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G. D. RICE

1,859,601

THERAPEUTIC LAMP

Filed March 23, 1929

Fig. 1.

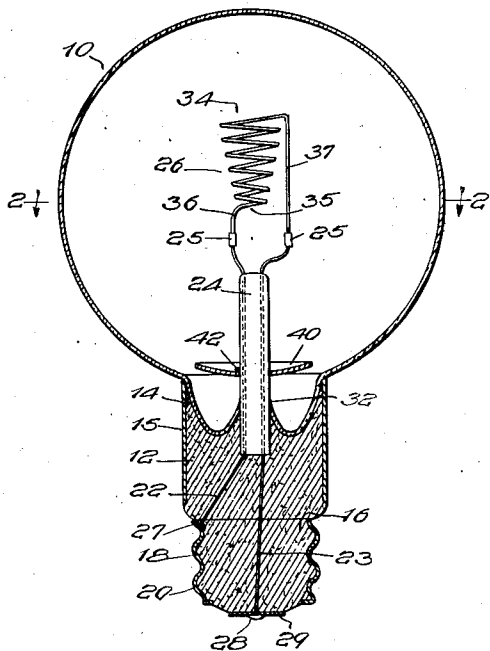


Fig. 2.

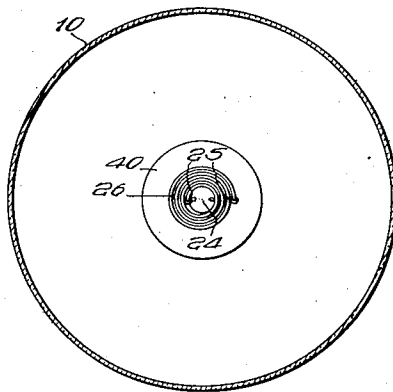


Fig. 3.

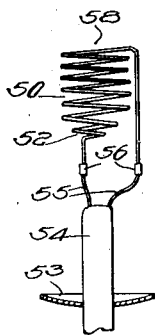


Fig. 4.

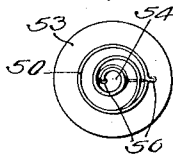


Fig. 5.

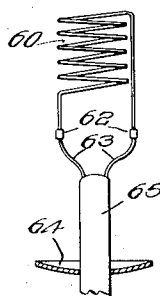
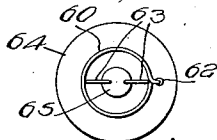


Fig. 6.



Witness:

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THERAPEUTIC LAMP

Application filed March 23, 1929. Serial No. 349,309.

This invention relates to therapeutic lamps and its primary object is to effect a saving of current and obtain maximum output of the radiated energy and particularly the invisible radiant energy.

Another object of the invention is the provision of a generally improved and simplified construction that may be economically produced.

Other objects and advantages of the invention will appear from the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is an axial sectional view through a lamp embodying the present invention showing the filament and filament stem in elevation;

Figure 2 is a transverse sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a fragmentary view showing another form of filament embodying the present invention;

Figure 4 is an end view of the filament and reflector shown in Figure 3 and taken from the outer end of the filament;

Figure 5 is a view similar to Figure 3 showing another form of filament embodying the present invention; and

Figure 6 is an end view taken from the outer end of the filament and reflector shown in Figure 5.

In the drawings, 10 indicates a suitable bulb having a suitable base 12. The bulb 10 is preferably made of special glass designed to pass maximum infra-red or other invisible radiant rays desired but this may vary. The base portion 12 is preferably of bakelite or other suitable or preferred insulating material preferably of a material which will seal well to the marginal edge of the bulb around the base opening 14. The base portion 12 is surrounded by a conducting sleeve 15 preferably of copper, brass or other suitable conducting material which may be cemented upon the base and to the bulb 10. Below the base portion 12 the insulating body is preferably of asphaltum or other equivalent insulating material as designated at 16 which I find provides a better seal with the adjacent parts and surrounding the lower reduced end

18 of the insulating body is a threaded brass or other conducting sleeve 20 forming a conducting plug for threaded engagement with the ordinary light socket or outlet.

The lead-in wires are indicated at 22 and 23 and these lead-in wires pass through and are sealed in the stem 24 and are connected at their inner ends at 25 with the filament 26. One of the wires 22 is connected at 27 with the plug contact shell 20 and the other wire 23 is shown as connected at 28 with the end contact 29 which is insulated from the contact shell 20 as well understood in the art. The stem 24 which may be of glass insulates the lead-in wires 22 and 23 from each other and this stem may be made up separate and then fused into the base end of the bulb 10 at 32 whereupon the bulb 10 is evacuated and the evacuation opening, as for example through the stem 24, is closed and sealed.

The filament shown in Figures 1 and 2 is coiled in a plurality of convolutions to form a conical helix with its axis substantially parallel to the direction of application of rays from the lamp. The filament is preferably of a material of relatively high infra-red ray efficiency and of relatively low visible light ray efficiency. A stereopticon filament of carbon silicate is suitable for this purpose, the size of filament wire in an illustrated embodiment of the invention drawing two hundred watts, which may vary. The open or larger end 34 of the conical filament helix shown is preferably directed toward the point of application of the rays from the lamp and the smaller or reduced end 35 of the conical filament is disposed away from the point of application of the rays.

The opposite ends 36 and 37 of the filament are suitably extended and connected at 25 with the lead-in wires 22 and 23 respectively. With the conical filament formation of this embodiment of the invention and the arrangement of this conical filament formation with the larger open end directed toward the point of application, I find that at least a 100% increase over the present type filament arrangement is obtained. The reflected energy; that is, the energy reflected within the filament element itself which amounts to about

50% of the energy generated is directed upon the point of application from the open end of the filament. The formation of the filament provides a maximum invisible radiant ray discharged in one direction and the arrangement of this filament within the bulb directs this maximum discharge directly toward the point of application. The lateral discharge is less and the internal lateral reflection is directed from the larger open end toward the point of application. The external lateral discharge may be utilized by means of any suitable or preferred reflector arrangement, not shown.

Sealed with the filament 26 and stem 24 within the bulb 10 is a reflector 40. This reflector 40 is preferably of metal and is secured and supported upon the stem 24 preferably on the axis of the filament 26, as shown. The reflector shown is of circular concave formation toward the filament 26 and is provided with a central opening 42 through which the stem 24 passes, the reflector being suitably secured upon the stem 24 marginally around this opening 42.

This reflector arrangement within the bulb and on the axis of the helix reflects the rays from the smaller end of the conical filament out toward the point of application and still further with this arrangement, the rays from the smaller end of the filament are reflected out in the direction of emission of the increased ray discharge from the larger end of the filament. The arrangement of the helical filament with its axis substantially parallel to the direction of application of the rays greatly increases the efficiency of the lamp and then by reflecting the rays from the opposite end of the helical filament by a reflector on the axis of the filament, this increased efficiency is still further increased. This effects a material saving of current and obtains maximum output of the radiated energy and particularly in the infra-red or other equivalent invisible radiant energy.

In the embodiment shown in Figures 3 and 4, the filament 50 is coiled in a plurality of convolutions to form a substantially cylindrical helix with the turns 52 at the inner end and away from the point of application reduced to reduce the end of the helical filament away from the point of application of the rays from the filament. Otherwise the larger open end of the filament is directed toward the point of application as before and the axis of the filament is preferably substantially parallel to the direction of application of the rays from the lamp and directed toward the point of application and the reflector 53 is mounted upon the stem 54 and on the axis of the filament away from the point of application of the rays.

The larger open end of the filament is indicated at 58 and the lead-in wires 55 are

shown as connected with the ends of the filament at 56.

In the embodiment of Figures 5 and 6, the filament is coiled in a plurality of convolutions to form a substantially cylindrical helix with both ends open and without the reduced end of the previous embodiment.

The ends of the filament 60 are connected at 62 with the lead-in wires 63 and the reflector 64 may be mounted upon the stem 65 on the axis of the filament 60 away from the point of application of the rays. The helix is preferably arranged with its axis substantially parallel to the direction of application of the rays from the lamp and directed toward the point of application and also as before the filament stem and reflector are all preferably enclosed and sealed within the bulb of the lamp.

I do not intend to be limited to the precise details shown or described. It is to be understood that the filament occurs singly, as shown, or in groups of any desired number within a common enclosure. Where two or more filaments or filament and reflector combinations are employed all of the filaments will preferably be arranged in the manner described in connection with the single filament herein and the filaments may be connected in the electric circuit within the vacuum inside the bulb either in series or parallel relation.

I claim:

As an article of manufacture a therapeutic lamp comprising a bulb and a filament formed directly of carbon silicate, said filament being disposed within said bulb and coiled in a plurality of convolutions to form a conical helix with its axis substantially parallel to the direction of application of rays from said lamp and directed toward the point of application, the larger end of said helix being toward the point of application of the rays from the lamp and the smaller end of the helix being away from the point of application, an insulating base sealed to said bulb substantially in axial alignment with the axis of said filament, a contact shell on said base, a frangible lead-in stem secured to said base and projecting into said bulb, a reflector disposed within the bulb and mounted on said stem on the axis of said helix, and lead-in wires entering through said base and said stem and connected with said filament.

In witness whereof, I hereunto subscribe my name this 20th day of March, 1929.

GEORGE D. RICE.