No. 781,818. PATENTED FEB. 7, 1905.

E. FOURNIER.

DISINFECTING APPARATUS.

APPLICATION FILED JAN. 14, 1902.

FIG. 1.

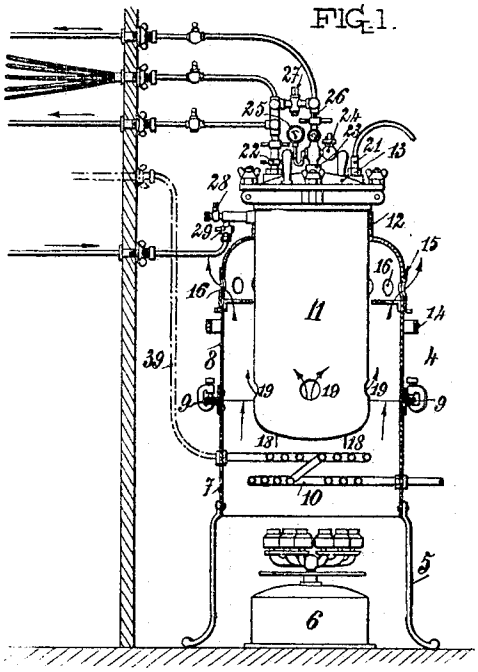


FIG. 2.

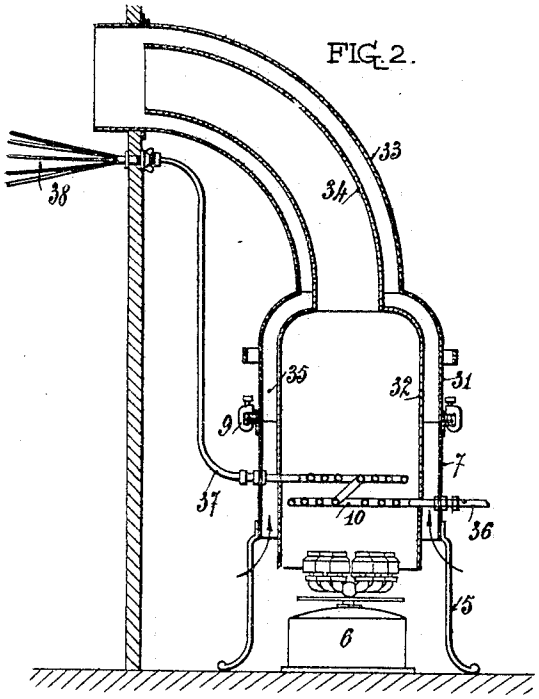
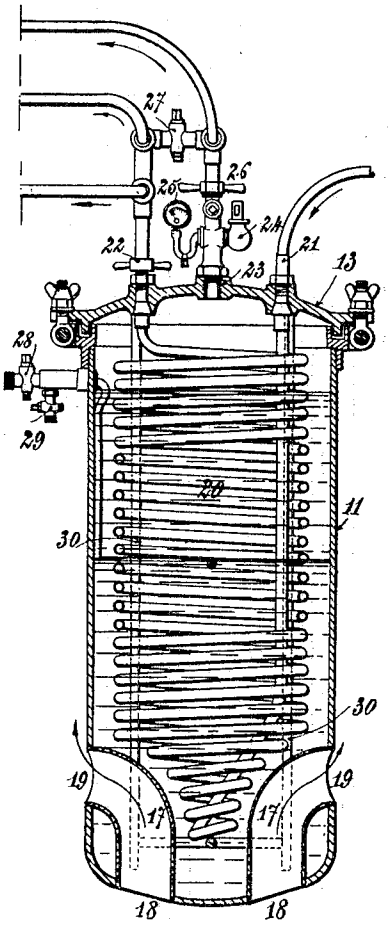


FIG. 3.



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UNITED STATES PATENT OFFICE.

EUGÉNE FOURNIER, OF PARIS, FRANCE.

DISINFECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 781,818, dated February 7, 1905.

Application filed January 14, 1902. Serial No. 89,764.

To all whom it may concern:

Be it known that I, EUGÉNE FOURNIER, a citizen of the Republic of France, residing at Paris, in the Republic of France, have invented certain new and useful Improvements in or Relating to Disinfecting Apparatus, (for which I have made application for Letters Patent in France, dated December 14, 1901,) of which the following is a specification.

The present invention relates to disinfecting apparatus acting by the projection of disinfecting-vapors, more especially formacetone, the said projection being used either alone or in combination with a preliminary or subsequent heating of the place to be disinfected.

The invention is based on the principle of the instantaneous evaporation of the liquids to be projected in the form of vapor, the liquids being for this purpose forced under pressure into the vaporizing device.

The apparatus is represented in the accompanying drawings, in which—

Figure 1 is a general view, partly in section, of an apparatus serving for projecting disinfecting-vapors and at the same time for heating the articles contained in the room—such as mattresses, clothes, and linen—the heat being employed in order to promote the action of the disinfecting-vapors. Fig. 2 shows an apparatus especially destined for heating the interior of a room to be disinfected, this heating being preferably used in connection with the projection of steam for the purpose of stirring up the air in order to obtain a uniform distribution of heat. Fig. 3 is a vertical section, on a larger scale, of the vaporizing device for the disinfecting liquids.

As may be seen from the drawings, the apparatus comprises an outer casing 4, mounted at a convenient height on supports 5, so that a heating device 6 may be suitably placed within and below it, this heating device consisting of an intense-flame burner, but any other heating device can be used according to circumstances.

The casing 4 is composed of two parts arranged above each other and connected at 9. In the interior of the lower part there is arranged a spiral 10, serving for the production of water-vapor, while the upper part 8 supports a closed boiler 11, (represented in detail on an enlarged scale in Fig. 3,) in which boiler the liquids to be disinfected are vaporized, the boiler serving at the same time for supplying steam for heating the articles to be disinfected, as mattresses, clothes, linen, or the like. The upper part of the boiler 11, arranged axially within the casing 8, passes through the upper part of the casing, which is provided with a ring 12 to support the boiler. The latter is closed at its top by means of a cover fixed by screw-clamps and carries parts which will be more fully described hereinafter. The casing may be provided on its circumference at convenient places with handles 14 to facilitate manipulation. An annular slide 15 is provided for regulating the extent of opening of the orifices 16, through which the gases of combustion are allowed to escape. In large apparatus this regulating device should be replaced by an air-tube or chimney for the escaping air, leading to the exterior or into the room to be disinfected.

The boiler 11 is provided, as may be seen in Fig. 3, with tubes 17, arranged in its lower part and extending from the bottom, where they communicate with the exterior at 18 above the fireplace and leading to the vertical walls, through which they also communicate with the exterior at 19. These tubes have for their object to assist the heating effect by affording a larger contact-surface for the circulation of the heat. In the interior of the boiler 11 there is further provided a spirally-wound tube 20, which is heated by contact with the hot water and the steam, forming a water-bath in the boiler 11, and serves for effecting vaporization under the required pressure, which may regulated by the pressure produced in the boiler 11, of the disinfecting liquids which are forced into the coil under sufficient pressure to be vaporized during their passage through the spiral 20 and to be finally ejected in the form of disinfecting steam-jets into the room to be disinfected.

The spiral 20 is supported in the center of the boiler and is connected at both ends to the inner surface of the cover 13 by means of conical fittings, which on the exterior are prolonged into pipes 21 22, the first of which

serves for the introduction of the disinfectant to be vaporized, while the other forms the discharge-conduit of the disinfecting-vapors produced from the liquid during its passage through the spiral 20. The cover 13 carries on its exterior and centrally another tube, 23, provided with a safety-valve 24, a manometer 25, and a branch 26, provided with a cock, which latter serves for drawing off steam from the boiler 11 in order to obtain a return circulation for the purpose of the heating operation mentioned above. The branch 26 is, moreover, connected by means of a branch cock 27 to the distributing-pipe for the disininfecting-vapors coming from the spiral 20, so that water-vapor may be introduced into this distributing-pipe with the object of cleaning it or for any other purpose. The boiler 11 is further provided with a gage consisting of two cocks 28 and 29, by means of which the level of the water may be ascertained, while, on the other hand, one of the cocks, preferably the cock 29, serving for gaging the lower part of the boiler, may be also used for reintroducing the heating-vapor passing through the pipe 26 into the boiler, so that the heating-vapor is led in a continuous circuit, to which end the cock 29 is to be connected with the extremity of the circulating-conduit opposite to the extremity connected with the pipe 26.

To the under surface of the cover 13 are attached vertical rods 30, arranged symmetrically, the length of which is greater than the total length of the spiral 20, so that the rods serve for supporting the cover 13 and the spiral 20 when cover and spiral are detached from the boiler 11.

The apparatus constructed in the above manner for the projection of disinfecting-vapors from instantaneously-vaporized liquids may be also used for the heating of the interior of the room to be disinfected, Fig. 2, this heating being effected in combination with the projection of water-vapor, which serves to bring about a uniform distribution of the heat.

It will be seen from Fig. 2 that this transformation of the apparatus may be effected in a simple manner by simply removing from the apparatus shown in Fig. 1 the casing 8 and the boiler 11 and by replacing them by another casing, 31, having an inner jacket or wall 32. Both walls terminate at their tops in tubes 33 and 34, arranged one within the other, the ends of which may be applied, for instance, to an opening in the door of the room to be disinfected. Under these circumstances the heat produced by the heating device 6 is transmitted by means of the tube 34 to the room to be disinfected. At the same time fresh air is sucked into the space 35 between the two walls 31 32, so that the radiated heat is completely utilized, as the fresh air heated in this space combines with the heated air escaping through the tube 34. Simultaneously with the heating of the air serving for heating the room to be disinfected to a degree required for an effective action of the disinfecting-vapors the spiral 10 is heated, through which spiral water is forced under pressure, this water being admitted at 36 and escaping at 37, to be distributed, for instance, by means of a suitable ejector 38, in any desired direction, whereby a perfectly uniform distribution of heat in all parts of the room is obtained.

In Fig. 1 the vaporizing spiral 10 is represented as adjacent to the boiler 11, comprising a second spiral 20, serving for the vaporization of the disinfecting liquid. This combination can be used in cases when it is necessary to combine the projection of water-vapor, effected by means of a tube 39, with the projection of disinfectants.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a disinfecting apparatus, the combination with a casing and a source of heat, of a closed boiler arranged within the casing, a detachable top or cover for said boiler, a coil of pipe leading through the cover and into the boiler and also leading from the boiler through the cover thereof, and an outlet-pipe for the products of combustion leading from the cover.

2. In a disinfecting apparatus, the combination with a casing and a source of heat, of a closed boiler arranged within the casing, a detachable top or cover for said boiler, a coil of pipe leading through the cover and into the boiler and also leading from the boiler through the cover thereof, and an outlet-pipe for the products of combustion leading from the cover, and a valved connection exteriorly of the boiler between the outlet-pipe and that portion of the pipe conducting the vapors from within the boiler.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EUGÉNE FOURNIER.

Witnesses:
LOUIS SULLIGER,
EDWARD P. MACLEAN.