March 17, 1942. R. C. UTLEY ET AL 2,276,809

HAT STEAMER

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Fig. 1.

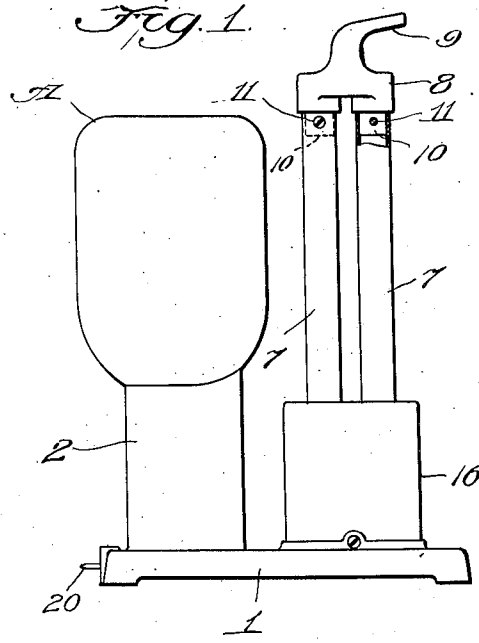

Fig. 2.

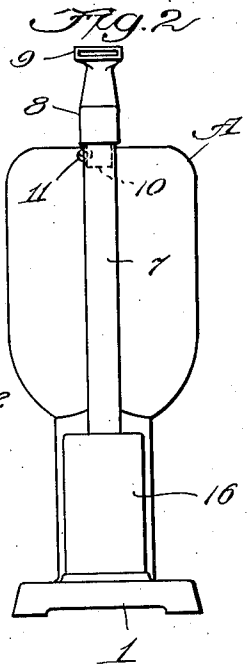

Fig. 4.

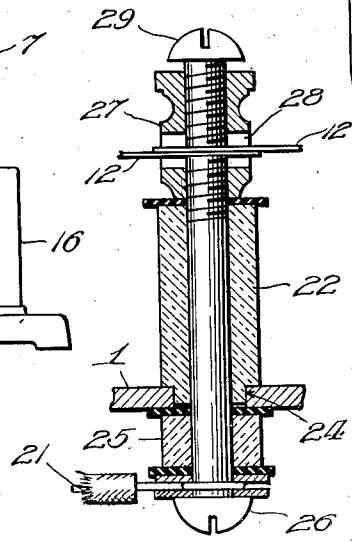

Fig. 3.

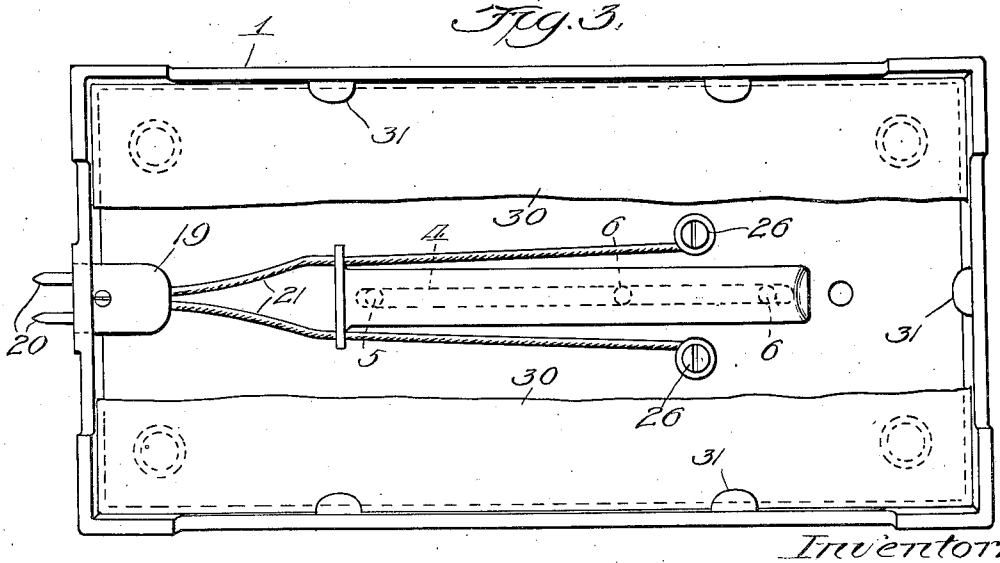

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Fig. 5.

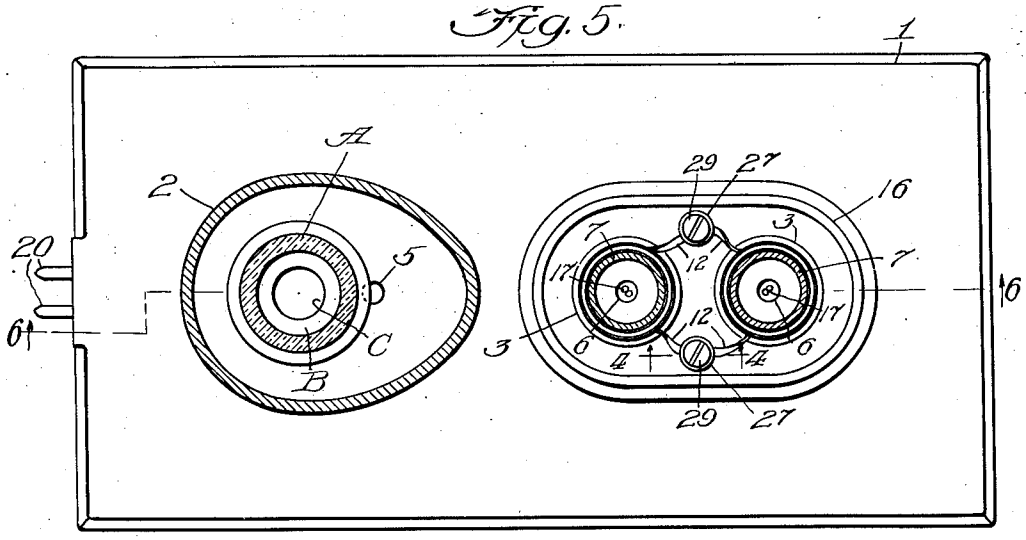
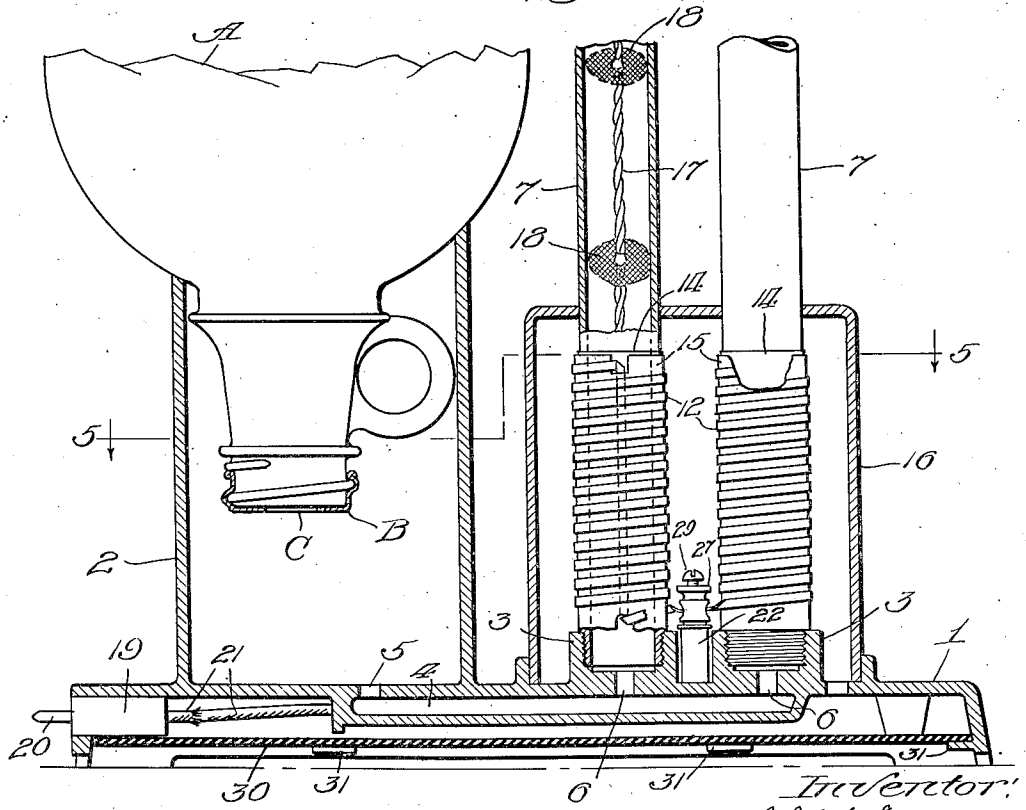


Fig. 6



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HAT STEAMER

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Chicago, Ill.

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4 Claims. (Cl. 219—38)

The present invention has for its object to produce a simple, novel and efficient portable apparatus for generating steam rapidly and delivering it for the purpose of steaming hats or other things.

The various features of novelty whereby our invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of our invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a side elevational view of an apparatus embodying the present invention; Fig. 2 is an end view of the apparatus; Fig. 3 is a bottom plan view of the apparatus, on an enlarged scale, the central portion of a bottom cover plate being broken away; Fig. 4 is a vertical section through one of the electrical terminals, being a section on an enlarged scale, on line 4—4 of Fig. 5; Fig. 5 is a horizontal section, on the same scale as Fig. 3, taken on line 5—5 of Fig. 6; and Fig. 6 is a vertical section approximately on line 6—6 of Fig. 5, the upper part of the apparatus being broken away.

Referring to the drawings, 1 represents a suitable flat base 1 which may conveniently be a metal casting. Rising from and integral with the base, near one end of the latter, is a reservoir 2 open at the top and so shaped that a bottle, such as indicated at A, may be placed upon the same upside down and discharge water into the reservoir when and as needed.

The reservoir is symmetrically disposed with respect to the longitudinal center of the base as are also two short sleeve-like projections 3 rising from and formed integral with the top of the base between the reservoir and the far end of the base. There is a passage 4 extending through the metal of the top of the base along the longitudinal center of the latter from a point under the reservoir past the two sleeve-like projections. One end of this passage communicates with the interior of the reservoir through a port 5 leading up through the effective bottom of the reservoir; and it also communicates with the interiors of the sleeve-like projections through ports or short passages 6. Screwed into the members 3 are two vertical pipes 7 which are shown as being long enough to extend somewhat above the up-ended bottle. The upper ends of the pipes 7 are connected together by a hollow head 8 terminating in a wide flat nozzle 9. The head may be provided with means adapted to be placed in telescoped relation with both of the pipes. In the arrangement shown, the head is provided with two short tubular downward extensions 10 adapted to fit into the upper ends of the pipes; the head being held against accidental displacement by means of screws 11 extending through the upper ends of the pipes and into the parts 10. Surrounding the lower end of each of the pipes is a heating coil 12.

Assuming that a full, open bottle is up-ended and set upon the reservoir, water will flow therefrom until it reaches a predetermined level in the reservoir, at the same time flowing through the port 5, passage 4 and ports 6 into the lower ends of the pipes 7 where it rises to the same level as in the reservoir. Then, when the heating coils are energized, those portions of the pipes surrounded thereby become so hot that steam is quickly generated, rising through the pipes and being discharged through the nozzle. As water is transformed into steam, the water level in the apparatus drops and additional water leaves the bottle to overcome the deficiency. Thus, a constant supply of water is delivered to the pipes as steam is being generated and discharged.

The heating coils may be composed of metal ribbons wound over a suitable insulating covering on the pipes. In the arrangement shown, those portions of the pipes surrounded by the heating coils are provided with a coating 14 of enamel or the like baked thereon; this coating being overlaid with a layer 15 of mica or the like. The heating elements are protected from contact with outside objects by a suitable detachable cover or casing 16 having in the top openings through which the pipes 7 extend. After removing the head member with its nozzle from the upper ends of the pipe, this casing or housing can be slid up along the pipes until it is free from the same.

The bottle which we have illustrated is of a commercial type having a screw cap B. We have found that one need only punch a hole C of considerable size in the center of this cap to insure automatic feeding at the maximum rate at which steam can be generated, without danger of spilling the water upon initially placing a bottle in position. This makes it unnecessary to employ any special fittings for cooperation with the bottle neck.

We have found that when steam is generated very rapidly, it is apt to carry unvaporized water along with the same, thereby causing the steam to be too wet as it leaves the nozzle. This difficulty is overcome by simply placing in each of the pipes a long central rod 17 along which are

distributed little disks 18 of wire mesh; these disks being large enough to be at least a loose fit within the corresponding pipes. With this arrangement, water carried along with the steam coalesces on the little wires constituting the disks and it is thus separated from the steam which emerges at the nozzle in a dry condition. As the water on the disk accumulates into drops, these drops fall back into the bottom of the pipes and into the body of water that is being heated to make steam.

Current may be supplied to the heating elements in any suitable way. In the arrangement shown, there is fixed in the hollow under part of the base, at one end, a terminal block 19 provided with suitable terminal pins 20 to which a cord may be attached. Conductors 21 extend from this block underneath the base to suitable terminals which are in turn connected to the heating coils. One of these terminals is illustrated in detail in Fig. 4. Referring to this figure, 22 is a thick-walled tube or sleeve of insulating material resting on top of and rising from the top wall of the base 1 and having at the lower end a short section of reduced diameter fitting into a hole 24 in that wall. On the under side of said wall, in registration with the sleeve 22, is a similar, but shorter sleeve 25. A long screw 26 extends up through the sleeves 25 and 22 and has on the upper end thereof an elongated sleeve nut 27. An end of one of the conductors 21 is inserted under the head of the screw 26 and, when the nut 27 is tightened on the screw, this wire is clamped into good electrically conductive relation therewith while, at the same time, the screw with the insulating sleeves 22 and 25 form a rigid post fixed to the base. The nut 27 is so long that the screw 26 extends only a short distance into the same. A large hole or passage 28 extends diametrically through the nut 27 at such a point that the free end of the screw 26 is exposed therein when the nut is tightened. Cooperating with the upper end of the nut 27 is a second, shorter screw 29 which, when screwed down as far as it will go, engages with the upper or free end of the screw 26; this meeting of the two screws taking place within the transverse opening or passage 28. The parts are so proportioned that when the screw 29 is backed off, corresponding ends of the two heating coils may be inserted in this opening or passage, from opposite sides, and overlap each other in the space between the near ends of the two screws. Then, when the screw 29 is screwed farther down into the nut, it engages with the upper of the two overlapping heating coil ends and presses both of them down against the upper end of the screw 26. Thus, by simply inserting the corresponding ends of the two heating coils in the transverse passage in the long sleeve nut, and tightening the screw 29, both coil ends are brought into good electrically conductive relation to the screw 26 and, consequently, to the leading-in wire 21.

The base member 1 is shown as taking the form of a shallow inverted pan, the open side of which may be closed, so as to conceal the wires and the terminal screws 26, by a stiff piece of fiber board 30 that may be sprung into position beyond little ears 31 formed integral with the side walls of the pan.

It will thus be seen that we have produced a very simple and rugged apparatus, and one which cannot easily get out of order, for rapidly generating steam and discharging it in a dry state so as to be available for steaming hats or other goods without making them too wet. Because the apparatus is compact and light, it may be operated at any place that happens to be most convenient at any given time, all that is needed being a bottle full of water and a cord adapted to be plugged into the nearest socket or outlet from the local lighting system. By placing the heating coils on the outside of the steam generating pipes, a large heating surface is obtained; and what is perhaps even more important, no special provision need be made to avoid wetting the heating coils because no water can reach them. It will also be seen that the electric current is carried to the coils from underneath the base in such a manner that there is no danger of grounding.

While we have illustrated and described with particularity only a single preferred form of our invention, we do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the definitions of our invention constituting the appended claims.

We claim:

1. In an apparatus of the character described, a base, a reservoir integral with the base rising from the latter, a pipe having an opening at the upper end also rising from the base, a heating means consisting entirely of a coil surrounding the lower part of the pipe, means to maintain a constant water level in the lower part of said pipe, and a casing surrounding the pipe above the base and slidable upwardly on the pipe far enough to expose said heating coil.

2. In an apparatus of the character described, a base, an open-topped bottle-supporting receptacle and two short sleeve-like projections integral with and arranged in a row on top of the base, said base having a passage connecting the bottom of the reservoir with the interiors of said projections, two pipes fixed at their lower ends in said projections, means to heat said pipes, and a hollow head terminating in a nozzle mounted on and connecting together the upper ends of said pipes.

3. In an apparatus of the character described, a base, a stand pipe open to atmosphere at its upper end mounted on the base, means to maintain a constant water level in the pipe, means to heat the pipe to vaporize the water, and a baffle device in the pipe comprising a supporting rod and a plurality of wire mesh disks distributed along the rod and forming open-work partitions across the interior of the pipe.

4. In an apparatus of the character described, a base, a stand pipe open to atmosphere at its upper end mounted on the base, means to maintain a constant water level in the pipe, means to heat the pipe to vaporize the water, and a baffle device arranged loosely in said pipe, said baffle device comprising a rod and a plurality of open-work disks distributed along the same and forming partitions across the interior of the pipe.

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