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APPARATUS FOR DISINFECTING AND EXTIRPATING VERMIN BY MEANS OF A STEAM BOILER

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Fig. 1

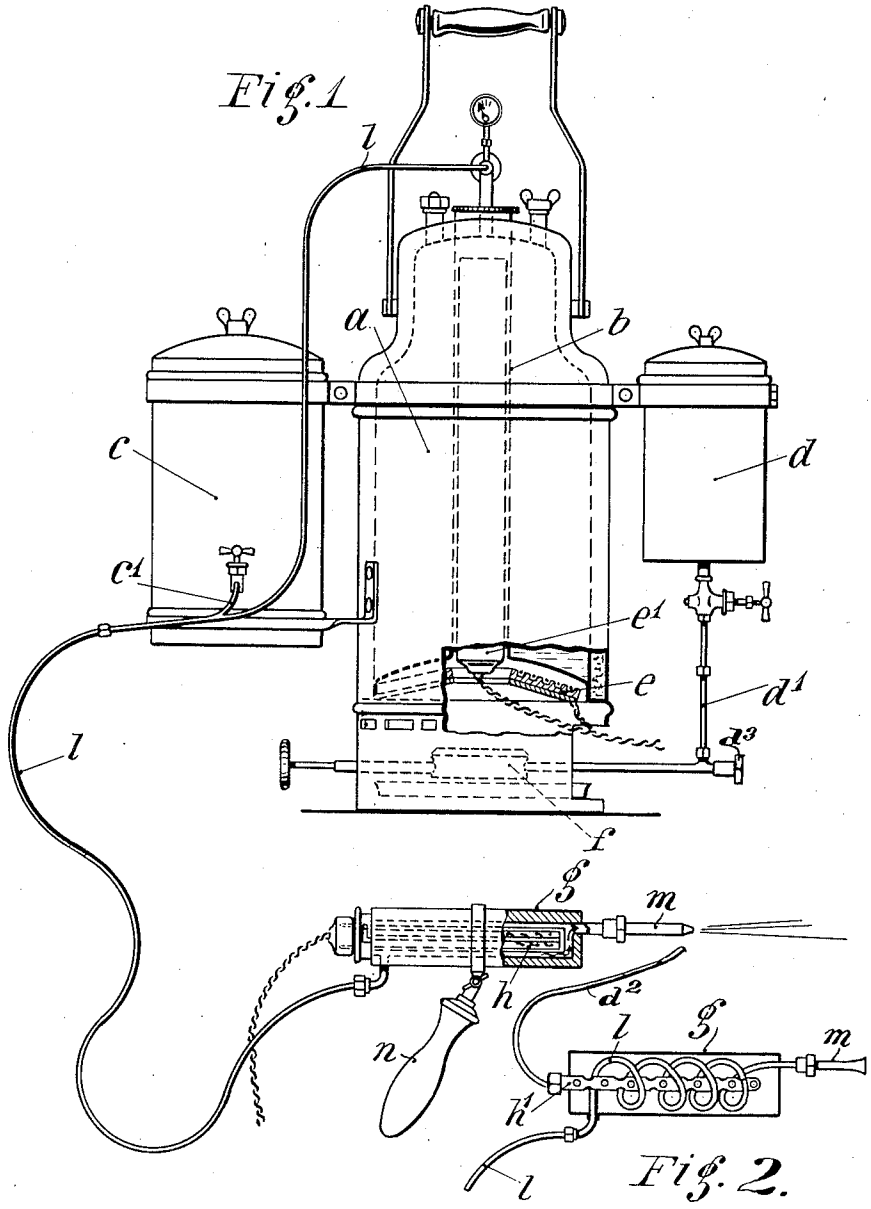

Fig. 2.

Inventor
Wilhelm Lechler
by Paul Schilling
Attorney

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WILHELM LECHLER, OF MUNICH, GERMANY.

APPARATUS FOR DISINFECTING AND EXTIRPATING VERMIN BY MEANS OF A STEAM BOILER.

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Portable apparatus for disinfecting and extirpating vermin are known, one kind consisting of a steam boiler, which is heated for instance by way of a spirit burner, while the steam is superheated through a system of pipes constructed around the boiler.

The apparatus of this kind which already exist have several drawbacks, making their practical usefulness questionable. One of these drawbacks is that the device is so constructed that the heating of the boiler can be effected only through one mode of heating, for instance through the use of a heater burning a liquid fuel only, whereas it is desirable in practice that one and the same boiler may also be heated by some other means, as, for instance, electrically, since in some countries electric energy can be supplied to better advantage and with less cost than other fuels. A further disadvantage is the fact that these boilers are very inefficient for superheating steam. In order to exterminate vermin completely and radically, and especially the larvæ of same, as well as bacterial life, which under some circumstances are encysted, it is necessary to superheat the steam up to a temperature of from 150 to 200 degrees C. In most cases the apparatus, which are known up to the present, cannot attain such high superheating temperatures, at least not at the outlet of the steam pipe, since the steam condenses rapidly and cools down on the inside of the pipe and discharges from the latter in the form of hot steam having a temperature less than 100 degrees C.

The present invention provides a hand apparatus for disinfecting and extirpating vermin which avoids all these inconveniences, being constructed in such a way that it can be heated with equal efficiency by the use of any of the most commonly used heating methods, while producing a superheated steam of such a high temperature that the steam issues from the discharge pipe like a compressed gas causing the absolutely sure destruction of vermin or the like.

The boiler according to the invention in question serves as support for the disinfecting material and for the heater, which is constructed for the use of electricity or gas in such a way that steam may be rapidly produced and superheated to the desired high temperature for use.

In the accompanying drawing,

Fig. 1 shows a side view of the apparatus, with parts in section and showing the use of one form of steam superheater and discharge device.

Fig. 2 is a sectional view of a modified form of steam superheating and discharge device.

The boiler *a* is provided with one or more heating pipes *b*, with which the pipe *l* for the discharge of the steam can be connected at a suitable point, for instance at the top of the boiler. The boiler shell is suitably insulated against heat losses and is provided with a hollow base forming a chamber for the reception of a gas burner *f*. The bottom of the boiler is arched and perforated centrally in such a way that underneath it an electric heater *e* in the form of a plate can be mounted, or so that in place of the latter an electric heater *e'* in the form of a bar can be inserted from below upwardly into the heating pipe *b*.

The boiler *a* serves as a support for receptacle *c* filled with a liquid disinfectant, also for a receptacle *d* for storing the liquid fuel or compressed gas. The receptacle *c* is also connected with the steam pipe *l* through a pipe *c'* and the receptacle *c* is in connection with the gas burner *f* through the pipe *d'*.

The steam pipe *l* leads to a superheater and discharge device *g* which, according to the construction shown in Fig. 1, consists of a tubular casing provided with a handle *n*, the casing being equipped with a removable heating unit *h*. Between the heating unit *h* and the casing a circular space is provided for the reception of the steam from the pipe *l* for the purpose of superheating it, the superheated steam being discharged through the nozzle or mouth-piece *m*.

Fig. 2 shows another construction of superheater and discharge device, wherein a heating coil *i* for connection with pipe *l* is arranged on the inside of the casing *g* in a spiral form around the heating element *h'*, which may be either a gas burner or an electric heating unit. In the present instance the heating element *h'* is shown as a gas burner

which may be connected by means of a pipe d^2 through a suitable coupling d^3 to the pipe d'. The construction of the nozzle or mouth-piece may also vary, i. e., it may be either pointed (Fig. 1) for the producing of a fine jet of steam or have a broad mouth-piece as in (Fig. 2). In the first case the mouth-piece will be suitable for crevices in walls, furniture, etc., while the other construction serves for the spraying of the walls and in general for a flat distribution of the steam. The construction of the mouth-piece may be generally of any desired shape and can be made to suit the purpose for which the apparatus will be used.

The operation is as follows:

The steam, heated in the boiler, is led through the pipe l which may consist of a flexible hose, made of metal or some other material, of any length, to the superheating apparatus, the steam on its way to the superheater being supplied through pipe c' with such a quantity of disinfectant from the receptacle c, that the steam on entering the casing g will be saturated with the disinfectant. The required superheating of the steam takes place in the apparatus g, whereby the temperature of the steam can be regulated within wide limits. Since the insecticide is to be projected directly against the spot or surface to be disinfected the steam will be discharged through the mouth-piece or nozzle m as highly superheated gas, so that its temperature will be high enough to cause the absolutely sure killing of the vermin in spite of its cooling down on striking a cold stone wall or other surface. Through the fact that the superheating of the steam takes place outside the boiler a and just before its discharge through the nozzle, steam supplied will be free from water and of sufficient temperature to prevent it from condensing on a wall or other surface and damaging the wall paper or other surface covering. Also by the separation of the steam generator and superheater the handling of the disinfecting apparatus is greatly simplified, since the boiler a with its accessories may be placed in the middle of a room, while the superheater can be used in any position and at any desired point in the room or in an adjacent room.

Owing to the manner in which the boiler a and the superheating apparatus g are constructed for using different heating methods, the heating itself of the two devices can take place by the same or different methods. The superheater for instance may not only be heated electrically by means of heaters (e, e' and h), but also by the use of a gaseous fuel (spirits, kerosene, raw oil, etc.) by means of the burners (f and h'). A mixed heating system can if desired be employed by heating the boiler a for instance by the use of gas and by heating the superheating apparatus electrically. Also the reverse may be the case, whereby the burner a' of the superheating apparatus is supplied with fuel from the receptacle d by means of the pipe d'. In case the gas burner f is used for the boiler a, the heating unit e, e' is preferably removed from the heating pipe b in order to provide for the necessary draft for the flame of the burner.

What I claim is—

1. A device of the character described comprising a steam generator, a steam conductor leading from the generator and provided with a discharge nozzle, means for introducing into said conductor a vermicide for admixture with the steam, and means located in said conductor in proximity to the nozzle for superheating the mixed steam and vermicide just prior to the discharge of the same through the nozzle.

2. A device of the character described comprising a steam generator, a steam conductor leading from the generator and provided with a discharge nozzle, means for introducing into said conductor a vermicide for admixture with the steam, a casing located in the conductor adjacent to and in rear of the nozzle and forming a nozzle manipulating device, and means in said casing for superheating the mixed steam and vermicide just prior to the discharge of the same through the nozzle.

3. A device of the character described comprising a boiler shell, steam generating pipes in the boiler shell, a compartment at the base of the boiler shell adapted to receive a burner employing gaseous fuel, a partition located in the shell above the compartment and provided with an opening in line with the steam generating pipes for the passage of the flames from the burner into contact with said pipes, a steam conductor leading from the boiler, and means for introducing a vermicide into the conductor for admixture with the steam.

WILHELM LECHLER.