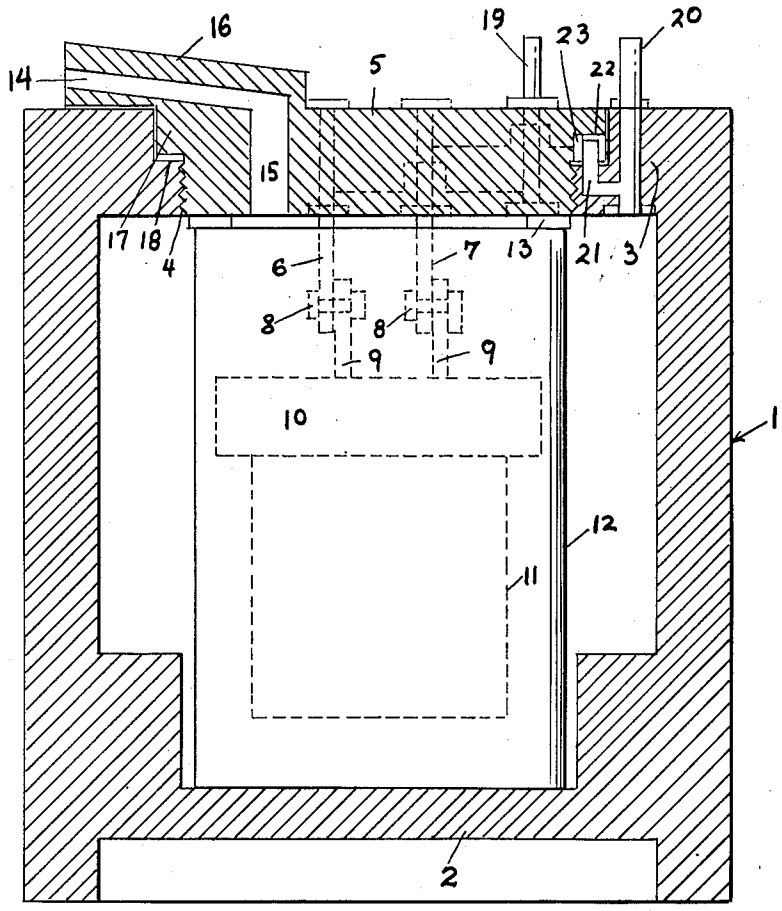
Sept. 25, 1956 L. M. MANTELL 2,764,666

VAPORIZER APPARATUS

Filed Nov. 1, 1954



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BY Leon M. Mantell

United States Patent Office 2,764,666
Patented Sept. 25, 1956

2,764,666

VAPORIZER APPARATUS

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Application November 1, 1954, Serial No. 466,096

9 Claims. (Cl. 219—38)

This invention relates to an improvement in an electric steam vaporizer. It particularly relates to vaporizers employed to supply a mixture of steam and medicinal vapor to relieve respiratory ailments.

One type of vaporizer employs an electric resistance heater immersed in the water to be vaporized. It is desirable to devise means to prevent the closing of the circuit through the heater unless the unit is in place in the water container and the mouth of the container sealed. This is especially true where the resistance unit is suspended from the lid by hinged metal straps, since the hinges carry the electric current to the resistance unit and are not covered by electric insulation.

An object of this invention is to make it substantially impossible in ordinary operation to send electric current through the heater unless the lid covers the vaporizing chamber.

Another object is to make it impossible to remove the resistance heater from the vaporizing chamber without first breaking the circuit through the heater.

These objects are attained by devising means whereby the placing of the lid in position on the vaporizing chamber serves to complete that part of the circuit carried by the apparatus. This is accomplished in one of several ways. In one the lid alone carries the current to the heater, and an electric push button or the like on the lid is closed by an abutting surface upon the water container or upon the outer frame or vessel in which the container is carried. In another embodiment the customary two electric lead posts are carried by a flange formed on the outer vessel or upon the water container, conductors being provided which contact corresponding connectors carried by the lid. The principle involved is the division of the electric circuit between the lid, which suspends the heater, and the water containing assembly unit. In still another embodiment the two electric lead posts are carried by the lid, the circuit being open or incomplete until a conducting bar carried by said flange fits into the open part of the circuit upon placing the lid on the vaporizing chamber.

In its preferred form one lead post is mounted on the lid, and the second post is mounted on the outer vessel or on the water container. It is thereby rendered impossible to plug in the vaporizer to current unless the lid is in place. It is also impossible to remove the lid, and the heater attached thereto, unless the electric plug is taken off the posts.

The drawing is a vertical view, partly in section, of this embodiment or preferred form.

The apparatus includes an outer cylindrical vessel having a side wall **1**, a bottom plate **2**, and an upper flange **3** which screw-threadedly engages the lid at **4**. The lid **5** is formed with a flange **17** the lower face of which seats upon or faces ledge **18** of flange **3**. Two metal suspending straps **6** and **7** fastened in the lid **5** are hinged at hinges **8** to brackets **9** which are fixed to cylindrical ceramic medicament cup **10**. Electric conductors, not shown, lead from brackets **9** to the resistance coil.

Water can be received directly in the outer vessel **1**, in which case a suitable sealing gasket and flange is provided on the lid. In the preferred form shown a transparent glass or plastic container **12** is employed, and the mouth sealed by a ring gasket **13** of sponge rubber or the like attached to the mouth of container **12** or to the underface of lid **5**. The container is filled half full of water, below the cup **10**. Side walls **1** of the outer vessel may be apertured or made in the form of an open cage or frame. Container **12** can rest upon ledge **2** or be removably suspended from lid **5** by any conventional means, such as a screw thread coupling, not shown. In the form shown in the drawing container **12** is supported on ledge **2** and is not attached to the lid **5**. The steam passes upwardly around cup **10** and outwardly through bore **15** in the lid and bore **14** in the spout **16**.

Electric current is supplied by connecting an electric plug, not shown, to lead posts **19** and **20**. Post **19** is fastened to lid **5**. Post **20** is fastened to flange **3** of the outer vessel or frame **1**. Formed on post **20** is an electric connector element **21** which projects upwardly through the ledge **18** of the flange **3**. When the lid is screwed into place connector **21** is received in a recess **22** formed in the lower face of flange **17** of the lid. An electric connector or conducting bar **23** is fastened to the arcuate wall of recess **22**. When the lid is in place current passes from post **20** through elements **21** and **23** to conducting strap **7**. The other lead post **19** is connected to strap **6**.

The invention is not limited to the type of heater suspension shown. Heater **11** can be directly and fixedly attached to the lid. Cup **10** can be removably mounted on the heater or in or on the lid. These variations are known in the art.

Flange **3** may be an organic plastic rim fixed upon vessel **1** which may be a glass jar. Inner container **12** is thus dispensed with.

Having thus described my invention I claim:

1. A steam vaporizer comprising a water container assembly including a container having a mouth, a removable lid for the mouth, an electric resistance heater suspended from the lid inside the container, two electric terminals fixedly carried by the steam vaporizer and adapted to be directly connected to an electric current source, electric conductors carried by the lid and leading from said terminals and connected to the heater, one of said conductors having an open part in its circuit, an additional electric conductor carried by means provided by the water container assembly in position to connect the said open part when the lid is placed on the mouth, the water container assembly being exclusive of the lid.

2. A steam vaporizer comprising a water container assembly including a water container having a mouth, a removable lid for the mouth, an electric resistance heater suspended from the lid inside the container, an electric lead post on the lid, the post being connected to the heater, a second electric lead post on said water container assembly, an electric conductor carried by the lid connected at one end to the heater and having its other end in position to make electric connection with the said second electric lead post when the lid is on the mouth, the water container assembly being exclusive of the lid.

3. The apparatus of claim 2 in which the two lead posts are positioned adjacent each other when the lid is on the mouth, whereby an electric plug can be attached thereto.

4. The apparatus of claim 2 in which the heater is suspended from the lid by means of uninsulated hinged metal elements which serve as electric conductors to the heater.

5. The apparatus of claim 2 in which the water container assembly includes an outer supporting member inside which is the water container, the supporting member having an upper aperture into which the lid fits, the second lead post being on the supporting member adjacent

the aperture, the electric connection from the second lead post to the electric conductor carried by the lid being through a contact element carried by the lid and through a second contact element on the supporting member, the elements coming in contact when the lid is in place.

6. A steam vaporizer apparatus comprising a removable lid, an electric resistance heater attached to the lower face thereof, water container means having a mouth closed by the lid, two electric terminals fixedly carried by the apparatus and adapted to be directly connected to an electric current source, electric connections leading from said terminals to the heater, a second means which is separable from the lid, part of said electric connections being carried by the lid and part by the said second means, whereby upon removing the lid the electric connection from one of the terminals to the heater is automatically severed.

7. The apparatus of claim 6 in which one of the said terminals is on the lid and the other on the said second means.

8. A steam vaporizer apparatus comprising a removable lid, an electric resistance heater attached to the lower face thereof, water container means having a mouth closed by the lid, two electric terminals carried by the apparatus, electric connections leading from said terminals to the heater, a second means which is separable from the lid, part of said electric connections being carried by the lid and part by the said second means, whereby upon removing the lid the electric connection from one of the terminals to the heater is severed, said terminals being lead posts, one of said posts being on the lid and the other on the second means, the two lead posts being positioned adjacent each other when the lid is in position on the mouth of the container, whereby an electric plug can be attached to said posts only when the lid is in place.

9. A steam vaporizer comprising a water container assembly including a container having a mouth, a removable lid for the mouth, an electric resistance heater suspended from the lid inside the container, two electric terminals fixedly carried by the vaporizer, said terminals being adapted to be connected to an electric current source, electric conducting means leading from the two terminals to the resistance heater, part of said conducting means being carried by the lid and part carried by the water container assembly, whereby the electric circuit from the two terminals through the conducting means and the electric heater is completed only when the lid is in place on the mouth and is automatically opened when the lid is removed from the mouth, the water container assembly being exclusive of the lid.

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