

May 7, 1935.

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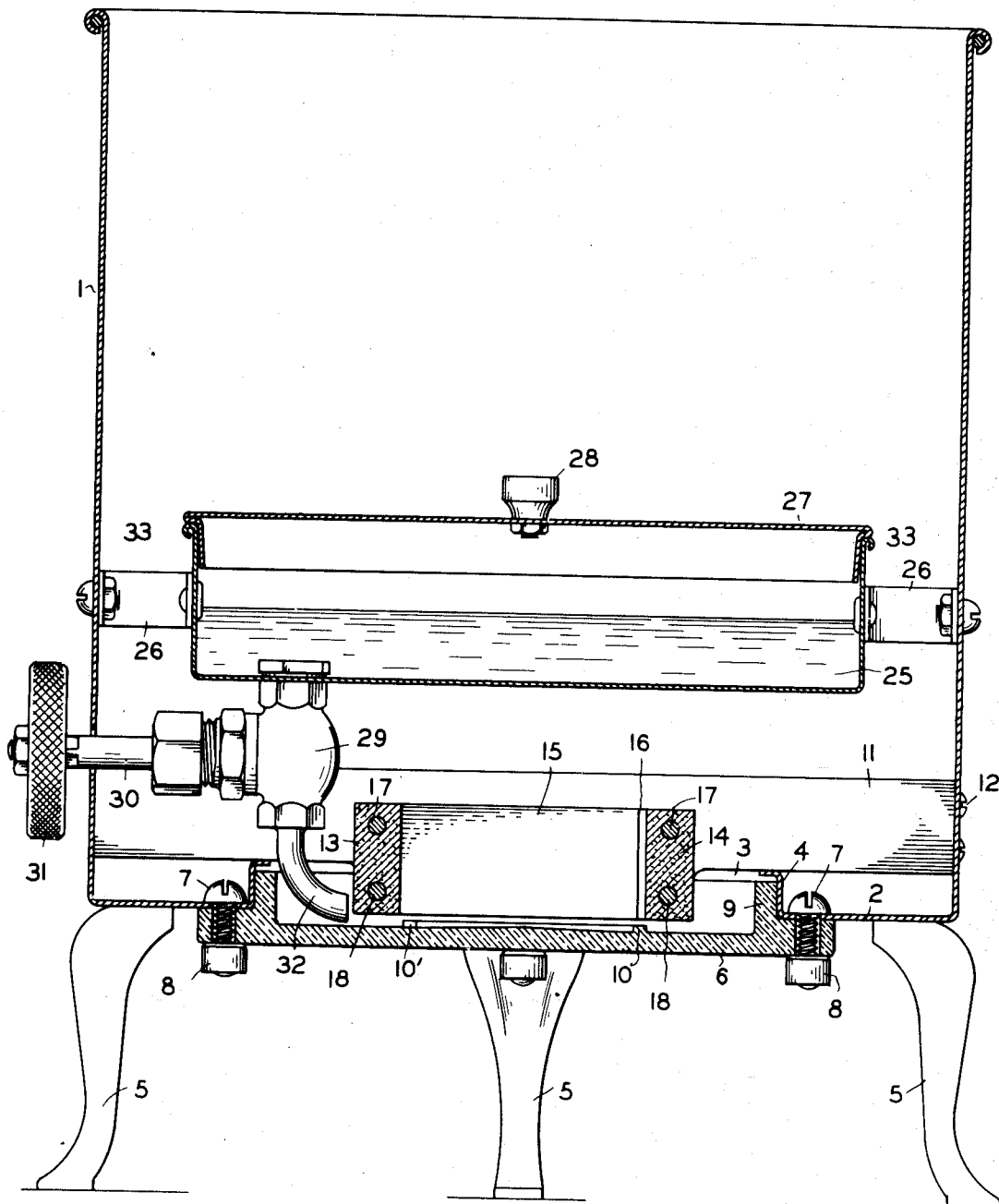
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ELECTRIC STEAMING APPARATUS

Filed July 16, 1932

2 Sheets-Sheet 1

FIG. 1.



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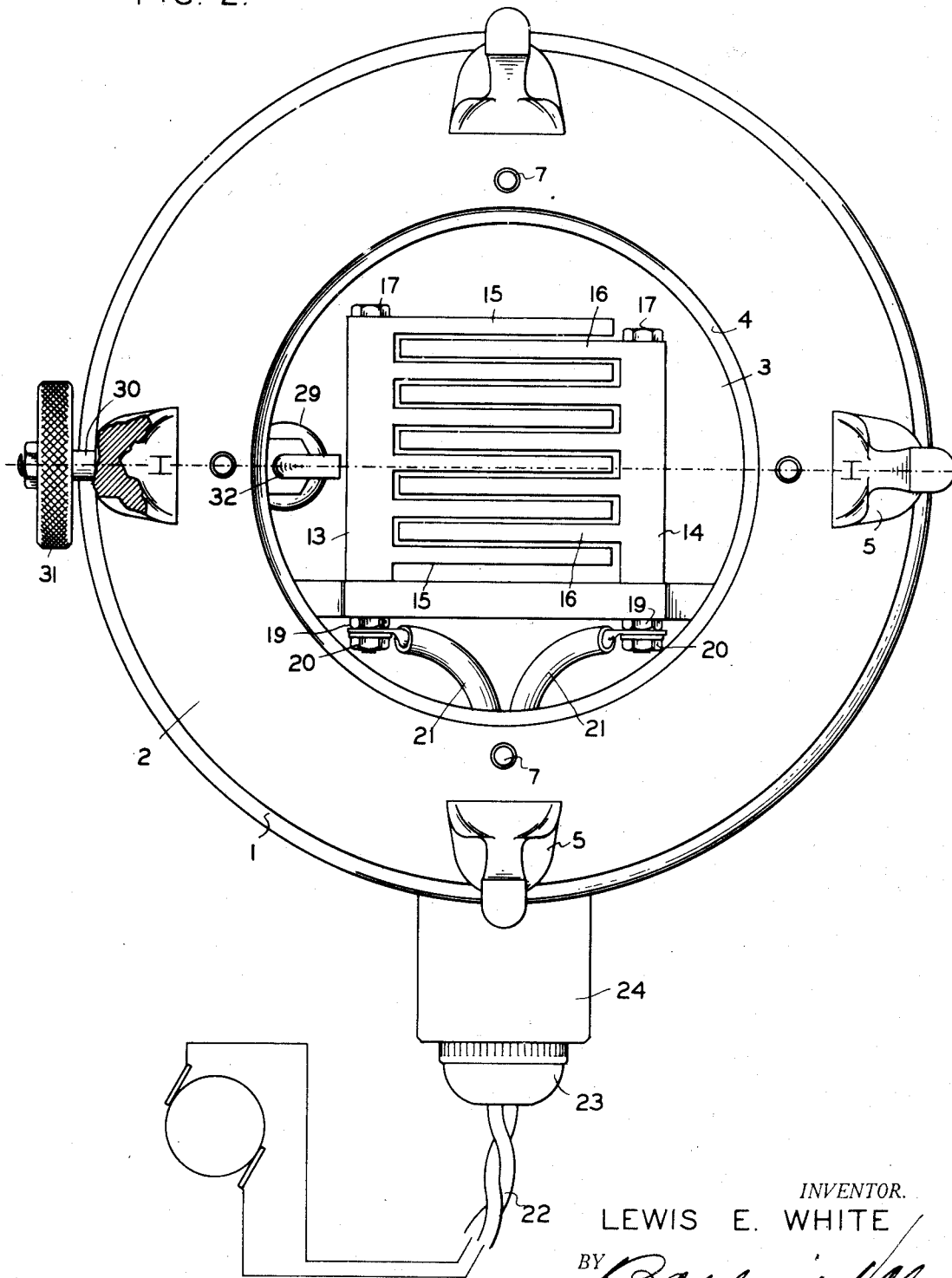
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FIG. 2.



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## UNITED STATES PATENT OFFICE

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## ELECTRIC STEAMING APPARATUS

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4 Claims. (Cl. 219-40)

This invention relates to improvements in electric steaming apparatus.

One object of the invention is to provide a hat steaming apparatus in which water may be electrically converted into hot, wet, steam for renovating hats.

Another object is to reduce the size, cost of production, and operation of apparatus for steaming hats.

A further object is to produce a hat steamer that is light, portable, simple, safe, easily cleaned and maintained, and that may be operated from the ordinary "lamp circuits" and without water connections.

Other objects and advantages will appear as the description progresses.

In this specification and the accompanying drawings the invention is disclosed in a preferred form. It is to be understood, however, that it is not limited to this form because it may be embodied in other forms within the spirit of the invention as defined in the claims following the description.

It has been the practice heretofore, in renovating hats, to utilize steam generated under pressure in boilers or steam generators. Such steam, when liberated, is too dry at first, for the purpose and steam is wasted until it becomes sufficiently wet. Such equipment is necessarily permanently installed as to water and gas fuel, is subject to rapid deterioration, and must be kept constantly in commission even when used intermittently. The odors, leakage, heat, and other disadvantages of pressure steam generators are sufficiently known.

In the accompanying two sheets of drawings:

Fig. 1 is a vertical section, taken on the line I—I, Fig. 2, of a hat steamer embodying this invention.

Fig. 2 is a plan view from below of the bottom of the same, with the water pan removed.

In detail the construction illustrated in the drawings, referring to Fig. 1, comprises the enclosing casing 1, open at the top, and having the annular bottom 2 with a central opening 3, surrounded by the upturned flange 4. The casing may be supported upon an ornamental annular base or upon the legs 5-5, as shown.

The bottom opening is closed by the overlapping pan 6, the margin of which is secured to the bottom 2 by the screws 7, the heads of which are soldered to the bottom to prevent leakage of splashed water and to hold the screws while the knurled nuts 8 are screwed on to hold the bottom 6. The annular flange 9 extends upward from

the bottom 6, within the flange 4 to form an integral water pan. This pan should be formed of hard rubber or other suitable dielectric composition. It has a concentric bead 10 at the central portion to concentrate the water beneath the heating element.

The transverse strut 11, also of dielectric material, extends across and is attached to the casing by the screws 12-12. It rests upon the top of the flange 4 and has a center lug, extending below this flange into the pan to support the heating element.

The heating element is preferably composed of a suitable carbon composition molded and pressed in the form of interlocking grids, see Fig. 2. The heads 13, 14 have the parallel grids 15, 16, respectively, extending therefrom, in spaced relation. The heads are fixed on the insulating strut 11, by the bolts 17-17 and 18-18, respectively, passing therethrough and engaging the lock nuts on their opposite ends. The pair of upper bolts 17-17 are pulled up by the lock nuts 19-19. The extended ends of these bolts have the nuts 20-20 thereon and serve as binding posts for the terminal wires 21-21 of the cord 22 of the power circuit. This cord has the conventional plug 23 thereon with insulated contacts to engage suitable contacts in the socket 24 wired through 21-21 to the heads 13-14, respectively. The opposite end of the cord 22 has a suitable plug, not shown, to engage a socket in the power line.

The grids are preferably composed of a composition of carbon and graphite known in the trade as of a hardness of 60, which offers about .0011 ohms resistance at 55 amperes on the usual 110 volt circuit of alternating current. For direct current a hardness of 50 and .00105 ohms resistance is preferable for the same voltage and amperage. For A. C. an arrangement of six and five grid plates 15-16 on the heads 13, 14 respectively, gives best results. For D. C. a symmetrical arrangement of an equal number of grid plates 15, 16 on the heads 13, 14, such as five or six plates on each head, gives best results. These arrangements are merely suggestive and have been proved in practice, and are not to be understood as in any way limiting this invention, since they may be varied to meet different sizes and capacities desired in adapting this invention to special uses.

These grids 15, 16 may rest upon or only approximately contact with the bead 10 in the water pan.

The flat circular water reservoir 25 is centrally suspended in the casing 1 above the heating ele-

ment, by the interposed spiders 26—26. It has the removable flanged cover 27, having the handle 28. Such a reservoir of about one quart capacity will serve the apparatus for about one day of operation.

The needle valve 29 is sealed in the bottom of the reservoir, and has the stem 30 projecting through the wall of the casing and provided with the dielectric handle 31. The valve discharges the contents of the reservoir through the neck 32 terminating adjacent, but out of contact with, the lower edge of the head 13 intermediate its length.

This apparatus operates substantially as follows: Assuming the reservoir 25 to contain water, the plug 23 is inserted in the socket 24. The circuit is still open due to the interspacing of the grids 15, 16. The handle 31 is now given several complete turns to open the valve, which is immediately closed again. This feeds about a teaspoon full of water through the neck 32 against the head 13. Capillary attraction leads the water under the head and between the adjacent grids 15, 16. The water closes the circuit and current flowing through the resistant grids rapidly heats them and almost immediately converts the water into wet steam. The rise of the steam pulls the water up between the grids, rendering practically their whole areas active in vaporizing the water. Very little water ever reaches the center of the pan 6. The bead 10 has an opening 10' opposite the neck 32 so that any surplus water will be led within the bead at the center of the pan. The bottom of the pan is slightly conical so that the water will collect in a ring adjacent the bead 10 and be distributed to all the grids 15, 16.

The reservoir 25 acts as a baffle in the path of the rising steam, which is diverted to the annular space 33 between the edge of the reservoir and the adjacent casing, flows over the top of the reservoir and fills the upper portion of the casing. The cold water in the reservoir probably has the effect of reducing the temperature and maintaining the saturated quality of the steam.

The hat to be steamed is held crown downward above the top of the casing so that its whole outer surface is subjected to the heat and moisture of the rising steam. The heat softens the sizing in the hat and the moisture affects the nap to facilitate the blocking and refinishing operations. The steaming requires only about five or six seconds of time, after which the operator is free to devote both his hands and all his efforts to the hat. The apparatus needs no attention because the evaporation of the small quantity of water automatically opens the circuit and stops current consumption.

The heating element contains about 31 square inches of heating surface for the present purpose. If a continuous volume of steam is desired the valve 29 can be regulated accordingly.

When desired the whole interior of the apparatus can be scalded clean and inverted to drain. The heating element is easily accessible by removing the pan 6, and can be cleaned by flowing boiling water therethrough from a faucet. The quality of carbon resistance suggested shows no disposition to disintegrate or accumulate films of deposit from the water. It is advisable to reverse the plug 23 in the socket 24 on D. C. to reverse the polarity occasionally. In an active hat renovating shop the present apparatus will not consume current in excess of two dollars per month at popular rates.

Another use for this apparatus is to form disinfecting vapors by introducing medicaments into the liquid in the reservoir. The size of the apparatus could be reduced or enlarged accordingly.

Having thus described this invention, what is claimed and desired to secure by Letters Patent is:

1. A steaming apparatus including a casing; a dielectric water pan in said casing; a pair of electrodes consisting of a plurality of grids horizontally spaced from each other and in juxtaposition to said water pan; an annular bead on said water pan beneath said electrodes; and means for introducing water into said pan around said bead.

2. A steaming apparatus including a casing; a dielectric water pan in said casing having a slightly conical area thereon surrounded by an annular bead having an opening therein; a pair of electrodes consisting of a plurality of grids horizontally spaced from each other and in juxtaposition to said water pan above said bead; and a water outlet opposite the opening in said bead.

3. A steaming apparatus including a casing; a dielectric water pan in said casing; means for introducing water into said pan; and a pair of electrodes consisting of a plurality of horizontally interspaced grids extending across said water pan and spaced therefrom but sufficiently close thereto to induce a capillary flow of the water therein.

4. A hat steaming apparatus including a closed casing open at the top end thereof; a dielectric water pan at the bottom of said casing; a pair of horizontally interspaced electrodes mounted above said pan; a water reservoir above said element and spaced from the sides of the casing and located at a distance below the top of said casing to permit the entry of the crown of a hat therein; and means for feeding water from said reservoir to said pan.

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