not as the sealing sticker (200) gets damaged automatically upon pumping the upper lever (170) and lower lever (180) through the user's grip.

[0077] Figure 18 is a blueprint to explain the notion of the sealing sticker (200) at the fire extinguishing equipment (100) according to the No. 3 embodiment of the current invention. The sealing sticker (200) can be made of a destructive label, or as a sticker that cannot be taken away without damaging the label. In other words, the sealing sticker (200) is a double-stripping destructive sticker of which thin film layer gets disassembled when removing so that no one may adhere it once again. Fig. 18b is a surface of the sealing sticker (200) according to an embodiment of the current invention.

[0078] Following is the explanation of the fire extinguishing equipment according to the No. 4 embodiment of the current invention.

[0079] Figure 19 is a perspective view to show the entire fire extinguishing equipment according to the No. 4 embodiment; Figure 20 is a blueprint to explain the separation structure of the protective cover, Figure 21 and Figure 22 are the perspective view of the protective cover, Figure 23 and Figure 24 are the floor plan and the bottom view of the protective cover, Figure 25 and Figure 26 are the front view and rear view of protective cover, Figure 27 and Figure 28 are the left and right side views of the protective cover, and Figure 29 is a blueprint showing the structure of the safety bar, emission hole equipped lower lever connection end, and the lower lever according to the No. 4 embodiment of the current invention.

[0080] Referring to the Fig. 19 to Fig. 29, the protective cover-based fire extinguishing equipment (100) are equipped with a safety bar (100), loss proof end (120), protective cover (130), main body container (140), container supporter (140a), trumpet-shaped emission nozzle (150), emission part connection end (160), upper lever (170), and lower lever (180).

[0081] The safety bar (100) is equipped with wire connection end (111), upper equipment hall (112), lower equipment hall (113), elastic frame (114), and installation bump (115), and is made not of metal but of flame retardant materials. Here the wire connection end (111) is cylinder shaped, where the upper installation hall (112) and lower installation hall (113) with differentiated width are formed internally in vertical direction, having the structure that is connected with the elastic frame (114) that can be adhered and attached to the upper lever (170) with an I-shaped linear vertical frame.

[0082] The linear vertical frame has a structure that forms the plane in the direction perpendicular with the upper plane of the container supporter (140a) formed at the bottom end of the body container (140) when installed to the upper lever (170) of the safety bar (110). Also, the vertical frame is equipped with a finger insertion hall, and may be equipped with other ventilation halls.

[0083] The elastic frame (114), formed in a way that the two curved plate like a tweezer at the end of the linear vertical frame, performs a role of fixing the safety bar (110) when installed in a form of wrapping the installation area of the support end that meets with the lower lever (180) from the upper lever (170) which is a plate shaped from both sides.

Here the installation area is formed as an area smaller than the entire dimension of the supportive ends. Meanwhile, the loss proof end (120) forms one unit with a wire (121) and a fixture (122) to prevent the safety bar (110) from getting away.

[0084] The protective cover (130) has the structure that can be separated from the body container (140), and is a hemisphere forming an area where the introduction pipe fixture (195) can pass through and be fixed in the center. Here the protective cover (130) is comprised of the cover body (131), container installation end (132), installation curve plane (133), gauge insertion furrow (134), emission hole pass through furrow (135), connection end fixing ring insertion furrow (116), and support curve plane (137).

[0085] The cover body (131) is a cone shape with the both upper and lower ends cut, and gets connected with the container installation end (132) to the lower end, and with the multiple connection method set (130a), that is comprised of the installation curve plane (133), gauge insertion furrow (134), emission hole pass through furrow (135), connection end fixing ring insertion furrow (136), and support curve plane (137) to the upper end.

[0086] Through this structure, the fire extinguishing liquid moves upward by the vertical pressure created by the outer force provided to the upper lever (170) and the lower lever (180) through the introduction pipe in the body container (140). The structure also performs a role to protect the introduction pipe fixture (195), which provides a route for the liquid to be emitted through the trumpet-shaped emission nozzle (150), at the outer side, and also protect the upper part of the body container (140) from the outer forces.

[0087] Container installation end (132) is in the structure of a barrel where the cut height of the both lower and upper ends are short, and is formed to fix the outer upper side of the body container (140) by wrapping it. For this, the upper part of the body container (140) is formed as a cone shape so that it can overlap with the lower side of the cover body (131), and the part right below is wrapped by the container installation end (132).

[0088] Installation curve plane (133) is where it meets with the rear side of the emission part connection end (160), a emission hall pass through furrow (135) gets formed in the upper end of the frontal central area, and at the left and right upper end the half of the emission hole pass through furrow (135) and gauge insertion furrow (134) is formed.

[0089] The gauge insertion furrow (134) is where the detection end of the pressure gauge (130a) is inserted; the emission hole pass through furrow (135) provides a structure where the emission hole of the emission hole equipped type lower lever connection end (180a) gets installed to the lower part from the upper part, while the connection end fixing ring insertion furrow (136) provides a structure where the fixing ring of the emission hole equipped type lower lever connection end (180a) gets installed to the lower part from the upper part.

[0090] Meanwhile, the other half of the gauge insertion furrow (134) and connection end fixing ring insertion furrow (136) than the aforementioned half formed on the installation curve plane (133) are formed at the support curve plane (137). Concretely, the gauge insertion furrow (134) and connection end fixing ring insertion furrow (136) has a structure extended toward the support curve plane (137) based on the half formed on the installation curve plane (133).

[0091] In other words, support curve plane (137), formed bigger than the installation curve plane (133) in diameter, forms the half of the body of the multiple connection method set (130a).

[0092] Through such structure the protective cover (130) has the structure that can be separated from the body container (140) with an area for the introduction pipe fixture (195) to pass through and be fixed in the center.

[0093] Here, introduction pipe fixture (195), at the same time as it is inserted to the central hole of the protective cover (130), is fixed as the introduction pipe is inserted through the bottom part.

[0094] And it has a structure that is wrapped with the emission hole equipped type lower lever connection end (180a) for the outside of the central axis (c) that connects the introduction pipe fixture (195) and the upper lever (170). It meets with the protective cover (130) at the bottom of the emission hole equipped type lower lever connection end (180a) and with the lower lever (180) with the upper part of the emission hole equipped type lower lever connection end (180a), and has the structure that is connected with the emission part connection end (160) to the front of the protective cover (130).

[0095] And the body container (140) is a barrel shaped, contains fire extinguishing substances such as accumulator type fire extinguishing powder, fire extinguishing liquid, fire extinguishing gas, etc., of which upper side is a hemisphere so that it can overlap with the bottom part of the protective cover (130), and for which a container supporter (140a) can be prepared for the protection from the outer forces.

[0096] The trumpet-shaped emission part (150) is a cone shaped with the top and bottom end cut instead of the previous fire extinguishing hose, letting the fire extinguishing substance to be emitted to all directions. The emission part connection end (160), as previously mentioned, is formed wrapping the outer frontal side of the protective cover (130), and by having a hole for the emission hole to pass through, it provides a structure that can be conjoined with the trumpet-shaped emission part (150) toward the emission hole. Through such structure the fire extinguishing substance can be moved upward through the vertical pressure occurred by the provision of the outer power to the upper lever (170) and the lower lever (180) through the introduction pipe and be emitted through the trumpet-shaped emission part (150) connected with the emission hole.

[0097] On the other hand, pressure gauge (130a) is horizontally formed and contacted against exhaust nozzle connection part (160) and protection cover (130) and also, extinguishing medium's pressure, passing the inner leading-in tube fixing material (195), is displayed. At this time pressure gauge (130a) can be formed as the analog pressure or the

digital pressure gauge.

[0098] At the extinguished equipment (100), based on the protection cover designed of such structure, the measuring result of tensile strength and folding strength and fracture strength for ends of top and bottom before and after protection cover (130)' s installation is shown at Fig 30(a) or Fig 30(c), as a result of which protection before all protection cover (130) is more improved.

[0099] At this time, according to tensile strength TAPPI T 404 om-87, Hounsfield' s tensile strength tester is used folding strength is used by MIT type of TAPPI T 511 om-83. In measuring folding strength, tensile load was 0.4kg and stiffness was Clark type according to TAPPI T 451 cm-84 and as for fracture strength Mullen low pressure type tester was used according to TAPPI T 403 om-85.

[0100] At extinguishing equipment (100) based on protection cover, safety bar (110) can be detachable, in which top lever (170), bottom lever (180), cone type exhaust nozzle connection part (160) are removed and then, protection cover is disconnected and main container (140) can be changed in refill type.

[0101] At extinguished equipment (100) based on protection cover, protection cover (130) seal, namely, protection cover (130) of the space between leading-in tube fixing material (195) and main container (140) shows particle occurring suppression by adhering protection cover (130) is shown as the result according to main container (140)' s parameter setup like below [table 1]. At this time, sealing was performed by external water-proof test. Also, as for the relation with particle occurring suppression, protection cover and sealing sticker based extinguished equipment and protection cover (130), particle occurring suppression is tested based on whether fine particle was generated bigger than 15 ppm per m2 after spraying extinguishing material to fine particle collection device, based on which its performance is tested. If result if less than 15 ppm, fine particle test is decided as pass.

[Table 1]

Example test	d1 : d2 : d3 : d4 : d5 : d6	Whether sealed test is proper	Whether fine particle test is proper
1	22 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	NO	NO
2	19 or 21 : 1.4 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	NO	NO
3	19 or 21 : 1.2 or 1.3 : 2 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	NO	NO
4	19 or 21 : 1.2 or 1.3 : 1 : 22.5 : 0.8 or 0.9 : 17 or 18	NO	NO
5	19 or 21 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 1.0 : 17 or 18	NO	NO
6	19 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	OK	OK
7	20 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	OK	OK
8	21 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	OK	OK
9	18 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	NO	NO
10	19 or 21 : 1.1 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	NO	NO
11	19 or 21 : 1.2 or 1.3 : 0.9 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	NO	NO
12	19 or 21 : 1.2 or 1.3 : 1 : 18.5 : 0.8 or 0.9 : 17 or 18	NO	NO
13	19 or 21 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 0.7 : 17 or 18	NO	NO

(continued)

Example test	d1 : d2 : d3 : d4 : d5 : d6	Whether sealed test is proper	Whether fine particle test is proper
14	19 or 21 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 16	NO	NO
15	19 or 21 : 1.2 or 1.3 : 1 : 19.5 or 21.5 : 0.8 or 0.9 : 17 or 18	NO	NO

Claims

1. Container filled inside with extinguished medium;
The protection cover is installed between the above container and the above head In order to exhaust the above extinguished medium, the above container and the above head are fixed but the above head bottom is inserted
2. At claim 1, the above protection cover is extruded toward the head ad bottom support and bottom support, wrapping the above container, in which support rib and bottom support' s top are specifically extruded inside.
3. At claim 1, head specifically includes safety bar, inserted between inserted exhausted tube inside container insides, top handle and bottom handle over exhaust nozzle.
4. At claim 3, bottom handle is inserted to formed support hole at safety bar, in which extinguished equipment is specially installed to support wire connecting the above safety bar and the above bottom handle.
5. At claim 4, the extinguishment equipment is specifically fixed and installed with pendent having more bigger width than inner diameter of the above support hole at the above support wire bottom.
6. At claim 5, the above safety bar includes fixing part inserted to the above wire. The above fixing part is specifically formed by connecting safety bar to height direction.
7. At claim 3, the above top handle is extruded to the bottom of No.1 handle plate and No.2 handle plate and includes pillar inserted to bottom handle. Safety bar specifically includes safety plate connected to ring and ring, wrapping the above pillar.
8. At claim 7, The above safety bar includes support bump, inserted to support groove formed at the above pillar. The above support bump is specifically formed by connected height direction of the above rig.
9. In the Claim 7,
A fire-extinguishing device **characterized by** the fact that the chain includes the first curved surface plate and the second curved surface plate, and the chain includes the first part where the gap between the first curved surface plate and the second curved surface plate is increased and the second part where elastic deformation is allowed to occur while the gap between the first curved surface plate and the second curved surface plate is reduced.
10. In the Claim 9,
A fire-extinguishing device **characterized by** the sealed tape being attached to the first curved surface plate and the second curved surface plate while the sealed tape is attached to the chain.
11. In the Claim 3,
A fire-extinguishing device **characterized by** inclusion of the valve assembly controlling open/close of the container by being connected to the discharge pipe and the injection nozzle that is directly fixed to the valve assembly and has the shape of a horn tube.
12. A fire-extinguishing device **characterized by** including
A container with fire-extinguishing chemical charged inside;
A head coupled to the upper side of the container so as to allow discharge of the fire-extinguishing chemical, and by the fact that the head includes a discharge pipe inserted in the interior of the container, upper handle and lower

handle positioned above the discharge pipe, and a safety bar that is fit between the upper handle and the lower handle realized in a plate shape.

13. In the Claim 12,

A fire-extinguishing device **characterized by** the fact that the upper handle includes the first handle plate and a post fit in the lower handle by protruding downward from the first handle plate, and that the safety bar includes a chain wrapping around the post and a safety plate connected to the chain

14. In the Claim 13,

A fire-extinguishing device **characterized by** the fact that the safety bar includes supporting bump inserted in the supporting hole formed in the post, and the supporting bump is formed by being connected in the height direction of the chain.

15. In the Claim 13,

A fire-extinguishing device **characterized by** the fact that the chain includes the first curved surface plate and the second curved surface plate, and the chain includes the first part where the gap between the first curved surface plate and the second curved surface plate is increased and the second part that is realized so as to allow elastic deformation while the gap between the first curved surface plate and the second curved surface plate is reduced.

16. In the Claim 15,

A fire-extinguishing device **characterized by** the fact that the sealed tape is attached to the first curved surface plate and the second curved surface plate while the sealed tape is attached to the chain.

17. In the Claim 13,

A fire-extinguishing device **characterized by** the fact that the safety bar is formed so that the height is gradually reduced in the direction facing the post.

18. In the Claim 12,

A fire-extinguishing device **characterized by** the fact that the supporting wire that connects the safety bar and the lower handle by being inserted in the supporting hole formed in the lower handle is fixed to the safety bar for installation.

19. In the Claim 18,

A fire-extinguishing device **characterized by** the fact that a pendant having a larger width than inside diameter of the supporting hole is fixed to the bottom of the supporting wire for installation.

20. In the Claim 19,

A fire-extinguishing device **characterized by** the fact that the safety bar further includes the fixing unit with insertion of the supporting wire, and the fixing unit is formed by being connected in the height direction of the safety bar.

21. Body container;

Safety bar formed in shape corresponding to the separated space of upper lever formed in the upper part of body container and lower lever; and

Loss-preventing end comprised of wire connecting upper lever, safety bar and lower lever in sequence and a fixed body preventing breakaway of the wire connected to the lower lever.

22. In the Claim 21,

A fire-extinguishing device where the wire forms a structure connecting the upper lever and the lower lever in the state with safety bar fastened in the middle as the upper tip is inserted in the upper fixing groove of the upper lever and passes through the top mounting hole and the bottom mounting hole inside the wire connecting end of safety bar in sequence followed by passing through the lower fixing hole of the lower lever, while having a structure connected to the fixing body for the lower tip.

23. In the Claim 21,

A fire-extinguishing device further including a protection cover that has a structure of being separated from the body container, with formation of an area allowing the fixing body to pass the introducing pipe in the center in a semispherical shape;

24. In the Claim 21,

A fire-extinguishing device

Where the fixing body is formed to have a shape between chain and disk.

25. In the Claim 21,

A fire-extinguishing device further including connecting end for venting unit that provides a structure that is formed by wrapping around the outer side of front face of the lower lever- supporting end, and can be coupled with a bugle-shaped venting unit toward the vent from outside by being equipped with a hole for passing through of the port;

26. In the Claim 25,

A fire-extinguishing device, where fire-extinguishing solution is injected radially as the bugle-shaped venting unit has upper and lower tips formed in a cut cone shape.

27. With regard to Claim 26,

fire extinguishing equipment that additionally has an introduction pipe for allowing the digestive liquid inside the main body container to move upward by the vertical pressure generated by the provision of the external force to the upper lever and the lower lever and to be sprayed through the trumpet-like ejection unit connected to the ejection port.

28. With regard to Claim 21,

fire extinguishing equipment that additionally has a sealing sticker formed between the upper lever and the lower lever.

29. With regard to Claim 28,

fire extinguishing equipment that has a sealing sticker, which is attached to the upper lever supporting end connecting between the upper and lower lever, which will automatically be damaged when the user forces the upper and lower lever to pump.

30. With regard to Claim 28,

Fire extinguishing equipment that has a sealing sticker, which is torn into shreds when someone tries to remove the sticker.

31. With regard to Claim 21,

fire extinguishing equipment that has a safety bar with a wire connecting end where a hole is formed in an inner central region; a straight vertical frame having a structure in which a plane is formed in a direction perpendicular to a bottom surface on which the main container is placed in a state of being connected to an upper lever of the safety bar in a structure connected to a wire connection end; and an elastic frame connected to the linear vertical frame and having two curved flat plates facing each other in a clamping manner at the end of the linear vertical frame.

32. With regard to Claim 31,

fire extinguishing equipment with an elastic frame that is fastened after the safety bar is fastened and secured to the upper lever of the upper lever in the form of a plate-like upper lever having the fastening groove formed in the upper lever and the fastening area of the support end abutting the lower lever in the vertical direction.

33. With regard to Claim 31,

fire extinguishing equipment with a fastening region that is formed in a region having a diameter smaller than an entire diameter of the upper lever supporting end in the horizontal direction.

34. With regard to Claim 31,

fire extinguishing equipment with a wire connecting end where the upper end mounting hole and the lower end mounting hole are vertically formed in the inner central region and the equipment's elastic frame, which is detached by the upper lever, is connected to the equipment through a bar-type linear vertical frame.

35. With regard to Claim 23,

fire extinguishing equipment whose protective cover has a structure separated from the main body container, and this equipment has a semispherical shape in which an area through which an introduced pipe fixing body can pass and is fixed; this equipment's upper and lower end is in a cut cone shape and its lower end is connected to the container fastening end and the cover body is in a structure that is connected to a multi-linking means aggregate composed of a fastening curved surface, a gage insertion groove, a jet hole passing groove, a coupling end fixing groove, and a supporting curve. These parts allow the inlet pipe inside the main container to move the extinguishing liquid upward through vertical pressure generated from the external force to the upper and lower lever and the

extinguishing liquid to be injected through the trumpet-shaped spraying part. The whole process can be done because the inlet pipe is protected from the outside and the upper part of the main body is protected from external force.

36. With regard to Claim 35,

fire extinguishing equipment that additionally has a container fastening part in a short cylindrical shape with the upper and lower end are cut, that is formed to cover and fix the upper outer surface of the main body container.

37. With regard to Claim 35,

fire extinguishing equipment that additionally has a fastening curve that is in touch with the rear part of the connecting part of the spray with a hole at the upper end of the central region passed by the spray, and a gage insertion groove and a half of the injection hole passing groove formed at an upper end of the right and left part.

38. With regard to Claim 35,

fire extinguishing equipment that additionally has a gage insertion groove into which a detection end of the pressure gauge is inserted.

39. With regard to Claim 35,

fire extinguishing equipment that additionally has a spout passage groove for providing a structure in which the spout of the lower lever connection end having the spout is fastened from the upper portion to the lower portion.

40. With regard to Claim 35,

fire extinguishing equipment that additionally has a connection end fixing groove insertion groove for providing a structure in which the fixing hook of the lower lever connection end having the air outlet is fastened from the upper portion to the lower portion.

Fig. 1

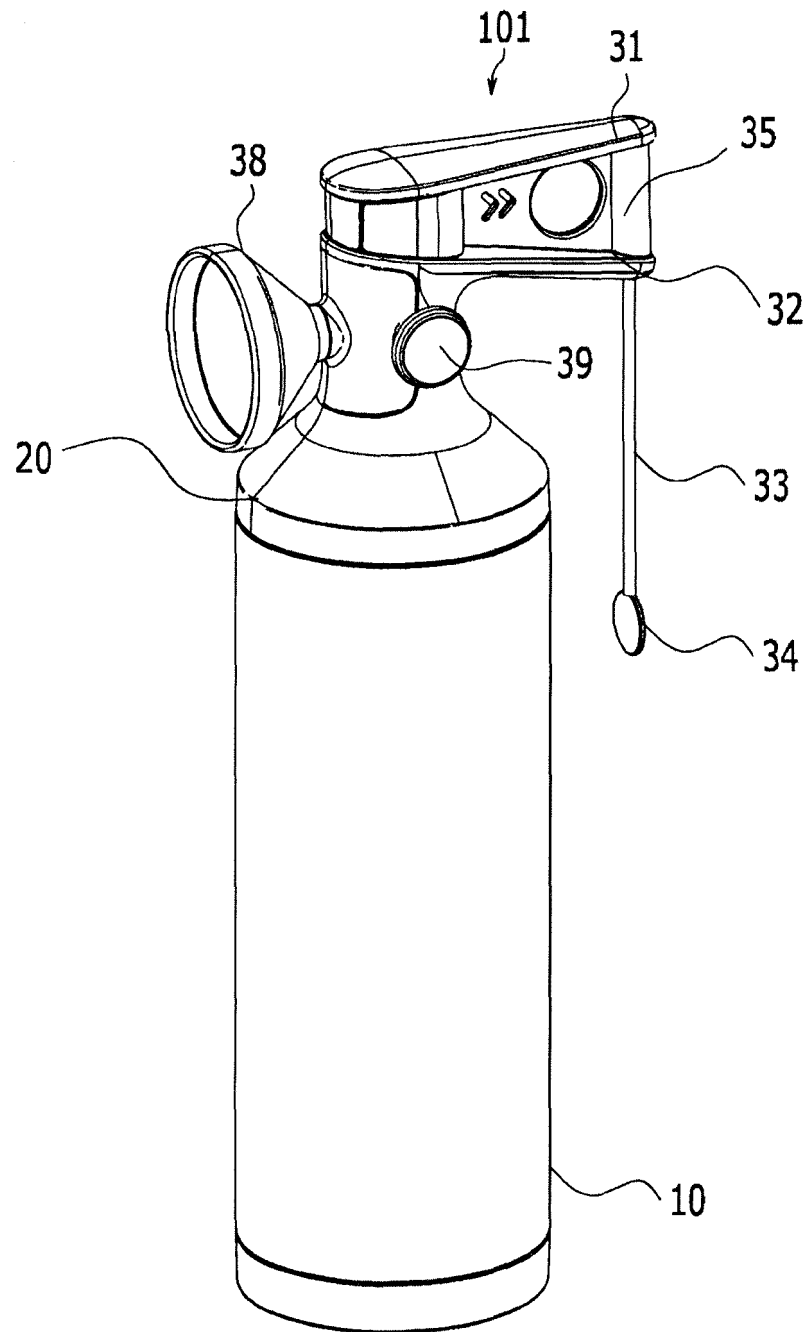


Fig. 2

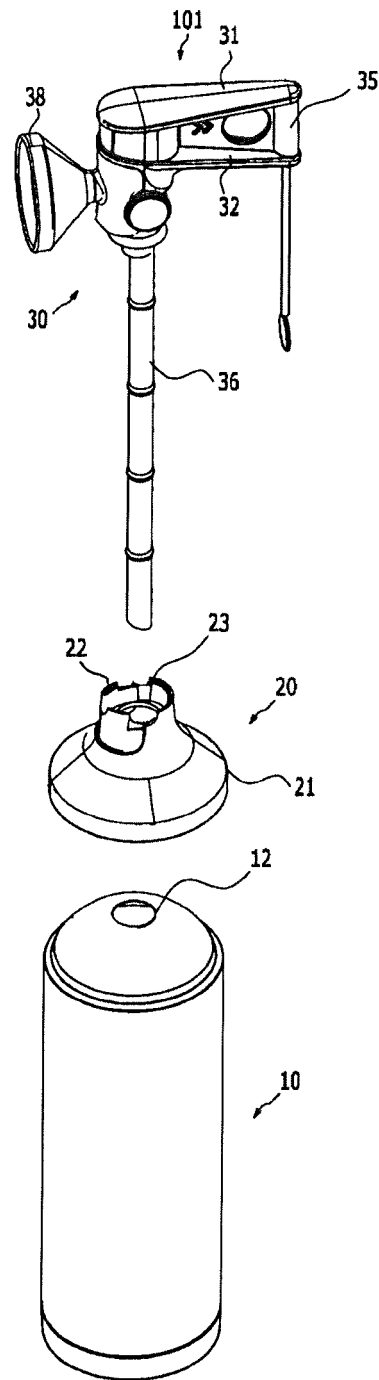


Fig. 3

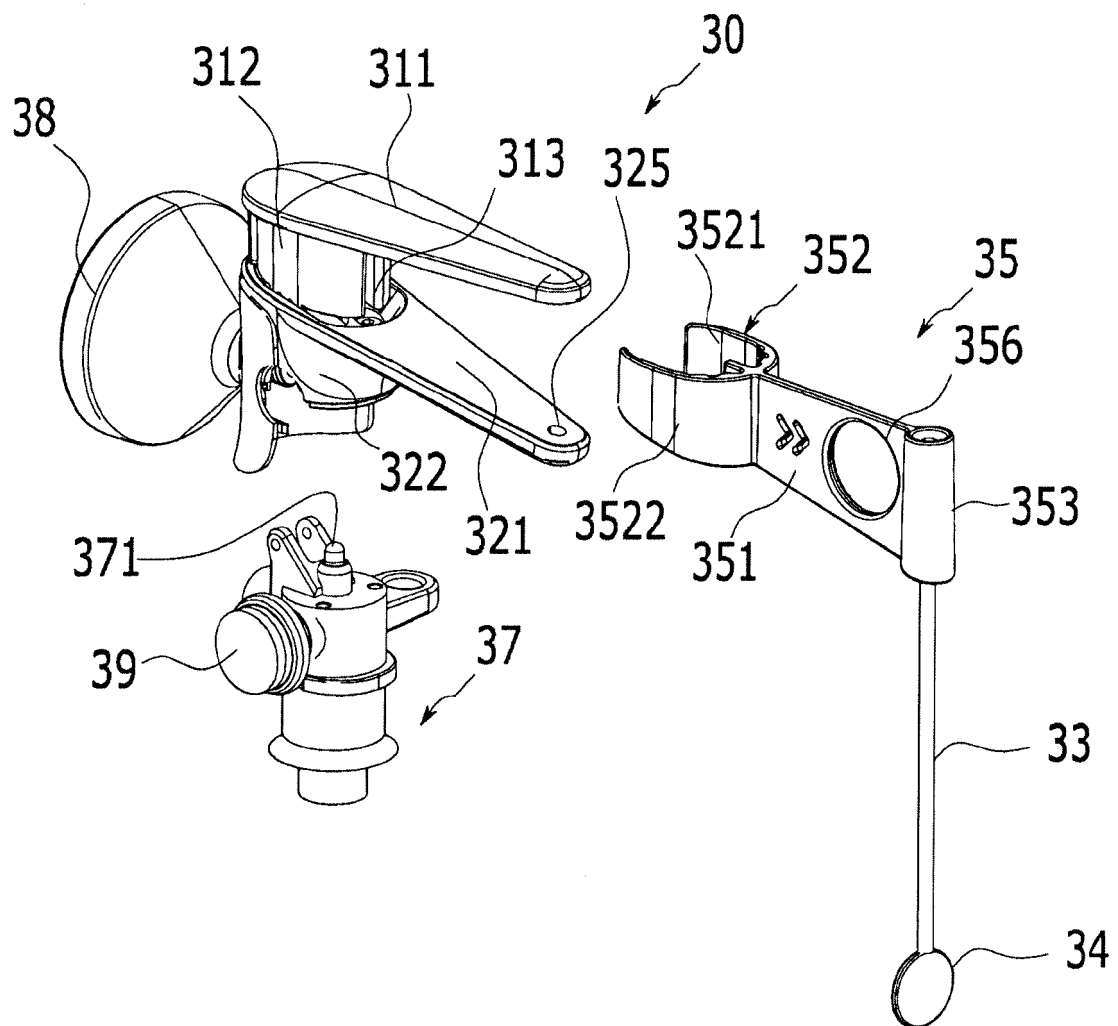


Fig. 4

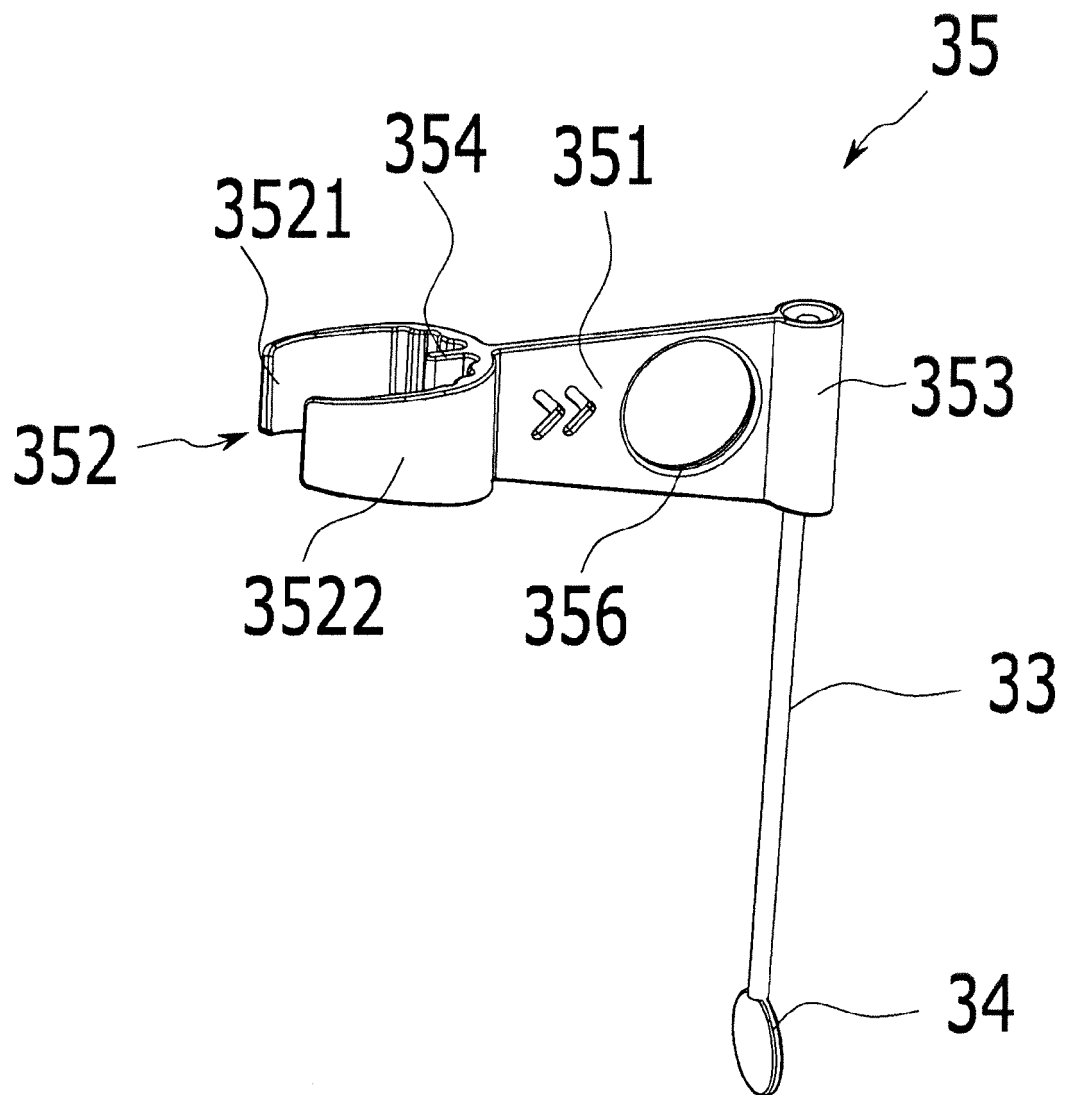


Fig. 5

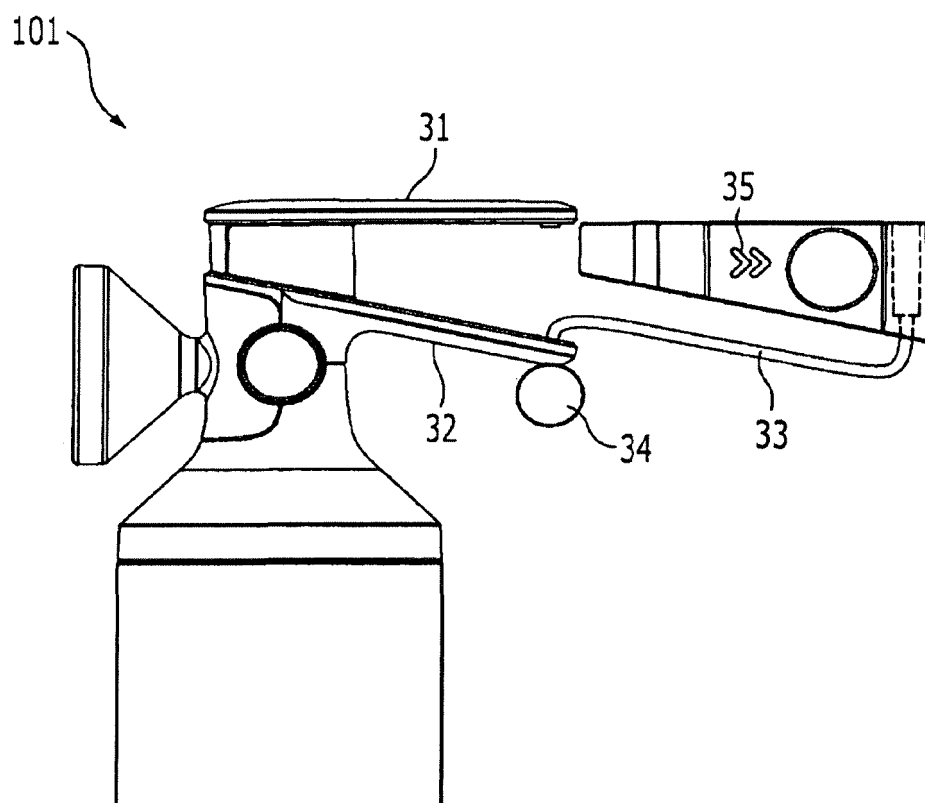


Fig. 6

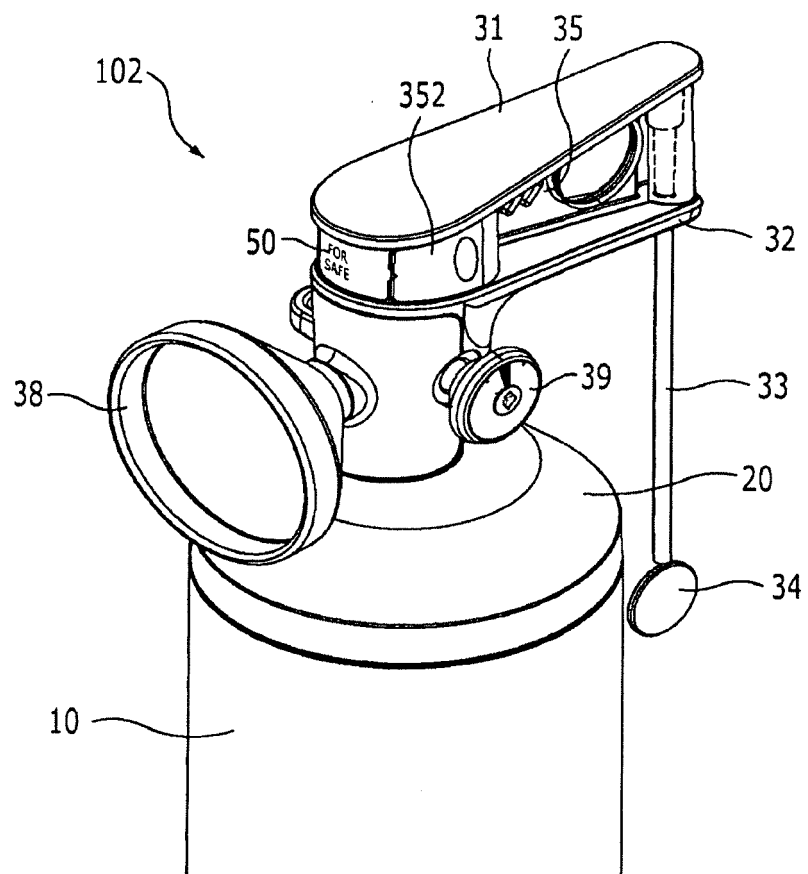


Fig. 7

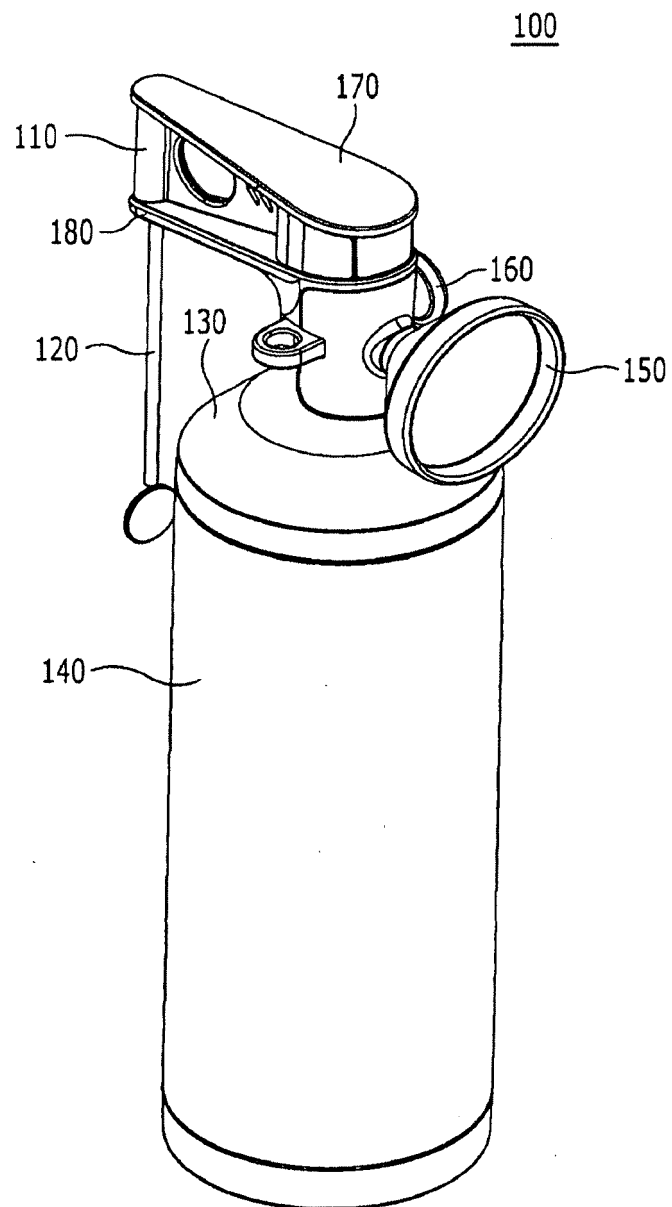


Fig. 8

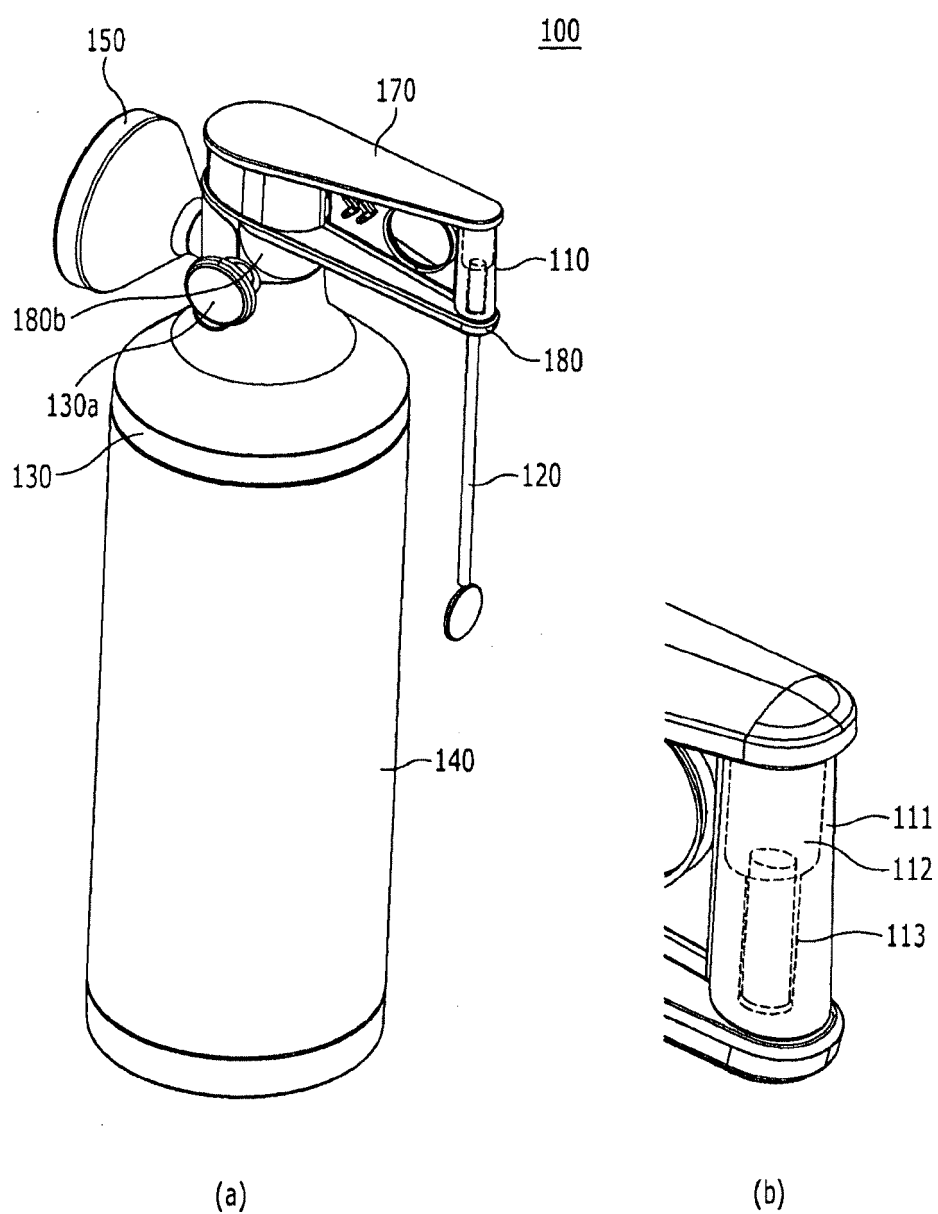


Fig. 9

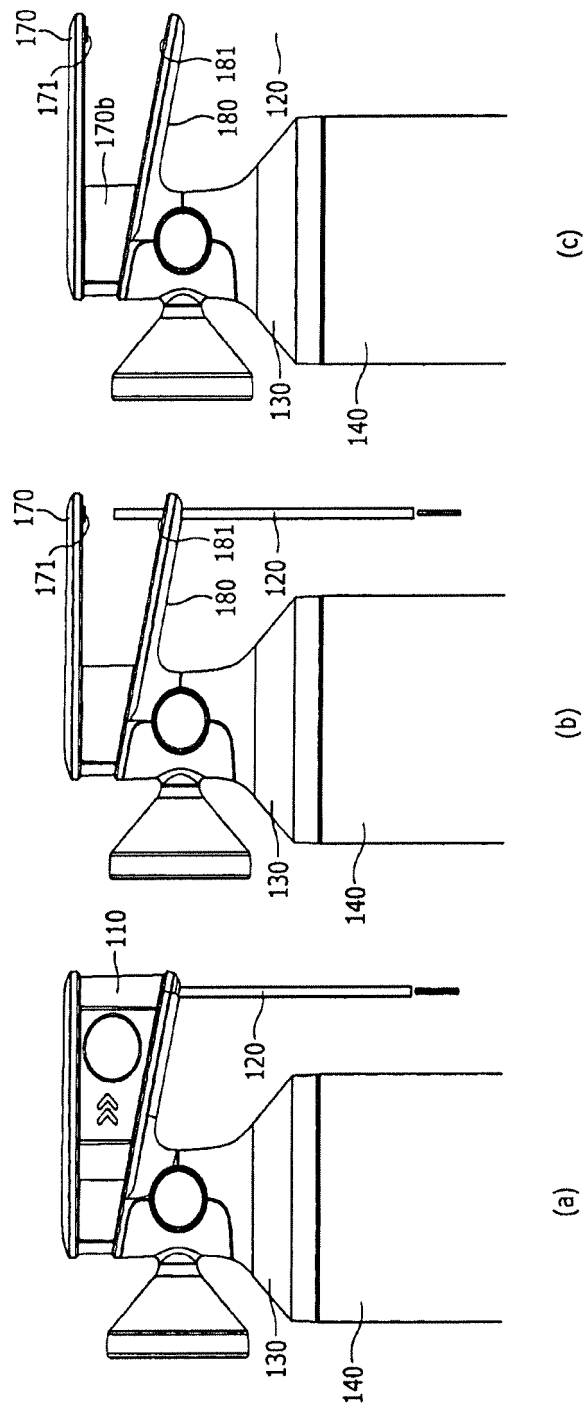


Fig. 10

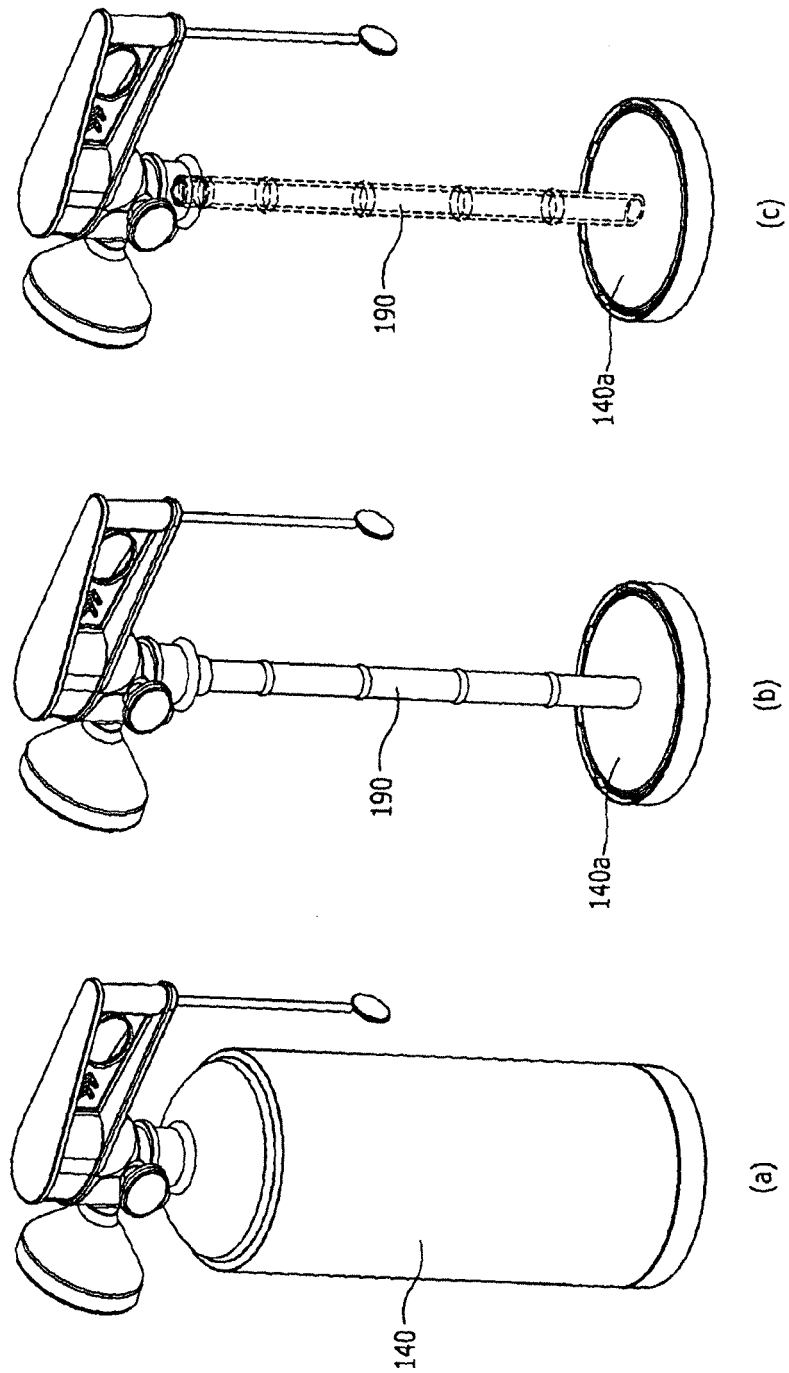


Fig. 11

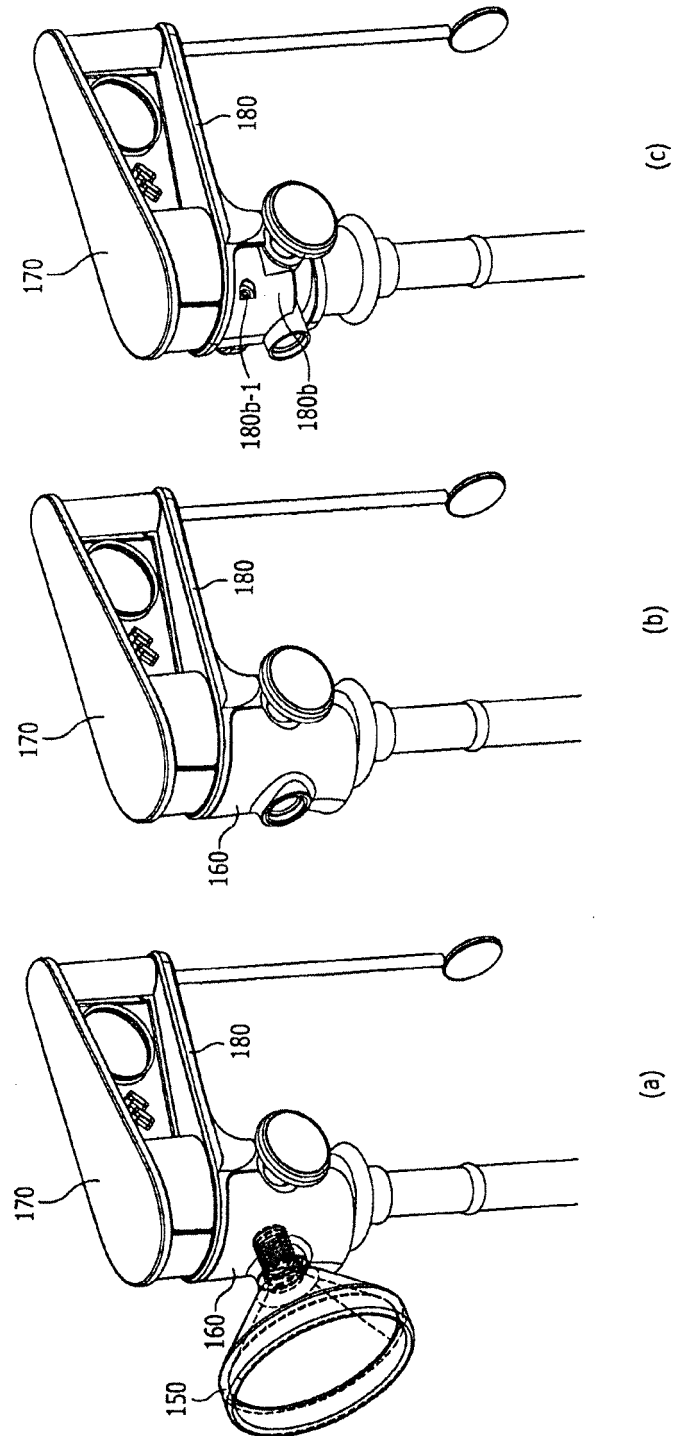


Fig. 12

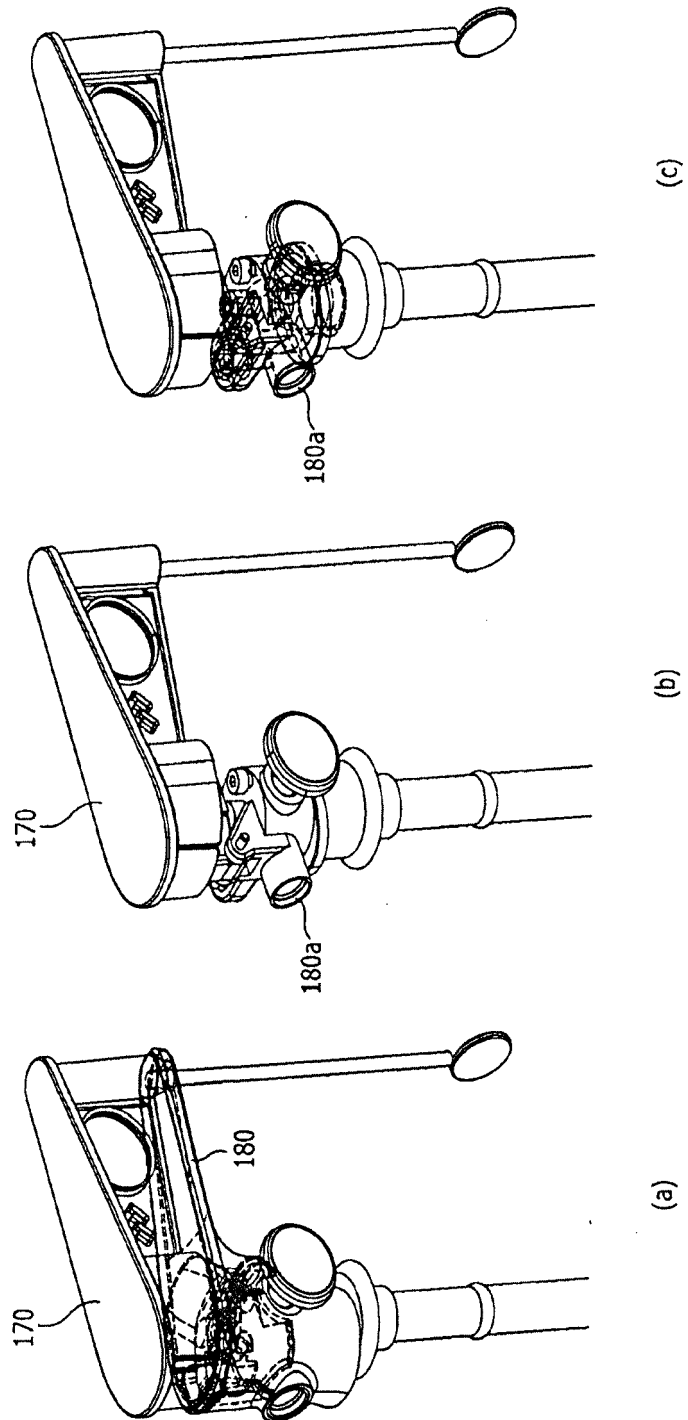


Fig. 13

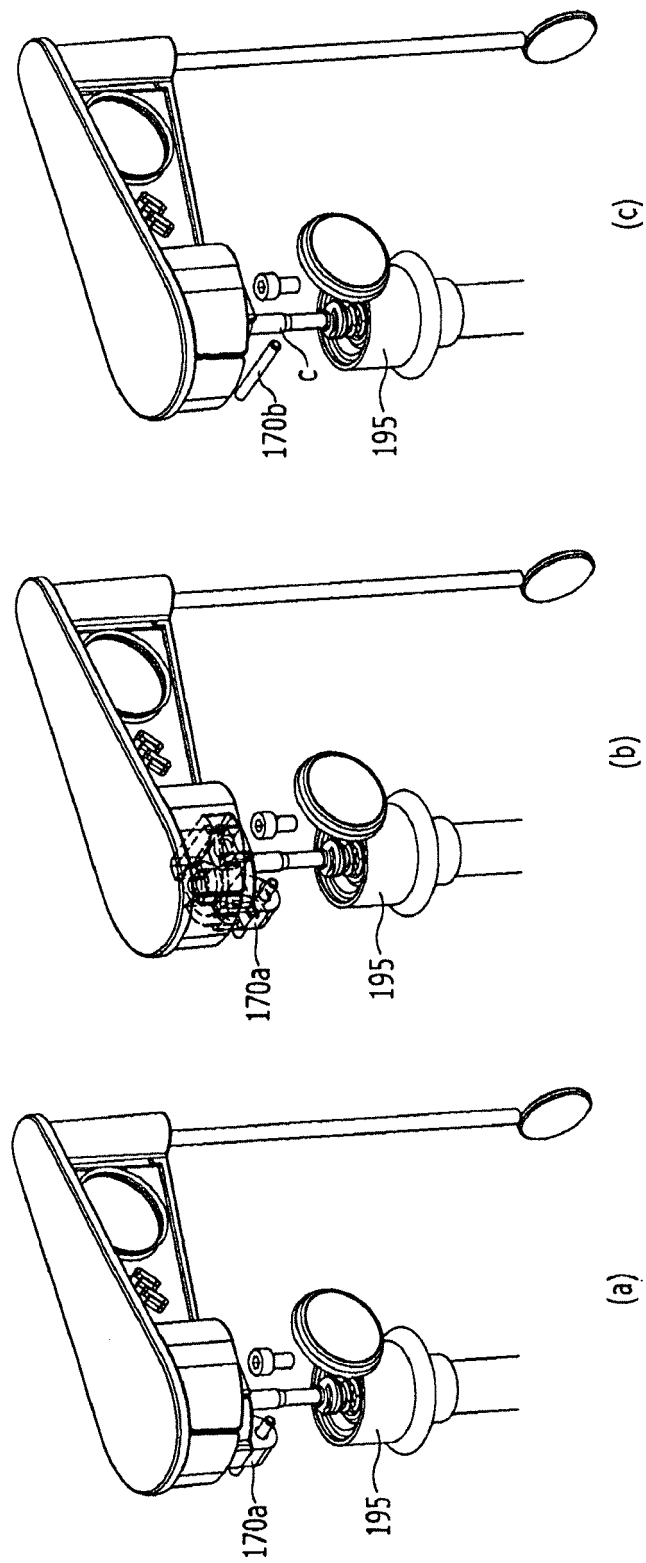


Fig. 14

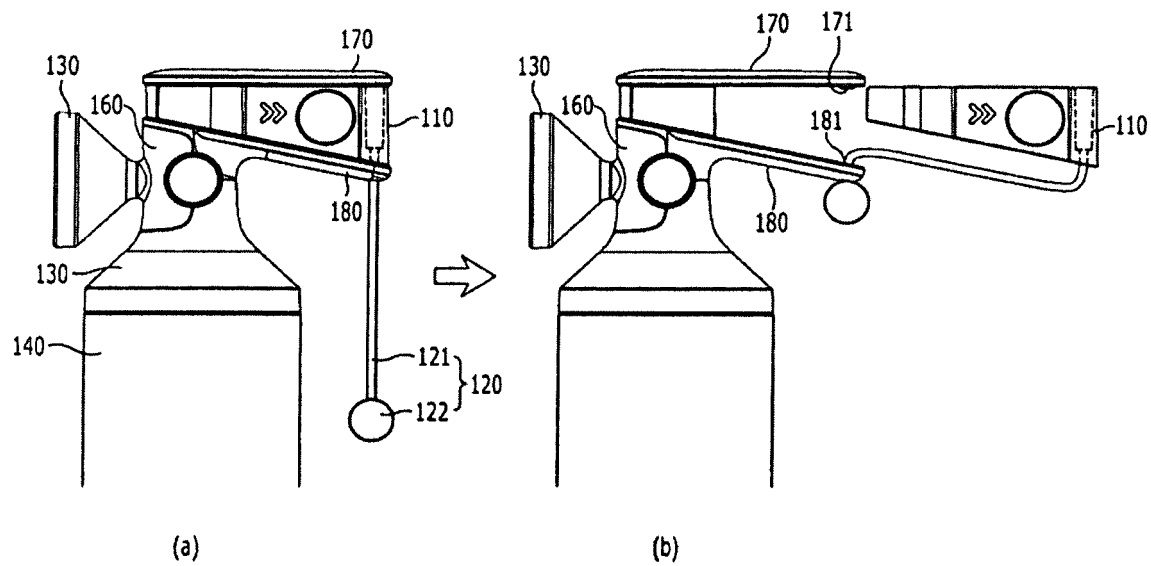


Fig. 15

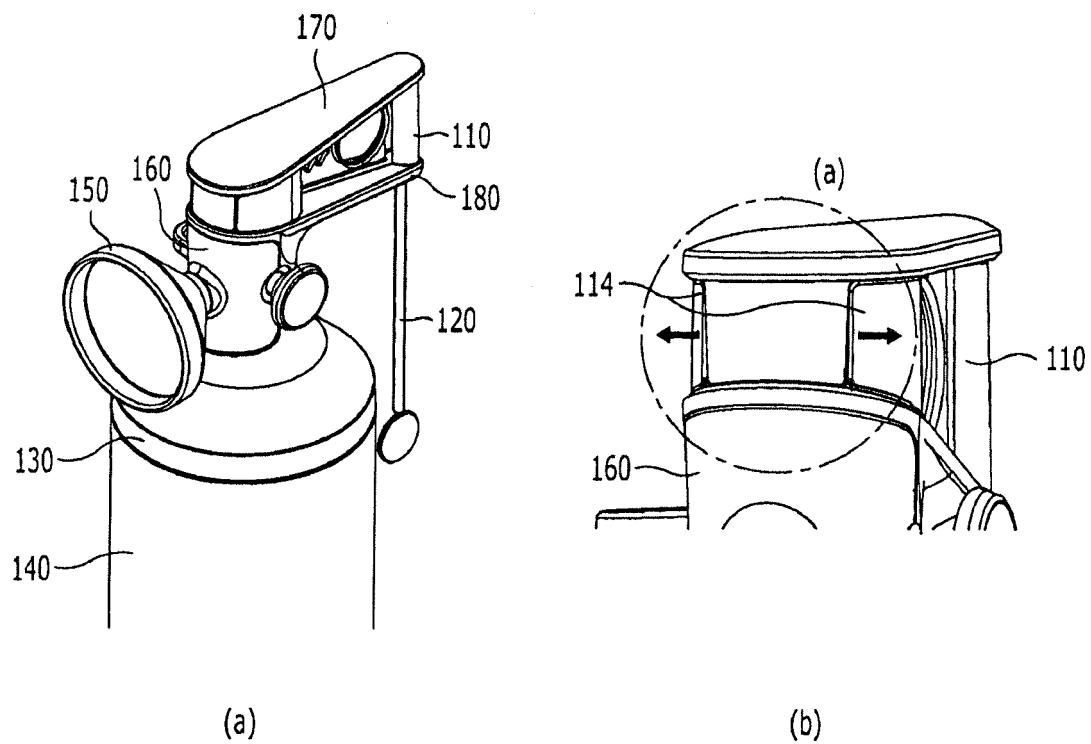


Fig. 16

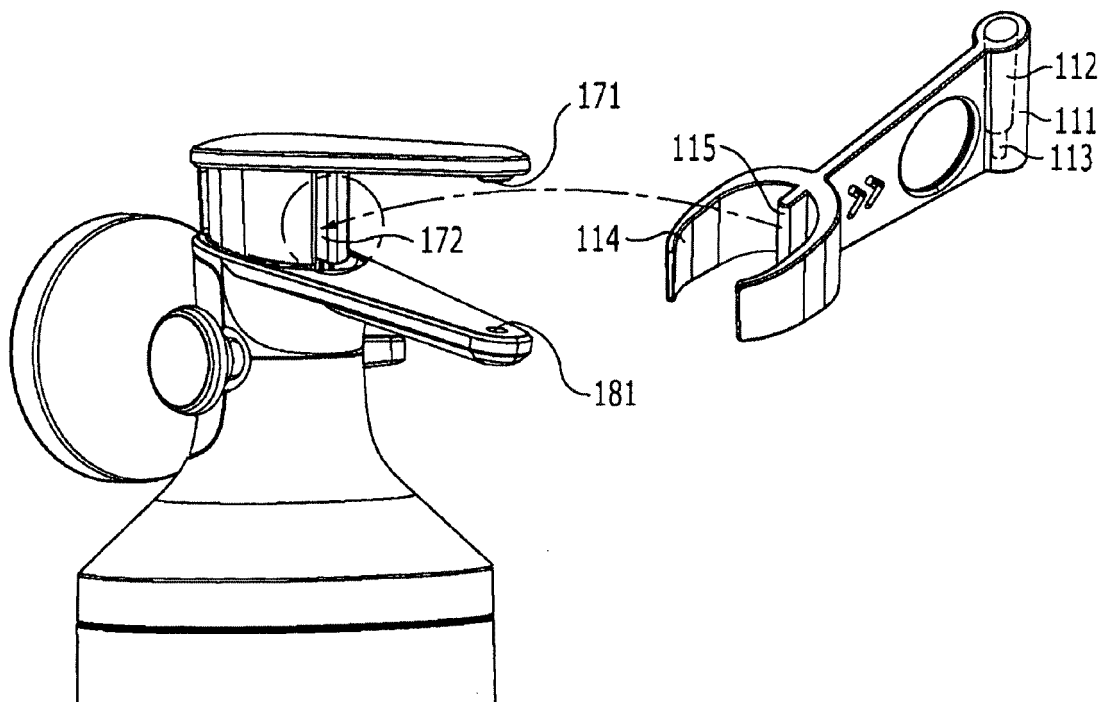


Fig. 17

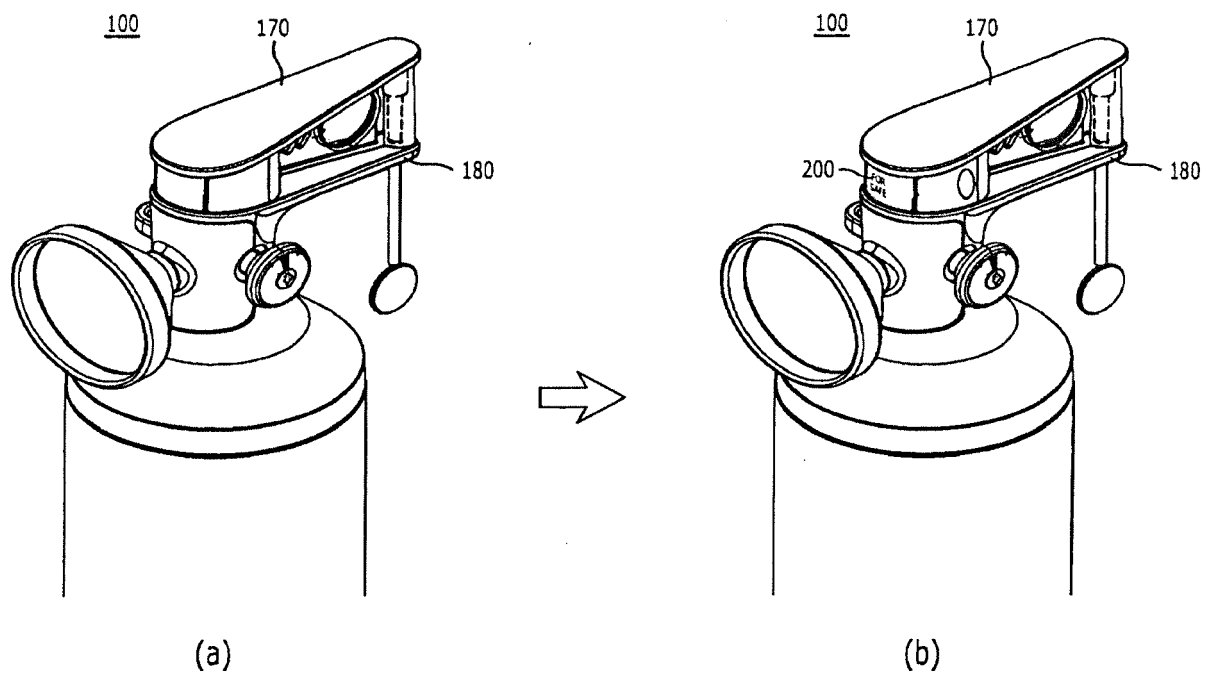
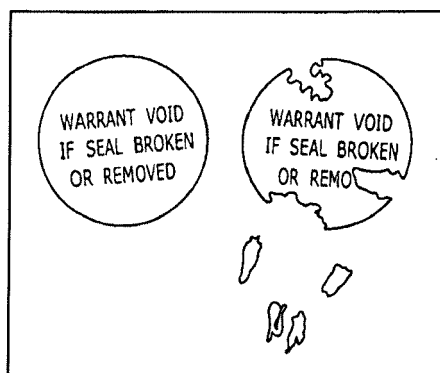


Fig. 18



(a)



(b)

Fig. 19

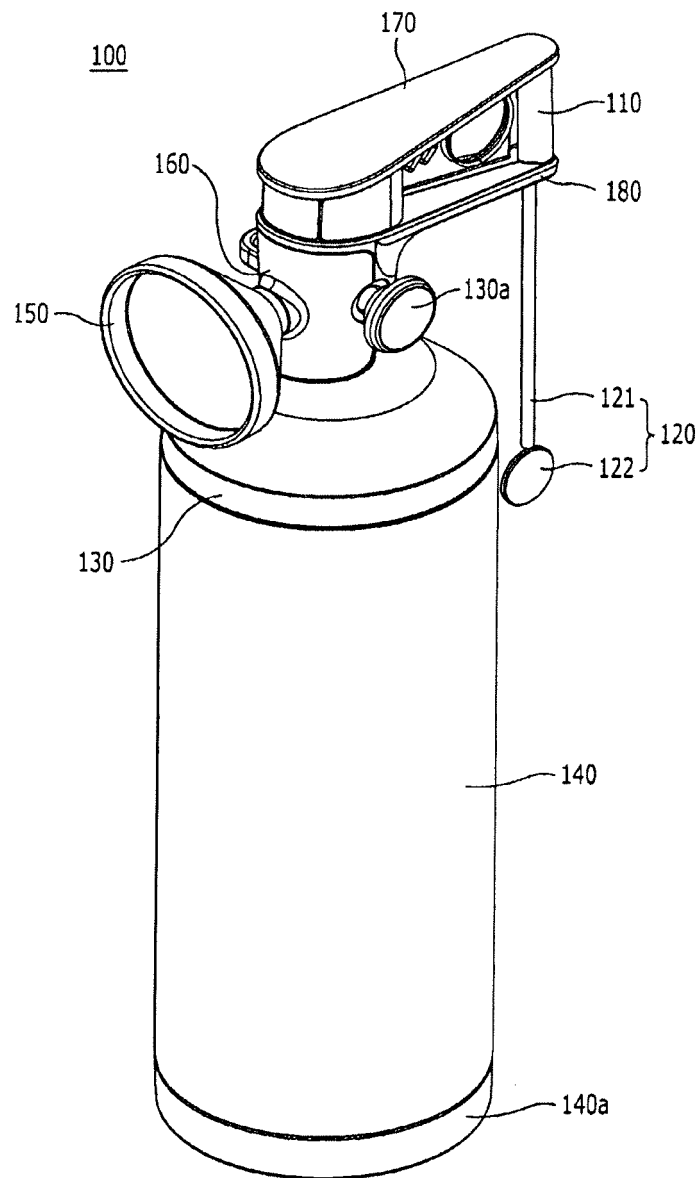


Fig. 20

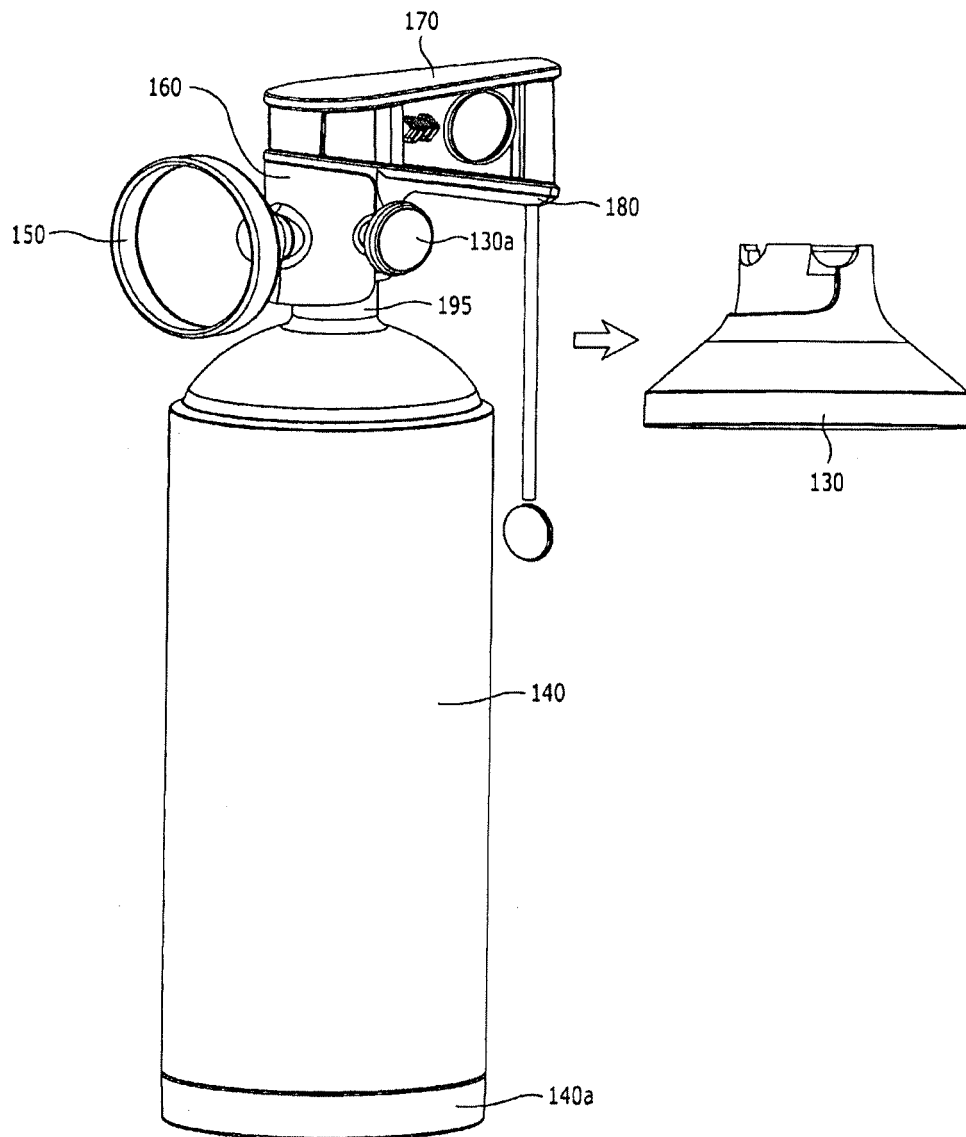


Fig. 21

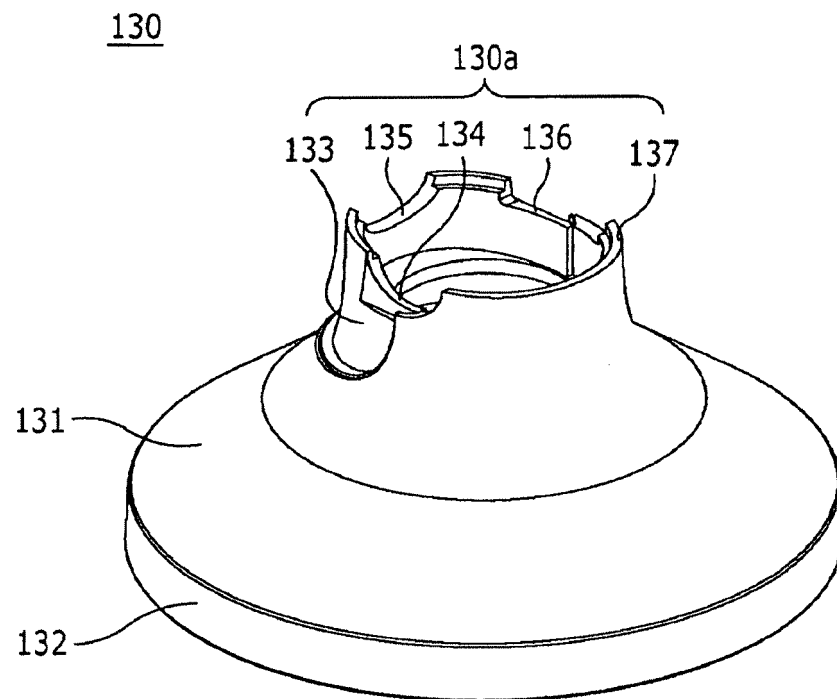


Fig. 22

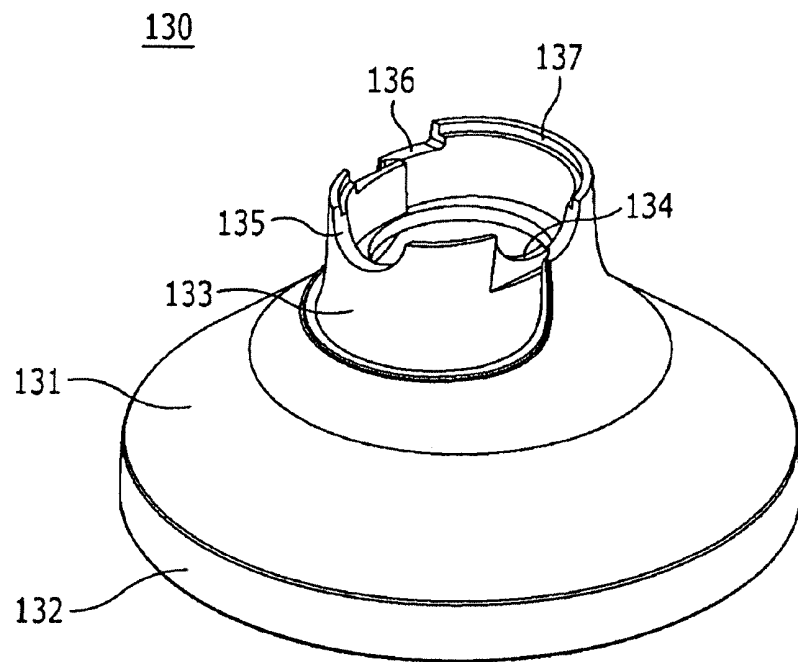


Fig. 23

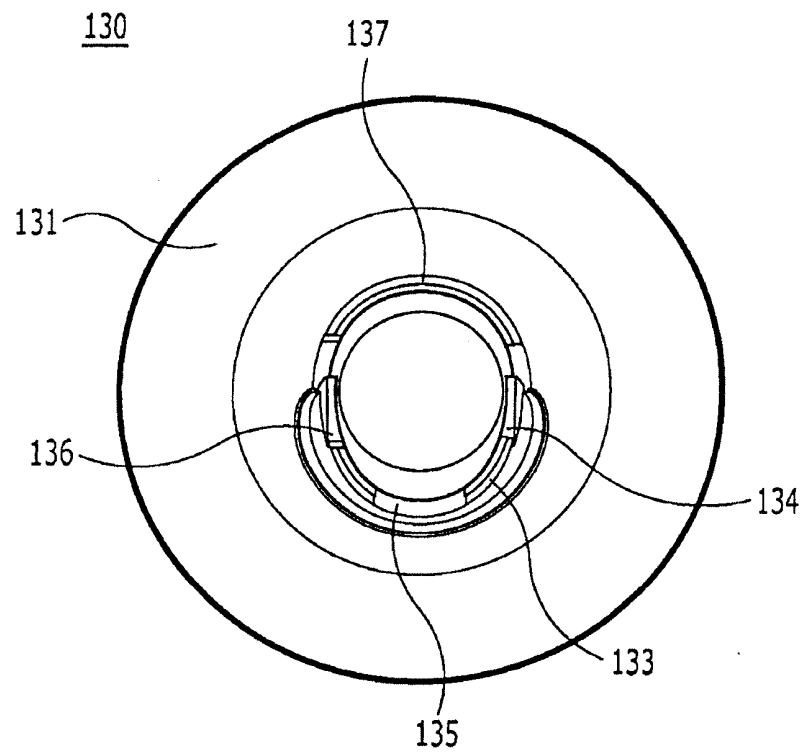


Fig. 24

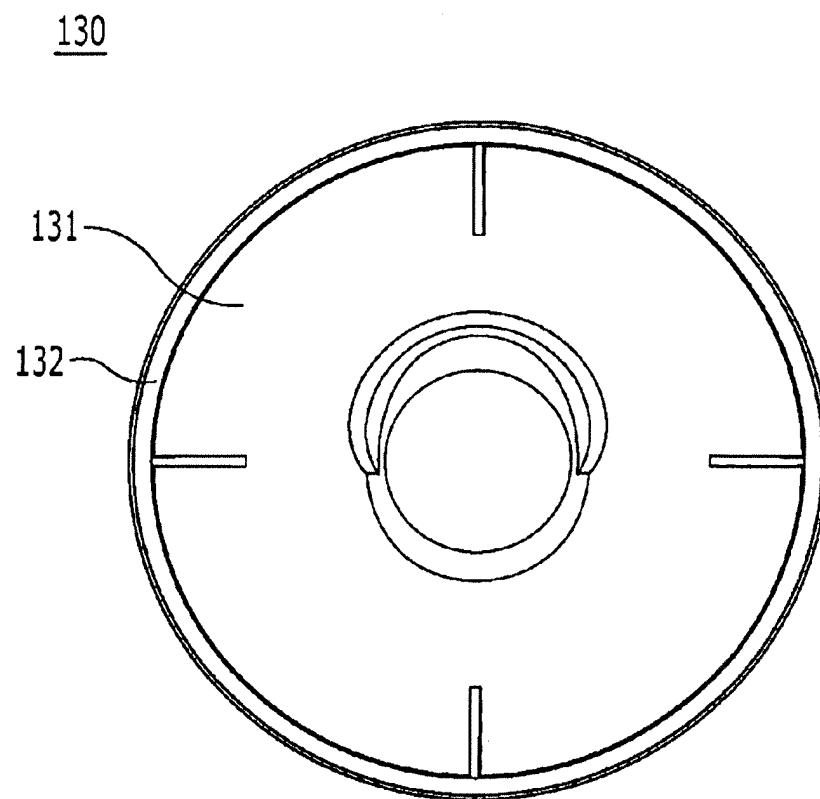


Fig. 25

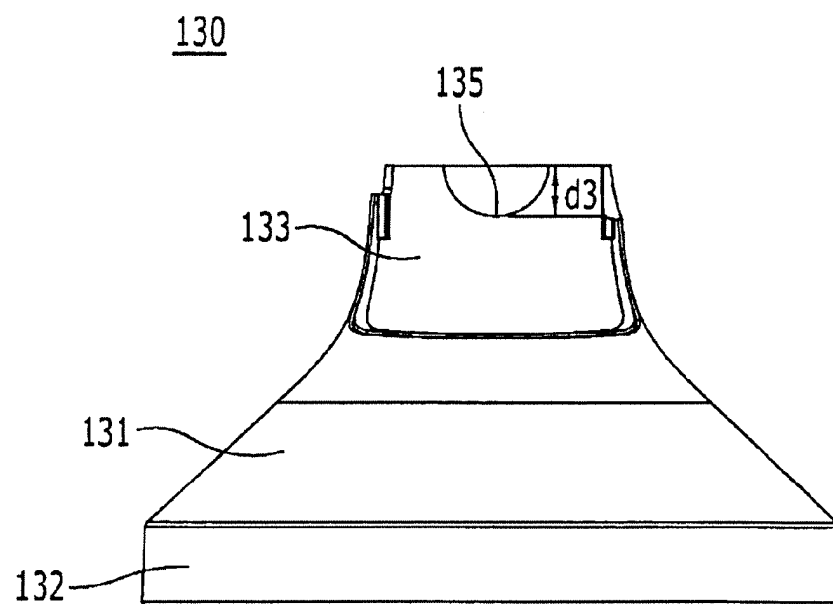


Fig. 26

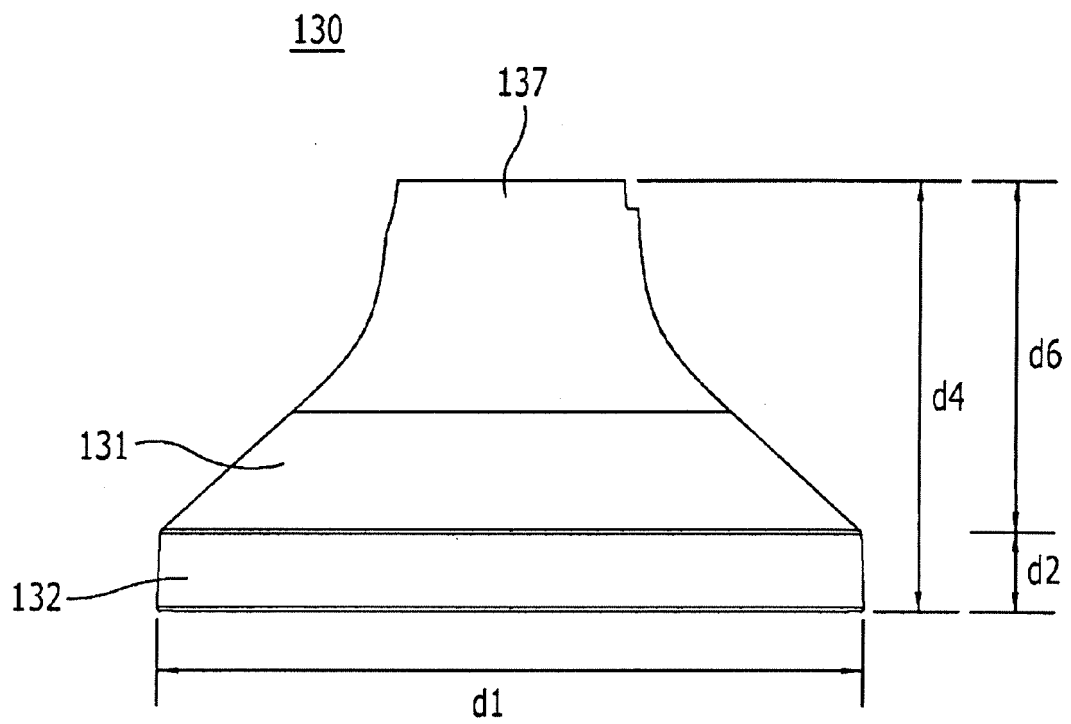


Fig. 27

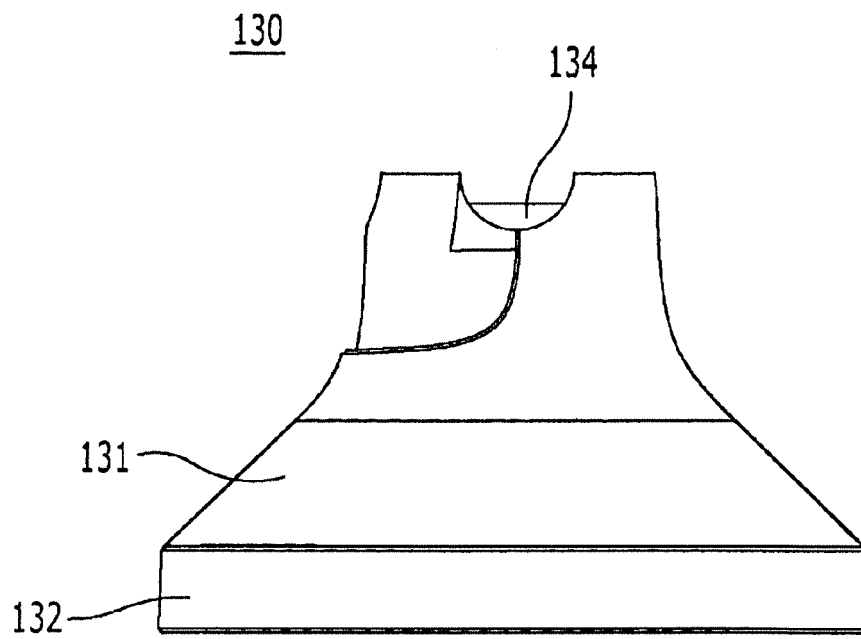


Fig. 28

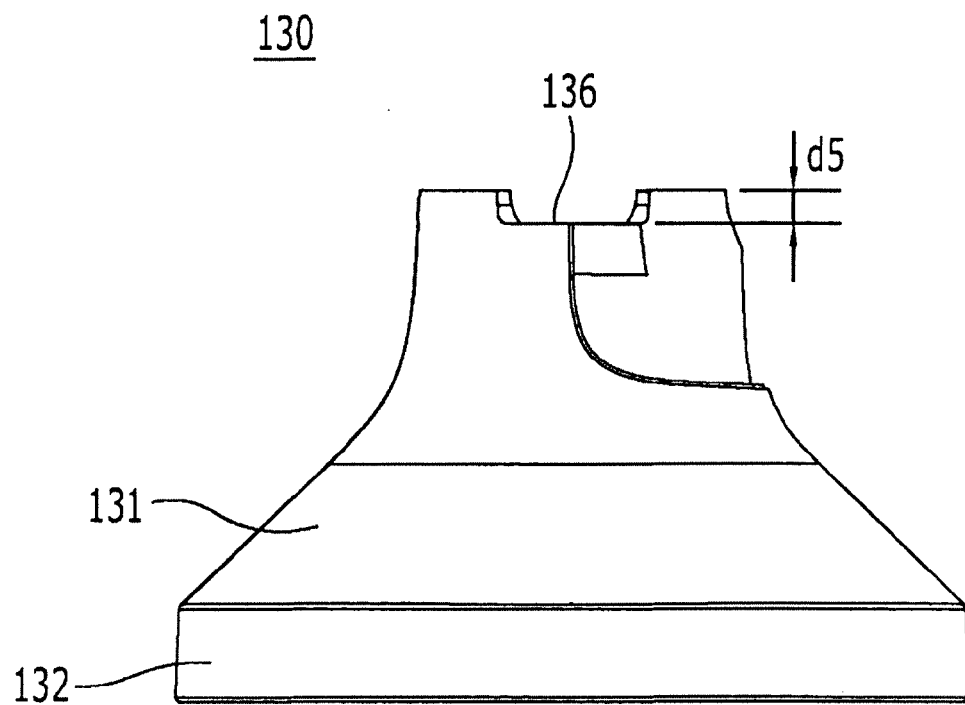
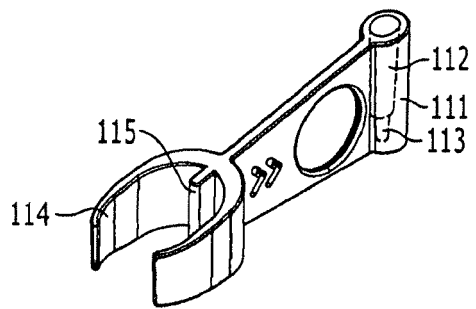
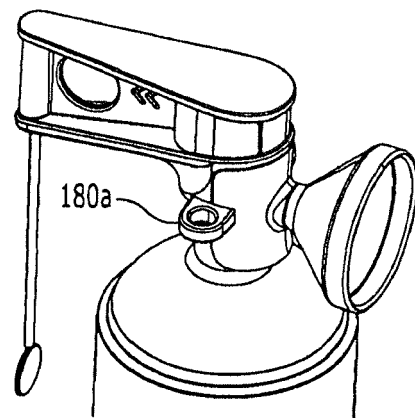


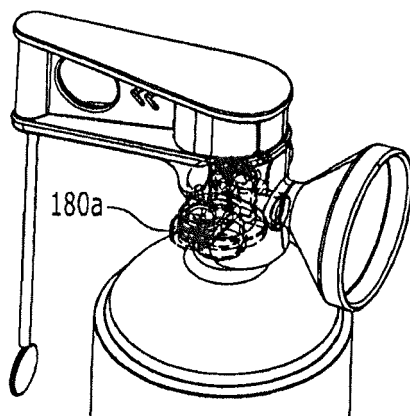
Fig. 29



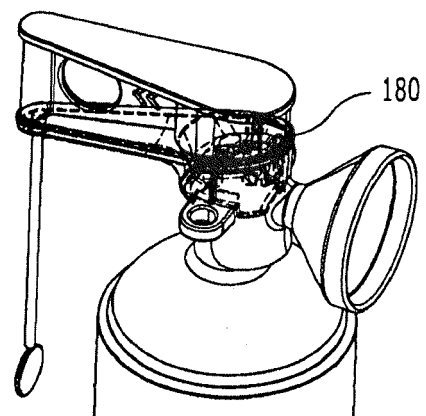
(a)



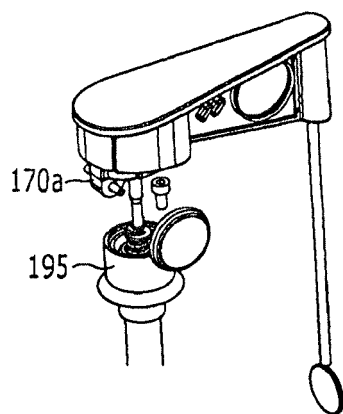
(b)



(c)

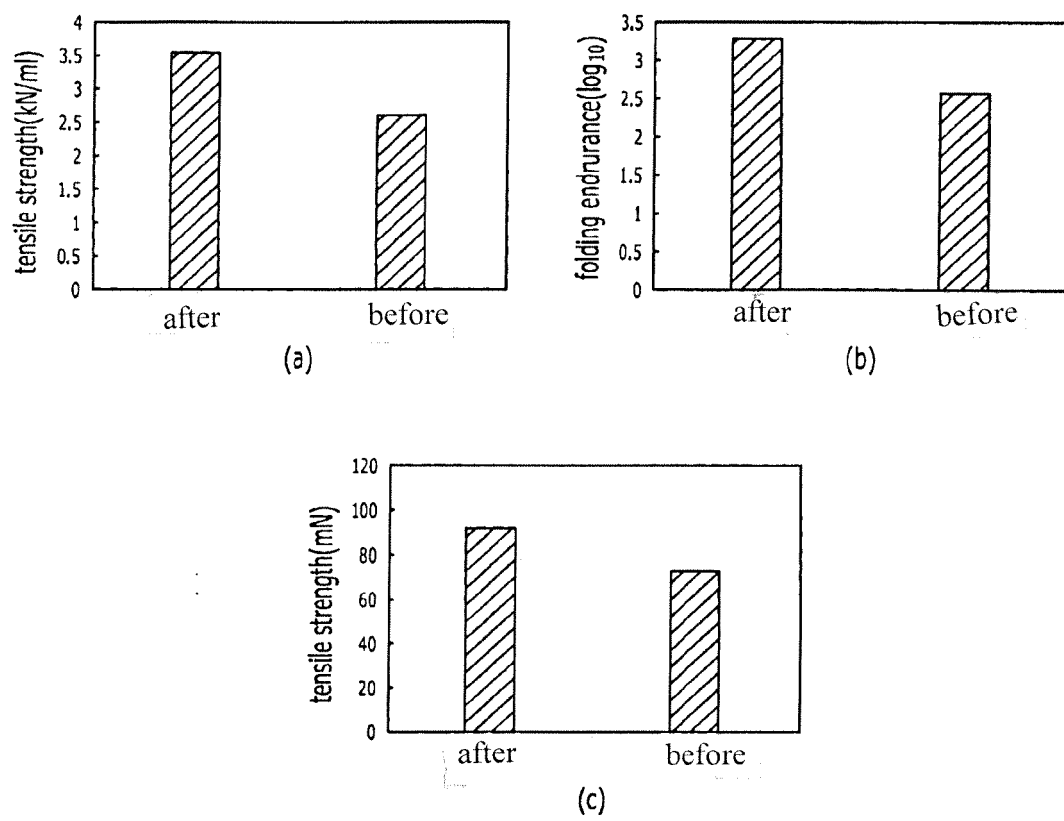


(d)



(e)

Fig. 30



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2017/003684

A. CLASSIFICATION OF SUBJECT MATTER

A62C 13/76(2006.01)i, G09F 3/03(2006.01)i, A62C 13/68(2006.01)i, A62C 13/14(2006.01)i, A62C 13/00(2006.01)i, B65D 47/20(2006.01)i, B65D 43/02(2006.01)i, B65D 55/02(2006.01)i, B65D 25/20(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A62C 13/76; B65D 83/76; B05B 11/00; A62C 13/64; A62C 13/00; B60K 15/05; G09F 3/03; A62C 13/68; A62C 13/14; B65D 47/20; B65D 43/02; B65D 55/02; B65D 25/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: fire extinguisher, head, protective cover, safety bar, support wire, pendant

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 06-032131 Y2 (MIYATA IND. CO., LTD.) 24 August 1994	1-3,11-12
Y	See pages 2-3, claim 1 and figures 1-3.	4-10,13-40
Y	KR 10-2005-0047907 A (HYUNDAI MOTOR COMPANY) 23 May 2005 See paragraphs [0017]-[0021] and figure 1.	4-6,18-40
Y	JP 2006-240638 A (MITANI VALVE CO., LTD.) 14 September 2006 See paragraphs [0039]-[0046] and figures 5-7.	7-10,13-17,28-34
Y	KR 20-2011-0009603 U (SAM WOO INSTRUMENT MANUFACT CO., LTD.) 10 October 2011 See paragraphs [0039]-[0047] and figure 1.	35-40
A	KR 10-2006-0117070 A (CHUNG, Hyung Ro) 16 November 2006 See paragraphs [0040]-[0058] and figures 4a-4c.	1-40

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

10 JULY 2017 (10.07.2017)

Date of mailing of the international search report

11 JULY 2017 (11.07.2017)

Name and mailing address of the ISA/KR



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Authorized officer

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2017/003684

Patent document cited in search report	Publication date	Patent family member	Publication date
JP 06-032131 Y2	24/08/1994	JP 3013164 U	08/02/1991
KR 10-2005-0047907 A	23/05/2005	NONE	
JP 2006-240638 A	14/09/2006	JP 4643310 B2	02/03/2011
KR 20-2011-0009603 U	10/10/2011	NONE	
KR 10-2006-0117070 A	16/11/2006	KR 10-0704893 B1	09/04/2007

Form PCT/ISA/210 (patent family annex) (January 2015)