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AUXILIARY STEAM GENERATOR FOR STEAM PRESSING IRONS

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Fig. 1

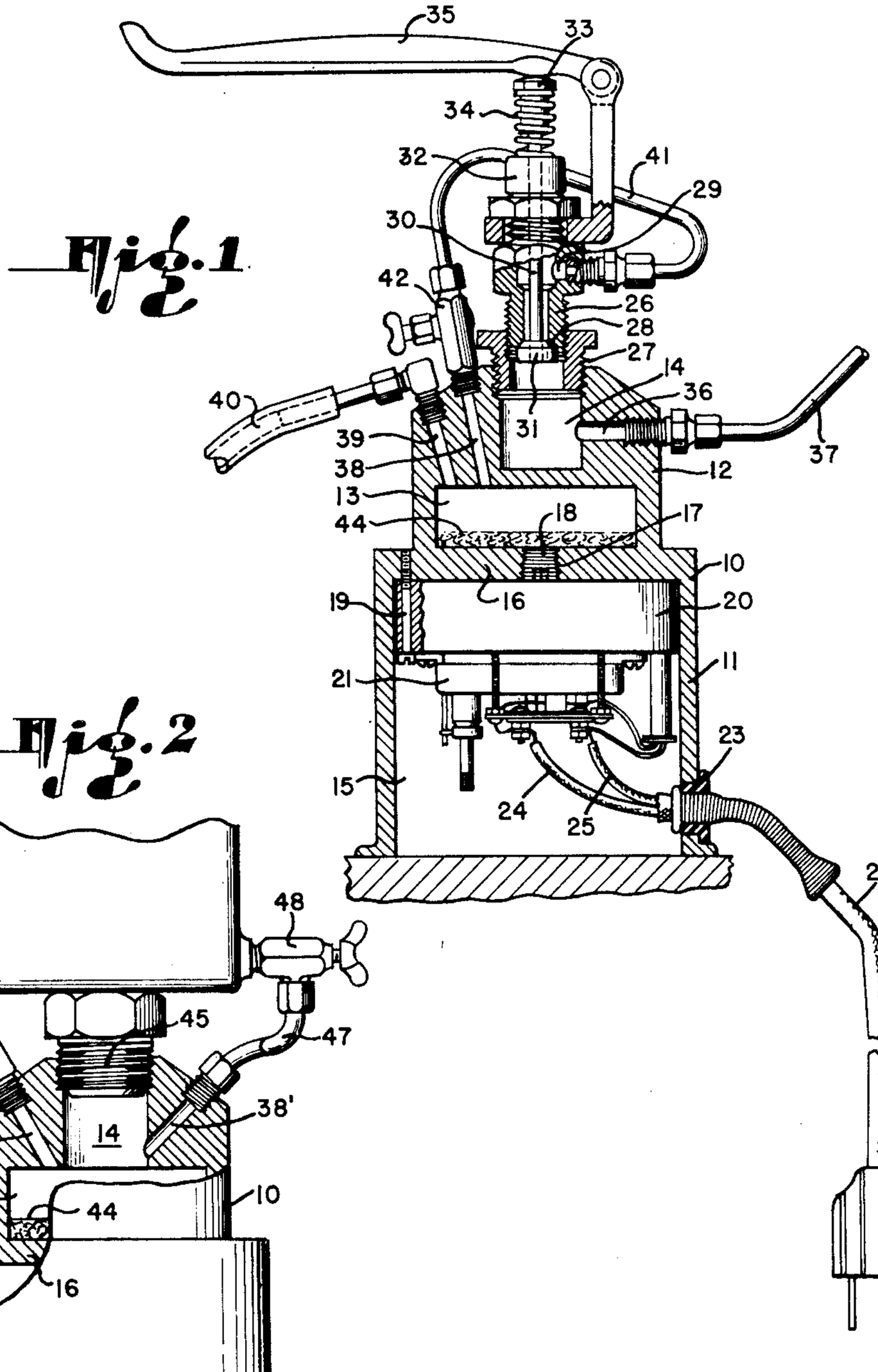
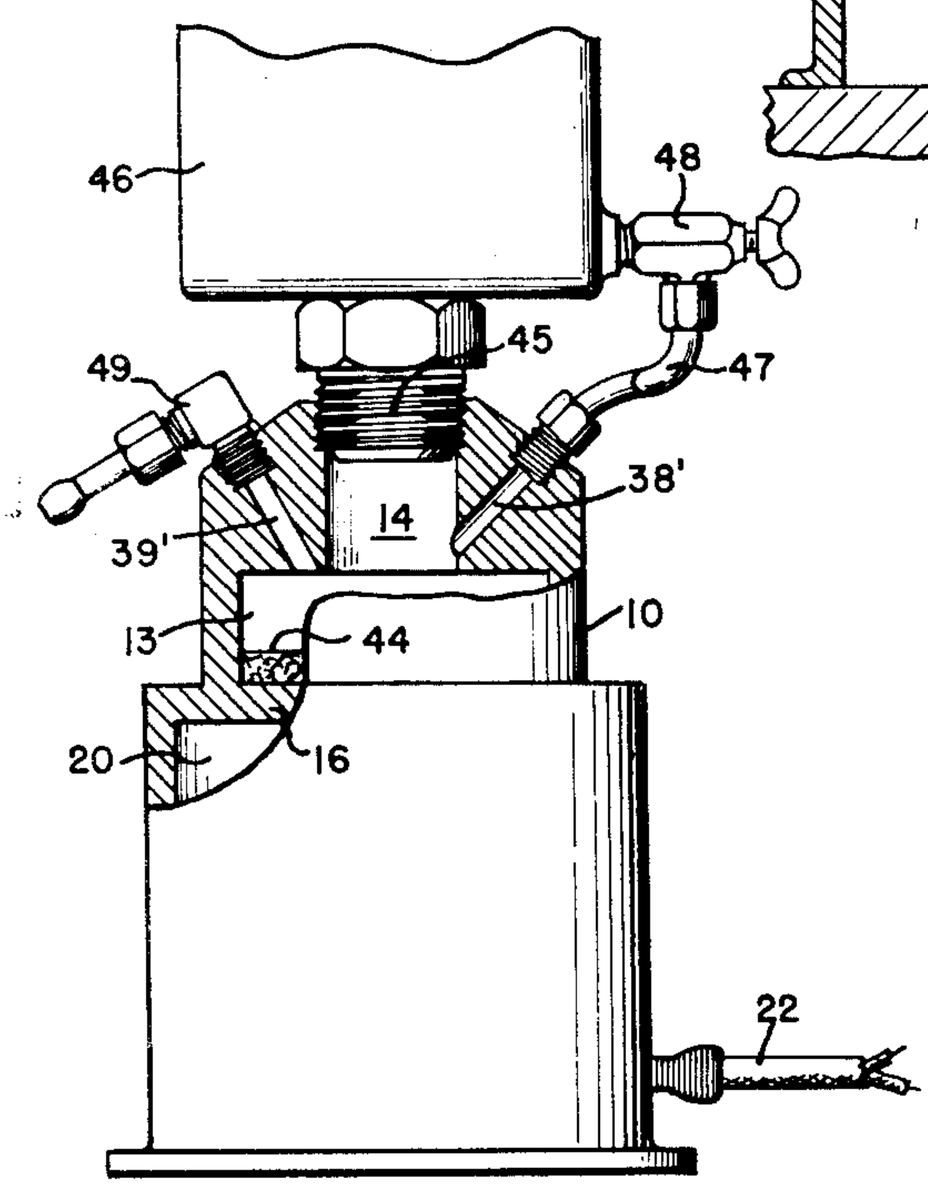


Fig. 2



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AUXILIARY STEAM GENERATOR FOR STEAM PRESSING IRONS

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9 Claims. (Cl. 219—38)

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This invention relates to equipment for improving the operation of steam pressing irons and relates in particular to an auxiliary unit for preventing spotting of fabrics by steam condensates which often issue from the steam outlets of steam pressing irons.

Steam pressing irons are now extensively employed and their use, in many places, has improved, simplified and expedited ironing and pressing practices. Their use avoids the necessity for dampening cloth by sprinkling prior to the ironing operation. Also, excess application of moisture to the cloth which is to be ironed, is to a great extent avoided. The drying out of excess moisture from previously dampened clothes requires an expenditure of time and heat. Where steam irons are employed, only sufficient moisture is supplied, in the form of steam, to accomplish the desired smoothing of the cloth. This, accordingly, results in a much faster performance of ironing and pressing operations. Steam pressing irons, however, have a serious fault which is corrected by the present invention. Water occasionally forms by condensation in steam passages and is carried through the steam outlets of the iron. These water drops, which issue from the iron, will spot certain types of fabrics.

It is one object of the present invention to provide an electrically heated auxiliary steam generator for use with steam pressing irons of different types, which auxiliary steam generator minimizes the condensation of steam in the irons and substantially eliminates water spotting. One type of steam pressing iron has in the body thereof a steam generator chamber which is adapted to receive water from an outside source and to vaporize this water into steam which is delivered through outlets in the bottom of the iron to the fabric being pressed. Another type of steam pressing iron is adapted to receive steam from the steam piping system of the establishment in which the iron is used. Our present invention provides an auxiliary steam generator which is mounted on or adjacent the ironing board and is connected in series in the source of water or steam supplied to the iron.

It is an object of the invention to provide an auxiliary steam generator for use with steam pressing irons, having a steam chamber with an inlet for connection to a supply of aqueous fluid, which aqueous fluid may be either water or steam depending upon the conditions under which the device is used. Associated with the steam chamber is an electric heater operating under control of a thermostat to produce in the steam chamber a temperature considerably above the boiling point of water. Under control of valve means the entry of the aqueous fluid into the steam chamber is regulated at the will of the user, and comparatively dry steam is fed from the steam generator to the steam pressing iron so that there is practically no liability of condensation of water in the steam iron.

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It is an object of the invention to provide an auxiliary steam generator of simple and practical form, as will be hereinafter described in detail. The steam generator may be supplied in a form having its own water reservoir and means for feeding a controlled flow of water into the steam chamber.

Further objects and advantages of the invention will be brought out in the following part of the specification wherein the invention has been described in particular detail for the purpose of disclosure, without limiting the scope of the invention set forth in the appended claims.

Referring to the drawing which is for illustrative purposes only:

Fig. 1 is a vertically sectioned view showing a preferred embodiment of our invention; and

Fig. 2 is a partly sectioned view showing a form of the invention equipped with a water reservoir.

The form of the invention shown in Fig. 1 includes a hollow body or shell 10 comprising a lower cylindric portion 11 and an upper cylindric portion 12. In the lower part of the upper portion 12 there is a steam chamber 13. Above the chamber 13 there is an upwardly faced recess 14, and below the chamber 13 there is a downwardly faced recess 15 separated from the chamber 13 by a heat conductive wall 16. In the form of the invention shown the hollow body 10 is cast and the wall 16 has therein an opening 17 which is filled by a plug 18 after removal of the core which forms the steam chamber 13 in the casting operation.

By screws 19 an electric heater 20 is clamped against the lower face of the wall 16. The details of this electric heater are not shown since the specific construction thereof is not a part of the present invention. The electric heater 20 in keeping with the electric heating art has suitable heat generating resistance element or elements therein. Also, this electric heater 20 has secured to its lower face a thermostat 21 for control of the heat generated by the heater

20 so as to maintain a temperature in the wall 16 and in the chamber 13 within a predetermined range. For energization of the heater 20 an electric cord 22 is provided, such cord extending through an opening 23 in the lower portion of the shell and having the conductors 24 and 25 thereof connected to the heater and to the thermostat in the manner shown. In the ordinary use of the invention, the thermostat 21 is set so that the heater 20 will maintain a temperature in the wall 16 of about 400° F. Any drops of water entering the chamber 13 are immediately vaporized. A valve 26 is connected to the upper part of the upper recess 14 by use of a bushing 27, and so that the inlet 28 of the valve 26 communicates with the upper portion of the recess 14. The valve 26 has an outlet port 29 upwardly spaced from the inlet 28 and a vertical valve stem 30 is provided, this valve stem 30 having a poppet type closure 31 on its lower end. The upper portion of the valve stem 30 extends through a stuffing box 32 and its upper end is equipped with a cap nut 33 which is engaged by a compression spring 34 acting to lift the valve stem 30 as as to hold the closure 31 in closed position. The valve 26 is provided with a lever 35 which may be hand operated, but which ordinarily is connected to a foot pedal so that the operation of the valve will not require use of the hand of the operator.

The upper portion 12 of the hollow body 10 is provided with an inlet passage 36 for connection to conduit 37 which leads to a supply of aqueous fluid such as steam piping or a water supply. The upper portion 12 of the body 10 is also provided with an inlet passage 38 for the steam chamber 13, and an outlet passage 39 for connecting the steam chamber 13 with flexible conduit 40 leading to the steam passages of the pressing iron. Duct means 41 connects the outlet 29 of the valve 26 with the inlet passage 38. This duct means includes a flow regulating valve 42 for controlling the rate of flow of fluid through the passage 38 when the valve closure 31 is moved downward into open position. The steam chamber 13 is provided with splash preventing means 44 consisting of a layer of noncorrosive filamentous material such as stainless steel wool. Therefore any water which may pass through the inlet passage 38 in liquid form is prevented from directly engaging the upper surface of the heated wall 16 and the possibility of droplets of water splashing into the outlet passage 39 is avoided.

In the form of the invention shown in Fig. 2, I employ the hollow body 10 having therein the steam chamber 13 with splash preventing means 44 lying on the upper face of the wall 16 and with the electrical heater 20 placed against the lower face of the wall 16. However, I place the upper recess 14 in open communication with the chamber 13 and close the upper end of the recess 14 by use of a plug 45 which supports a water container 46. An inlet passage 38′ is provided for the steam chamber 13. This inlet passage 38′ is connected through tubing 47 and a drip valve 48 with the lower part of the water container 46 which may be adjusted so as to produce a drop by drop flow of water through the passage 38′ into the steam chamber 13. An outlet passage 39′ is provided for the steam chamber with fittings 49 at the outer end thereof for connection to a hose leading to the steam pressing iron which is provided with heated

chambers and passages intended for the vaporization of water directly within the iron so that steam will issue from the steam outlets in the bottom of the iron.

As previously explained herein, such steam pressing irons will issue drops of water along with the steam. This is avoided by the use of the herein disclosed auxiliary steam generator which feeds steam and a minimum of condensate to the steam generating chambers and passages of the steam iron, with the final result that only vapor issues from the steam outlets of the iron.

We claim:

1. In an auxiliary steam generator for use with steam pressing irons: a hollow body having an upper recess extending downwardly from the upper face thereof, a lower recess extending upwardly from the bottom thereof, a steam chamber between said recesses, an inlet passage for said upper recess for connection to a source of aqueous fluid, an inlet passage leading into said steam chamber, and an outlet passage leading from said steam chamber for connection to a conduit adapted to convey steam to a steam pressing iron, there being a heat conductive wall between said steam chamber and said lower recess; an electric heater in said lower recess contiguous to said heat conductive wall to heat said wall and said steam chamber, said heater having a thermostat control; a valve having its inlet connected to said upper recess; walls forming a duct connecting the outlet of said valve to the inlet passage of said steam chamber; and a layer of filamentous material in said steam chamber to prevent splashing of water drops in said chamber.

2. In an auxiliary steam generator for use with steam pressing irons; a hollow body having an upper recess extending downwardly from the upper face thereof, a lower recess extending upwardly from the bottom thereof, a steam chamber between said recesses, an inlet passage for said upper recess for connection to a source of aqueous fluid, an inlet passage leading into said steam chamber, and an outlet passage leading from said steam chamber for connection to a conduit adapted to convey steam to a steam pressing iron, there being a heat conductive wall between said steam chamber and said lower recess; an electric heater in said lower recess contiguous to said heat conductive wall to heat said wall and said steam chamber, said heater having a thermostat control; a valve having its inlet connected to said upper recess; and walls forming a duct connecting the outlet of said valve to the inlet passage of said steam chamber.

3. In an auxiliary steam generator for use with steam pressing irons: a hollow body having an upper recess extending downwardly from the upper face thereof, a lower recess extending upwardly from the bottom thereof, a steam chamber between said recesses, an inlet passage for said upper recess for connection to a source of aqueous fluid, an inlet passage leading into said steam chamber, and an outlet passage leading from said steam chamber for connection to a conduit adapted to convey steam to a steam pressing iron, there being a heat conductive wall between said steam chamber and said lower recess; an electric heater in said lower recess contiguous to said heat conductive wall to heat said wall and said steam chamber, said heater having a thermostat control; a valve having its inlet connected to said upper recess; walls forming a duct

connecting the outlet of said valve to the inlet passage of said steam chamber; and a flow rate regulating valve in said duct to control the flow of fluid into said steam chamber.

4. In an auxiliary steam generator for use with steam pressing irons: a hollow body having an upper recess extending downwardly from the upper face thereof, a lower recess extending upwardly from the bottom thereof, a steam chamber between said recesses, an inlet passage for said upper recess for connection to a source of aqueous fluid, an inlet passage leading into said steam chamber, and an outlet passage leading from said steam chamber for connection to a conduit adapted to convey steam to a steam pressing iron, there being a heat conductive wall between said steam chamber and said lower recess; an electric heater in said lower recess contiguous to said heat conductive wall to heat said wall and said steam chamber, said heater having a thermostat control; a valve having its inlet connected to said upper recess; walls forming a duct connecting the outlet of said valve to the inlet passage of said steam chamber; and means controlling the rate of flow of aqueous fluid into said steam chamber.

5. In an auxiliary steam generator for use with steam pressing irons: a hollow body having an upper recess extending downwardly from the upper face thereof, a lower recess extending upwardly from the bottom thereof, a steam chamber between said recesses, an inlet passage for said upper recess for connection to a source of aqueous fluid, an inlet passage leading into said steam chamber, and an outlet passage leading from said steam chamber for connection to a conduit adapted to convey steam to a steam pressing iron, there being a heat conductive wall between said steam chamber and said lower recess; an electric heater disposed so that the heat therefrom will heat the interior of said chamber to a temperature above the boiling point of water; a valve having its inlet connected to said upper recess; walls forming a duct connecting the outlet of said valve to the inlet passage of said steam chamber; and a layer of filamentous material in said steam chamber to prevent splashing of water drops in said chamber.

6. In an auxiliary steam generator for use with steam pressing irons: a hollow body having therein a steam chamber, an inlet passage disposed above the bottom of the steam chamber for connection to a source of aqueous fluid and an outlet passage for steam disposed above the bottom of the steam chamber; an electric heater supported in such position that it will effectively heat the bottom wall of said steam chamber to a temperature above the boiling point of water; a thermostat controlling the heat production of said electric heater; and splash preventing means in said steam chamber positioned between said inlet passage and the bottom of the steam chamber, said splash preventing means comprising a plurality of small members arranged so as to provide a plurality of small openings through which steam may pass upwardly from the bottom wall of the steam chamber.

7. In an auxiliary steam generator for use with steam pressing irons: a hollow body having therein a steam chamber formed in part by a bottom wall, an inlet passage for connection to a source of aqueous fluid and an outlet passage for steam, both of said passages leading into the upper part of said steam chamber; an electric heater supported in contact with said bottom wall so that it will heat the interior of said steam chamber to a temperature above the boiling point of water; a thermostat mounted upon and controlling the heat production of said electric heater; and splash preventing means disposed horizontally between said bottom wall and said inlet passage, said splash preventing means comprising substances arranged so as to define a plurality of small openings through which steam and water may pass.

8. A device as defined in claim 6 wherein said splash preventing means comprises a mass of filamentous material disposed over said bottom wall so as to define a plurality of small openings through which water and steam may pass.

9. In an auxiliary steam generator of the character described: a hollow body having therein a steam chamber, an inlet passage for conducting water into the steam chamber and an outlet passage for steam disposed above the bottom of the steam chamber; an electric heater supported in such position that it will directly heat the bottom wall of the steam chamber to a temperature above the boiling point of water; a thermostat controlling the flow of electric current to said electric heater; and splash preventing means in said steam chamber positioned between said bottom wall and said outlet passage, said splash preventing means comprising filamentous material arranged across the bottom wall so as to define a plurality of small openings through which steam may pass and being arranged so as to prevent splashing of water into said outlet passage when boiling of water in the steam chamber occurs.

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