No. 716,910. Patented Dec. 30, 1902.

T. W. LÜBBECKE.

SPRAYING APPARATUS.

(Application filed May 14, 1902.)

(No Model.)

Fig. 1.

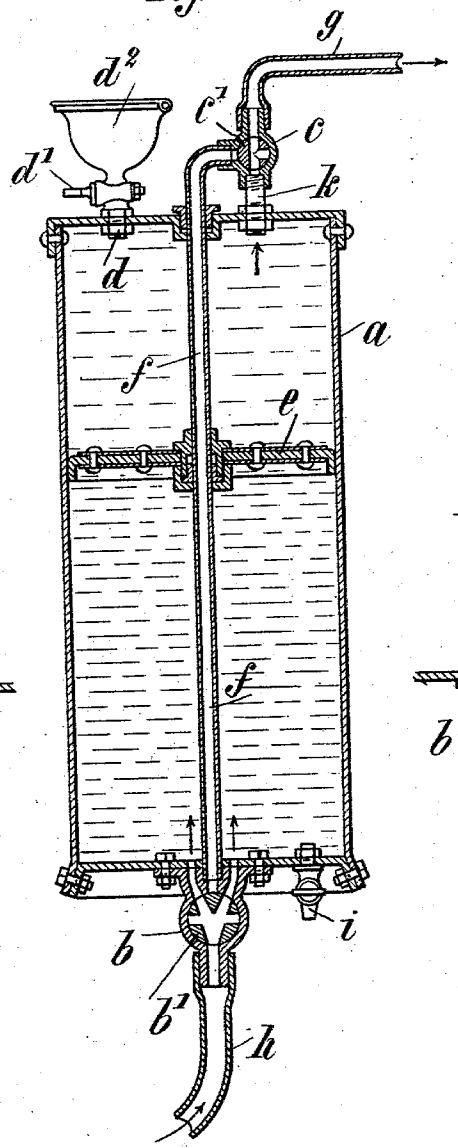


Fig. 2.

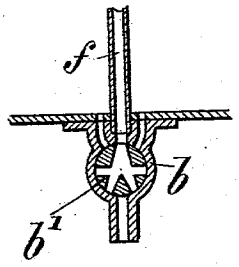
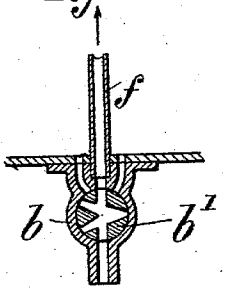


Fig. 3.



Witnesses:
B. Lobe
R. F. Sommers

Inventor
Theodor Wilhelm Lübbecke
By Munn & Orthofer
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THEODOR WILHELM LÜBBECKE, OF HAMBURG, GERMANY.

SPRAYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 716,910, dated December 30, 1902.

Application filed May 14, 1902. Serial No. 107,288. (No model.)

To all whom it may concern:

Be it known that I, THEODOR WILHELM LÜBBECKE, a subject of the German Emperor, and a resident of Hamburg, in the German Empire, have invented certain new and useful Improvements in Spraying Apparatus, of which the following is a specification.

The present invention relates to spraying apparatus for disinfecting purposes of that class in which the disinfecting liquid is forced in the form of a jet or spray against the object or objects to be disinfected by the action of a piston slidably arranged within a suitable vessel provided at one end with a suitable inlet for filling in the disinfecting liquid and a suitable outlet for attaching a hose, carrying at its free end a nozzle or spray-head and provided at the other end with a suitable inlet for the pressure medium (pressure-water, steam, compressed air, &c.) operating the piston, the said piston separating the disinfecting liquid from the pressure medium, so that the strength or degree of concentration of the former remains unchanged or unaltered when it is forced out of the vessel by the forward stroke of the piston.

My invention more particularly refers to a controllable pipe connection between the pressure-medium conduit and the space of the vessel destined for the reception of the disinfecting liquid. After the proper connections have been established the said connecting-pipe allows of admitting the pressure medium into the disinfectant-space of the vessel—that is to say, at the other side of the piston—in order to effect the return stroke of the latter. The said connecting-pipe also permits of an addition of the pressure medium (water, steam, &c.) to the disinfectant in the disinfectant-space of the vessel, provided such addition is desired or required.

In the accompanying drawings, Figure 1 shows a vertical central section of a disinfectant-spraying apparatus constructed in accordance with and embodying my invention. The stop-valves or stop-cocks of the pressure-medium conduit and of the hose through which the disinfecting liquid is ejected or forced out are in the positions they occupy when the apparatus is at work. Fig. 2 is a detailed sectional view of the stop-cock of the pressure-medium conduit, showing the former in the position to cut off the admission of the pressure medium; and Fig. 3 is a similar sectional view showing the said stop-cock in the position to allow the pressure medium to enter into the auxiliary pipe, but to bar the pressure medium from entering into the main vessel or from its action upon the piston, respectively.

Similar letters refer to similar parts throughout the several views.

My improved apparatus comprises a large but preferably transportable vessel a, which is closed with the exception of an inlet b at its lower portion, and an outlet k and a filling-inlet d, provided with a closing device d' and filling-cup d^2 at its upper portion. This vessel is cylindrical and contains a piston e, for the guidance of which a central fixed tube f may be provided. To the outlet k is connected, with the aid of a three-way cock $c\,c'$, a pipe or hose g, of small diameter, which terminates in a nozzle or spray-head. (Not shown.) The inlet b in the lower portion of the vessel a is provided with a hose h, whereby it may be connected, for example, to a water stand-pipe. In the bottom of the vessel a is also arranged a suitable valve or cock i for drawing off the exhausted pressure medium.

In the inlet-neck b is mounted a suitable multiple-way cock. When the plug b' of this cock is in the position shown by Fig. 1, the pressure medium is allowed to flow or enter into the main vessel a. When the plug b' is in the position Fig. 2, the admission of the pressure medium is cut off, and when the plug b' is in the position Fig. 3 the connection is thus that the pressure medium is enabled to enter into the tube f. The upper end of this tube f, passing through the top of the vessel a, may be brought by means of a three-way cock (intercalated between the outlet k, the hose g, and the tube f) into communication with the interior of the vessel or with the hose, or may be cut off from either, this latter position being shown in Fig. 1.

When it is desired to use the apparatus, it is filled through the filling device $d\,d'\,d^2$ with the disinfecting liquid—for example, carbolic acid—above the piston e, by which means the piston is depressed. The hose h is then connected with the pressure-water conduit and the cock b' opened, so that the pressure-

water rushes into the vessel *a* and presses against the piston *e*, gradually lifting it and forcing the disinfecting liquid out through the hose *g* and its nozzle in the form of a fine jet or spray. The operative has only to direct the spray from the hose *g* or its nozzle, respectively, against the object or surface to be disinfected. The disinfecting liquid is always separated from the water under pressure by the piston *e*, so that the strength or degree of concentration of the disinfecting liquid remains unaltered. Steam or compressed air may, if desired, be employed instead of water under pressure for spraying the disinfectant. After the disinfecting liquid has been forced out of the vessel *a* the piston *e* is at the end of its upward or forward stroke. To again bring down the piston into its original position, the cock *c'* is to be turned so as to connect the tube *f* with the inlet *k*, the cock *b'* is to be brought from the position Fig. 1 into the position Fig. 3, and the draw-off cock *i* opened. The water under pressure entering now into the upper part of the vessel and pressing from above against the piston moves the latter down, while the exhausted pressure-water is forced out through the draw-off cock *i*. Thereupon the cock *c'* is turned back in the position Fig. 1 and the cock *i* closed again. The vessel—that is to say, the space above the piston—is now filled with water, to which the required quantity of the disinfectant may be added or mixed through the filling device *d d' d²*. Thus the production of the disinfecting liquid proper in separate mixing vessels is avoided, as the vessel *a* and the cup *d²* can be used as measuring vessels.

When direct connection is made between the tube *f* and the hose *g*, by turning the cock *c'* accordingly, and the cock *b'* is brought into the position Fig. 3, the pressure medium—for example, water or steam—may be forced directly through the hose *g*.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In apparatus such as described, the combination with a vessel, means for supplying a disinfectant thereto and means for supplying a liquid from a suitable source of supply to the vessel; of means for forcing the contents therefrom by liquid from said source of supply and preventing the admixture of the forcing liquid with said contents, for the purpose set forth.

2. In apparatus such as described, the combination with a vessel, a feed-pipe and a measuring device connected thereto and of a capacity proportionate to the capacity of said vessel and means for supplying a liquid from a suitable source of supply to said vessel; of means for forcing the contents therefrom by liquid from the said source of supply and preventing the admixture of the forcing liquid with said contents of the vessel, for the purpose set forth.

3. Apparatus such as described, comprising a vessel, a piston therein, means for supplying a disinfecting liquid to the vessel on one side of the piston, a pipe connected to said vessel on said side of the piston, means for admitting a fluid under pressure to the vessel on the opposite side of said piston and a valved exhaust-pipe connected to the vessel on the last-named side of the piston; in combination with means for admitting pressure fluid from one side of the piston to its opposite side, for the purpose set forth.

4. Apparatus such as described, comprising a cylindrical vessel provided with a discharge-pipe and a valved supply-pipe at one end and with a valved exhaust-pipe at its opposite end and a piston in said vessel; in combination with means for admitting fluid under pressure to one or the other side of the piston and to the discharge-pipe, for the purpose set forth.

5. Apparatus such as described, comprising a cylindrical vessel provided at one end with a valved supply-pipe, a measuring vessel on said pipe and with a discharge-pipe, and with a valved exhaust-pipe at its opposite end, and a piston in said vessel; in combination with means for admitting a fluid under pressure to one side of the piston to drive the same in one direction and force the contents of the vessel on one side of the piston through the discharge-pipe, means for admitting fluid under pressure to the opposite side of the piston to drive the same in an opposite direction to exhaust fluid under pressure from the vessel, and means admitting such fluid to the discharge-pipe, for the purpose set forth.

6. The combination with a cylinder, a pipe arranged axially therein, a piston movable on said pipe, an outlet in one of the cylinder-heads connected with the axially-disposed pipe, a valve in said connection, and a cock in the other cylinder-head, of an inlet communicating with the cylinder and with the axially-disposed pipe, and a valve in said inlet adapted to admit fluid under pressure directly to the cylinder, or to said cylinder through the axially-disposed pipe and the outlet-pipe, for the purpose set forth.

THEODOR WILHELM LÜBBECKE.

Witnesses:
MAX LEMCKE,
EMIL WELLKE.