

[54] **APPARATUS FOR HEATING OF
HAIRWINDERS**

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126/20, 126/369, 132/33, 219/401, 219/521

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126/20, 20.1, 20.2, 369, 369.1, 369.2, 369.3,
381-387; 99/345-347; 132/33 R

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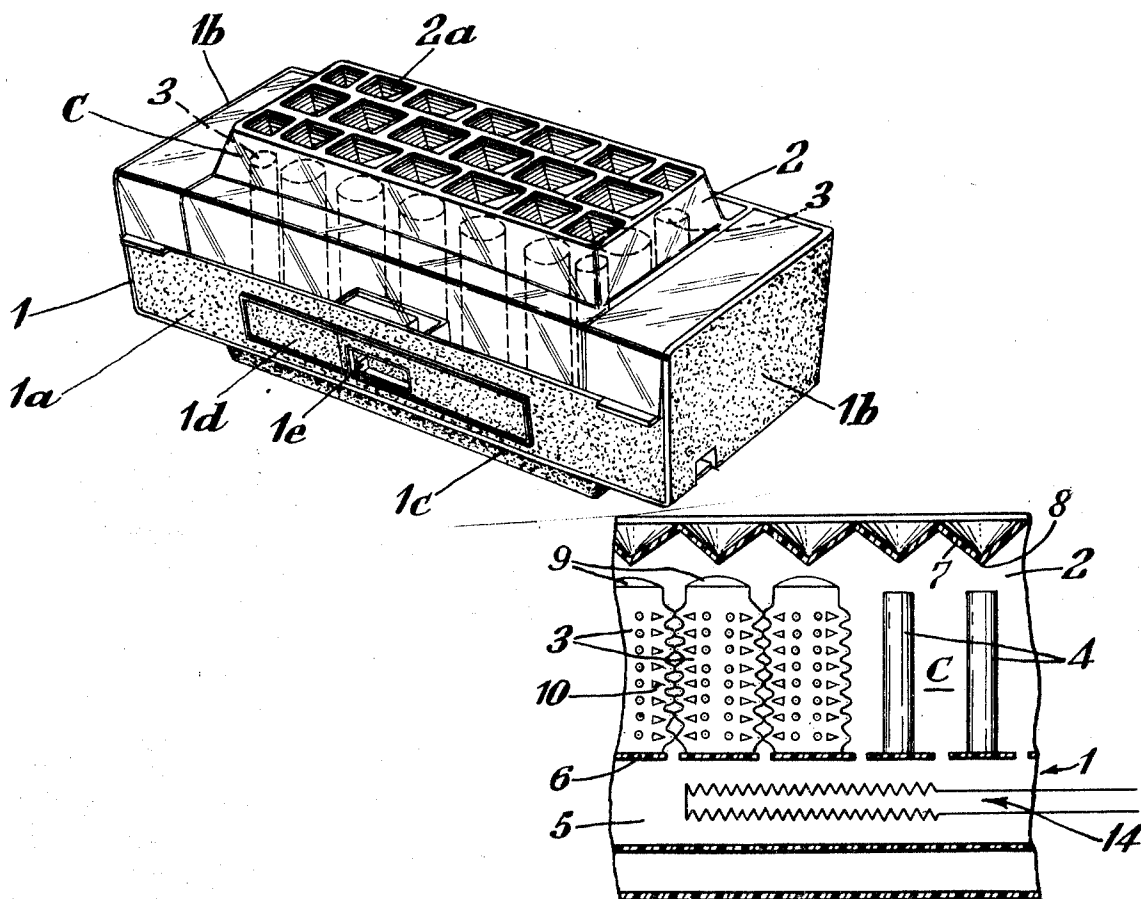
Primary Examiner—A. Bartis

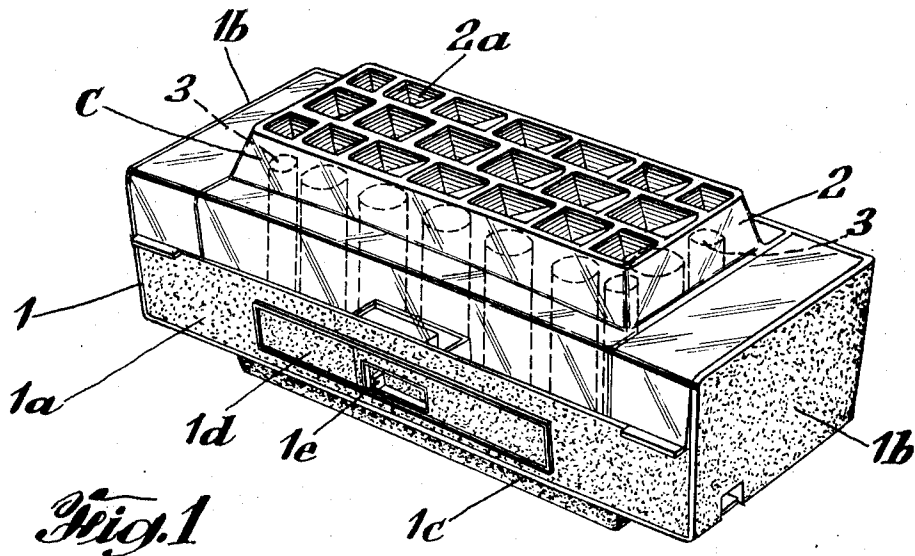
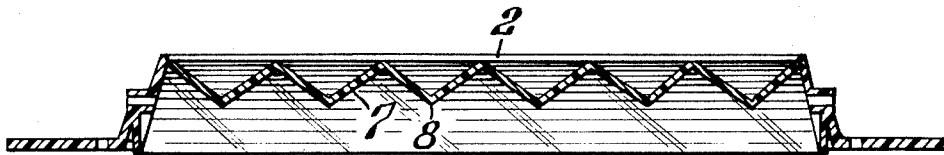
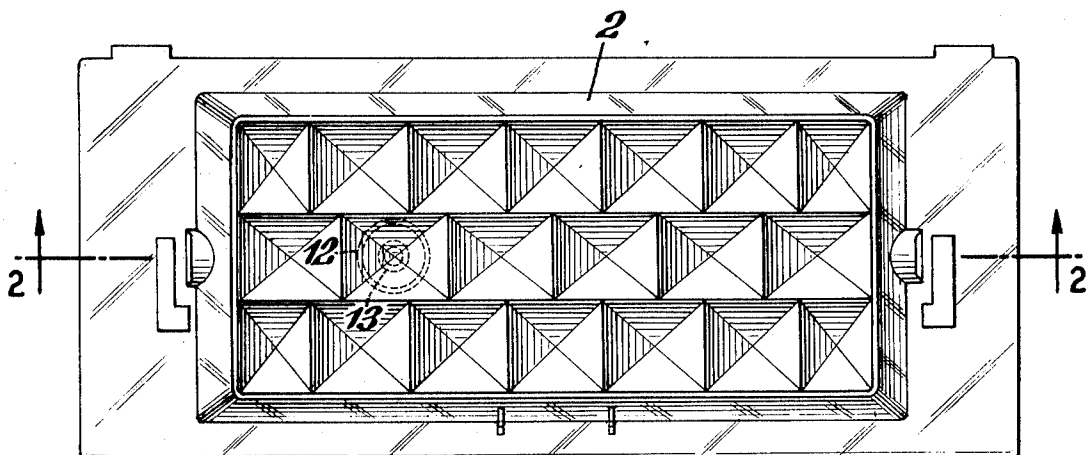
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[57] **ABSTRACT**

Apparatus for heating hair curlers by means of vaporized liquid which includes a chamber for holding a liquid normally applied to the hair such as water or hair conditioning agents, electrical heating means for vaporizing the liquid and a condensation chamber having curlers mounted therein. The apparatus is provided with a special lid having recesses in its outer surface and downwardly extending projections on its inner surface which may be of various shapes and configurations. The design of the lid and the projections allow for control of the amount and distribution of the condensing liquid onto the curlers. The projections correspond in number and position to the curlers as mounted in the condensation chamber and are of such shape and are so disposed above each curler as to direct the downward flow of condensed liquid from the projections onto and over the surface of each of the curlers.

8 Claims, 9 Drawing Figures





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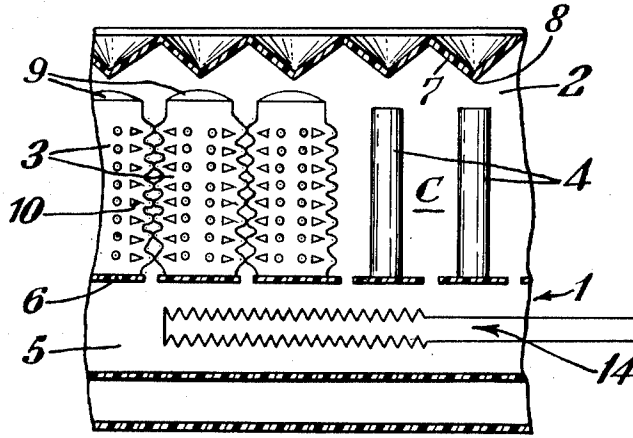


Fig. 4

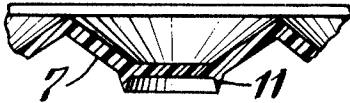


Fig. 5

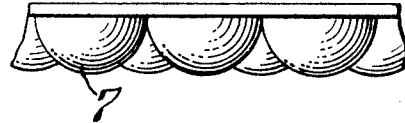


Fig. 6

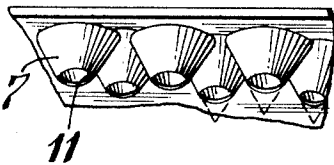


Fig. 7

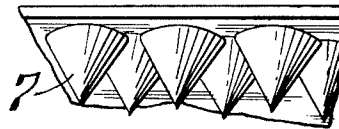


Fig. 7a

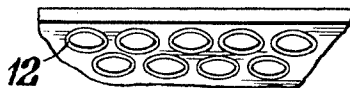


Fig. 8

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APPARATUS FOR HEATING OF HAIRWINDERS

This invention is concerned with an apparatus for heating hair curlers. More particularly the invention relates to an apparatus comprising a casing and a lid having a unique construction adapted for optimal condensation and for control of the distribution of condensed liquid. The apparatus includes an evaporation chamber for holding any liquid which may be applied to the hair, means for heating the liquid and a condensation chamber having means for supporting curlers therein.

Hair curlers have enjoyed wide acceptance in recent years. So-called dry-heat curlers have been very effective and have been particularly well received. Recently curler heating devices have appeared on the market which heat by steaming so that curlers are moistened by water vapor and steam before being rolled onto the hair. Curlers have also been heated by immersing in a water bath. This latter method has proven to be disadvantageous since dissolved salts present in many water supplies, such as calcium salts, may eventually be left on the hair. These salts can cause the hair to appear somewhat stiff and dull. Moreover, handling curlers heated in this manner is inconvenient and even dangerous. Attempts have been made to improve over the water immersion method and to avoid the above mentioned disadvantages by the use of steaming devices having the curlers located over a perforated panel under which is a chamber of heated water, generally referred to as an evaporation container. When the water is heated to a high enough temperature steam is directed upwardly through the tubular curlers and along the outer surfaces of the curlers where it eventually condenses. When the water is heated by electrical means the curlers attain such a high temperature that the water will evaporate from their surfaces and will be deposited upon the cooler inside surface of the lid of the evaporation chamber. In order to avoid pressuring this type of steam heating apparatus a steam outlet is provided. The incorporation of this feature is disadvantageous since such an outlet allows for the escape of humidity or moist air.

The present invention is an improvement over the steam curler heating apparatus described above. The heating device described herein provides for maximum effective utilization and uniform distribution of evaporated and recondensed liquid on the curler surfaces. This is accomplished by providing the lid with a unique construction not found in other curler heating apparatus. In accordance with the invention the lid is formed with a plurality of downwardly extending projections arranged in such a manner that a projection is located above each of the curlers when the curlers are supported within the condensation chamber.

In accordance with the invention vapor rising from the evaporation chamber is used far more effectively than heretofore possible. This is particularly dramatic in view of the relatively small amount of liquid being deposited upon the outer surfaces of the curlers, with respect to the considerable amount of liquid condensed on the under surface of the lid. As the vapor condenses onto the lid the liquid runs down over the projections and form droplets which flow or drip onto each curler. An important feature of the lid construction is the provision of downwardly extending projections which are shaped and disposed with respect to the bottom in-

side surfaces of the condensation and evaporation chambers so that when the lid is in the closed position there are no surfaces of the projections which are parallel to the bottom inside surfaces of the chambers.

Thus, the under surface of the lid may be said to be comprised exclusively of surfaces forming an angle with the bottom area of the apparatus so that all condensed liquid is forced to run downwardly in flow paths and are so controlled that the liquid concentrates above each curler and drips in droplets onto each curler. It is contemplated that a variety of shapes of projections would be suitable for incorporation into the structure of the lid, since the particular shape is not critical as long as the lid and projections are so constructed so as to direct the condensate in the desired downward direction and to distribute it uniformly on the curlers.

For a more complete understanding of the above-mentioned advantages and features of the invention the following drawings and description are referred to in which:

FIG. 1 is a perspective view showing the casing and the transparent plastic or glass lid in the closed position;

FIG. 2 is a sectional view of the preferred embodiment of the lid taken along the lines 2—2 of FIG. 3;

FIG. 3 is a top plan view of the lid of FIG. 2;

FIG. 4 is a partial cross-sectional view of the curler heating apparatus including the transparent lid as shown in FIG. 2;

FIGS. 5 and 6 are partial sections showing additional embodiments of the lid projections; and

FIGS. 7, 7a and 8 show additional embodiments of the lid projections.

Referring more specifically to FIG. 1 the apparatus includes casing 1 provided with a transparent lid 2 formed with recesses 2a in the outer surface, having the same relative location as the projections on the inner surface. The casing has a front wall 1a, side walls 1b and base 1c. Switch 1e for treatment setting is positioned in front panel 1d. Curlers 3 are shown supported within condensation chamber C.

In FIG. 2 the downwardly extending projections 7 are shown in the inside surface of the lid 2. The lowermost points on the projections, 8 are referred to herein as pyramid apices.

In FIG. 3 concentric circular ribs 12 and 13 are shown as parts of the lid 2.

Referring to FIG. 4 the apparatus is shown consisting of casing 1 with a lid 2 located over a condensation chamber C. Contained within the condensation chamber C is a plurality of curlers represented by 3 positioned over guide posts 4 which act as support members. Liquid in the evaporation chamber 5 is heated by electrical heating means 14 shown schematically. Forming the bottom of the condensation chamber is a perforated panel 6 and evaporated liquid such as water vapor can pass upwardly through this panel. A portion of the vapor will condense on the surfaces of the curlers 3. Most of the vapor will pass upwardly and condense on the under surface of the lid 2.

In the preferred embodiment of the invention the projections are pyramidal as shown by 7 in Fig. 2 and so located that the apex of each pyramid extending downwardly is located substantially above or in align-

ment with a curler or curler supporting member, as shown in FIG. 4.

As can be readily seen from the drawings in accordance with the invention, the lid is provided with downwardly extending projections which are adapted to lead the condensed liquid onto specific points or areas in such a manner that the liquid concentrates at said points and drips in droplet form onto the curlers.

The lid as shown in the drawings is quite simple in construction and utilizes relatively small amounts of liquid due to the efficient arrangement and structure of the projections. The lid being composed exclusively of oblique surfaces effectively allows for condensation on its under surface and for the controlled or guided flow of liquid downwardly toward each pyramid apex 8. Each apex 8 lies in an axis through a guide post 4. Curlers 3 mounted on posts 4 are heated by the hot vapor. As the liquid forms on the pyramid apex 8 the curlers are contacted with liquid which drips from each apex. The upper end surface or top 9 of each curler is rounded so that liquid drops falling on surface 9 flow downwardly and are distributed throughout the outer surfaces of the curler including projections 10.

The projections in the lid may also be shaped as spherical segments as shown in FIG. 6 or as a frustum of a pyramid or cone, the reversed top surface of which is shown in FIG. 5 may be provided with a projected edge 11. In this embodiment of the invention liquid can drip downwardly over the cylindrical surface of each curler located beneath the projection. Where the projecting edge 11 is located on the frustum of the cone as shown in FIG. 7 exact alignment with the curlers is facilitated. The projections may also be in the form of cones as shown in FIG. 7a.

The invention also contemplates the projections as comprising one or more concentric circular ribs 12, and 13 as shown in FIG. 3, or as shown in FIG. 8 where each projection consists of a single annular rib.

In order to obtain optimal cooling of the projections and condensation of the liquid vapor it is preferred that the projections be formed by thin-walled sections of the lid itself and the location of the recesses in the outer surface correspond to that of the projections. This allows for maximum area of the lid to be in contact with the atmosphere.

It is preferred that the lid be formed as a single continuous member so that the projections on the inner surface and the recesses in the outer surface are integral parts of the lid. However, the lid may be fabricated in any other suitable manner for purposes of the invention. The lid may also be provided with cooling ribs or similar cooling elements. The upper side of the lid may also be contacted with a cooling medium other than air, in order to enhance condensation.

Although embodiments of the invention have been described above, it will be understood that these are il-

lustrative examples only, and that various modifications may be carried out without departing from the invention.

We claim:

1. An apparatus suitable for housing and heating hair curlers comprising a casing and a lid for said casing, said casing comprising a liquid evaporating chamber, a liquid condensation chamber, and heating means, said liquid condensation chamber being provided with a plurality of support means for supporting curlers, and a corresponding plurality of curlers mounted on the support means, said heating means being disposed to heat the liquid in said evaporating chamber to cause the liquid in vapor form to be directed into the condensation chamber, said lid being comprised of a plurality of downwardly extending projections disposed in positions corresponding to the positions of the curlers on said support means so that at least one projection is located substantially directly above each of the curlers to direct liquid which condenses on the projections to drip downwardly onto and over the surface of the curlers.
2. An apparatus according to claim 1 wherein said projections are pyramidal in shape and so disposed that the apex of at least one pyramid is positioned substantially directly above each of the curlers when mounted on said support means.
3. An apparatus according to claim 1 wherein each of the projections is shaped as a frustum of a cone.
4. An apparatus according to claim 3 wherein the frustum has a downwardly extending peripheral edge on the reversed top surface.
5. An apparatus according to claim 1 wherein each of the projections is shaped as a pyramid.
6. An apparatus according to claim 1 wherein the projections are in the form of annular ribs.
7. An apparatus according to claim 1 wherein said lid and projections are formed from a single continuous section of thin-walled transparent material.
8. An apparatus for heating hair curlers comprising a casing having a liquid evaporating chamber and a liquid condensation chamber, heating means for heating liquid in the evaporating chamber, curlers mounted on support means in said condensation chamber, and a lid for said casing, having recesses in the outer surface and downwardly extending projections in the inner surface, said projections corresponding in number and position to the curlers in the condensation chamber and being comprised of surfaces forming an angle with the bottom of the apparatus so that no surface of the projections is substantially parallel to the bottom, said projections being of such shape and being so disposed on the inner surface so as to direct the downward flow of condensed liquid from the projections onto and over the surface of each of the curlers mounted within the condensation chamber.

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