(No Model.)

W. W. ROSENFIELD.

PORTABLE DISINFECTING APPARATUS.

No. 330,853. Patented Nov. 17, 1885.

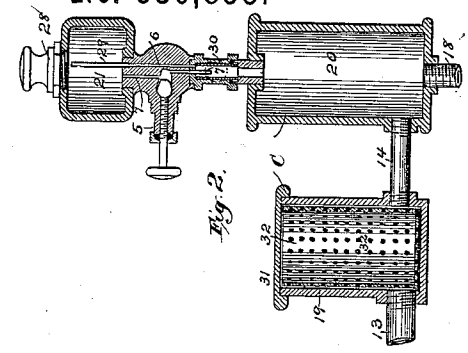


Fig. 2.

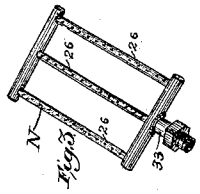


Fig. 3.

Fig. 1.

Attest:

Geo. H. Botts.

J. A. Hoovey

Inventor:

William W. Rosenfield

by Munson & Philipp

Atty's

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM WOODWARD ROSENFIELD, OF NEW YORK, N. Y., ASSIGNOR TO THE HOME VAPOR BATH AND DISINFECTOR COMPANY, OF SAME PLACE.

PORTABLE DISINFECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 330,853, dated November 17, 1885.

Application filed March 23, 1885. Serial No. 159,735. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. ROSENFIELD, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Portable Disinfecting Apparatus, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

It has been found necessary in all large towns and cities, in order to prevent the spread of contagious diseases, and in order also to preserve as far as possible the general health of the community, to provide not only for the disinfecting and purifying of houses and other places where contagious diseases have existed, but also for the disinfecting and purifying of all buildings and other places which, either from being overcrowded or in a filthy condition, or from any other cause, are likely to originate and promote the spread of disease. This work is usually performed by officers appointed for the purpose, and in the case of houses or other places which are infected with contagious diseases—such as small-pox, cholera, fevers and the like—the disinfecting is accomplished by burning or vaporizing some suitable disinfectant on or about the premises, so that the smoke or vapor produced carries the disinfectant into all places where contagion exists. In addition to this some suitable liquid disinfectant is sometimes sprinkled about the premises. In the case of buildings and other places which are not infected, but are in such condition as to be likely to originate disease, the disinfecting, or, more properly speaking, the purifying, is commonly accomplished by simply sprinkling some suitable disinfectant about the premises.

In large and densely-populated cities, where great numbers of people live in crowded and filthy buildings, and particularly at times when contagious diseases are prevalent, or in time of an epidemic, the work of properly disinfecting and purifying the infected and filthy places is one of considerable magnitude, and, owing to the poor facilities for the work which have heretofore existed, has frequently been imperfectly performed, and the general health of the community has suffered in consequence.

It is the object of the present invention to provide a simple and portable apparatus by which an infected or filthy building or other place can be quickly and thoroughly disinfected or purified, and by which the disinfectant can be applied either in liquid or vapor form, as may be found most desirable and efficacious in any particular case.

To this end the invention consists in an apparatus which is constructed and operates in a manner which will now be explained, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation partly in section of the complete apparatus. Fig. 2 is a sectional elevation of the medicating or tincturing apparatus thereof, which will be hereinafter referred to, and Fig. 3 is a view of the foraminous nozzle through which the disinfectant is applied.

Referring to said figures, it is to be understood that the apparatus in its most complete form consists of a force-pump, B, a feeding apparatus, C, by which the water passing through the pump is properly impregnated or charged with a suitable disinfectant, a heater, D, by which the water containing the disinfectant is properly heated for use, a hose, E, connecting the pump with a water-supply, a hose, F, through which the water containing the disinfectant is conducted to the place of use, and a suitable vehicle, G, upon the platform H of which the several parts just mentioned are mounted.

The pump B may be of any suitable form, either single or duplex, and arranged either vertically or horizontally, and may be operated either by hand or by any suitable motor mounted upon the vehicle. The pump will preferably, however, be a direct-acting steam-pump, as illustrated in the present case. When the pump is of this form, the vehicle will usually be provided with a suitable boiler, as A, for supplying steam for operating the pump,

though in some cases where the streets are provided with steam-pipes the boiler may be omitted, the steam for driving the pump being drawn from the pipes in the streets.

The boiler A, when one is provided, may be of any suitable construction, but will preferably be of the vertical form shown, and be provided at its base with a fire-box or furnace, 15, arranged below the platform H of the vehicle, the boiler and furnace being arranged and mounted in substantially the same manner as in an ordinary steam fire-engine. The steam from the boiler A is conducted to the engine or to the steam end 16 of the pump B through a pipe, 10, which is arranged in the usual manner and is provided with the usual throttle-valve, 11. It is to be remarked, in passing, that the size of the pump B is considerably exaggerated in the drawings for the purpose of illustration.

The suction-pipe 9 of the pump proper, 17, is connected by a detachable coupling, 8, with the hose E, which is of suitable length and is provided at its opposite end with a coupling, 12, by which it can be attached to a hydrant or other source of water-supply.

The feeding apparatus C is of substantially the construction shown and described in United States Letters Patent No. 266,530, heretofore granted to me, and consists, essentially, of a chamber, 19, for containing a solid disinfectant, a chamber, 21, for containing a liquid disinfectant, and a chamber, 20, for containing a volume of air to prevent the water from passing upward and mingling with the liquid disinfectant contained in the chamber 21. The chamber 21 is air-tight, and communicates with the chamber 20 by means of a glass pipe, 30, and two ducts, 6 7. The duct 7 extends from the pipe 30 to the bottom of the chamber 21, and affords a passage through which the liquid disinfectant contained in the chamber 21 flows downward into the chamber 20 to mingle with the water. The duct 7 is provided with a suitable cock or valve, 5, by which the flow of the liquid from the chamber 21 can be properly regulated. The duct 6 extends from the pipe 30 to the bottom of the chamber 21, where it communicates with a pipe, 29, which extends upward in the chamber 21 and terminates at a point above the surface of the liquid therein. The chamber 21 is provided at its top with a suitable opening, through which it can be filled, and this opening is hermetically closed by a screw-plug, 28. The chamber 19 is provided at its top with a removable cap, 31, and upon its interior with a removable perforated cup, 32, the purpose of which will hereinafter appear.

This feeding apparatus, as before stated, is of the same general construction as that described in my former Letters Patent, to which reference is made for a more detailed description of its construction and operation.

The feeding apparatus will in practice usually be considerably larger in proportion to the other parts than is shown in the drawings. The discharge-pipe 13 of the pump 17 enters the chamber 19 of the feeding apparatus, and this chamber is connected by a pipe, 14, with the air-chamber 20 at a point near its bottom, and this latter chamber is in turn connected by a pipe, 18, with the top of the heater D. The pipes 13 18 will preferably be provided with throttle-valves, as 22 23, by which they can be closed, if desired. The heater D is of any suitable form, and is provided at a point near its bottom with an outlet, 25, which is controlled by a cock, 4, and is provided with a coupling, 3, to which is connected the hose F, which is of considerable length, and is provided at its opposite end with a coupling, 1, to which can be attached a foraminous nozzle, as N. This nozzle may be of any desired or suitable form, but will be so constructed as to deliver a large number of small jets. The form shown in Fig. 3, consisting of a number of perforated pipes, 26, connected to a T-shaped pipe, 33, is well suited for the purpose. The pipe 10 is provided with a branch, 27, which connects with a coil, 24, located in the heater D, and having an outlet, 2, near the bottom of the heater, and through which steam from the boiler is allowed to circulate, so as to heat the water containing the disinfectant.

The operation of the apparatus is as follows: Assuming that the necessary steam-pressure exists in the boiler A, and that the apparatus has been brought into the neighborhood of the building or other place which it is desired to disinfect or purify, the hose E will be coupled to the inlet-pipe 9 of the pump 17 and to the hydrant or other source of water-supply. The disinfectant, if in liquid form, will be placed in the chamber 21 of the feeding apparatus and the chamber then closed. The hose F will be coupled to the outlet 25 of the heater D, and the nozzle N, after being secured to the coupling 1, will be carried to the point or near to the point where the disinfectant is to be applied. The pump will then be set in operation and the valve 5 opened, so as to allow the proper quantity of the liquid disinfectant contained in the chamber 21 to flow downward through the duct 7 and the body of air confined in the chamber 20 and mingle with the water as it is forced by the pump 17 through the pipes 13 14 18 into the heater D, and thus impregnate or charge the water, so as to form a disinfecting-mixture of suitable strength for use for disinfecting purposes. As the water charged with the disinfectant passes downward through the heater D it will become heated by the steam in the coil 24, so that when it is discharged through the nozzle N it will be in the proper condition to operate most efficiently.

If it is desired to apply the disinfectant in liquid form, the perforations in the nozzle N may be comparatively large, so that the water charged with the disinfectant will be delivered in the form of a shower or spray. If, on the other hand, it is desired to apply the disinfectant in the form of vapor, a nozzle having

very small perforations will be used. When this is done and the water charged with the disinfectant is of a temperature of from 130° to 200° Fahrenheit, it will be largely converted into vapor as it issues through the perforations of the nozzle and comes in contact with the air, and thus the disinfectant can be applied in this form. The small amount of the water not vaporized will be caught in any suitable vessel placed under the nozzle N.

By means of the pump B and the hose F the water charged with the disinfectant can be forced to almost any height, so that it can be used in any part of a building that may be desired, or if a hose of sufficient length is provided it can be delivered at almost any distance from the apparatus.

If the disinfectant which is to be used is of solid instead of liquid form, it will be placed in the cup 32 of the chamber 19, instead of in the chamber 21. The operation will then be the same as before described, except that the water will become charged or impregnated with the disinfectant by coming in contact with and dissolving a portion of it in passing through the chamber 19, instead of by mingling with it in passing through the chamber 20.

The apparatus just described, in addition to its utility for disinfecting and purifying infected and filthy houses and other similar places, may be employed for purifying infected ships. The vehicle G will preferably be provided with suitable reels, as K, upon which the hose E F can be wound for transportation and when not in use. The vehicle may also be provided with a box or bin, as L, in which a suitable quantity of fuel can be carried for use in heating the water in the boiler A, and also with a tank or reservoir, M, in which a quantity of the disinfectant can be carried.

The apparatus shown in the drawings illustrates the invention in its most complete and desirable form. It is to be understood, however, that the relative arrangement of the parts and the construction of some of the parts may be varied considerably, and also that some of the parts may be omitted without departing from the essential features of the invention. The heater D may be so arranged that the water will be heated before it reaches the pump, if preferred. So, also, the feeding apparatus, instead of being interposed between the pump and the heater, may be arranged to charge the water with the disinfectant before it reaches the pump, or it may be arranged to charge the water with the disinfectant after the water leaves the heater. If preferred, the chamber 19 of the feeding apparatus may be placed beneath the chamber 20, as shown in my former Letters Patent; or if it is not desired to capacitate the apparatus to employ a solid disenfectant the chamber 19 may be omitted. The heater D, instead of being provided with a steam-coil for heating the water containing the disinfectant, or into which the disinfectant is to be introduced, may be provided with a furnace or any other suitable means for that purpose. So, also, in some cases metal pipes may be used in place of the hose E F. In some cases the pump may be omitted and the pressure in the water-pipes be depended upon to force the water through the heater and the hose F. So, also, in some cases the feeding apparatus may be omitted, the suction-pipe of the pump being in such case connected to the outlet of the heater, and the hose F connected to the discharge-pipe of the pump. In such case the water previously charged with the disinfectant will be supplied to the heater and will be drawn therefrom by the pump and forced through the hose F to the place of use.

What I claim is—

1. In a portable disinfecting apparatus, the combination, with a heater arranged to heat a quantity of water charged or impregnated with a disinfectant, of a hose or pipe arranged to conduct the heated water from the heater to the place of use, and a pump arranged to force the water from the heater through the hose, the whole being mounted upon a suitable vehicle, substantially as described.

2. In a portable disinfecting apparatus, the combination, with the feeding apparatus C, arranged to charge or impregnate a stream of water with a disinfectant, of a heater arranged to heat the water, and a hose or pipe arranged to conduct the heated water from the heater to the place of use, the whole being mounted upon a suitable vehicle, substantially as described.

3. In a portable disinfecting apparatus, the combination, with the feeding apparatus C, arranged to charge or impregnate a stream of water with a disinfectant, of a heater arranged to heat the water, a hose or pipe arranged to conduct the heated water from the heater to the place of use, and a pump arranged to force the water from the heater through the hose, the whole being mounted upon a suitable vehicle, substantially as described.

4. The herein-described portable disinfecting apparatus, consisting of the force-pump B, and a suitable motor for operating the same, the feeding apparatus C, arranged to charge or impregnate a stream of water with a disinfectant, a heater, D, arranged to heat the water, and the hose E F, the whole being mounted upon a suitable vehicle, and arranged to co-operate, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM WOODWARD ROSENFIELD.

Witnesses:
J. A. HOVEY,
T. H. PALMER.