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N. LAWNER

ELECTRIC HEATER

Filed May 20, 1927

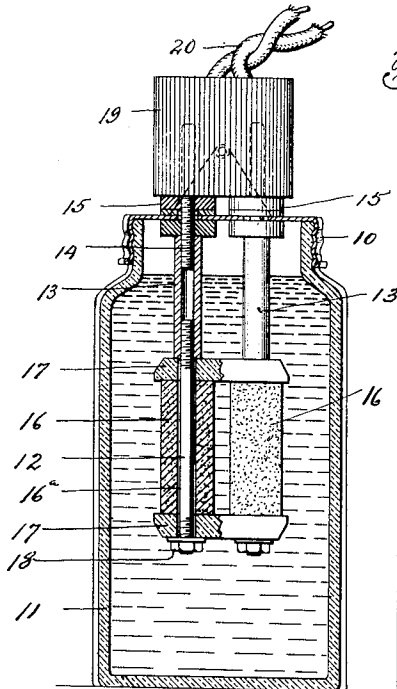


Fig. 1,

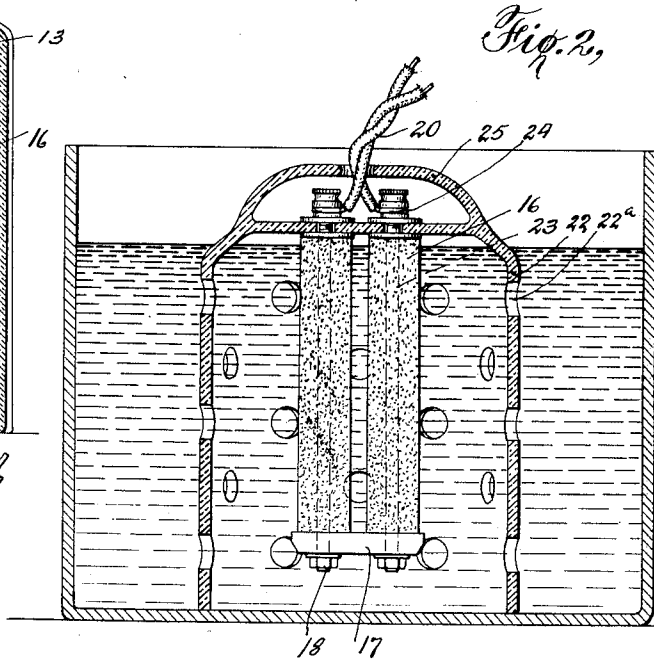


Fig. 2,

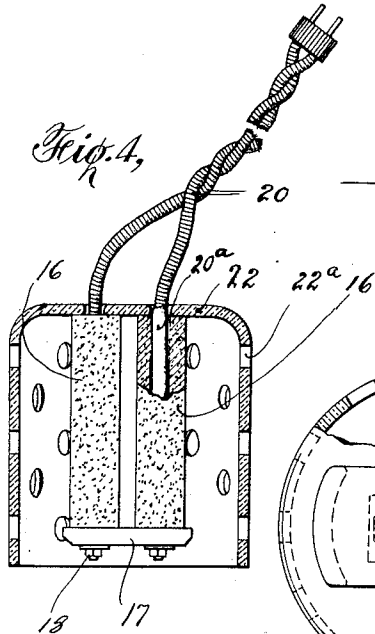


Fig. 4,

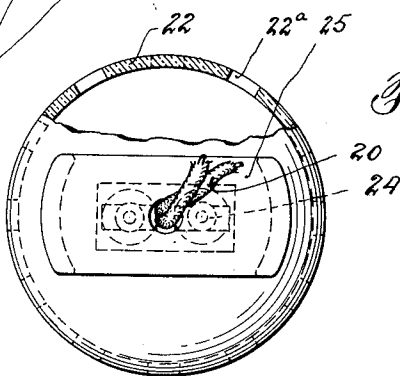


Fig. 3,

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ELECTRIC HEATER.

Application filed May 20, 1927. Serial No. 192,837.

This invention relates to electric heaters based on the principle of heating an electric conductive liquid, such as water, benzoin or the like, by submerging therein electrodes through which an electric current is passed, so that the liquid in becoming decomposed is heated.

The main object is to provide a heater of this type that can effectively be used as a vaporizer for the treatment of certain diseases, such as asthma, bronchial catarrhs or the like.

Another object is to so construct the heater that its manufacture will be extremely simple and cheap to be within the most modest means.

And a further object is to provide means which will render the heater safe against injury to the user and at the same time protect the heating elements from damage or disarrangement.

With these and other objects in view my invention consists in the novel construction, combination and arrangement of parts as will be hereinafter described and defined in the appended claims.

In the accompanying drawing which forms part of this specification and in which similar reference characters denote corresponding parts Fig. 1 is a vertical section of a container equipped with my heater; Fig. 2 is a vertical section of a modified construction; Fig. 3 a top plan view thereof and Fig. 4 a vertical section of another modification.

In the construction shown in Fig. 1 my new heater is suspended from the lid 10 which is threaded or otherwise removably applied to the neck portion of a jar or vessel 11 adapted to contain the liquid to be heated or vaporized. The electric heating unit consists of at least two electric conductors such as metal rods 12 suitably fixed in the lid 10 to project therefrom downwardly and parallel to one another.

In the example shown the upper ends of the metal rods may be suitably fixed, as by thread, in sleeves 13 of metal which may preferably be covered with insulation material (not shown). The upper ends of these

sleeves are threaded or otherwise fixed to pins or rods 14 supported in bushings 15 provided in the lid 10. The conductors 12 extend parallel to one another and are spaced apart a predetermined distance.

Mounted on each rod 12 is a block or bar of carbon 16 which constitute electrodes. These electrodes are longitudinally perforated as at 16' to fit snugly on said rods and are held in position thereon by yokes or cross pieces 17, one bearing on the upper ends and the other against the lower ends of said carbon electrodes. The lower ends of said rods 12 are threaded to receive nuts 18 whereby the electrodes 16 are tightened between the yokes and against the sleeves 13, to prevent longitudinal displacement of the electrodes. The yokes 17 are made of porcelain or other insulation material and serve not only to support the electrodes between themselves but also to hold the conductors rigidly at the proper spacing apart.

The upper ends of the pins or rods 14 are extended through the bushings 15 above the lid to serve as terminals for engagement of an electric plug 19 attached to the lead in wires 20.

When the lid is applied to the jar the heating unit is adapted to project downwardly so that the carbon electrodes are partly or wholly submerged in the liquid, and when the terminals 14 are connected to the electric source the electric current flows through the electrodes 16 and the liquid and as a result of decomposition the latter is heated.

The above described device which I have been using for vaporizing liquids for inhalation purposes in cases of asthma or other bronchial or similar diseases, because of its simplicity, has the advantage over the well known vaporizers of this type that its cost of manufacture is reduced to a minimum, so that it is within the reach of the most moderate means.

The comparatively long carbon blocks or electrodes when becoming worn at their faces bordering the gap can on slackening the nuts 18 be quickly turned around their axes on the rods 12 to present fresh smooth

or unworn surfaces at the gap. As the blocks are made of polygonal cross sections having at least two uneven sides the gap can be conveniently and easily enlarged or reduced by turning the carbon blocks around their axes whereby the acting opposite surfaces thereof are brought closer to or farther away from one another. The adjustability of the gap between the two electrodes is vitally important. The water in some localities contains too much and in others too little minerals. If the water is too rich in minerals the carbon electrodes cause a short circuit and if it contains little minerals the carbons fail to operate. Also the voltage used with the lighting systems varies in different localities. To make the device operative for different localities the gap between the electrodes must be adjustable. By using carbon electrodes in form of blocks of polygonal cross sections having at least two uneven sides the gap can be adjusted by the mere turning of the carbons around their axes. All that is necessary is to slacken the nuts 18, turn the carbons on the conductors and retighten the nuts. In addition this device has the advantage that there being only few metal parts exposed to the liquid particularly when the sleeves 13 are covered with insulation material the device will be very durable.

In order to utilize the heater for heating liquids in vessels of any size and shape, I may use the modification shown in Fig. 2.

Here the conductors or electrodes 16 of carbon or any other suitable material are fixed in the top of a casing 22 of porcelain or other insulating material perforated throughout its circumference. This casing is made of such dimensions as to completely enclose the electrodes so that when dropped into a vessel the electrodes will not be damaged and the heater can be handled by the user without any danger of burning his hands. The casing may be given the shape of an inverted cup or bell open at the bottom and having an even edge which when the device is inserted into a vessel will serve as a rest. The perforations 22^a serve as passages permitting the circulation of the liquid through the bell and between the electrodes. The upper ends of the conductor rods 23 on which the carbons are mounted project through the top of the casing and are formed with terminals 24 to which the lead in wires are adapted to be attached in any suitable manner.

The wires may be enveloped by water proof and insulated coverings (not shown), to prevent short circuits when they accidentally drop into the liquid.

To facilitate the handling of the heater and also shield the terminals so as to prevent their coming in contact with the user's hands, the casing may be formed integrally

with a cross piece or grip 25 extending diametrically over the top thereof. This cross piece may be formed with an aperture for the passage of the lead in wires.

To still more simplify the construction the carbon blocks may be mounted direct on noninsulated portions 20^a of the lead in wires 20 as shown in Fig. 4. The upper carbon electrodes 16 are held rigidly in position by being tightened against the inner face of the top of the casing 22 by means of a cross yoke 17 and tightening nuts 18 working on the free ends of said wires.

If desired the bottom of the casing may be provided with a removable cover of any suitable material to still more insure against injury to the user or damage of the heating elements.

The device as constructed according to Figs. 2-4 dispenses with all means of attachment thereof to a vessel.

In use the heater is simply dropped or placed into any available vessel containing the liquid to be heated and its lead in wires are connected to a switch of the electric lighting system or other source of electrical energy.

It is obvious that various other modifications may be made in the construction of my device without departing from the principle of my invention. I therefore, do not wish to limit myself to the details described and shown.

What I claim is:—

1. In an electric heater, spaced parallel electric conductors and electrodes rotatably mounted on said conductors and so shaped in relation to their axes that by rotation of said electrodes the opposite acting surfaces thereof are brought closer to or farther away from one another thereby reducing or enlarging the gap.

2. In an electric heater, spaced parallel electric conductors, and carbon electrodes of which at least one has uneven sides and is rotatably mounted on its conductor so as to be adjustable relative to the other for varying the gap therebetween.

3. In an electric liquid heater, spaced parallel electric conductors, carbon electrodes of which at least one has uneven sides and which are rotatably mounted on said conductors so as to be adjustable relative to one another for varying the gap therebetween and means for securing said carbon elements in adjusted position on said conductors.

4. In an electric liquid heater, spaced parallel electric conductors, insulating members movably mounted on said conductors and carbon blocks of which at least one has uneven sides and which are rotatably mounted on said conductors between said members and means for tightening said blocks between said insulating members.

5. In an electric liquid heater, a pair of the gap therebetween, and tightening means spaced parallel electric conductors, yokes carried by said conductors for tightening of insulating material movably mounted on said blocks between said yokes to secure 10 said conductors, carbon blocks having uneven sides and rotatably mounted on said them in adjusted position. In testimony whereof I affix my signature.

5 conductors between said yokes so as to be adjustable relative to one another for varying

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