(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 945 088 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
28.11.2012 Bulletin 2012/48

(21) Application number: **05797171.5**

(22) Date of filing: **27.10.2005**

(51) Int Cl.:
A47L 13/26 *(2006.01)* ***A47L 13/22*** *(2006.01)*

(86) International application number:
PCT/EP2005/055607

(87) International publication number:
WO 2007/048446 (03.05.2007 Gazette 2007/18)

(54) MOP HANDLE WITH INTEGRATED TANK AND FILLING STATION

MOPPGRIFF MIT INTEGRIERTEM TANK UND INTEGRIERTER FÜLLSTATION

MANCHE DE BALAI A FRANGES AVEC RESERVOIR INTEGRE ET POSTE DE REMPLISSAGE

(84) Designated Contracting States:
DE FR GB IT

(43) Date of publication of application:
23.07.2008 Bulletin 2008/30

(73) Proprietor: **ECOLAB INC.**
St. Paul, MN 55102-2233 (US)

(72) Inventors:
- **MENZEL, Matthias**
  40764 Langenfeld (DE)
- **WAGNER, Eduard**
  41189 Mönchengladbach (DE)

(74) Representative: **Polypatent**
An den Gärten 7
51491 Overath (DE)

(56) References cited:
DE-U1- 29 903 868
GB-A- 926 504
US-A- 4 618 279
US-A- 5 165 811
US-A- 5 769 324

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 945 088 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention refers to a device for cleaning or treating a floor, a filling station for dispensing a liquid for cleaning or treating a floor into a reservoir of a device for cleaning or treating a floor, wherein the device and the station can be coupled, a system for cleaning or treating a floor comprising said device and said station and a method of filling or refilling a reservoir of a hand-operated cleaning device.

[0002] Typically, for cleaning or treating a surface, in particular a floor, the cleaning implement has to be charged repeatedly with the cleaning or treatment composition to be applied. Thus, there has to be provided a possibility to recharge the cleaning implement. In particular when professionally cleaning or treating floors, which means for example cleaning or treating a comparatively large area in total or cleaning or treating a lot of floors which are spread in comparatively large building like an office building or a public or private institution, the cleaning personnel often has the problem that recharging of the implement for cleaning or a treatment is circumstantial or time consuming. This is because typically the cleaning personnel either has to take the container which stores the cleaning or treatment composition and which often is heavy and/or bulky with him or her or he or she has to return to the container each time he or she desires to recharge the cleaning implement.

[0003] To overcome those disadvantages there were developed cleaning implements which have a reservoir for storing and releasing the cleaning or treatment composition, which the cleaning personnel takes with him or her or which is attached to or integrated within a handle of a cleaning implement.

[0004] US 6,550,998 B1 discloses one example for a device for applying flowing media to a surface, wherein the device comprises an equipment for a container, which can be worn on the back of the person applying the media. In addition, the device has a flow-regulating hose which can be shut off for conveying the media from the container by force of gravity to an outlet on a mopping or applicator device. Preferably, the container is equipped with a filling opening which is suitable for the pouring in of the media without a funnel or a similar means and is closable by a closure lid. However, the hose connecting the container with the mopping or applicator device may be very disturbing during the cleaning or application process since it may hinder the freedom of movement of the cleaning person and he or she always has to be taken care that it won't get caught and that it isn't torn off.

[0005] A device having a reservoir mounted to the handle is for example known from DE 3718141 A1. This document describes a container for liquid floor treatment preparations adapted to be mounted at its back to the handle of a long-handled floor wiper. The container includes a return flow cutoff funnel with an inlet, and a lower outlet tube with an exit port coupled to one end of a flexible hose that is selectively kinked to prevent fluid flow from the container to the floor, or un-kinked to obtain such fluid flow. The container is filled manually via an opening functioning as a filling hopper.

[0006] A further cleaning implement is disclosed in US 5,736,620. This document describes a cleaning tool having a multipurpose implement mounted within a housing, wherein housing and implement again are mounted to an extendable handle. A liquid container or reservoir is mounted so as to form a portion of the handle so that liquid may be selectively dispensed through the handle to a distribution header in the housing. Preferably, the container has a thread throat portion through which liquid may be resupplied to the interior of the container and to which a closing cap is threadingly engaged.

[0007] A further document which discloses a chamber for holding a liquid within the handle of a cleaning implement is US 6,467,983. The handle of said cleaning implement includes internal upper and lower valve assemblies sealably mounted within the handle to provide an air tight chamber there between for holding liquid. The upper valve assembly includes a push button actuator for introducing air into the chamber. The lower valve assembly includes a dispensing outlet for discharging the liquid from the chamber. The upper valve body is preferably manually removable from the tubular shaft of the handle to facilitate filling of the chamber with liquid.

[0008] DE 299 03 868 U1 describes a device for cleaning or treating a surface, comprising a handle provided with a reservoir (4) for storing a liquid, an implement for cleaning or treating a surface and a valve (5) provided at the outer wall of the reservoir (4) for dispensing the liquid to be discharged from the reservoir onto the floor to be treated.

[0009] In all the above cleaning implements the filling of the reservoir for storing the cleaning liquid proceeds manually via an opening in the upper end of the reservoir. Depending on the dimensions of said opening there may be high demands to the dexterity of the cleaning personnel to refill the reservoir without spilling much of the liquid, or additional equipments like hoppers have to be taken along to facilitate the filling or refilling of the container. On one hand this results in a loss of cleaning liquid which is spilled and on the other hand the required refilling needs a lot of time. Both factors may lead to an increase of costs.

[0010] It was, thus, an object of the present invention to find a way to overcome the above described disadvantages and in particular to facilitate the filling or refilling of such a reservoir and, thereby, to accelerate the cleaning process as a whole.

[0011] The above problem is solved by providing a method of filling or refilling a reservoir which is mounted to or part of a device, especially a hand-operated device for cleaning or treating a surface, in particular a floor, with a liquid, comprising positioning a tank containing the liquid to be filled or refilled and the reservoir to be filled or refilled in such a position that the liquid level in the tank is at the same height or below the maximum filling level

of the reservoir to be filled or refilled, providing a connection between the tank and the reservoir in a position which enables a flow of the liquid from the tank into the reservoir and initiating the flow of the liquid from the tank to the reservoir through the connection, wherein the reservoir to be filled or refilled is the reservoir (2) of the device according to claims 1 to 8 and the foule (7) is fixed to the filling station according to claims 9 to 24.

[0012] The device may be any device which has a reservoir mounted thereto or incorporated therein. A "hand-operated device for cleaning or treating" in the sense of the present invention may be any had-operated device for cleaning or treating a surface which is known in the art, in particular a handle-type cleaning/treatment device.

[0013] In the sense of the present invention the "height" of a filling level or a liquid level refers to the vertical distance from the ground to the filling level or the liquid level, respectively, if not otherwise indicated. The maximum filling level may be identical with the upper edge of the reservoir. However, it is also possible, for example for constructional reasons, that the maximum filling level is below the upper edge of the reservoir.

[0014] "Liquid" in the sense of the present invention means any substance which is capable of free-flowing, i.e. it moves through the components used in the method of the present invention without needing any further support, like the use of pumps, in a suitable time to not render the filling process inefficient.

[0015] The above described method takes advantage of the principle of communicating tubes which is known in the art. Communicating tubes are considered to be tubes which may be of different shape but have an open end and are connected with each other. In case they are filled with a substantially homogenous liquid the liquid level in each of the tubes is the same provided that the diameter of the tube is not so small that for example the capillary force in the tube distorts the effect of the gravity and the atmospheric pressure, and provided that for each tube the connection is positioned below the liquid level at equilibrium.

[0016] When connecting the tank containing the liquid supposed to be filled or refilled into the reservoir and the reservoir in the way specified above, the filling of the reservoir proceeds because the liquid levels of those connected containers are different and the system seeks to eliminate this imbalance. Thus, the liquid flows from the tank into the reservoir until the liquid levels of the tank and the reservoir have the same height.

[0017] A free flow from the tank to the reservoir only takes place when the connection between the tank and the reservoir for both the tank as well as for the reservoir is below the liquid level in the tank. Therefore, the connection at the tank preferably is provided near or even more preferred at the lowest point of the tank, which typically corresponds to the bottom of the tank or the top of the tank if the tank is positioned upside down. In addition, the connection at the reservoir preferably is provided below the above mentioned lowest point of the tank. Thereby, the amount of liquid which remains in the tank and may not be transferred into the reservoir is reduced. Moreover, the position of the connection at the reservoir should be below the maximum filling level of the reservoir to allow a stop of the filling before the liquid runs over the edge of the reservoir. Otherwise, the position of the connection is not specifically limited in order to take advantage of the above described filling concept.

[0018] A ventilating means should be provided with the tank as well as with the reservoir to enable air to escape from the reservoir and to flow into the tank, respectively. Otherwise the increasing overpressure in the reservoir and the negative pressure in the tank may prevent the filling of the reservoir. Preferably, the means for ventilation of the reservoir is provided at the same height or above the reservoir maximum filling level

[0019] One big advantage of filling or refilling the reservoir according to the method of the present invention is that the filling or refilling proceeds automatically as soon as the connection between the tank and the reservoir is provided. The cleaning person only has to initiate the flow by providing said connection.

[0020] Moreover, the discharge of the liquid from the tank into the reservoir automatically stops when the liquid level in the reservoir reaches the height of the liquid level in the tank. Since the reservoir and the tank are positioned such in relation to each other that the liquid level in the tank is at the same height or below the upper edge of the reservoir, the transfer of the liquid from the tank into the reservoir stops at the latest when the liquid level in the reservoir reaches the upper edge of the reservoir. Thus, there is no danger that the liquid runs over the upper edge of the reservoir and gets lost, even when the top of the reservoir is open.

[0021] Thus, the cleaning personnel only has to provide the connection between the tank and the reservoir and shortly thereafter, depending on the volume of the reservoir to be filled or refilled, the cleaning or treatment implement can be used for the next area to be cleaned or treated. The cleaning or treating person may use the time until the filling or refilling of the reservoir is completed to do other things he or she has to do, like polishing or drying the already cleaned or treated surface, cleaning or treating other surfaces with other devices or, in case the device for cleaning or treating a surface and the tank both are fixed to a movable cart, the cleaning person may use the time to move the cart to the next surface to be cleaned and, generally, the device for cleaning or treating will be ready for the next application when said next surface is reached.

[0022] Thereby, the method according to the present invention helps to reduce the loss of liquid actually intended to be applied onto a surface, which may occur in the process of filling or refilling the cleaning/treatment device. Moreover, the method according to the present invention is also time saving.

[0023] It is particularly preferred if the device for cleaning or treating a surface and the tank are removably fixed

during the filling or refilling process such that the tank and the reservoir may not be moved, for example by the cleaning person, into a position in which the height of the liquid level of the tank is above the maximum filling level of the reservoir and the filling will not automatically stop when the reservoir is full.

[0024] The method is particularly efficient if the hand-operated device and the filling station are specifically adapted to be used in the method as will be elucidated in the following.

[0025] Thus, the present invention also relates to a device for cleaning or treating a surface comprising
a handle provided with a reservoir for storing a liquid,
an implement for cleaning or treating a surface,
a valve which is provided at the outer wall of the reservoir, which can cooperate with a filling station for dispensing the liquid used for cleaning or treating the floor, and
a means to enable the liquid to be discharged from the reservoir directly or indirectly onto the floor to be cleaned or treated wherein the means is different from the valve, wherein the valve is provided below the upper third of the reservoir, more preferred in the lower half of the reservoir, and most preferred in the lower third of the reservoir.

[0026] A "valve" in the sense of the present invention means in its broadest sense any mechanical device that regulates the flow of a free-flow substance by opening, closing and partially obstructing various passageways. Thus, the valve provided at the outer wall of the reservoir enables the flow of liquid into and out of the reservoir to be controlled, i.e. initiated or stopped. The kind of the valve is not particular limited provided that it can cooperate as specified above with the filling station and that it can be closed when it is separated from the filling station. Thus, any valve known in the art fulfilling those requirements may be used in the present invention.

[0027] Although the valve may be exemplified by a simple plug valve or cock which can be cooperating with the filling station for example by means of a conduit or a hose it is preferred that the valve represents one part of two cooperating parts forming a coupling system wherein the second part is provided at the filling station.

[0028] The method according to the present invention will be especially facilitated in case the valve is one part of a coupling valve. In this case the cleaning person can easily provide the connection between the reservoir and the filling station by just coupling the corresponding parts of the valve. In case the coupling valve is a quick-action coupling valve as the ones known in the art, this further accelerates the cooperating proceedings.

[0029] In order to avoid an unwanted distribution of the liquid used for cleaning or treating the surface after having completed the filling process, the valve is equipped with a drip protection, as is generally known in the art, like by means of a check valve.

[0030] The device may be provided with a means with which it can be removably fixed to the filling station in order to facilitate the filling process. Preferably, the fixing proceeds such that the maximum filling level of the reservoir is at the same height or above the liquid level in the filling station, when the valve cooperates with the filling station. As fixing means any means known in the art may be used. However, in a particularly preferred embodiment the fixing takes advantage of the coupling system such that the part of the coupling system which is a part of the filling station is fixed to the filling station and the remaining part of the coupling system which is provided at the reservoir can be coupled. Thereby, at the same time the coupling generates the cooperation between the reservoir and the filling station and fixes the device to the filling station.

[0031] The means to enable the liquid to be discharged from the reservoir directly or indirectly to the floor can be any means which is known from the devices of the state of the art. The means, therefore, may be separate from the handle, especially in case the reservoir is mounted outside the handle, or it may be integrated within the handle, in particular when the reservoir also is integrated within the handle. The liquid may directly be applied from the opening of the reservoir to the floor, for example as is the case in the device described in DE 37 18 141 A1. However, it is also possible that the liquid is conveyed indirectly to the surface to be treated. This may be realized, for example, when at first the liquid is conveyed from the reservoir to the implement for cleaning or treating the surface and then applied to the surface, like in the devices of US 6,467,983 B2 and US 5,735,620.

[0032] "Means being different from the valve" means that the way of the liquid to be discharged directly or indirectly from the reservoir onto the surface to be cleaned is not completely identical with the way of the liquid from the valve to the reservoir when the reservoir is filled. However, said valve may be one part of the means for discharging the liquid from the reservoir.

[0033] Thus, for example using a three-way-valve in which one way provides the connection to the reservoir, one way is used for the cooperation with the filling station and one way is used for discharging the liquid directly or indirectly onto the surface exemplifies a means different from the valve.

[0034] Similarly, when the valve represents one part of a coupling system it may not only be coupled to the cooperating part of the coupling system provided at the filling station but also to an analogous part of a coupling system which enables to discharge the liquid from the reservoir to the surface. In this scenario the way of the liquid from the reservoir to the surface is also not completely identical with the way of the liquid from the valve to the reservoir when filling the reservoir since the liquid has to pass a different coupling system to become discharged. Consequently, in such a system the means is also different from the valve and, therefore, such a discharging/filling system is supposed to be within the scope of the present invention as well.

[0035] In a preferred embodiment the valve is closed the whole time when there is no cooperation between

the valve and the filling station. It is particularly preferred that the means for discharging the liquid from the reservoir to the surface to be cleaned is completely separated from the valve.

[0036] The position of the reservoir in relation to the handle is not particularly limited. However, the method of the present invention is of particular use in case the reservoir is either mounted outside the handle or integrated completely or partly therein. When the reservoir is integrated within the handle the wall of the handle may be at the same time the outer wall of the reservoir. However, it is also possible that the reservoir represents a separate container which is pushed as whole or partly into the interior of the handle.

[0037] In case the reservoir is integrated within the handle the valve may be provided at the outer wall of the handle as long as there is also provided a connection between the valve and the interior of the reservoir through the outer wall of the reservoir. Thus, an opening in the handle may be sufficient in case the outer wall of the handle corresponds to the outer wall of the reservoir. However, when the reservoir having its own outer walls different from the outer walls of the handle, is integrated only partly within the handle the valve may be provided at the outer wall of the handle, provided there is a connection to the interior of the reservoir through its outer wall. This connection may also be provided at that part of the reservoir which is not inside the handle.

[0038] If the valve is provided below the upper third of the reservoir the connection between the tank and the reservoir typically slopes at some position the aforementioned locations of the valve help to take advantage of the gravity to completely empty the tank, in particular when the tank is discharged from the bottom. Moreover, it might be disturbing for the cleaning person to have the valve in an area which he or she may generally use for moving the device, in particular if the reservoir is integrated within the handle.

[0039] The reservoir preferably additionally contains a means for ventilation refers to any means which allows a flow of air into the reservoir when it is desired. This includes an open top of the reservoir but also any kind of valve which is known in the art. Preferably, the means for ventilation functions automatically, which means as soon as the liquid is filled into the reservoir the air is discharged without being forced to operate the valve during the whole time of the filling. The means for ventilation preferably are provided at the reservoir at the same height or above the reservoir's maximum filling level.

[0040] The implement used for cleaning or treating a surface may be any one as is known in the art. Typical implements are mops, mop head covered with a mop cover, preferably of a natural, synthetic or mixed textile material, a brush or even a multi-purpose implement like the one disclosed in US 5,735,620. However, the implement is not particularly limited.

[0041] A further object of the present invention represents a filling station for dispensing a liquid for cleaning or treating a surface into a reservoir of a device for cleaning or treating a surface, comprising a fixture for fixing a tank containing the liquid to be filled in a specific distance above the ground, a device for discharging the liquid contained in the tank, a means for generating a cooperation between the discharging device and a valve provided at the outer wall of a reservoir to be filled or refilled, which valve is a part of a device for cleaning or treating a floor, and optionally a means for fixing said device for cleaning or treatment to the filling station, wherein a device for directing the valve of the reservoir to the valve at the end of the pipeline is positioned nearby, preferably above the valve at the end of the pipeline.

[0042] In a particularly preferred embodiment the filling station cooperates with the above described device for cleaning or treating a surface according to the present invention.

[0043] The filling station comprises a fixture for fixing a tank wherein the fixture has a specific distance above the floor. This means that the fixture should not be coincidentally movable. For example if the cleaning person carried the tank on his or her back or in his or her hand, it could be easily moved with respect to its distance above the floor together with the movements of the cleaning person. However, in the present invention the fixture is fixed in a position where it may only controllably moved, if at all, but otherwise is in a defined height above the floor. Thereby, it is also possible to place or fix the device for cleaning or treatment in a determined position in relation to the filling station.

[0044] In order to take advantage of the method of the present invention the height of the fixture for fixing the tank should be chosen such that the liquid level in the tank is at the same height or below the upper edge of the reservoir, when the filling station and the valve of the reservoir are cooperating. Preferably, the height of the fixture for fixing the tank is chosen such that the liquid level in the tank is at the same height or below the maximum filling level of the reservoir

[0045] The type of the fixture for fixing the tank is not particularly limited provided it leaves enough space for providing the tank with the device for discharging the liquid contained in the tank. In order to enable the whole amount of liquid in the tank to be discharged the discharging means should be provided in the lower part of the tank which means nearby the bottom or directly in the bottom. This has to be taken into account -when selecting the fixture for fixing the tank. Preferably, the tank partly or as a whole is put into a frame which partly or as a whole is adapted to the shape of the tank.

[0046] In a preferred embodiment the tank is mainly fixed using the discharging device. When the discharging device itself is fixed to the filling station, for example to a frame-like structure, and the discharging device may be connected to the tank in a comparatively rigid way, just by providing the connection between the tank and the discharging device. To stabilize the fixture the tank may additionally be propped up, for example by means

of a frame.

[0047] In a particularly advantageous embodiment, the fixture can be controllably moved upwards and downwards either continuously or stepwise. With controllable movement is meant that the fixture is in a specific, determined position when the filling takes place but said specific position may be varied in height, preferably before the filling takes place. However, it is also possible to slightly change the height during the filling process but this change only takes place calculated and under the control of the cleaning personnel.

[0048] This enables the filling station to be adapted to various devices for cleaning or treating a surface, which may each have a different height of the maximum filling level in the reservoir. Moreover, a tank fixture which can be varied in height also helps to provide a maximum filling of the reservoir even after repeated filling processes using the same tank.

[0049] Without this possibility to vary the height of the fixture for fixing the tank, the more filling processes have been carried out with the same tank the earlier the filling of the reservoir stops before reaching its maximum filling level. This is because from filling process to filling process the liquid level in the reservoir more and more decreases. And as the filling of the reservoir stops when the liquid level in the reservoir has the same height as the one in the tank, the filling stops before the maximum filling level in the reservoir is reached. Therefore, with an increasing number of filling steps using the same tank the reservoir will be incompletely filled and the filling has to be repeated in a higher frequency.

[0050] Consequently, when providing a way to vary the height of the fixture which fixes the tank after each or several filling processes, the tank may be lifted upwards to guarantee a constant completely filling of the reservoir. Of course, it has to be taken care that the lifting up is not carried out to an extent that the height of the liquid level of the tank gets above the height of the maximum filling level of the reservoir.

[0051] Generally, the tank has to be selected such that it is not so high that it will be difficult to bring the reservoir in a position in which the reservoirs maximum filling level is at the height of the liquid level of the tank or above.

[0052] Preferably, the device for discharging the liquid from the tank is a valve, wherein "valve" has the same meaning as indicated before. However, it is also possible that the discharging device just represents an opening in the tank which is connected with the means for connecting the discharging device with the valve of the reservoir. In this case in order to avoid a loss of cleaning/treatment composition when there is no connection between the tank and the reservoir the end of the connecting means cooperating with the valve of the reservoir has to be closeable, for example also by means of a valve .

[0053] It is particularly preferred if the valve is a coupling valve, in particular a quick-action coupling valve, wherein one part of the coupling valve can be connected to the tank and the counterpart of the coupling valve is connected to the means for connecting the discharging device to the valve of the reservoir.

[0054] The one part of the coupling valve may also function as a closing means of the tank. Therefore, in an embodiment which is especially advantageous, the tank is a commercially available tank which has an opening provided with a closing means, preferably with a screw lid, and the valve is adapted such that it may replace the closing means. Thereby, commercially available tanks may easily be equipped with the valve and used in the filling station of the present invention.

[0055] This also enables the tank to be removed from the filling station and easily stored if the cleaning/treatment process is completed and the tank is not empty yet. Thereby, the stress on the discharging valve during the period where the filling station is not used is reduced.

[0056] However, it is also possible to pour the liquid which is within a container which can not be directly used in the filling station of the present invention, at first into a tank which is suitable for use in the filling station of the present invention.

[0057] In a preferred embodiment the means for connecting the discharging device with the valve of the reservoir of the cleaning/treatment device is a flexible or rigid pipeline. Thereby, the liquid can easily be transported from the discharging device of the tank to the reservoir of the device for cleaning or treating a surface. A flexible pipeline is particularly preferred.

[0058] The connecting means and especially the pipeline may directly be connected to the valve of the reservoir. This means the connecting means in generally may be open and is closed when providing the connection with the valve of the reservoir. However, in such a case it has to be guaranteed that the discharging device may be closed although it is connected with the connecting means. This can be achieved, for example, when the discharge device is a plug valve or a cock which can be manually closed.

[0059] However, when a coupling valve is used as discharging device which is in an open state when it is coupled to the connecting device, the end of the connecting means cooperating with the valve of the reservoir has to be closeable. Otherwise, the liquid would run out of the tank each time when there is no connection between the connecting means and the valve of the reservoir.

[0060] Such a closable end of the connecting means can be realized by a further valve, and in particular a part of a coupling valve which represents the counterpart to the part of the coupling valve which is provided at the reservoir. It is particularly preferred that the connecting device is a pipeline, more preferred a flexible pipeline, wherein the end of the pipeline comprises a valve cooperating with the valve of the reservoir.

[0061] The end part of the connection means including an optional valve may be free movable. Thereby, the device for cleaning or treating a surface is not required to be fixed to the filling station and the position of the valve at its reservoir is to some extent variable. This will be of

advantage in case the reservoir has a kind of bulky shape or at least a shape which makes it difficult to fix the device to the filling station.

[0062] However, it is preferred that the reservoir of the cleaning/treatment device has a shape which does not prevent its fixing to the filling station. In this case it is particularly advantageous when the connection means of the filling station and in particular a part of a coupling system being a complement to the valve of the reservoir is fixed to the filling station. Thereby, such a fixed valve may also function as a fixing means for the device for cleaning or treating a surface to the filling station when the corresponding valves on the pipeline and the reservoir are coupled.

[0063] In this case the cleaning person may easily induce the filling process of the reservoir by just coupling the valve at the reservoir with the valve at the connection to the filling station.

[0064] Typically, such a fixing results in a position of the valve of the filling station and, thereby, also of the valve of the cleaning/treatment device, which is elevated in comparison to the floor. However, it is also possible to provide a fixing means such that the cleaning/treatment device rests on the floor during the filling/refilling process. In such a case the valve of the pipeline preferably is flexible and moveable to result in the connection to the thus fixed valve of the reservoir.

[0065] The position of the valve at the connection of the filling station and in particular the fixing of said valve to the filling station may also be adapted to the height of the reservoir if the valve or the fixing, respectively, can be varied in height by a means typically used in the state of the art for this purpose. Thereby, the filling station can be especially adapted to the use of several different devices for cleaning or treating a surface which are provided with a reservoir each of a different height of its maximum filling level.

[0066] The valve of the pipeline is fixed to the filling station or positioned such that it is connected with the valve of the reservoir below the upper third, preferably in the lower half and more preferred in the lower third of the filling station. This is of particular advantage in case the valve is fixed to the filling station since it might be easier for the cleaning person to provide the coupling when the device has to be lifted up only slightly, in particular when the valve is positioned at a lower part of the reservoir.

[0067] In order to facilitate the coupling between the counterpart valves at the reservoir and the filling station the filling station may comprise a directing device for directing the valve of the reservoir to the valve at the end of the pipeline may be provided nearby the valve at the end of the pipeline. The directing may proceed in all possible ways and directions as long as the directing device does not interfere with the dimensions of the handle and/or the filling station. Consequently, the handle can be directed to the filling station, for example, from the front relating to the valve of the filling station, from one or both sides thereof or from above the valve.

[0068] A directing device which is especially suitable for this purpose tapers in the direction of the valve at the end of the pipeline. Such a directing device can be exemplified by a funnel positioned above the connecting valve at the filling station and having an opening along at least a part of the length of the funnel. The dimensions of the funnel opening are chosen such that an easy movement of the valve at the reservoir into the upper part of the funnel opening is possible without a particular dexterity of the cleaning person. As soon as the valve at the reservoir enters the upper part of the funnel's opening the valve at the reservoir moves along the tapering inner walls of the funnel to the connecting valve of the filling station supported by gravity and, thereby, almost by itself. Besides the above described directing device other devices known in the art like runners or attracting means like magnets can also be employed separately or in combination therewith. Such a directing means tremendously facilitates and accelerates the coupling process of the counterparts of the valves at the reservoir and the filling station.

[0069] In order to carry out the method according to the present invention the filling station can be provided with a tank which is equipped with a means for ventilation. A means for ventilation may just be a permanent opening. However, it is preferred to use a valve as a means for ventilating the tank. Preferably, the ventilating means is positioned at the top of the fixed tank, in order to enable the tank to be completely filled before its first use. Despite from the requirements to the shape of the tank and its height as elucidated before and the material of the tank which has to be compatible with the liquid contained therein, the tank is not particularly limited.

[0070] The tank may be permanently fixed to the fixture of the filling device. In this case there has to be provided a means to fill the tank and to clean it. However, it is preferred that the tank is removably fixed to the filling station, like with a valve which at the same time functions as a screw lid or with a frame as already described above.

[0071] It is also possible that the filling station is equipped with several tanks which can be changed whenever one tank is empty. However, as this will take up a lot of space and the cleaning person has to take a lot of weight along it is preferred that the filling station can be equipped with one or more containers containing one or more concentrates. An opening provided in the tank may be used to fill the tank on the spot with concentrate and a diluting agent like water. Therefore, even when extremely large areas have to be cleaned and one filling of the tank will not be sufficient for cleaning the whole area, the cleaning person is capable to also refill the tank whenever required and when the required diluting agent is available. Thereby, it can be avoided that the cleaning person has to return to the place where the cleaning and treatment materials are stored each time the tank is empty.

[0072] In a particularly preferred embodiment the station is movable. It represents, for example, a frame which

is equipped with castors at the bottom, resulting in a cleaning trolley similar to the ones known in the art. Anyway any other means known in the state of the art which provide a moving of the filling station may be employed as long as it does not interfere with the other described requirements.

[0073] Depending on the intended area to be cleaned, in some cases it can be advantageous to provide a filling station as described above which is fixed, for example, to a wall or which is intended not to be moved. This especially applies to all kinds of localities which are small enough to be cleaned using only one or two fillings of the reservoir at the handle to be completely cleaned or treated. Therefore, in those cases there is no necessity and often also no desire to provide a movable filling station but a somehow fixed station which can be refilled very easily and which also dispenses very easily. Examples of use of such a filling station include the use in small offices or even offices having only one or two rooms, small shops of all kinds, small storerooms, rooms of physicians or veterinarians and similar spatially limited locations.

[0074] A further object of the present invention refers to a system for cleaning or treating a floor which comprises a device as described above and a filling station as described above.

[0075] A particularly preferred system according to the present invention comprises

a device comprising

a handle having a reservoir for a liquid integrated therein, an implement for cleaning or treating a surface

one part of a coupling valve which is provided at the outer wall of the handle and is connected by means of a bore with the interior of the reservoir, wherein the valve can cooperate with a filling station for dispensing the liquid used for cleaning or treating the surface, the valve is closed when it does not cooperate with the filling station and is provided in the lower third of the handle, and

a means to enable the liquid to be transferred from the reservoir onto the surface to be cleaned or treated or onto the implement used for cleaning or treating the surface wherein the means is different from the valve

a preferably movable filling station comprising

a fixture which optionally can be varied in height, for fixing a tank containing the liquid to be filled

a valve for discharging the liquid contained in the tank and a rigid or flexible pipeline connected on one end with the discharging valve and on the other end with a part of a coupling valve which is a counterpart of the part of the coupling valve which is provided at the outer wall of the handle of said device for cleaning or treating a surface,

wherein the part of the coupling valve of the pipeline cooperating with the counterpart valve on the reservoir is fixed to the filling station in its lower third and functions as a fixture for the handle when both valves are coupled and wherein in said coupled state the height of the fixture for fixing the tank is chosen such that the liquid level in the tank is of the same height or below the upper edge of the reservoir.

[0076] A further interesting use of the filling station and the handle of the present invention, i.e. of the system according to the present invention, is in connection with professional mobile cleaning machines, like, for example, scrubber dryers. When such typically quite large and bulky cleaning machines are applied there may be some places the cleaning machine itself cannot reach and which require a separate manual cleaning. In those cases it may be helpful additionally to provide for a handle with a reservoir according to the present invention. The filling station can be the cleaning machine itself provided that all other requirements of the filling station are fulfilled. However, it is also possible to mount a separate filling station according to the present invention to the cleaning machine. In particular the tank of the filling station can be fed using the storage tank of the cleaning machine or a separate tank. Using a separate tank has the advantage to be able to provide for different cleaning solutions.

Description of the Figures

[0077]

Fig. 1 is a schematic side view of a preferred embodiment of a system according to the present invention comprising a device for cleaning/treatment and a filling station.

Fig. 2 is a schematic drawing of the system according to Fig. 1 in which the frame for fixing the tank is not shown.

Fig. 3 is a schematic side view of the segment of a handle, which comprises the coupling valve, wherein the handle is a part of the cleaning/treatment device of Fig. 1 and 2.

Fig. 4 is a schematic drawing of the segment shown in Fig. 3 coupled to the valve of the filling station of Fig. 1.

Fig. 5 is a schematic front view of the directing device positioned above the connecting valve of the filling station of Fig. 1 and 2.

Fig. 6 is a schematic side view of the directing device of Fig. 5

[0078] The present invention is further elucidated by describing a particularly preferred embodiment of the system according to the present invention comprising a device for cleaning or treating a surface and a filling station.

[0079] Fig. 1 shows a preferred embodiment of the system according to the present invention. The system comprises a device for cleaning or treating a surface and a filling station (5). The device for cleaning or treating a

surface is comprises a handle (1), a valve (4) and an implement (3) for cleaning or treating the surface, which in this drawing is a mop head covered with a mop cover (not explicitly shown in detail).

[0080] The part of the handle (1) at which the valve is mounted is illustrated in further detail in Fig. 3. Fig. 3 shows a segment of a hollow handle (1). The handle (1) has an interior cavity providing a reservoir (2) for storing the liquid which is supposed to be used in the cleaning/treatment process. In this embodiment the walls of the handle (1) at the same time represent the walls of the reservoir (2). As in the shown embodiment the reservoir (2) corresponds to the whole cavity of the handle (1) the maximum filling level of the reservoir correspond to the upper end of the handle (1).

[0081] A valve (4) is mounted around a part of the outer wall of the handle (1) to provide a connection with the interior of the reservoir (2) via a bore within the wall of the handle (1). The valve in the preferred embodiment is designed as a quick-action coupling valve, in particular the coupling part of such a valve.

[0082] Fig. 5 and 6 show in more detail the counterpart (10) of said quick-action coupling valve (4), representing the nipple, which counterpart (10) is a part of the filling station. When coupling the coupling (4) and the nipple (10) of the quick-action coupling valve a passageway is released within the valves initiating a flow the inner tube of the valves. As soon as the coupling is separated again the flow stops. To avoid dripping the valve may additionally be designed to comprise a check valve.

[0083] The means to enable the liquid to be discharged from the reservoir (2) is not explicitly shown in the drawing but it is completely separated from the valve (4) mounted at the handle (1).

[0084] The device for cleaning/treating a surface in Fig. 1 is fixed to the filling station (5). The means for fixing the handle (1) to the filling station is provided by the valve (10) at the filling station in the form of a plate holding the valve (10) and mounted to a frame of the filling station (5). Thus, when coupling the counterparts (4,10) of the valve the handle (1) will rest above the floor at the valve (10) via the valve (4) at the reservoir. However, the fixing may also be provided by any other means known in the art.

[0085] The valve (10) at the filling station is connected via a hose or a tube (9) to the discharge device (8) at the tank (7). The hose or tube (9) may be of a rigid material like a metal, for example stainless steel, or a rigid plastic, or it may be made of an elastic material like rubber, as long as the material itself is compatible with the liquid to be filled. In the embodiment shown in Fig. 1 the hose is mainly hid within the frame of the filling station.

[0086] The discharge means (8) in the preferred embodiment also represents a quick-action coupling valve which is shown in Fig. 1 and 2 in its coupled state which enables a liquid flow from the tank (7) connected with the discharge valve (8) into the hose or tube (9). The tank represents a tank which is commercially available and preferably has a filling volume of about 3 to 50 liters, more preferred of from 5 to 20 liters. However, the shape of the tank (7) and its volume is not particularly limited.

[0087] In Fig. 1 and 2 the tank (7) is fixed upside down to the fixture (6) which is formed by the part of the discharge valve (8) belonging to the filling station (5). The counterpart of the discharge valve (8) being a part of the tank (7) at the same time represents the lid of the tank (7). Thus, when separating the coupling of the discharge valve (8) the tank (7) automatically is closed and can be stored without a danger of getting contaminated or losing its content.

[0088] For an easy movement of the filling station (5) the bottom plate of the filling station (5) is provided with castors. Since the connecting valve (10) also functioning as a fixing means for valve (4) of the reservoir (2) is positioned elevated from the floor, the whole station including the device for cleaning fixed thereto may be easily moved.

[0089] From Fig. 1 it is obvious that the tank (7) and the cleaning device are positioned such in relation to each other that the upper end of the handle (1) and, thereby, also the maximum filling level of the reservoir (2) in any case are above the filling level of the tank (7). Thus, when the connection between the reservoir (2) and the tank (7) of the filling station (5) is provided by coupling the discharge coupling valve (8) and also the coupling valve of the counterparts (4) and (10) a flow of liquid from the tank (7) into the reservoir (2) is induced until the liquid level in the reservoir (2) and in the tank (7) have the same height from the ground. Because of the present construction the liquid can not run over the upper edge of the reservoir (2) (assumed that it also has an open state).

[0090] Fig. 4 to 6 also show the directing device (11) mounted to the frame of the filling station (5) above the connecting valve (10), wherein the frame itself is not shown. The directing device (11) has the form of a funnel with a broad upper opening and tapering along the length of the funnel downward in the direction of the valve (10). The funnel is partly open along its whole length on the side opposite to the frame of the filling station (5), wherein the walls (12) of the funnel can be seen in Fig. 5. The valve (4) of the reservoir is supposed to be moved to the broader upper part (13) of the funnel and as soon as the valve (4) is within the cavity formed by the upper part of the funnel it can be easily directed downwards towards the connecting valve (10) along the tapering walls of the funnel. It would even be sufficient if the cleaning person just releases the handle (1) when the valve (4) is within the funnel as the gravity directs the valve automatically downwards along the walls of the funnel right to the connecting valve (10). Thus, this represents an easy and quick way for the cleaning person to provide the connection between the reservoir (2) and the filling station (5) and to induce the filling/refilling of the reservoir (2). The lower part (14) of the funnel more or less corresponds to the shape of the valve (4) wherein the dimensions should be chosen such that there remains some space between

the outer wall of the valve (4) and the inner walls of the funnel when directing the valve (4) along the funnel (11).

Claims

1. A device for cleaning or treating a surface comprising a handle (1) provided with a reservoir (2) for storing a liquid,
an implement (3) for cleaning or treating a surface,
a valve (4) which is provided at the outer wall of the reservoir (2), which can cooperate with a filling station (5) for dispensing the liquid used for cleaning or treating the floor, and
a means to enable the liquid to be discharged from the reservoir (2) directly or indirectly onto the floor to be cleaned or treated wherein the means is different from the valve (4),
characterized in that the valve (4) is provided below the upper third of the reservoir (2), preferably in the lower half of the reservoir (2), more preferred in the lower third of the reservoir (2).

2. The device according to claim 1 wherein the valve (4) is one part of a coupling system, preferably one part of a coupling valve, in particular a coupling of a coupling valve.

3. The device according to claim 2 wherein the coupling valve is a quick-action coupling valve.

4. The device according to any of claims 1 to 3 wherein the valve (4) is closed when it is not cooperating with the filling station (5).

5. The device according to any of claims 1 to 4 wherein the reservoir (2) is integrated within the handle (1).

6. The device according to any of claims 1 to 6 wherein the reservoir is mounted outside of the handle (1).

7. The device according to claim 5 wherein the valve (4) is provided at the outer wall of the handle (1) and is connected with the interior of the reservoir (2) through its outer wall.

8. The device according to any of claims 1 to 7 wherein it can be removably fixed to the filling station (5) such that the maximum filling level of the reservoir (2) is at the same height or above the liquid level in the filling station (5), when the valve (4) cooperates with the filling station (5).

9. A filling station (5) for dispensing a liquid for cleaning or treating a surface into a reservoir (2) of a device for cleaning or treating a surface, comprising a fixture (6) for fixing a tank (7) containing the liquid to be filled in a specific distance above the ground, a device (8) for discharging the liquid contained in the tank (7), a means (9) for generating a cooperation between the discharge device (8) and a valve (4) provided at the outer wall of a reservoir (2) to be filled or refilled which is a part of a device for cleaning or treating a floor and optionally a means for fixing said device for cleaning or treatment to the filling station (5), **characterized in that** a device (11) for directing the valve (4) of the reservoir (2) to the valve (10) at the end of the pipeline is positioned nearby, preferable above, the valve (10) at the end of the pipeline.

10. The filling station according to claim 9 wherein the device (8) for discharging the liquid from the tank (7) the liquid is a valve.

11. The filling station according to any of claims 9 or 10 wherein the valve is a coupling valve (4), in particular a quick-action coupling valve, wherein one part of the coupling valve can be connected to the tank (7) and the counterpart of the coupling valve is connected to the means (9) for connecting the discharging device to the valve (4) of the reservoir (2).

12. The filling station according to any of claims 9 to 10 wherein the means (9) for connecting the discharging device with the valve (4) of the reservoir (2) is a flexible or rigid pipeline.

13. The filling station according to any of claims 9 to 12 wherein the means (9) for connecting the discharging device to the valve (4) of the reservoir (2) is closed when there is no connection between the means (9) and the valve (4) of the reservoir (2).

14. The filling station according to claims 12 or 13 wherein the end of the pipeline cooperating with the valve (4) of the reservoir (2) comprises a valve (10).

15. The filling station (5) of claim 14 wherein the valve (10) of the pipeline is a part of a coupling valve forming the counterpart of the valve (4) of the reservoir (2).

16. The filling station according to claims 14 or 15 wherein the valve (10) of the pipeline also functions as a fixing means for the device for cleaning or treating a surface to the filling station (5) when the corresponding valves on the pipeline and the reservoir (2) are coupled.

17. The filling station according to any of claims 9 to 16 wherein the directing device (11) tapers in the direction of the valve (1) at the end of the pipeline.

18. The filling station according to any of claims 9 to 17 wherein the directing device (11) is a funnel having an opening along at least a part of the length of the

funnel.

19. The filling station according to any of claims 9 to 18 wherein the end of the means (9) for generating a cooperation between the discharge device (8) and the valve (4), preferably the valve (10), is fixed to the filling station (5) or positioned such that it is connected with the valve (4) of the reservoir (2) below the upper third, preferably in the lower half and more preferred in the lower third of the filling station (5).

20. The filling station according to claim 19 wherein the position of the means (9), preferably of the valve (10) at the end of the pipeline, can be varied in height.

21. The filling station according to any of claims 9 to 20 wherein the fixture (6) for fixing the tank (7) can be controllably varied in height.

22. The filling station according to any of claims 9 to 21 wherein the station comprises a tank (7) which is equipped with a means for ventilation.

23. The filling station according to any of claims 9 to 22 wherein the station is movable.

24. The filling station according to any of claims 9 to 23 wherein the height of the fixture (6) for fixing the tank (7) is chosen such that the liquid level in the tank (7) is at the same height or below the upper edge of the reservoir (2), when the filling station (5) and the valve (4) of the reservoir (2) are cooperating.

25. A system for cleaning or treating a floor which comprises a device according to
claims 1 to 8 and a filling station according to claims 9 to 24.

26. A system according to claim 22 wherein
the device comprises
a handle (1) having a reservoir (2) integrated therein for storing a liquid,
an implement (3) for cleaning or treating a surface
one part of a coupling valve (4) which is provided at the outer wall of the handle (1) and is connected by means of a bore with the interior of the reservoir (2), wherein the valve (4) can cooperate with a filling station (5) for dispensing the liquid used for cleaning or treating the surface, the valve (4) is closed when it does not cooperate with the filling station (5) and is provided in the lower third of the handle (1),
a means to enable the liquid to be transferred from the reservoir (2) onto the surface to be cleaned or treated or onto the implement (3) used for cleaning or treating the surface wherein the means is different from the valve (4), and wherein the valve (4) is provided below the upper third of the reservoir (2), preferably in the lower half of the reservoir (2), more preferred in the lower third of the reservoir (2),
the preferably movable filling station (5) comprises
a fixture (6) which optionally can be varied in height, for fixing a tank (7) containing the liquid to be filled
a valve (8) for discharging the liquid contained in the tank (7) and
a rigid or flexible pipeline (9) connected on one end with the discharging valve (8) and on the other end with a part of a coupling valve (10) which is a counterpart of the part of the coupling valve (4) which is provided at the outer wall of the handle (1) of said device for cleaning or treating a surface,
wherein the part of the coupling valve (10) of the pipeline (9) cooperating with the counterpart valve (4) on the reservoir (2) is fixed to the filling station (5) in its lower third and functions as a fixture for the handle (1) when both valves (4,10) are coupled,
wherein in said coupled state the height of the fixture (6) for fixing the tank (7) is chosen such that the liquid level in the tank (7) is of the same height or below the upper edge of the reservoir (2)
and wherein a device (11) for directing the valve (4) of the reservoir (2) to the valve (10) at the end of the pipeline is positioned nearby, preferable above, the valve (10) at the end of the pipeline.

27. A method of filling or refilling a reservoir (2) which is mounted to or part of a device, preferably a hand-operated device for cleaning or treating a surface, with a liquid comprising positioning a tank (7) which contains the liquid to be filled or refilled and the reservoir (2) to be filled or refilled in such a position that the liquid level in the tank (7) is at the same height or below the maximum filling level of the reservoir (2) to be filled or refilled, providing a connection between the tank (7) and the reservoir (2) in a position which enables a flow of the liquid from the tank (7) into the reservoir (2) and initiating said flow of the liquid from the tank (7) to the reservoir (2) through the connection wherein the reservoir (2) to be filled or refilled is the reservoir (2) of the device according to claims 1 to 8 and the tank (7) is fixed to the filling station according to claims 9 to 24.

28. The method according to claim 27 wherein the connection is provided at the reservoir (2) below the liquid level of the tank (7), preferably below the lowest point of the tank (7).

29. The method according to claims 27 or 28 wherein the connection is provided at the tank (7) at its lowest point.

Patentansprüche

1. Vorrichtung zur Reinigung oder Behandlung einer Oberfläche, umfassend

einen Griff (1), bereitgestellt mit einem Vorratsbehälter (2) zur Bevorratung einer Flüssigkeit,
ein Utensil (3) zur Reinigung oder Behandlung einer Oberfläche,
ein Ventil (4), bereitgestellt an der äußeren Wandung des Vorratsbehälters (2), welches mit einer Füllstation (5) zur Abgabe der Flüssigkeit, verwendet zur Reinigung oder Behandlung des Fußbodens, zusammenwirken kann, sowie
ein Hilfsmittel, um es der Flüssigkeit zu ermöglichen, aus dem Vorratsbehälter (2) direkt oder indirekt auf den zu reinigenden oder zu behandelnden Fußboden abgelassen zu werden, wobei das Hilfsmittel vom Ventil (4) verschieden ist,
dadurch gekennzeichnet, dass das Ventil (4) unterhalb des oberen Drittels des Vorratsbehälters (2) bereitgestellt ist, vorzugsweise in der unteren Hälfte des Vorratsbehälters (2), bevorzugter im unteren Drittel des Vorratsbehälters (2).

2. Vorrichtung nach Anspruch 1, wobei das Ventil (4) ein Teil eines Kupplungssystems ist, vorzugsweise ein Teil eines Kupplungsventils, insbesondere eine Kupplung eines Kupplungsventils.

3. Vorrichtung nach Anspruch 2, wobei das Kupplungsventil ein Schnellschlussventil ist.

4. Vorrichtung nach einem der Ansprüche 1 bis 3, wobei das Ventil (4) geschlossen ist, wenn es nicht mit der Füllstation (5) zusammenwirkt.

5. Vorrichtung nach einem der Ansprüche 1 bis 4, wobei der Vorratsbehälter (2) in den Griff (1) integriert ist.

6. Vorrichtung nach einem der Ansprüche 1 bis 6, wobei der Vorratsbehälter außerhalb des Griffs (1) montiert ist.

7. Vorrichtung nach Anspruch 5, wobei das Ventil (4) an der äußeren Wandung des Griffs (1) bereitgestellt ist und mit dem Inneren des Vorratsbehälters (2) durch dessen äußere Wandung hindurch verbunden ist.

8. Vorrichtung nach einem der Ansprüche 1 bis 7, wobei diese abnehmbar an der Füllstation (5) befestigt sein kann, so dass sich die maximale Füllhöhe des Vorratsbehälters (2) auf der gleichen Höhe oder oberhalb des Flüssigkeitsniveaus in der Füllstation (5) befindet, wenn das Ventil (4) mit der Füllstation (5) zusammenwirkt.

9. Füllstation (5) zur Abgabe einer Flüssigkeit zur Reinigung oder Behandlung einer Oberfläche in einen Vorratsbehälter (2) einer Vorrichtung zur Reinigung oder Behandlung einer Oberfläche, umfassend eine Befestigungsvorrichtung (6) zur Befestigung eines Tanks (7), welcher die einzufüllende Flüssigkeit enthält, in einem bestimmten Abstand oberhalb des Bodens, eine Vorrichtung (8) zur Abgabe der in dem Tank (7) enthaltenen Flüssigkeit, ein Hilfsmittel (9) zum Hervorrufen eines Zusammenwirkens zwischen der Abgabevorrichtung (8) und einem Ventil (4), bereitgestellt an der äußeren Wandung eines zu befüllenden oder wiederaufzufüllenden Vorratsbehälters (2), welcher ein Teil einer Vorrichtung zur Reinigung oder Behandlung eines Fußbodens ist, sowie wahlweise ein Hilfsmittel zur Befestigung der Vorrichtung zur Reinigung oder Behandlung an der Füllstation (5), **dadurch gekennzeichnet, dass** eine Vorrichtung (11) zur Zuführung des Ventils (4) des Vorratsbehälters (2) zum Ventil (10) am Ende der Leitung in der Nähe, vorzugsweise oberhalb, des Ventils (10) am Ende der Leitung angeordnet ist.

10. Füllstation nach Anspruch 9, wobei die Vorrichtung (8) zur Abgabe der Flüssigkeit aus dem Tank (7) ein Ventil ist.

11. Füllstation nach einem der Ansprüche 9 oder 10, wobei das Ventil ein Kupplungsventil (4) ist, insbesondere ein Schnellschluss-Kupplungsventil, wobei ein Teil des Kupplungsventils mit dem Tank (7) verbunden sein kann und das Gegenstück des Kupplungsventils verbunden ist mit dem Hilfsmittel (9) zur Verbindung der Abgabevorrichtung mit dem Ventil (4) des Vorratsbehälters (2).

12. Füllstation nach einem der Ansprüche 9 bis 10, wobei das Hilfsmittel (9) zum Verbinden der Abgabevorrichtung mit dem Ventil (4) des Vorratsbehälters (2) eine flexible oder starre Leitung ist.

13. Füllstation nach einem der Ansprüche 9 bis 12, wobei das Hilfsmittel (9) zum Verbinden der Abgabevorrichtung mit dem Ventil (4) des Vorratsbehälters (2) geschlossen ist, wenn keine Verbindung zwischen dem Hilfsmittel (9) und dem Ventil (4) des Vorratsbehälters (2) besteht.

14. Füllstation nach den Ansprüchen 12 oder 13, wobei das Ende der Leitung, welche mit dem Ventil (4) des Vorratsbehälters (2) zusammenwirkt, ein Ventil (10) umfasst.

15. Füllstation (5) nach Anspruch 14, wobei das Ventil (10) der Leitung ein Teil eines Kupplungsventils ist, das Gegenstück des Ventils (4) des Vorratsbehälters (2) bildend.

16. Füllstation nach den Ansprüchen 14 oder 15, wobei das Ventil (10) der Leitung außerdem als Hilfsmittel zur Befestigung der Vorrichtung zur Reinigung oder Behandlung einer Oberfläche an der Füllstation (5)

dient, wenn die entsprechenden Ventile an der Leitung und dem Vorratsbehälter (2) gekoppelt sind.

17. Füllstation nach einem der Ansprüche 9 bis 16, wobei die Zuführungsvorrichtung (11) sich in Richtung des Ventils (1) am Ende der Leitung konisch verjüngt.

18. Füllstation nach einem der Ansprüche 9 bis 17, wobei die Zuführungsvorrichtung (11) ein Trichter ist mit einer Öffnung entlang wenigstens eines Teils der Länge des Trichters.

19. Füllstation nach einem der Ansprüche 9 bis 18, wobei das Ende des Hilfsmittels (9) zum Hervorrufen eines Zusammenwirkens zwischen der Abgabevorrichtung (8) und dem Ventil (4), vorzugsweise dem Ventil (10), an der Füllstation (5) befestigt ist oder derart angeordnet ist, dass dieses mit dem Ventil (4) des Vorratsbehälters (2) unterhalb des oberen Drittels, vorzugsweise in der unteren Hälfte und bevorzugter im unteren Drittel der Füllstation (5), verbunden ist.

20. Füllstation nach Anspruch 19, wobei die Position des Hilfsmittels (9), vorzugsweise des Ventils (10) am Ende der Leitung, in der Höhe variiert werden kann.

21. Füllstation nach einem der Ansprüche 9 bis 20, wobei die Befestigungsvorrichtung (6) zur Befestigung des Tanks (7) regulierbar in der Höhe variiert werden kann.

22. Füllstation nach einem der Ansprüche 9 bis 21, wobei die Station einen Tank (7) umfasst, welcher mit einem Hilfsmittel zur Belüftung ausgestattet ist.

23. Füllstation nach einem der Ansprüche 9 bis 22, wobei die Station beweglich ist.

24. Füllstation nach einem der Ansprüche 9 bis 23, wobei die Höhe der Befestigungsvorrichtung (6) zur Befestigung des Tanks (7) derart gewählt ist, dass sich das Flüssigkeitsniveau im Tank (7) auf der gleichen Höhe oder unterhalb der oberen Kante des Vorratsbehälters (2) befindet, wenn die Füllstation (5) und das Ventil (4) des Vorratsbehälters (2) zusammenwirken.

25. System zur Reinigung oder Behandlung eines Fußbodens, welches eine Vorrichtung nach den Ansprüchen 1 bis 8 sowie eine Füllstation nach den Ansprüchen 9 bis 24 umfasst.

26. System nach Anspruch 22, wobei die Vorrichtung umfasst:

einen Griff (1) mit einem darin integrierten Vorratsbehälter (2) zur Bevorratung einer Flüssigkeit,
ein Utensil (3) zur Reinigung oder Behandlung einer Oberfläche,
einen Teil eines Kupplungsventils (4), welches an der äußeren Wandung des Griffs (1) bereitgestellt ist und mittels einer Bohrung mit dem Inneren des Vorratsbehälters (2) verbunden ist, wobei das Ventil (4) mit einer Füllstation (5) zwecks Abgabe der zur Reinigung oder Behandlung der Oberfläche verwendeten Flüssigkeit zusammenwirken kann, und das Ventil (4) geschlossen ist, wenn es nicht mit der Füllstation (5) zusammenwirkt, und bereitgestellt ist im unteren Drittel des Griffs (1),
ein Hilfsmittel, um es der Flüssigkeit zu ermöglichen, vom Vorratsbehälter (2) auf die zu reinigende oder zu behandelnde Oberfläche oder auf das zur Reinigung oder Behandlung der Oberfläche verwendete Utensil (3) übertragen zu werden, wobei das Hilfsmittel vom Ventil (4) verschieden ist, und
wobei das Ventil (4) bereitgestellt ist unterhalb des oberen Drittels des Vorratsbehälters (2), vorzugsweise in der unteren Hälfte des Vorratsbehälters (2), bevorzugter im unteren Drittel des Vorratsbehälters (2),
wobei die vorzugsweise bewegliche Füllstation (5) umfasst:

eine Befestigungsvorrichtung (6), welche wahlweise in der Höhe variiert werden kann, zur Befestigung eines Tanks (7), welcher die einzufüllende Flüssigkeit enthält,
ein Ventil (8) zum Ablassen der im Tank (7) enthaltenen Flüssigkeit, und
eine starre oder flexible Leitung (9), an einem Ende mit dem Ablassventil (8) und am anderen Ende mit einem Teil eines Kupplungsventils (10) verbunden, welches ein Gegenstück des Teils des Kupplungsventils (4) ist, welches an der äußeren Wandung des Griffs (1) der Vorrichtung zur Reinigung oder Behandlung einer Oberfläche bereitgestellt ist,
wobei der Teil des Kupplungsventils (10) der Leitung (9), welcher mit dem Gegenstück-Ventil (4) am Vorratsbehälter (2) an der Füllstation (5) in deren unterem Drittel befestigt ist und als Befestigungsvorrichtung für den Griff (1) dient, wenn beide Ventile (4, 10) gekoppelt sind,
wobei im gekoppelten Zustand die Höhe der Befestigungsvorrichtung (6) zur Befestigung des Tanks (7) derart gewählt ist, dass sich das Flüssigkeitsniveau im Tank (7) auf der gleichen Höhe oder unterhalb der oberen Kante des Vorratsbehälters (2) befindet

und wobei eine Vorrichtung (11) zur Zuführung des Ventils (4) des Vorratsbehälters (2) zum Ventil (10) am Ende der Leitung in der Nähe, vorzugsweise oberhalb, des Ventils am Ende der Leitung angeordnet ist.

27. Verfahren zum Füllen oder Wiederauffüllen eines Vorratsbehälters (2), welcher an einer Vorrichtung montiert oder ein Teil derselben ist, vorzugsweise eine von Hand bediente Vorrichtung zur Reinigung oder Behandlung einer Oberfläche mit einer Flüssigkeit, umfassend das Anordnen eines Tanks (7), welcher die einzufüllende oder wiederaufzufüllende Flüssigkeit enthält, sowie des zu füllenden oder wiederaufzufüllenden Vorratsbehälters (2) in einer solchen Position, dass sich das Flüssigkeitsniveau im Tank (7) auf der gleichen Höhe oder unterhalb der maximalen Füllhöhe des zu füllenden oder wiederaufzufüllenden Vorratsbehälters (2) befindet, bereitstellend eine Verbindung zwischen dem Tank (7) und dem Vorratsbehälter (2) in einer Position, welche ein Fließen der Flüssigkeit vom Tank (7) in den Vorratsbehälter (2) ermöglicht, und das Fließen der Flüssigkeit vom Tank (7) in den Vorratsbehälter (2) durch die Verbindung auslösend, wobei der zu füllende oder wiederaufzufüllende Vorratsbehälter (2) der Vorratsbehälter (2) der Vorrichtung nach den Ansprüchen 1 bis 8 ist und der Tank (7) befestigt ist an der Füllstation nach den Ansprüchen 9 bis 24.

28. Verfahren nach Anspruch 27, wobei die Verbindung am Vorratsbehälter (2) unterhalb des Flüssigkeitsniveaus des Tanks (7) bereitgestellt ist, vorzugsweise unterhalb des niedrigsten Punktes des Tanks (7).

29. Verfahren nach den Ansprüchen 27 oder 28, wobei die Verbindung am Tank (7) an dessen niedrigstem Punkt bereitgestellt ist.

Revendications

1. Dispositif pour nettoyer ou traiter une surface comprenant
une poignée (1) prévue avec un réservoir (2) pour stocker un liquide,
un accessoire (3) pour nettoyer ou traiter une surface, une valve (4) qui est prévue au niveau de la paroi externe du réservoir (2), qui peut coopérer avec une station de remplissage (5) pour distribuer le liquide utilisé pour nettoyer ou traiter le sol ; et
des moyens pour permettre au liquide d'être déchargé du réservoir (2) directement ou indirectement sur le sol à nettoyer ou traiter, dans lequel les moyens sont différents de la valve (4),
caractérisé en ce que la valve (4) est prévue sous le tiers supérieur du réservoir (2), de préférence dans la moitié inférieure du réservoir (2), de préférence dans le tiers inférieur du réservoir (2).

2. Dispositif selon la revendication 1, dans lequel la valve (4) est une partie d'un système de couplage, de préférence une partie d'une valve de couplage, en particulier un couplage d'une valve de couplage.

3. Dispositif selon la revendication 2, dans lequel la valve de couplage est une valve de couplage à action rapide.

4. Dispositif selon l'une quelconque des revendications 1 à 3, dans lequel la valve (4) est fermée lorsqu'elle ne coopère pas avec la station de remplissage (5).

5. Dispositif selon l'une quelconque des revendications 1 à 4, dans lequel le réservoir (2) est intégré à l'intérieur de la poignée (1).

6. Dispositif selon l'une quelconque des revendications 1 à 6, dans lequel le réservoir est monté à l'extérieur de la poignée (1).

7. Dispositif selon la revendication 5, dans lequel la valve (4) est prévue au niveau de la paroi externe de la poignée (1) et est raccordée avec l'intérieur du réservoir (2) par sa paroi externe.

8. Dispositif selon l'une quelconque des revendications 1 à 7, dans lequel il peut être fixé de manière amovible à la station de remplissage (5) de sorte que le niveau de remplissage maximum du réservoir (2) est à la même hauteur ou supérieur au niveau de liquide dans la station de remplissage (5), lorsque la valve (4) coopère avec la station de remplissage (5).

9. Station de remplissage (5) pour distribuer un liquide pour nettoyer ou traiter une surface, dans un réservoir (2) d'un dispositif pour nettoyer ou traiter une surface, comprenant un dispositif de fixation (6) pour fixer un réservoir (7) contenant le liquide à déverser à une distance spécifique au-dessus du sol, un dispositif (8) pour décharger le liquide contenu dans le réservoir (7), des moyens (9) pour générer une coopération entre le dispositif de décharge (8) et une valve (4) prévue au niveau de la paroi externe d'un réservoir (2) à remplir ou à réapprovisionner qui fait partie d'un dispositif pour nettoyer ou traiter un sol et facultativement des moyens pour fixer le dispositif pour le nettoyage ou le traitement de la station de remplissage (5), **caractérisée en ce qu'**un dispositif (11) pour diriger la valve (4) du réservoir (2) vers la valve (10) à l'extrémité de la conduite est positionné tout près, de préférence au-dessus de la valve (10) à l'extrémité de la conduite.

10. Station de remplissage selon la revendication 9, dans laquelle le dispositif (8) pour décharger le liqui-

de du réservoir (7) est une valve.

11. Station de remplissage selon l'une quelconque des revendications 9 ou 10, dans laquelle la valve est une valve de couplage (4), en particulier une valve de couplage à action rapide, dans laquelle une partie de la valve de couplage peut être raccordée au réservoir (7) et la contrepartie de la valve de couplage est raccordée aux moyens (9) pour raccorder le dispositif de décharge à la valve (4) du réservoir (2).

12. Station de remplissage selon l'une quelconque des revendications 9 à 10, dans laquelle les moyens (9) pour raccorder le dispositif de décharge avec la valve (4) du réservoir (2) est une conduite souple ou rigide.

13. Station de remplissage selon l'une quelconque des revendications 9 à 12, dans laquelle les moyens (9) pour raccorder le dispositif de décharge à la valve (4) du réservoir (2) sont fermés lorsqu'il n'y a pas de raccordement entre les moyens (9) et la valve (4) du réservoir (2).

14. Station de remplissage selon les revendications 12 ou 13, dans laquelle l'extrémité de la conduite coopérant avec la valve (4) du réservoir (2) comprend une valve (10).

15. Station de remplissage (5) selon la revendication 14, dans laquelle la valve (10) de la conduite est une partie d'une valve de couplage formant la contrepartie de la valve (4) du réservoir (2).

16. Station de remplissage selon les revendications 14 ou 15, dans laquelle la valve (10) de la conduite fonctionne également comme des moyens de fixation pour le dispositif de nettoyage ou de traitement de surface sur la station de remplissage (5), lorsque les valves correspondantes sur la conduite et le réservoir (2) sont couplées.

17. Station de remplissage selon l'une quelconque des revendications 9 à 16, dans laquelle le dispositif de direction (11) se rétrécit progressivement dans la direction de la valve (1) à l'extrémité de la conduite.

18. Station de remplissage selon l'une quelconque des revendications 9 à 17, dans laquelle le dispositif de direction (11) est un entonnoir ayant une ouverture le long d'au moins une partie de la longueur de l'entonnoir.

19. Station de remplissage selon l'une quelconque des revendications 9 à 18, dans laquelle l'extrémité des moyens (9) pour générer une coopération entre le dispositif de décharge (8) et la valve (4), de préférence la valve (10), sont fixés à la station de remplissage (5) ou positionnés de sorte qu'ils sont raccordés avec la valve (4) du réservoir (2) sous le tiers supérieur, de préférence la moitié inférieure et de préférence le tiers inférieur de la station de remplissage (5).

20. Station de remplissage selon la revendication 19, dans laquelle la position des moyens (9), de préférence de la valve (10) à l'extrémité de la conduite, peut être modifiée en hauteur.

21. Station de remplissage selon l'une quelconque des revendications 9 à 20, dans laquelle le dispositif de fixation (6) pour fixer le réservoir (7) peut être modifié en hauteur de manière contrôlée.

22. Station de remplissage selon l'une quelconque des revendications 9 à 21, dans laquelle la station comprend un réservoir (7) qui est équipé avec des moyens de ventilation.

23. Station de remplissage selon l'une quelconque des revendications 9 à 22, dans laquelle la station est mobile.

24. Station de remplissage selon l'une quelconque des revendications 9 à 23, dans laquelle la hauteur du dispositif de fixation (6) pour fixer le réservoir (7) est choisie de sorte que le niveau de liquide dans le réservoir (7) est à la même hauteur ou inférieur au bord supérieur du réservoir (2), lorsque la station de remplissage (5) et la valve (4) du réservoir (2) coopèrent.

25. Système pour nettoyer ou traiter un sol qui comprend un dispositif selon les revendications 1 à 8 et une station de remplissage selon les revendications 9 à 24.

26. Système selon la revendication 22, dans lequel
le dispositif comprend
une poignée (1) ayant un réservoir (2) intégré à l'intérieur de celle-ci pour stocker un liquide,
un accessoire (3) pour nettoyer ou traiter une surface ;
une partie d'une valve de couplage (4) qui est prévue au niveau de la paroi externe de la poignée (1) et est raccordée au moyen d'un alésage avec l'intérieur du réservoir (2), dans lequel la valve (4) peut coopérer avec une station de remplissage (5) pour distribuer le liquide utilisé pour nettoyer ou traiter la surface, la valve (4) est fermée lorsqu'elle ne coopère pas avec la station de remplissage (5) et est prévue dans le tiers inférieur de la poignée (1),
des moyens pour permettre au liquide d'être transféré du réservoir (2) sur la surface à nettoyer ou à traiter ou sur l'accessoire (3) utilisé pour nettoyer ou traiter la surface, dans lequel les moyens sont différents de la valve (4), et
dans lequel la valve (4) est prévue sous le tiers su-

périeur du réservoir (2), de préférence dans la moitié inférieure du réservoir (2), encore de préférence dans le tiers inférieur du réservoir (2),
la station de remplissage de préférence mobile (5) comprend
un dispositif de fixation (6) qui facultativement peut être modifié en hauteur, pour fixer un réservoir (7) contenant le liquide à déverser,
une valve (8) pour décharger le liquide contenu dans le réservoir (7), et
une conduite rigide ou flexible (9) raccordée à une extrémité avec la valve de déchargement (8) et à l'autre extrémité avec une partie d'une valve de couplage (10) qui est une contrepartie de la partie de la valve de couplage (4) qui est prévue au niveau de la paroi externe de la poignée (1) dudit dispositif pour nettoyer ou traiter une surface,
dans lequel la partie de la valve de couplage (10) de la conduite (9) coopérant avec la valve de contrepartie (4) sur le réservoir (2) est fixée à la station de remplissage (5) dans son tiers inférieur et fonctionne comme un dispositif de fixation pour la poignée (1) lorsque les deux valves (4, 10) sont couplées,
dans lequel, dans ledit état couplé, la hauteur du dispositif de fixation (6) pour fixer le réservoir (7) est choisie de sorte que le niveau de liquide dans le réservoir (7) est de la même hauteur ou sous le bord supérieur du réservoir (2),
et dans lequel un dispositif (11) pour diriger la valve (4) du réservoir (2) vers la valve (10) à l'extrémité de la conduite est positionné tout près, de préférence au-dessus, la valve (10) à l'extrémité de la conduite.

27. Procédé pour remplir ou réapprovisionner un réservoir (2) qui est monté sur ou fait partie d'un dispositif, de préférence un dispositif actionné à la main pour nettoyer ou traiter une surface, avec un liquide, comprenant les étapes consistant à positionner un réservoir (7) qui contient le liquide à déverser ou à réapprovisionner et le réservoir (2) à remplir ou à réapprovisionner dans une position telle que le niveau de liquide dans le réservoir (7) est à la même hauteur ou au-dessous du niveau de remplissage maximum du réservoir (2) à remplir ou à réapprovisionner, prévoir un raccordement entre le réservoir (7) et le réservoir (2) dans une position qui permet un écoulement du liquide du réservoir (7) dans le réservoir (2) et initier ledit écoulement de liquide du réservoir (7) au réservoir (2) par le raccordement, dans lequel le réservoir (2) à remplir ou à réapprovisionner est le réservoir (2) du dispositif selon les revendications 1 à 8, et le réservoir (7) est fixé à la station de remplissage selon les revendications 9 à 24.

28. Procédé selon la revendication 27, dans lequel le raccordement est prévu au niveau du réservoir (2) au-dessous du niveau de liquide du réservoir (7), de préférence au-dessous du point le plus bas du réservoir (7).

29. Procédé selon les revendications 27 ou 28, dans lequel le raccordement est prévu au niveau du réservoir (7) au niveau de son point le plus bas.

Fig. 1

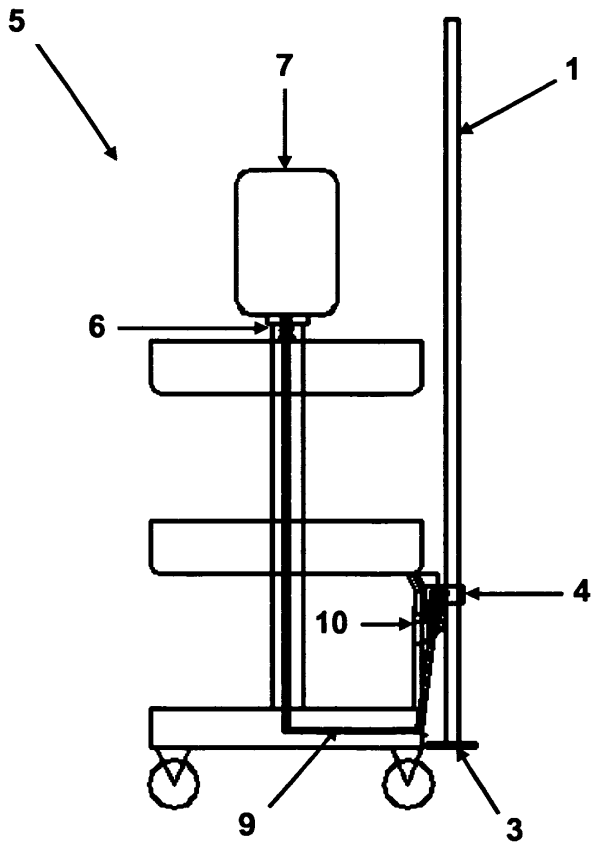


Fig. 2

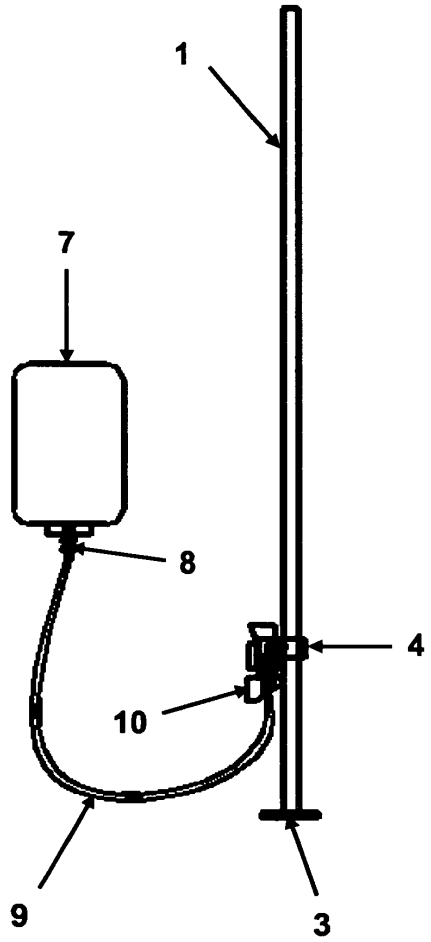


Fig. 3

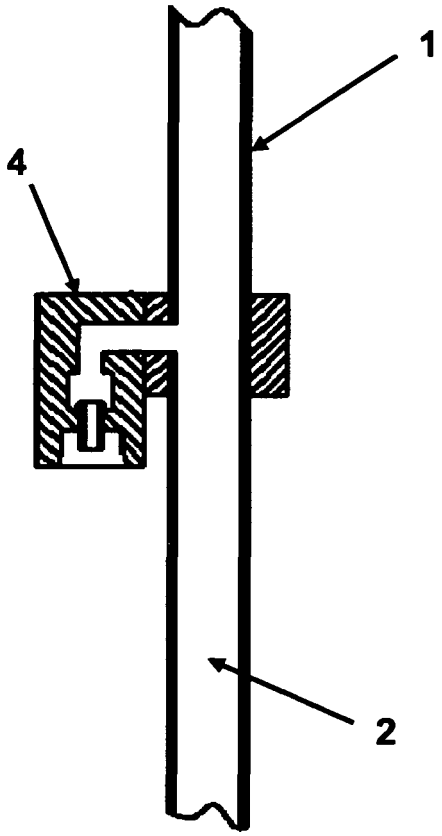


Fig. 4

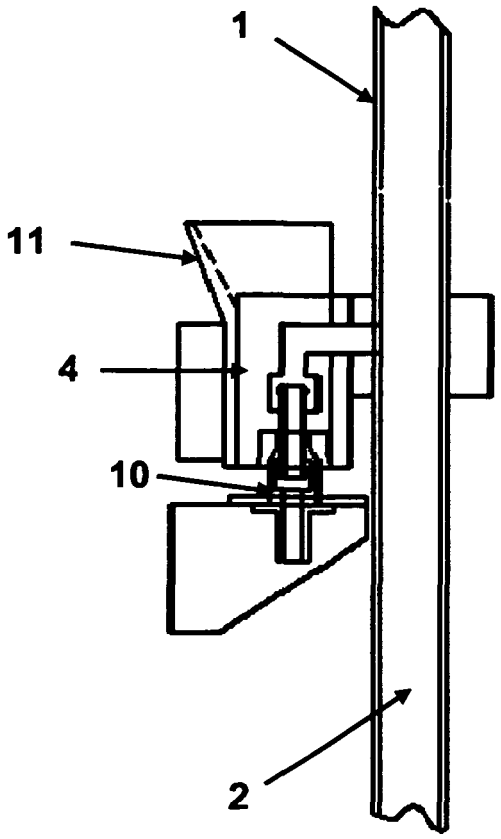
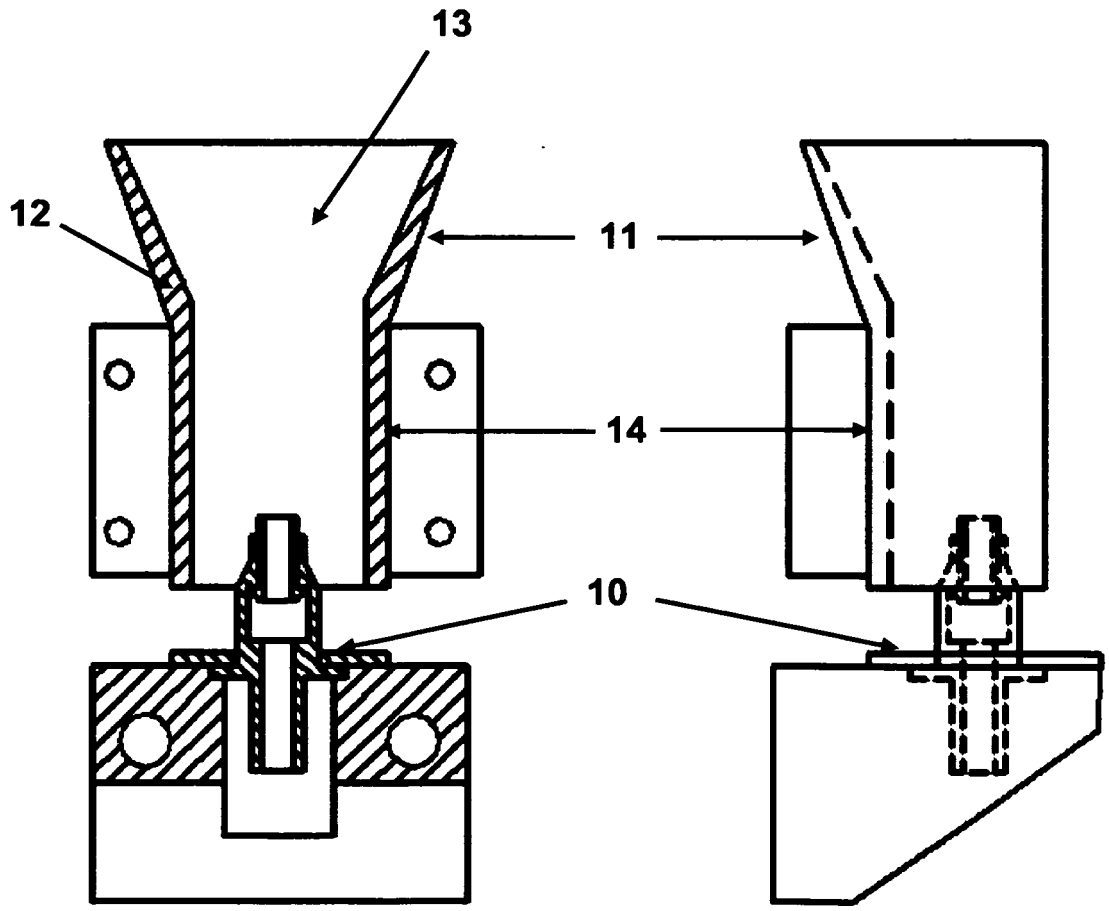


Fig. 5

Fig. 6



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 6550998 B1 **[0004]**
- DE 3718141 A1 **[0005] [0031]**
- US 5736620 A **[0006]**
- US 6467983 B **[0007]**
- DE 29903868 U1 **[0008]**
- US 6467983 B2 **[0031]**
- US 5735620 A **[0031] [0040]**