

Sept. 22, 1931.

F. E. WOLCOTT ET AL

1,824,585

ELECTRIC HEATING DEVICE

Filed Nov. 23, 1927

Fig.1.

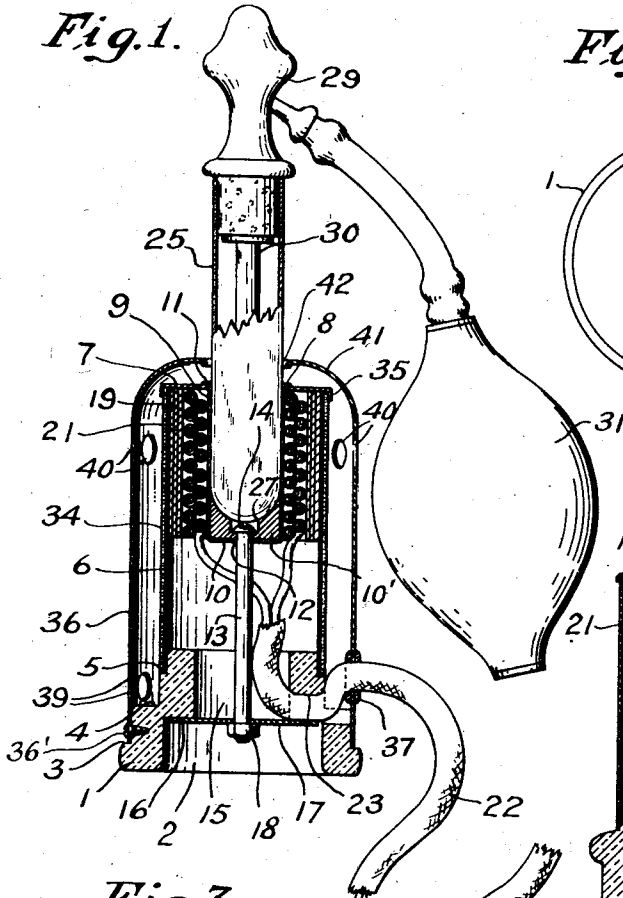


Fig.2.

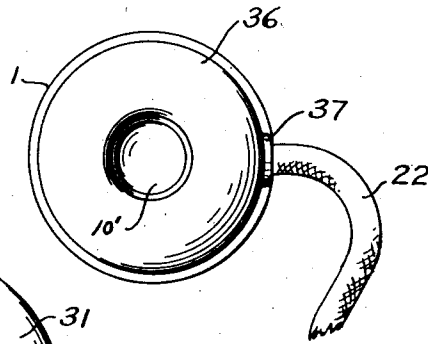


Fig.4.

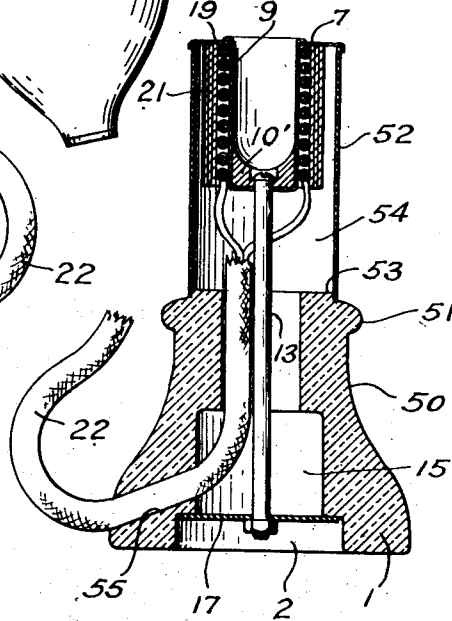
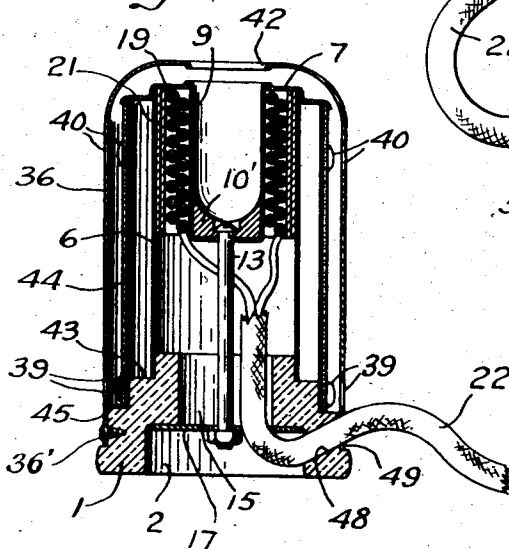


Fig.3.



INVENTOR
FRANK E. WOLCOTT
AND LOUIS V. LUCIA.

BY *Max J. [Signature]*
ATTORNEY.

UNITED STATES PATENT OFFICE

FRANK E. WOLCOTT, OF WEST HARTFORD, AND LOUIS V. LUCIA, OF HARTFORD, CONNECTICUT, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE BEARDSLEY & WOLCOTT MFG. CO., A CORPORATION OF CONNECTICUT

ELECTRIC HEATING DEVICE

Application filed November 23, 1927. Serial No. 235,316.

This invention relates to electric heating devices.

It has for its object to provide an improved electric heating device adapted to various uses and which is both safe and convenient in use and capable of being supplied at small expense. A more specific object is to provide an improved, safe and convenient electrically heated device adapted to receive a receptacle such, for example, as a test tube or similar container used in laboratories, doctors' offices, or the like, and heat the material therein. A further object of this invention is to provide an improved electrically heated receptacle of the character set forth, which is so constructed and arranged as to enable the same to be conveniently grasped in the hand and held comfortably therein while heated. A still further object of the invention is to provide an improved electrically heated device having the characteristics mentioned and, further, adapted to carry, in addition to the receptacle mentioned, and on the latter, a spray or other nozzle adapted to distribute medicament heated in the tube, the whole being so constructed and arranged that a unitary and conveniently grasped construction is provided which, while effectually heating the medicament, is also so cool on its exterior as to enable it to be comfortably held in the hand during use, as when the spray nozzle is inserted in the mouth or nose during treatment of colds or the like. These and other objects and advantages of this improved construction will, however, hereinafter more fully appear.

In the accompanying drawings are shown, for purposes of illustration, three forms which the invention may assume in practice.

In these drawings,—

Figure 1 is a vertical sectional view of a device constructed in accordance with this improvement;

Fig. 2 is a plan view of the same with the medicament receptacle removed;

Fig. 3 is a vertical sectional view, similar to Fig. 1, of a modified construction, the medicament receptacle being removed, and

Fig. 4 is a similar vertical sectional view of a further modified form of the same, the

medicament receptacle likewise being omitted in this view.

Considering first the construction of Figs. 1 and 2, it will be noted that a base formed of any suitable insulating material, such for example as wood, is provided having an electrically heated heating receptacle carried on the base and projecting upward therefrom, this receptacle being so constructed and arranged as to receive in its upper end another receptacle to be heated, herein in the form of a test tube carrying a spraying device, and also so cooled as to enable the heating portion to be carried comfortably in the hand.

More particularly, it will be noted that the base 1 has an axial aperture 2 in its bottom and a series of three stepped concentric flanges 3, 4 and 5 on its outer periphery. Of these flanges, each inner flange begins where the outer flange terminates, while the middle flange 4 is considerably wider than either of its fellows. Seated on the uppermost flange 5 is an upwardly extending cylindrical member 6 having an open bottom adapted to enclose snugly the disc-like portion formed by that flange. The upper end of this ferrule 6 also carries a top closure 7 having a central perforation or aperture 8 therein. In the latter, in turn, is seated a hollow cylindrical member 9, preferably of metal and having an open top and a closed bottom 10, and herein extending substantially halfway down into the member 6. Herein it will also be noted that the upper edge 11 of the member 9 is bent over in the form of a flange surrounding the aperture 8 in the member 7. Further, it will be noted that the members 6, 7, 9 are suitably united with the base 1. Preferably the cylindrical member 9 acts as a part of a connecting means holding the members 7 and 6 firmly to the base. Herein, the bottom 10 of the member 9 supports a countersunk member 10' and both 10 and 10' are provided with a central perforation 12 adapted to permit the passage of a bolt 13, the head 14 of which by its engagement with the periphery of the opening 12 in the member 10', acts to clamp the parts together when the bolt is fastened at its lower end to the base 2 in any suitable manner. It will

also be noted that the base 2 is provided with a central opening 15 communicating with the aperture 2, though of smaller diameter than the latter, a flange 16 thus being formed surrounding the bottom of the aperture 15. Herein, a bottom plate 17 also rests against this flange 16 and the bolt 13 passes axially through this plate and is connected thereto by suitable means, such for example as a nut 18. Thus it will be noted that all of the parts previously mentioned are firmly clamped together when the nut 18 is suitably adjusted.

Improved heating means are also disposed within the member 6. Herein these means comprise a plurality of coils of a suitable heating element, indicated at 19 and wound about the member 9 substantially throughout the length thereof. While different constructions may be used, in a preferred construction the element 19 is in the form of a series of conductors covered with asbestos, since such an element is adapted to be applied when wet to the member 6 and when dry to stick thereto in such manner as to require no other attaching means. Obviously, any suitable number of circuit connections of these coils 19 may be used which is found adapted to the particular conditions required. In this construction two concentric series of coils 19 in series connection are provided, and these are suitably insulating from the outer member 6 by suitable insulating material 21 disposed between the coils and the inside diameter of the member 6. This insulating material may be of different character, but the same herein is in the form of tape. Herein these heating coils 19 are also connected to a usual conductor or cable 22 which is extended through a suitable lateral aperture 23 in the base 1, herein opening into the bottom of the aperture 15. Thus, it will be evident that when current is supplied through the conductor 22 to the coils 19 in a usual manner, the member 9 will be heated throughout its length in a most effective way, while through the arrangement of the heating means at the top of the member 6 the lower end of the latter and the base 1 is kept relatively cool.

While the member 9 may be used as a container for certain materials, where a liquid or a material forming a liquid when heated is to be operated upon, a separate receptacle is preferably placed in the member 9. Herein it will be noted that a receptacle 25, in the general form of a glass or other suitable test tube, is snugly fitted into the member 9. Also, to provide a suitable seat for the receptacle 25, the member 10' is preferably made in the form of a seat adapted to fit the bottom of this member 25. Herein, for example, the test tube 25 having a rounded bottom, the upper surface of the member 10' is suitably dished or hollowed out, as shown at 27, to

receive the rounded bottom thereof. As shown, this member 10' is preferably formed of metal and thus adapted to conduct heat to the bottom of the test tube.

Obviously, different forms of means may be used for distributing the material in the tube 25 when such distribution is desired. When, however, the device is to be used as a heater for medicine or the like to be inhaled or sprayed, the test tube 25 also carries a nozzle member fitted in the top of the latter. Herein, it will be noted that this member has an upstanding portion 29 adapted to be inserted in the nostril or mouth, as desired, and that it is also provided with a suitable oppositely disposed extension 30 which extends downward a substantial distance into the member 25. Herein, as preferably, it is also provided with a spray bulb 31. Thus, it will be evident that the device may be held conveniently in one hand while the nozzle member is used as desired, while where a bulb is provided the other hand may be used to operate the bulb.

While the base 1 may be grasped in the palm of the hand when the device is used, it is preferred to provide additional means for keeping the same cool in order to enable the device to be more quickly and conveniently handled and to increase the safety of the same in use. Herein, for example, it will be noted that a covering 34, herein formed of asbestos or other suitable non-conductor of heat, encloses the member 6 and is held in position thereon by the flange 5 and by a suitable depending flange 35 or equivalent projections formed on the periphery of the member 7. Further to reduce the temperature, an outer cylindrical shell member 36 is herein provided. This shell member 36 herein is suitably attached to the base, as by a screw 36', and extends upward from the flange 3 in spaced relation to the member 6 in such manner as to be insulated from and insulate the latter and provide a cool grasping means. As shown herein, this member 36 is suitably bushed at 37 to receive the cable 22 and also provided with series of radially disposed apertures 39, 40 near the bottom and top thereof, respectively, in such manner as to permit air circulation and a still further cooling effect. Here it will also be noted that the upper end of the member 36 is curved inward, as shown at 41, in such manner as to overlie the member 7 and confine the heat to a certain extent above the top thereof while preventing objectionable heating of the bulb 31 or one's hand or face. As shown, a suitable aperture 42 is, of course, provided in this portion 41 to permit the insertion and removal of the member 25 when desired. Thus, it will be evident that, since the member 36 may be grasped comfortably substantially at any point throughout its length, the device may be very conveniently

and safely handled, while danger from fire, should the same be overturned, is also minimized.

In Fig. 3 is illustrated a modified construction which is generally similar to the construction shown in Figs. 1 and 2, with the exception that a flange 43, generally similar to the flange 5 but wider than the latter, is provided, and that a second spacing tube 44 is provided seated on a flange 45, generally corresponding to the flange 4 and within the outer shell member 36, in such manner as, where necessary, further to reduce the temperature of the member 36. Attention is further directed to the fact that in this construction the cable 22 is extended through an aperture 48 extending angularly downward into the aperture 2 in the base 1 and upward through a suitable aperture in the member 17, the conductor 22 herein also passing through a suitable aperture 49 in the outer shell member 36 below the bottommost apertures 39 therein, this construction eliminating any need for providing a cable bushing on the member 36.

In Fig. 4 is illustrated a still further modification which, while not so desirable in certain respects as the form shown in Fig. 1, also has certain advantages adapting it for certain uses. In this construction it will be noted that the base 1 is elongated vertically and provided with a reduced gripping portion 50 having an outwardly extending flange 51 at its top. Thus, the base is made to provide a convenient grasping portion adapted to be held in the hand while the flange 51 prevents the user's hand from slipping upward into contact with the heating means carried above the base. In this construction an outer ferrule member 52 is used surrounding a suitably raised portion 53 on the base 1 and resting on the upper surface of the flange 51, and this member 52 is disposed at its upper end under the member 7. In this construction, the member 52, while the outermost member, is ordinarily not provided with apertures corresponding to the apertures 39 and 40, and further, is not covered with insulating material, while a heating unit is provided using a smaller number of coils, herein in the form of a single series, these changes being made possible by the disposition of the heating element on the high base shown and the use of the latter as the holding or handling means for the device. As a result of this arrangement, it is also found possible, if desired, to reduce the vertical spacing of the member 9 relative to the base, herein indicated at 54, substantially more than is shown herein without objectionable heating, and thereby also render the device more compact vertically. Here attention is also directed to the fact that the cable 22 is extended through an aperture 55 extending upward

through the base 1 into the aperture 15 at a point above the member 17.

As a result of this invention it is made possible to provide an electric heating device of improved and simplified construction and capable of being manufactured at small expense, which is also exceedingly safe and conveniently handled. More particularly, the provision of the base enables the device to stand upright when desired. Moreover, through the provision of the heat insulating means such as used in the preferred form thereof, it is made possible to prevent burning should the device accidentally be knocked over. As regards convenient handling, the arrangement and construction is such that an operator may pick up the device and move it with the receptacle therein with facility, the preferred form of the construction especially being adapted to facilitate handling since it enables the operator to grasp the device at substantially any point throughout its length. It will also be noted that the heat insulation of the preferred form thereof is such as to make the device especially adapted to use with sprays having rubber or other bulbs, the heat insulating means acting to protect the bulb from the injurious effects of the heat. These and other advantages of this improved construction will, however, be clearly apparent to those skilled in the art.

While this application specifically describes three forms which the invention may assume in practice, it will be understood that these forms are shown for purposes of illustration only and that the invention is not limited thereto but may be further modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In combination, a base, an upstanding ferrule connected to the base housing electric heating means and having a central socket member heated thereby, and heat insulating means for said ferrule including an outer shell spaced therefrom and provided with an apertured end spaced therefrom and having an aperture overlying the socket of said socket member.

2. In a heating device, a base, a plurality of upstanding concentric members carried thereon, one having a central socket and heating means surrounding the latter within said member, and another being spaced from the latter member by an air chamber and having a flanged upper end apertured above said socket and openings in its sides providing air circulation through said air space.

3. A portable heating device comprising a base adapted to stand upright, a ferrule thereon provided with a heating socket and carrying electric heating means in said fer-

rule for said socket, and heat insulating means outside said ferrule including an outer shell spaced from the side and top of said ferrule and having an aperture permitting
5 access to said socket.

4. In combination, a ferrule, a top plate fitting over the periphery thereof and having an axial aperture therein, and a socket member extending down into said aperture and
10 having a flange overlying the edge thereof.

5. In an electric vaporizer, an outer casing member having a tubular body and an inwardly extending upper end provided with an axial receptacle aperture therein, electrically heated socket means wholly inside said
15 member disposed coaxially with said aperture, and a base carrying said member and socket means and terminal connections for the latter.

20 In testimony whereof we affix our signatures.

FRANK E. WOLCOTT.
LOUIS V. LUCIA.

25

30

35

40

45

50

55

60