Nov. 18, 1930. E. SUTER ET AL 1,782,218

INFRA RED ELEMENT FOR THERAPEUTIC LAMPS AND HOLDERS

Filed April 25, 1928

Fig. 1.

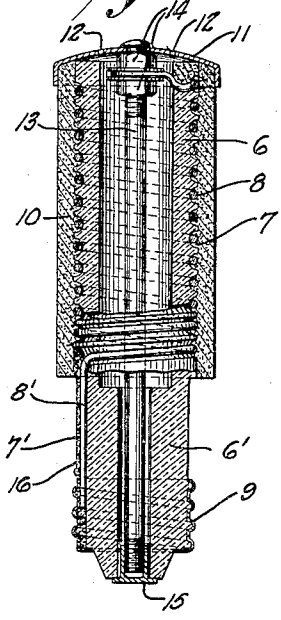


Fig. 2.

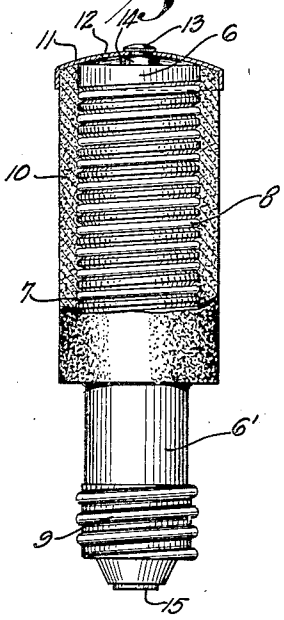


Fig. 3.

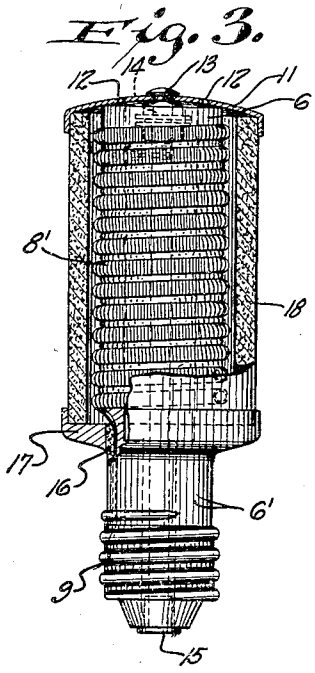
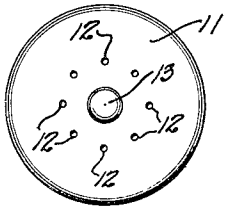


Fig. 4.



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Patented Nov. 18, 1930 1,782,218

UNITED STATES PATENT OFFICE

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INFRA-RED ELEMENT FOR THERAPEUTIC LAMPS AND HOLDERS

Application filed April 25, 1928. Serial No. 272,672.

This invention relates to improvements in infra-red elements for therapeutic lamps and holders.

It has been found that therapeutically the human tissue is greatly benefited when subjected to the rays or waves of infra-red energy radiated from an electric resistance element in which the ultra violet ray is properly screened or stopped without stopping the longer waves of the visible spectrum; red, orange, and yellow. This combination of rays in which the ultra violet ray is excluded, leaves the heat waves to radiate through the screen and forms a surface radiation of non-metallic material and produces the infra-red energy that is controlled by the surface temperature. These rays in combination with the longer waves of the visible spectrum are able to penetrate deeply into the human tissue with beneficial results.

It is, therefore, the primary object of the present invention to provide an infra-red element for therapeutic lamps for the purpose above set forth and which is very efficient and beneficial in use.

A further object of the invention is to provide an element of the class described in which a resistance wire is wound on a tube or other body and is coated with a material which will obstruct the passage of ultra violet rays therethrough.

A further object of the invention is to provide an infra-red element for lamps in which the parts are assembled and held together in a very simple and effective manner.

A further object of the invention is to provide an infra-red element of the class described which is of very simple construction, is strong and durable, and is well adapted for the purpose described.

With the above and other objects in view the invention consists of the improved infra-red element for therapeutic lamps, and its parts and combinations as set forth in the claim, and all equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a longitudinal sectional view of the improved infra-red element;

Fig. 2 is a side view thereof with the outer coating broken away and shown in section;

Fig. 3 is a longitudinal sectional view of a modified form of the invention; and

Fig. 4 is a plan view of a cap used in the device.

Referring now more particularly to Figs. 1 and 2 of the drawing, it will appear that the numeral 6 indicates a porcelain tubular member or core formed externally with a spirally trending recess or groove 7 in which is lodged an elongated resistance wire 8. Said core is formed with a lower or inner extension portion 6′ having a longitudinal recess 7′ in which is disposed one end portion 8′ of the wire 8, said portion 8′ being straight. Mounted on the extension portion 6′ is an externally threaded collar 9 engaging a portion of the wire 7′ and forming a terminal connection for the same, the collar 9 being adapted to be threaded into an electrically connected socket or holder.

The spirally wound portion of the resistance wire as well as the tubular member or core 6 is covered or coated by a substantial layer of plastic compound, indicated at 10. In the form of the invention shown in Figs. 1 and 2 said compound is formed of suitable proportions of aloxide, neutral iron oxide black (magnetic), silicon-soda (for binder) and red phosphor zirconium oxide (for color). The aloxide consists principally of fused alumina made by an electric furnace process from aluminum silicate. This combination, when in a fluid state, is packed around the core 6 and resistance wire 8 and forms a smooth outer tube through which the infra-red light rays emanate when said tube is incandescent.

A metallic cap 11 is mounted on the outer end portion of the compound tube 10 and the mid-portion of said cap is provided with perforations 12 to cool the interior of the element when the same is in operation. Secured at one end portion to said cap and depending from the mid-portion thereof is an elongated metallic stem 13 extending centrally through the interior of the core 6 and its extension 6′. As shown clearly in Fig. 1, the upper or outer end portion of the resistance wire 8 is

wrapped about the stem 13 and is clamped by a pair of nuts 14 threaded thereon. The lower end portion of the stem 13 has threaded thereonto a small metallic, cup-like member 15 which has a flanged head portion overlying the end of the member 6'. Said cup-like member 15 forms the other terminal end for the resistance wire.

The groove 7' in which the portion 8' of the wire extends is filled with an insulating compound, as at 16, to cover and protect the wire.

In the form of element shown in Fig. 3 the porcelain core 6 has wound thereabout in a spiral trend the major portion of a resistance wire 8', said wire being comparatively thin and wound in convolutions. Adjacent the junction of the core 6 with its lower extension 6' there is an annular flanged member 17 and the lower or inner end portion of an outer quartz tube 18 is seated in said member. The outer end portion of the tube is engaged by the cap 11 and an elongated stem 13 has secured thereto the outer end portion of the resistance wire 8'. The inner end portion of said stem carries a terminal cup 15 and a threaded metallic collar 9 engages the other end portion of the wire 8' and forms a terminal.

In use, the element is threaded into a lamp socket and the current turned on. The resistance wire will heat to a point of incandescence and also heat the screen material or outer tube, causing it to glow. The heat waves will pass through the outer tube, which turns black and dark red infra-red rays are given off which produce the results desired.

From the foregoing description it will be seen that the improved infra-red element for therapeutic lamps is of simple and novel construction, and is well adapted for the purposes described.

What is claimed as the invention is:

A therapeutic element, comprising an insulating core having a spiral groove, a coiled resistance wire extending into the groove, and a screen coating for said wire consisting of aloxide, neutral magnetic iron oxide black, silicon soda, and red phosphor zirconium oxide.

In testimony whereof, we affix our signatures.

ERNEST SUTER.
JULIUS NUETZI.