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(54) LIGHTING DEVICE EMPLOYING LIQUID FUEL

BELEUCHTUNGSVORRICHTUNG MIT FLÜSSIGEM BRENNSTOFF

DISPOSITIF D'ÉCLAIRAGE FAISANT APPEL À UN COMBUSTIBLE LIQUIDE

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Description

[0001] The invention refers to a lighting device employing liquid fuel, in particular liquid paraffin, paraffin oil or a similar fuel in the form of a compound on the basis of saturated hydrocarbons, optionally including essential oils and aromas and/or other preparations, wherein such fuel is stored inside of each lighting device. Such lighting device generally serves for decorative purposes, but can optionally in certain cases also be used as a grave candle or a backup lantern, for example, when there is no electricity available. According to the International Patent Classification such inventions belong to the class F 21 V 37/00.

The invention is based on a problem of designing a lighting device employing liquid fuel of a previously mentioned type, wherein on one hand leakage of fuel would be prevented from the interior of the lighting device towards the exterior during transport or tipping during at least a specified and in advance known time period, and on the other hand also any establishment of oral contact with a wick and sucking out fuel from the interior of the lantern would have to be prevented.

Lighting devices employing liquid fuel are generally known, and one of them is described in DE 102 10 955 A1 and DE 201 04 766 U1 respectively. Document DE 10 2008 0630267 A1 discloses the preamble of claim 1. EP 2 136 130 A1 and GB 189414924A show other lighting devices employing liquid fuel.

[0002] It also is known that liquid fuels, which are suitable for being used in such lighting devices, are harmful in case of ingestion. Especially in cases when such lighting device is used for decorative purposes, it is usually located inside i.e. in the room and can generally be accessible to children. In such cases it is usually not possible to completely discard the possibility of a child trying to suck fuel out of the lighting device, which could have severe consequences on the health of the child. Said possibility of sucking out fuel has obviously not been taken into account in the previously mentioned lighting device according to DE 102 10 955 A1 and DE 201 04 766 U1 and still remains completely unsolved. On the other hand, said known lighting device takes care about the possibility of fuel leaks at least during transporting of an unused device. The lighting device namely comprises a fuel container, which is fitted with a sealed cover, which also has a function of a burner and is therefore furnished with two openings. A wick is placed within the first opening, wherein the first end portion thereof is arranged inside of the container and is saturated by each fuel, while its second end portion is arranged outside of the lighting device and allows burning said fuel supplied by means of the wick. The second opening on the cover serves as an aerating opening, which eliminates pressure differences, which would otherwise occur during the burning of the fuel between the internal pressure inside of the container and the external pressure due to reduction of volume of fuel inside of the container, which would make

the transport of fuel along the wick totally impossible. In order to prevent leakage of the fuel through anyone of said openings at least during transporting of such lighting device, the last is furnished with a seal, which is placed over the cover and needs to be removed prior to and during the use of the lighting device, since otherwise the lighting device could not function. However, it is quite possible that for various possible reasons the lighting device is tipped over during the use, wherein in such case said fuel leakage is not prevented in any way, even not for a shortest possible time period after the change in the position of the lighting device, for example, at least for a time period, which is required by each user to notice such accident and to return the lighting device back to its regular operating position.

[0003] Amongst others, such known lamps due to their potential accessibility to children do not comply with the actual standard DIN EN 14059:2002 for decorative lighting devices. Namely, according to said standard, lighting devices must ensure such preventing fuel leakage towards the exterior for at least a time period of 30 s after the lighting device has been tipped over, and also to prevent children from sucking the wick on the burner.

[0004] It is known that the problem of fuel leakage through the wick opening has been solved by closing the opening in such manner that the wick was tightly compressed in the area of the opening. Despite to the mentioned precaution there is still a possibility of fuel leakage, namely through the remaining aerating opening.

[0005] The common problem with oil lighting devices and other lighting devices employing liquid fuel is namely that the volume of consumed oil in the container must be replaced with air. When this is not possible, negative pressure is formed inside of the container, upon which the required transporting of the fuel towards the burner is terminated, which results in extinguishing of the lighting device. In order to enable burning, such lighting device must therefore include an opening on the top, which allows airflow towards the interior of the fuel container. If the lighting device is tipped over, fuel starts to leak through this opening, as well as through the wick, which is unacceptable, especially when paraffin oil or other health hazardous fuel are used. Fuel leaks through the wick have thus far been relatively effectively prevented by means of tight compression of the wick on the burner, however there were no appropriate construction solutions, which would prevent fuel leakage through the aerating opening.

The requirements and problems regarding lighting devices, which are using oil, are further described in a technical article in »BAM Pressemitteilung 10/07 vom 18. April 2007 - Gemenisame Presseinformation mit dem Bundesinstitut für Risikobewertung (BfR)« with the title »Kindersichere Öllampen sind möglich!« Despite a relatively complicated technical approach in the direction of preventing sucking of fuel, the problem of preventing fuel leakage by tipping over a lighting device still remains unsolved.

According to the invention, a lighting device employing liquid fuel is proposed, which comprises at least a container, which is arranged to receive and store liquid fuel, as well as a burner, which at the same time serves as a lid, by which said container is tightly sealed. Said burner includes a wick, the first end portion of which is located inside of the container in a way that it is allowed to absorb said liquid fuel, while its second end portion passes through the burner and protrudes out from the container. The burner further comprises, in addition to a tube, through which extends said the wick and which passes from the inside of the container to the outside, also an additional opening for aeration of the interior of the container and thus equalising the air pressure inside of the container due to varying of the amount of fuel therein. According to the invention it is further proposed, that the container of the lighting device is furnished with a neck, in the area of which the burner is placed, which is conceived as a hollow lid and comprises a reservoir for the fuel which is possibly leaked from the interior of the container, wherein the said reservoir is located above the highest allowed level of the fuel within the container. The burner with accompanied reservoir is on the one hand suitable for closing and sealing the container in the area of its neck, and on the other hand for receiving any fuel, which could be leaked from the container, if the lantern would be tipped over. Said burner is moreover on the external surface of the container surface furnished with an outwardly protruding tubular rib in the form of a continuous ring, which extends at sufficient distance around the wick and serves to prevent any oral contact with said second end portion of the wick, which is located outside of the container. Furthermore, said reservoir of the burner also comprises a top wall, which is located outside of the container, so that said protective tubular rib is arranged on the external surface of said top wall, as well as a bottom wall, which is located inside of the container, and a side wall, which is located between said bottom wall and top wall. According to the invention, another embodiment is foreseen, in which said tube is sealed both in the area, where it passes through the top wall towards the bottom wall, and also in the area, where it passes through the bottom wall towards the top wall of the reservoir.

[0006] Furthermore, the aeration opening in the top wall of the reservoir is arranged at a distance apart from said centrally aligned tube comprising a wick, and at the same time an aeration tube is connected to the aeration opening, wherein the airing tube is used to enable the airflow from the exterior of the container towards the interior, or vice versa, and is extending towards the bottom wall and ends at a sufficient distance apart from the bottom wall. The bottom wall of the reservoir is furnished with a further opening, which allows the airflow from the interior of the container into the reservoir, or vice versa, and also to allow the fuel to flow from the interior of the container into the reservoir, or vice versa, respectively.

[0007] According to one of the embodiments of the invention, the mentioned opening in the bottom wall of the

reservoir is arranged coaxially with said tube, wherein the tube passes through the mentioned opening by maintaining sufficient space there-between.

[0008] According to a still further embodiment of the invention said opening in the bottom wall of the reservoir is arranged adjacent to the side wall of the reservoir, preferably on the opposite side of the ventilation opening with the belonging tube with respect to said centrally arranged tube with wick. The fuel level before and during the regular use should be below the bottom wall of the reservoir.

[0009] As said tube, through which the wick is inserted, either a metallic tube or a non-metallic tube, for example a ceramic tube, can be used. The cover wall, side wall and the bottom wall of the reservoir may optionally consist of a synthetic material or any other material, which is suitable for this purpose.

[0010] The invention will be described on the basis of embodiments, which are schematically presented in the attached drawings, wherein

Figs. 1 and 2 show longitudinal cross sections along a diametric plane of a lighting device employing liquid fuel;

Figs. 3 to 5 show said lighting device in three typical positions during irregular use thereof, namely when rotated for around 90°, around 135° and around 180° in with respect to its position during its regular use as shown in said Figs. 1 and 2; and
Fig. 6 is a further embodiment of said lighting device employing liquid fuel, which is presented analogously as in Fig. 1.

[0011] In the embodiment of the invention according to Fig. 1 the lighting device employing liquid fuel comprises an at least essentially cylindrical container 1, which is suitable for receiving and storage of each liquid fuel 14, as well as a burner 7, which is functioning as a lid and is suitable for tightly sealing of said container 1. For this purpose the container 1 is on its end area, which is faced away from the base, furnished with a narrowed neck 4, in the area of which said burner 7 is arranged.

[0012] The burner 7 includes a wick 8, the first end portion of which is located in the interior of the container 1 in such a way that it is capable to absorb liquid fuel 14, while its second end portion passes through the mentioned burner 7 and protrudes out of the container 1. Similarly like in known lighting devices, the liquid fuel, in this particular embodiment a liquid paraffin, is by means of the wick 8 due to capillary effect transported from the interior of the container 1 towards the external second end portion of the wick, which in the area of the burner 7 protrudes outwardly from the container 1.

[0013] In addition to the tube 9, through which the wick 8 extends from the interior of the container 1 to the exterior thereof, said burner 7 comprises an additional opening 6 which serves for aeration of the interior of said container 1 and herewith also for equalising of the air

pressure inside of the container 1. Otherwise, during the regular use the air pressure inside of the container 1 would change, since the fuel 14 is burning and consequently, quantity of the fuel 14 inside the container 1 is gradually changed.

[0014] The burner 7 is designed as a hollow lid, which comprises a reservoir 2 for those fuel 14, which is eventually leaked from the interior of the container 1, wherein said reservoir 2 is regularly located above the highest allowed level of the fuel 14 in the container 1, and wherein said burner 7 with the reservoir 2 is adjusted to close and seal said container 1 in the area of its neck 4, as well as to receive those fuel 14, which is leaked from container 1, when the lighting device is tipped over.

[0015] Said burner 7 is on the external surface of the container 1 furnished with an outwardly protruding protective tubular rib 10, which is designed as a circumferentially continuous ring, which extends around the wick 8 and at a distance apart from it, and which is intended for preventing oral contact with the section of the wick 8 which is located outside of the container 1.

[0016] The reservoir 2 of the burner 7 comprises a top wall 15, which is located outside of the container 1 and on the external surface of which said protective tubular rib 10 is arranged, a bottom wall 13, which is located inside of the container 1, as well as a side wall 3, which is located between said bottom wall 13 and top wall 15. Besides, a tube 9 with a wick 8 inserted there-through is integrated within said reservoir 2 and passes in approximately central arrangement through the top wall 15 and the bottom wall 13, and is sealed either just in the area of the top wall 15 or both in the area of said top wall 15 and the bottom wall 13 of the reservoir 2.

[0017] An aeration opening 6 in the top wall 15 of the reservoir 2 is arranged at a distance apart from the said centrally aligned tube 9 comprising said wick 8. An aerating tube 5 is connected to said aeration opening 6, so that the aeration tube 5 enables the air to flow from the exterior of the container 1 towards its interior, or vice versa, and extends towards the bottom wall 13, where it is ended at a sufficient distance apart from the bottom wall 13, whereas the bottom wall 13 of the reservoir 2 is furnished with a further opening 12, which allows the fuel 14 to flow from the interior of the container 1 into the reservoir 2, or vice versa.

[0018] In the embodiment according to Fig.1, said opening 12 in the bottom wall 13 of the reservoir 2 is arranged adjacent to the circumferential wall 3 of the reservoir 2 and with respect to said centrally arranged tube 9 and the wick 8 inserted there-through oppositely to the aerating opening 6 with belonging tube 5.

[0019] In a further embodiment according to Fig. 6 said opening 12 in the bottom wall 13 of the reservoir 2 is arranged coaxially with the tube 9 in such way that the tube 9 passes through the opening 12 by maintaining sufficient gap therebetween.

[0020] Furthermore, the tube 9 together with said which wick 8 inserted there-through is preferably availa-

ble a metallic tube. However, said tube 9 can generally consist of any other non-flammable non-metallic material, especially for example of ceramics.

[0021] The top wall 15, side wall 3 and the bottom wall 13 of the reservoir 2 preferably consist of synthetic material, but can also be manufactured of any other material suitable for this purpose.

[0022] The level of fuel 14 within the container 1 before and during regular use of the lighting device should always be below the bottom wall 13 of the reservoir 2, which must be established during the first filling of fuel 14 by the manufacturer, and also by every subsequent filling by each user. Thus, the air is enabled to enter the interior of the container 1 through the openings 6 and 12, which allows fuel 14 to be transported along the wick 8 towards the burner 7.

[0023] In the case of irregular use of the lighting device, for example by tipping-over the lighting device or upon that, the opening 12 in the bottom wall 13 is closed by the fuel 14, and the air is prevented from flowing into container 1. The fuel 14, which leaks outside of the container 1, is temporarily stored inside the reservoir 2 and can flow back into the container 1 as soon as the lighting device is returned into its operational position, i.e. its correct position of regular use.

Claims

1. Lighting device employing liquid fuel, said device comprising at least a container (1), which is adapted to receive and store a liquid fuel (14), as well as a burner (7), which also serves as a lid and is suitable for tightly sealing said container (1) and includes a wick (8), the first end portion of which is located inside of the container (1) in such way that it is allowed to absorb said liquid fuel (14), while the second end portion thereof protrudes out of the container (1) and passes through the burner (7), wherein said burner (7) is furnished with a tube (9) through which said wick (8) is inserted in order to extend from the interior of the container (1) towards the exterior thereof, as well as an additional opening (6) for aerating the interior of the container (1) and thus equalising the air pressure inside of the container (1) due to changes of the amount of fuel (14) therein, wherein said container (1) comprises with a neck (4), in the area of which said burner (7) is arranged, which is conceived as a hollow lid and comprises a reservoir (2) for storage of the fuel (14) which is possibly leaked from the interior of the container (1), wherein said reservoir (2) is placed above the highest allowed level of the fuel (14) within the container (1), and wherein said burner (7) furnished with said reservoir (2) is adapted both for closing and sealing said container (1) in the area of its neck (4), and also for receiving the fuel (14) that could be leaked from the container (1) when the lantern would be tipped over, and

wherein said burner (7) is moreover on its external surface outside of the container (1) equipped with an outwardly protruding protective tubular rib (10), which is designed as a continuous ring, which extends around the wick (8) and at a certain distance apart from it and is intended for preventing oral contact with said second end portion of the wick (8), which is located outside of the container (1), and wherein said reservoir (2) of the burner (7) comprises a top wall (15), which is located outside of the container (1) and on the external surface of which said protective tubular edge (10) is arranged, a bottom wall (13), which is located inside of the container (1), as well as a side wall (3), which is arranged between said bottom wall (13) and said top wall (15), and moreover, a tube (9) is foreseen, which passes through said top wall (15) and said bottom wall (13) of the reservoir (2), in which said wick (8) is inserted and which is at least approximately centrally aligned and sealed at least in the area of passing through the top wall (15) towards the bottom wall (13), and wherein said bottom wall (13) of the reservoir (2) is furnished with a further opening (12), which is intended for allowing the fuel (14) to flow from the interior of the container (1) into the reservoir (2), or vice versa, wherein the level of fuel (14) is always, during the regular use of the lighting device and also before that, maintained below the bottom wall (13) of the reservoir (2), **characterised in that** the aerating opening (6) in the top wall (15) of the reservoir (2) is arranged at a distance apart from said centrally arranged tube (9) comprising a wick (8), and at the same time an aerating tube (5) is connected to said aerating opening (6) and is suitable for allowing the air to flow from the exterior of the container (1) towards the interior thereof, or vice versa, wherein said aerating tube (5) protrudes towards the bottom wall (13) but is ended at a sufficient distance from the bottom wall (13).

2. Lighting device according to claim 1, **characterised in that** the tube (9) is sealed both in the area of its passing through the top wall (15) towards the bottom wall (13) and also in the area of its passing through the bottom wall (13) towards the top wall (15) of the reservoir (2).
3. Lighting device according to claims 1 or 2, **characterised in that** the opening (12) in the bottom wall (13) of the reservoir (2) is arranged coaxially with the tube (9) in such a way that the tube (9) passes through the opening (12) with sufficient space maintained there-between.
4. Lighting device according to claims 1 or 2, **characterised in that** the mentioned opening (12) in the bottom wall (3) of the reservoir (2) is arranged near the side wall (3) of the reservoir (2).

5. Lighting device according to claim 4, **characterised in that** the opening (12) in the bottom wall (3) of the reservoir (2) is with respect to said centrally arranged tube (9) comprising wick (8) arranged on the opposite side of the aerating opening (6) with the belonging tube (5).
6. Lighting device according to any of the claims 1 to 5, **characterised in that** said tube (9), which is adapted to receive said wick (8), consists of metal.
7. Lighting device according to any of the claims 1 to 5, **characterised in that** said tube (9), which is adapted to receive said wick (8), consists of a non-flammable non-metallic material.
8. Lighting device according to claim 7, **characterised in that** said tube (9), which is adapted to receive said wick (8), consists of ceramic material.
9. Lighting device according to any of the previous claims, **characterised in that** the top wall (15), the side wall (3) and the bottom wall (13) of the reservoir (2) consist of synthetic material.

Patentansprüche

1. Beleuchtungsvorrichtung, die flüssigen Brennstoff verwendet, wobei die Vorrichtung mindestens einen Behälter (1), der geeignet ist, einen flüssigen Brennstoff (14) aufzunehmen und zu speichern, sowie einen Brenner (7) umfasst, der auch als Deckel dient und geeignet ist, den Behälter (1) dicht zu verschließen, und der einen Docht (8) umfasst, dessen erster Endabschnitt innerhalb des Behälters (1) so angeordnet ist, dass er den flüssigen Brennstoff (14) aufnehmen kann, während dessen zweiter Endabschnitt aus dem Behälter heraussteht (1) und durch den Brenner (7) geführt ist, wobei der Brenner (7) mit einem Rohr (9) versehen ist, durch das der Docht (8) eingeführt wird, um sich vom Inneren des Behälters (1) zu dessen Außenseite hin zu erstrecken, sowie mit einer zusätzlichen Öffnung (6) zum Belüften des Inneren des Behälters (1) und damit zum Ausgleichen des Luftdrucks innerhalb des Behälters (1) durch Änderungen der darin enthaltenen Brennstoffmenge (14), wobei der Behälter (1) einen Hals (4) hat, in dessen Bereich der Brenner (7) angeordnet ist, der als hohler Deckel konzipiert ist und einen Sammelbehälter (2) zum Speichern von eventuell aus dem Inneren des Behälters (1) austretendem Brennstoff (14) umfasst, wobei der Sammelbehälter (2) über dem höchstzulässigen Füllstand des Brennstoffs (14) innerhalb des Behälters (1) angeordnet ist, und wobei der mit dem Sammelbehälter (2) versehene Brenner (7) sowohl zum Verschließen und Abdichten des Be-

hälters (1) im Bereich seines Halses (4) als auch zur Aufnahme des Brennstoffs (14) geeignet ist, der aus dem Behälter (1) austreten könnte, wenn die Laterne umkippen würde,

und wobei der Brenner (7) ferner an seiner Außenfläche außerhalb des Behälters (1) mit einer nach außen vorstehenden röhrenförmigen Schutzrippe (10) versehen ist, die als durchgehender Ring ausgebildet ist, der sich um den Docht (8) herum und in einem bestimmten Abstand davon erstreckt und dazu bestimmt ist, Mundkontakt mit dem zweiten Endabschnitt des Dochtes (8) zu verhindern, der sich außerhalb des Behälters (1) befindet, und wobei der Sammelbehälter (2) des Brenners (7) eine obere Wand (15), die sich außerhalb des Behälters (1) befindet und an deren Außenfläche der genannte röhrenförmige Schutzrand (10) angeordnet ist, eine Bodenwand (13), die sich im Behälter (1) befindet, sowie eine Seitenwand (3) umfasst, die zwischen der Bodenwand (13) und der oberen Wand (15) angeordnet ist, und ferner ein Rohr (9) vorgesehen ist, das durch die obere Wand (15) und die Bodenwand (13) des Sammelbehälters (2) geführt ist, in das der Docht (8) eingeführt ist und das im Bereich der Durchführung durch die obere Wand (15) zur Bodenwand (13) hin zumindest annähernd mittig ausgerichtet und abgedichtet ist,

und bei dem die Bodenwand (13) des Sammelbehälters (2) mit einer weiteren Öffnung (12) versehen ist, die dazu vorgesehen ist, dem Brennstoff (14) das Fließen vom Inneren des Behälters (1) in den Sammelbehälter (2) oder umgekehrt zu ermöglichen, wobei der Brennstofffüllstand (14) immer, und zwar sowohl während der normalen Nutzung der Beleuchtungsvorrichtung als auch vorher, unter der Bodenwand (13) des Sammelbehälters (2) gehalten wird, **dadurch gekennzeichnet, dass** die Belüftungsöffnung (6) in der oberen Wand (15) des Sammelbehälters (2) in einem Abstand von dem mittig angeordneten Rohr (9), das einen Docht (8) umfasst, angeordnet ist, und gleichzeitig ein Belüftungsrohr (5) mit der Belüftungsöffnung (6) verbunden und geeignet ist, die Luft von außerhalb des Behälters (1) in dessen Innenraum oder umgekehrt strömen zu lassen, wobei das Belüftungsrohr (5) in Richtung der Bodenwand (13) vorsteht, aber in einem ausreichenden Abstand von der Bodenwand (13) endet.

2. Beleuchtungsvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Rohr (9) sowohl im Bereich seiner Durchführung durch die obere Wand (15) zur Bodenwand (13) als auch im Bereich seiner Durchführung durch die Bodenwand (13) zur oberen Wand (15) des Sammelbehälters (2) hin abgedichtet ist.
3. Beleuchtungsvorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Öffnung (12)

in der Bodenwand (13) des Sammelbehälters (2) koaxial zu dem Rohr (9) in der Weise angeordnet ist, dass das Rohr (9) durch die Öffnung (12) mit ausreichendem Abstand dazwischen geführt ist.

4. Beleuchtungsvorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die erwähnte Öffnung (12) in der Bodenwand (3) des Sammelbehälters (2) nahe der Seitenwand (3) des Sammelbehälters (2) angeordnet ist.
5. Beleuchtungsvorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** die Öffnung (12) in der Bodenwand (3) des Sammelbehälters (2) in Bezug auf das mittig angeordnete Rohr (9), das den Docht (8) umfasst, auf der entgegengesetzten Seite der Belüftungsöffnung (6) mit dem zugehörigen Rohr (5) angeordnet ist.
6. Beleuchtungsvorrichtung nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** das Rohr (9), das geeignet ist, den Docht (8) aufzunehmen, aus Metall besteht.
7. Beleuchtungsvorrichtung nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** das Rohr (9), das geeignet ist, den Docht (8) aufzunehmen, aus einem nicht brennbaren, nicht-metallischen Material besteht.
8. Beleuchtungsvorrichtung nach Anspruch 7, **dadurch gekennzeichnet, dass** das Rohr (9), das geeignet ist, den Docht (8) aufzunehmen, aus keramischem Material besteht.
9. Beleuchtungsvorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die obere Wand (15), die Seitenwand (3) und die Bodenwand (13) des Sammelbehälters (2) aus synthetischem Material bestehen.

Revendications

1. Dispositif d'éclairage employant un combustible liquide, ledit dispositif comprenant au moins un récipient (1), qui est conçu afin de recevoir et de stocker un combustible liquide (14), ainsi qu'un brûleur (7), qui sert également de couvercle et est conçu afin de sceller de manière étanche ledit récipient (1) et inclut une mèche (8), dont la première partie d'extrémité est située à l'intérieur du récipient (1) de sorte qu'elle puisse absorber ledit combustible liquide (14), tandis que sa seconde partie d'extrémité ressort du récipient (1) et passe à travers le brûleur (7), dans lequel ledit brûleur (7) est doté d'un tube (9) à travers lequel ladite mèche (8) est insérée afin de s'étendre de l'intérieur du récipient (1) vers l'extérieur de celui-ci,

ainsi qu'une ouverture supplémentaire (6) permettant d'aérer l'intérieur du récipient (1) et donc d'égaliser la pression d'air à l'intérieur du récipient (1) du fait des changements de la quantité de combustible (14) à l'intérieur,

dans lequel ledit récipient (1) comprend un goulot (4), dans la zone duquel ledit brûleur (7) est agencé, qui est conçu comme un couvercle creux et comprend un réservoir (2) pour le stockage du combustible (14) qui peut fuir de l'intérieur du récipient (1), dans lequel ledit réservoir (2) est placé au-dessus du niveau le plus haut autorisé du combustible (14), dans le récipient (1) et dans lequel ledit brûleur (7) doté dudit réservoir (2) est conçu à la fois afin de fermer et de sceller ledit récipient (1) dans la zone de son goulot (4) et également afin de recevoir le combustible (14) qui pourrait fuir du récipient (1) lorsque la lanterne est renversée,

et dans lequel ledit brûleur (7) est en outre, sur sa surface externe à l'extérieur du récipient (1), doté d'une nervure tubulaire de protection saillant vers l'extérieur (10), qui est conçue comme un anneau continu, qui s'étend autour de la mèche (8) et à une certaine distance en éloignement de celle-ci et est destinée à prévenir tout contact oral avec ladite seconde partie d'extrémité de la mèche (8), qui est située hors du récipient (1) et dans lequel ledit réservoir (2) du brûleur (7) comprend une paroi supérieure (15), qui est située hors du récipient (1) et sur la surface extérieure duquel ledit bord tubulaire protecteur (10) est agencé, une paroi inférieure (13), qui est située à l'intérieur du récipient (1), ainsi qu'une paroi latérale (3), qui est agencée entre ladite paroi inférieure (13) et ladite paroi supérieure (15), et en outre, un tube (9) est prévu, qui passe à travers ladite paroi supérieure (15) et ladite paroi inférieure (13) du réservoir (2), dans lequel ladite mèche (8) est insérée et qui est au moins approximativement alignée de manière centrale et scellée au moins dans la zone de passage à travers la paroi supérieure (15) vers la paroi inférieure (13),

et dans lequel ladite paroi inférieure (13) du réservoir (2) est dotée d'une ouverture supplémentaire (12), qui est destinée à permettre au combustible (14) de s'écouler de l'intérieur du récipient (1) dans le réservoir (2), ou inversement, dans lequel le niveau de combustible (14) est toujours, pendant l'utilisation régulière du dispositif d'éclairage et également avant cela, maintenu sous la paroi inférieure (13) du réservoir (2), **caractérisé en ce que** l'ouverture d'aération (6) dans la paroi supérieure (15) du réservoir (2) est agencée à une distance éloignée dudit tube agencé au niveau central (9) comprenant une mèche (8), et en même temps un tube d'aération (5) est connecté à ladite ouverture d'aération (6) et est adapté afin de permettre à l'air de s'écouler depuis l'extérieur du récipient (1) vers l'intérieur de celui-ci, ou inversement, dans lequel ledit tube d'aération (5) ressort

vers la paroi inférieure (13) mais se termine à une distance suffisante de la paroi inférieure (13).

2. Dispositif d'éclairage selon la revendication 1, **caractérisé en ce que** le tube (9) est scellé à la fois dans la zone de son passage à travers la paroi supérieure (15) vers la paroi inférieure (13) et également dans la zone de son passage à travers la paroi inférieure (13) vers la paroi supérieure (15) du réservoir (2).
3. Dispositif d'éclairage selon les revendications 1 ou 2, **caractérisé en ce que** l'ouverture (12) dans la paroi inférieure (13) du réservoir (2) est agencée de manière coaxiale avec le tube (9) de sorte que le tube (9) passe à travers l'ouverture (12) avec suffisamment d'espace maintenu entre eux.
4. Dispositif d'éclairage selon les revendications 1 ou 2, **caractérisé en ce que** l'ouverture mentionnée (12) dans la paroi inférieure (3) du réservoir (2) est agencée près de la paroi latérale (3) du réservoir (2).
5. Dispositif d'éclairage selon la revendication 4, **caractérisé en ce que** l'ouverture (12) dans la paroi inférieure (3) du réservoir (2) est, relativement audit tube agencé de manière centrale (9) comprenant la mèche (8), agencée sur le côté opposé de l'ouverture d'aération (6) avec le tube lui appartenant (5).
6. Dispositif d'éclairage selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** ledit tube (9), qui est conçu afin de recevoir ladite mèche (8), est constitué de métal.
7. Dispositif d'éclairage selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** ledit tube (9), qui est conçu afin de recevoir ladite mèche (8), est constitué d'un matériau non-métallique, non-inflammable.
8. Dispositif d'éclairage selon la revendication 7, **caractérisé en ce que** ledit tube (9), qui est conçu afin de recevoir ladite mèche (8), est constitué d'un matériau en céramique.
9. Dispositif d'éclairage selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la paroi supérieure (15), la paroi latérale (3) et la paroi inférieure (13) du réservoir (2) sont constituées d'un matériau synthétique.

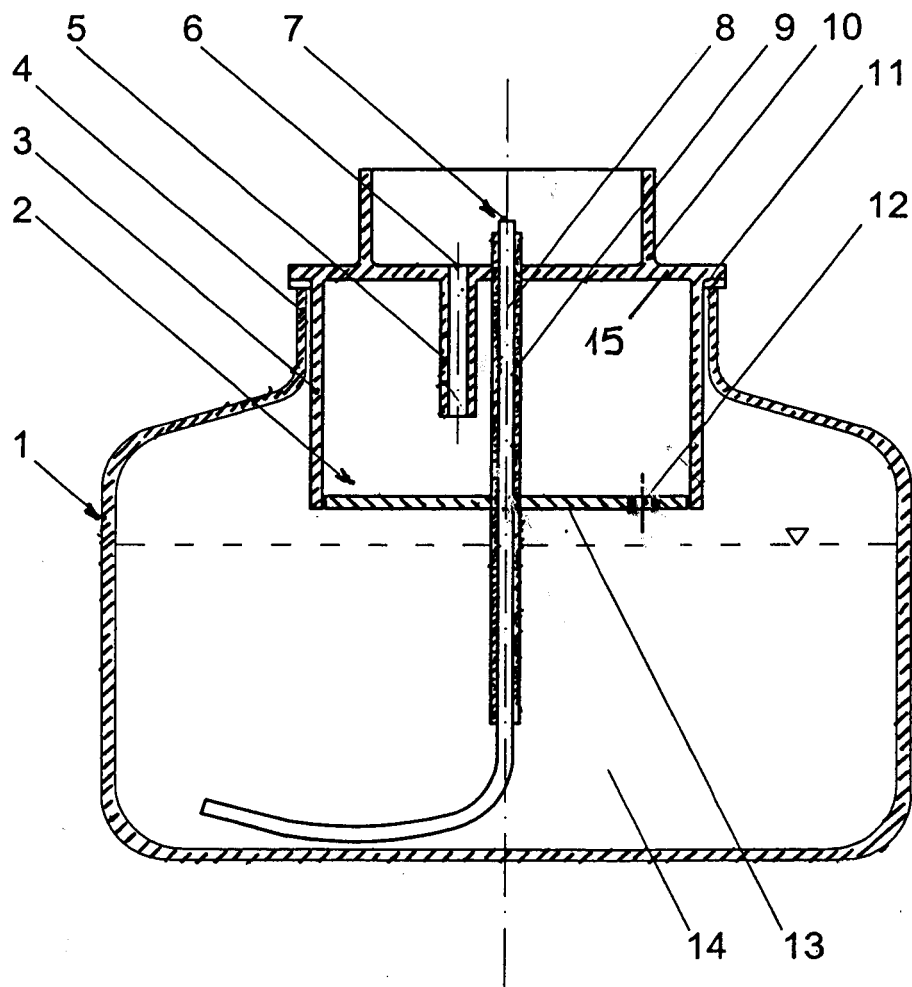
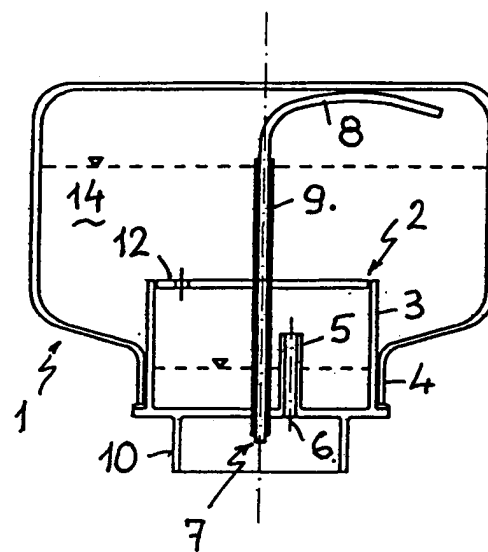
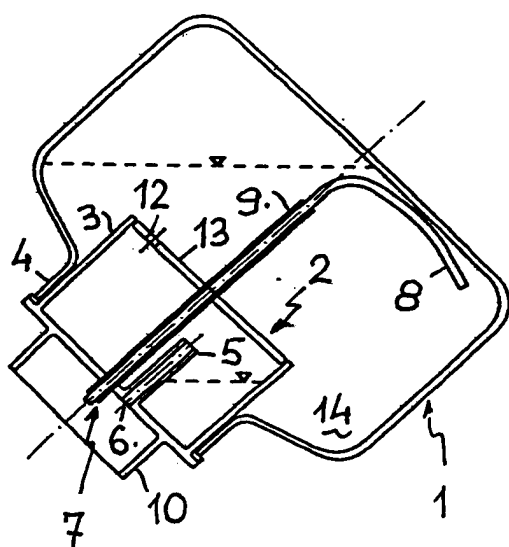
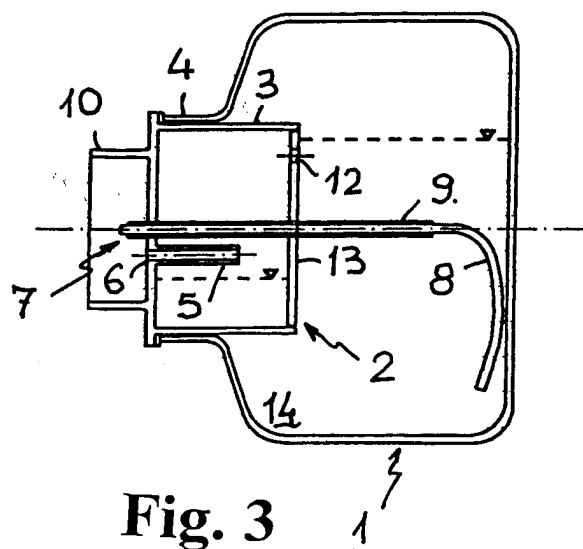
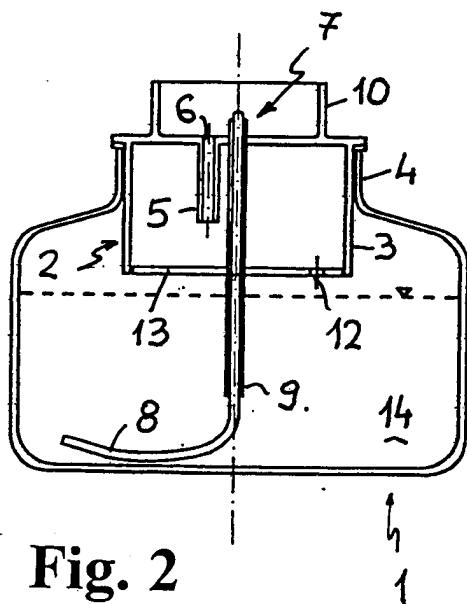


Fig. 1



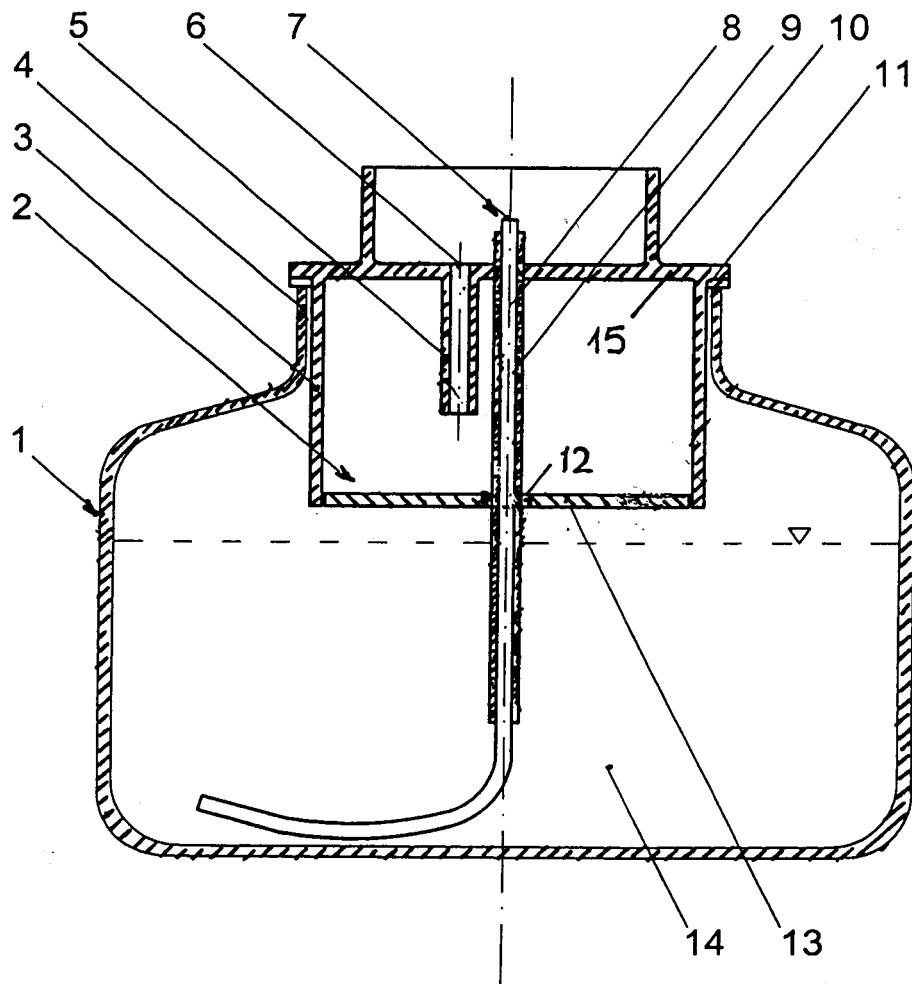


Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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