No. 843,775. PATENTED FEB. 12, 1907.

S. W. TALIAFERRO.

ELECTRIC HEATER.

APPLICATION FILED JULY 31, 1905.

Fig. 1.

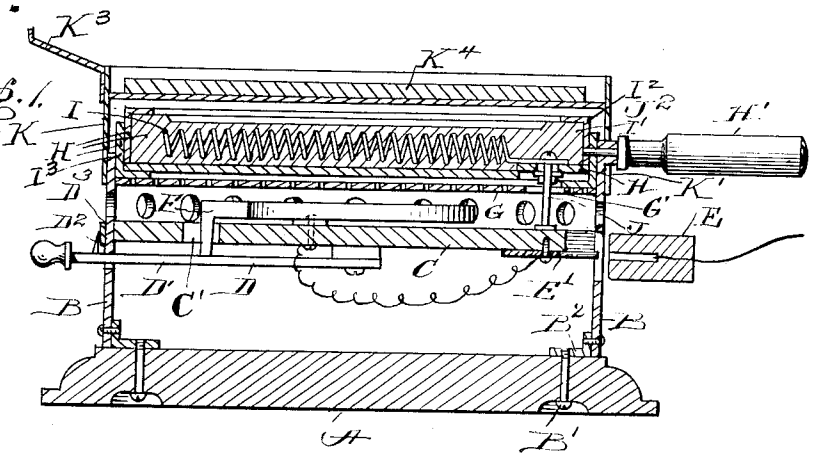


Fig. 2.

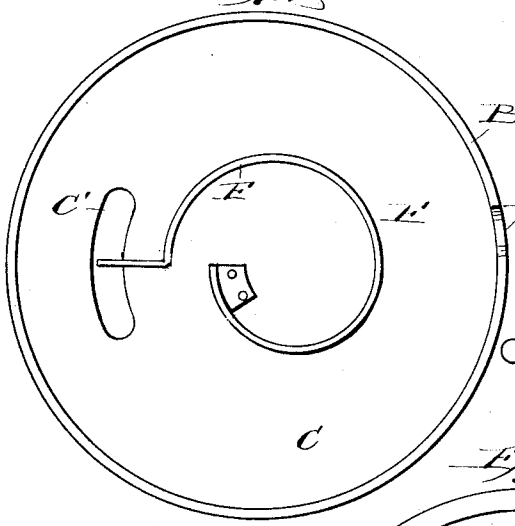


Fig. 3.

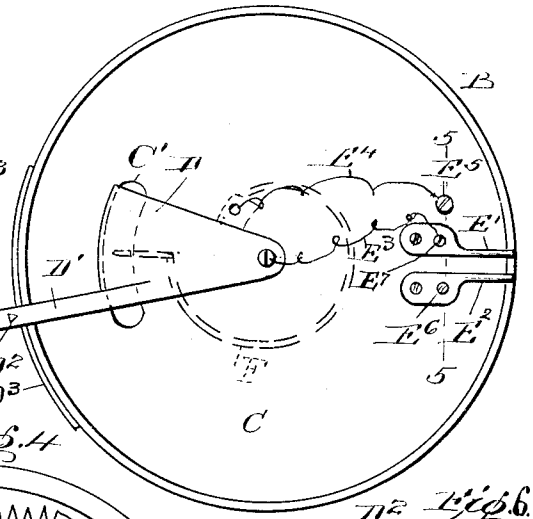


Fig. 4.

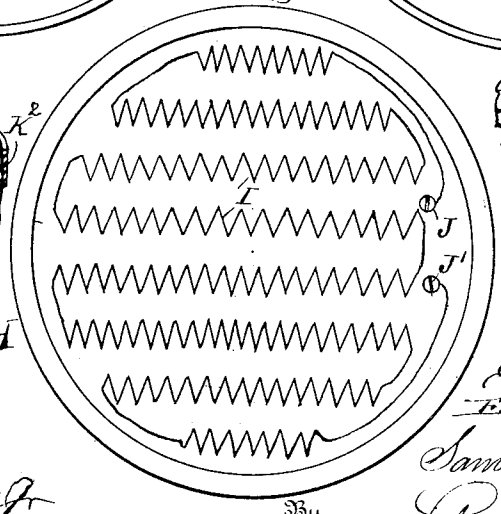


Fig. 7.

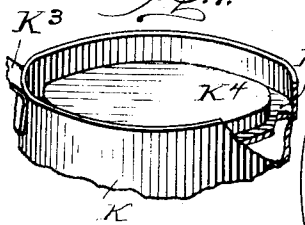


Fig. 6.

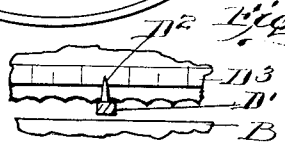
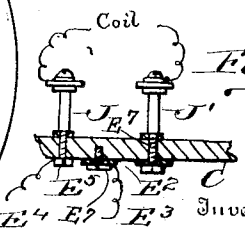


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

SAMUEL W. TALIAFERRO, OF SAN FRANCISCO, CALIFORNIA.

ELECTRIC HEATER.

No. 843,775. Specification of Letters Patent. Patented Feb. 12, 1907.

Application filed July 31, 1905. Serial No. 271,981.

To all whom it may concern:

Be it known that I, SAMUEL W. TALIAFERRO, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Electric Heaters, of which the following is a specification.

My invention relates to electric heaters especially intended for dentists' use, and it involves an electric heater combined with a thermostatic regulator whereby the heat is kept approximately at a predetermined point by automatic variation of the heating-current.

In the accompanying drawings, Figure 1 is an axial vertical section of the apparatus. Fig. 2 is a plan view of a certain horizontal plate in the base portion of the apparatus, together with certain attachments. Fig. 3 shows in a similar way the lower side of the same plate. Fig. 4 is a plan view of the heater plate or tray, the material inclosing the coils being removed. Fig. 5 is a section at 5 5, Fig. 3. Fig. 6 is a detail view showing a portion of the casing notched and holding a certain adjusting-lever. Fig. 7 is a view in perspective of a cup or basin attachable to the heater.

In these views, A represents a suitable adjusting-base, preferably a poor conductor of both heat and electricity, and B designates a preferably cylindrical case secured to the base by screws B′ engaging lugs B^2. Case B is provided with perforations to admit air for the better regulation of the thermostat. At some distance above the base the case is divided by a plate C, which is preferably a non-conductor of electricity, and at a little distance above this plate is a parallel foraminous plate G. To the lower side of plate C is pivoted a sector D of conducting material, provided with an arm D′, which projects through a horizontal slot in the casing and bears a pointer D^2, which sweeps over a scale-plate D^3. The upper margin of the slot is notched, as in Fig. 6, to hold the lever in any desired position. At the opposite side of the apparatus the casing is perforated to admit an ordinary plug E for putting circuit-wires into contact with two rods E′ E^2, respectively, fixed to the plate C. Upon the upper side of the plate is a curved thermostatic bar F, having one end fixed to the plate C and engaged by a binding-screw extending from below through the plate. The other end of the bar is bent down through a slot C′ in the plate to meet the sector D. From a binding-screw E^5 a conductor E^4 runs to the binding-screw at the fixed end of the bar F, and from the inner end of the sector D a wire E^3 passes to a binding-screw E^7, which extends upward through the plate C at a short distance from a screw E^6, which in like manner passes through rod E^2 and the plate C.

In the casing and a little above the foraminous plate G fits a heater plate or tray H, provided with a handle H′, which normally rests in a notch B^3 in the margin of the casing and is thereby brought accurately into position as often as it is put upon the casing. As shown, the heater-plate consists of resistance-coils I embedded in suitable material I′ in the usual manner, this material preferably forming a shallow tray exposed above, but otherwise inclosed in a metal casing I^2, itself held in a flanged ring I^3, removably fitting in the casing B.

The ends of the coils are connected, respectively, to binding-screws J J′, which project downward from the heater in position to make electrical contact with the ends of the conducting-screws E^5 E^6 whenever the heater-plate is in position. Any substances or articles requiring considerable heat are laid in the shallow tray. Where less heat is required, as in the case of gutta-percha, or where water is to be heated a shallow basin or cup is placed over the tray H. The cup or basin has vertical sides K, which are extended downwardly below the bottom of the cup proper, so as to form a flange adapted to fit over the cylindrical case B, which flange is provided with notch K′ to register with notch B^3, wherein handle H′ rests. This cup or basin has a fixed horizontal plate K^2 between the upper and lower edges of the vertical sides and is provided with a handle K^3, which also serves as a rest to support dental instruments to be warmed. When heating gutta-percha and like material or warming instruments, it is preferable to first place a soapstone disk K^4 on the horizontal plate K^2. When water is to be heated, the glass or other vessel containing same rests upon the horizontal plate K^2.

The heating-current arriving at E′ passes by way of E^3, D, F, E^4, E^5, J, I, J′, E^6, E^2 again to the source of current. (Not shown.) When circuit is made through the apparatus, the bar F becomes heated and its arm moves in the aperture C′ along the surface of the sec-

tor or plate D, and as it passes the margin of the plate circuit is broken, to be reëstablished when by the cooling of the bar its arm moves in the opposite direction and again rests upon the plate. The degree of heat necessary to thus break the circuit depends upon the initial distance of the plate's margin from the arm of the thermostatic bar, and this distance is varied at will by moving the arm D′ from notch to notch along the scale D^3. The devices thus maintain the heat indefinitely between narrow limits on each side of a thermal point fixed at will.

What I claim is—

1. In an electric heater, the combination with a suitable casing, of heating-coils within the casing, a conducting-plate within the casing, and a thermostatic bar provided with a contact-arm normally resting upon the plate and arranged to cross the margin of the latter as the bar bends under changes of temperature, and means for connecting the coils, bar and plate, in series, with a source of current.

2. In an electric heater, the combination with a suitable casing, of a conducting-plate within the casing, a thermostatic bar provided with an arm normally resting upon the plate and arranged to move back and forth across the margin of the latter as the bar bends under alternate increase and decrease of its temperature, means for at will fixing the normal distance of said margin from said arm, heating-coils within the casing, and means for connecting the coils, bar and plate, in series, with a source of current.

3. In an electric heater, the combination with a suitable casing, of a thermostatic circuit-breaker mounted in the casing, a freely-removable heating-tray in the upper part of the casing, heating-coils in said tray, means whereby seating the tray in place connects said coils in series with the thermostatic circuit-breaker, and means for connecting the coils and circuit-breaker with a source of current.

4. In an electric heater, the combination with a suitable casing, of a heating-plate removably mounted in the upper part of the casing, a thermostatic circuit-breaker governing the current through the heating plate or tray, and a freely-detachable cup seated upon the upper end of the casing and provided with an outwardly and upwardly extending handle adapted to serve as a rest for instruments to be heated in the cup, substantially as set forth.

5. The combination with an electric heater, of a removable heater plate or tray which makes an electric circuit through the heater when placed in position and breaks it when removed therefrom.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

SAMUEL W. TALIAFERRO.

Witnesses:

SCHUYLER DURYEE,

F. W. LAWLER.