

(No Model.)

H. F. LIBBY.
DENTAL HEATER AND ANNEALER.

No. 535,590.

Patented Mar. 12, 1895.

Fig:1.

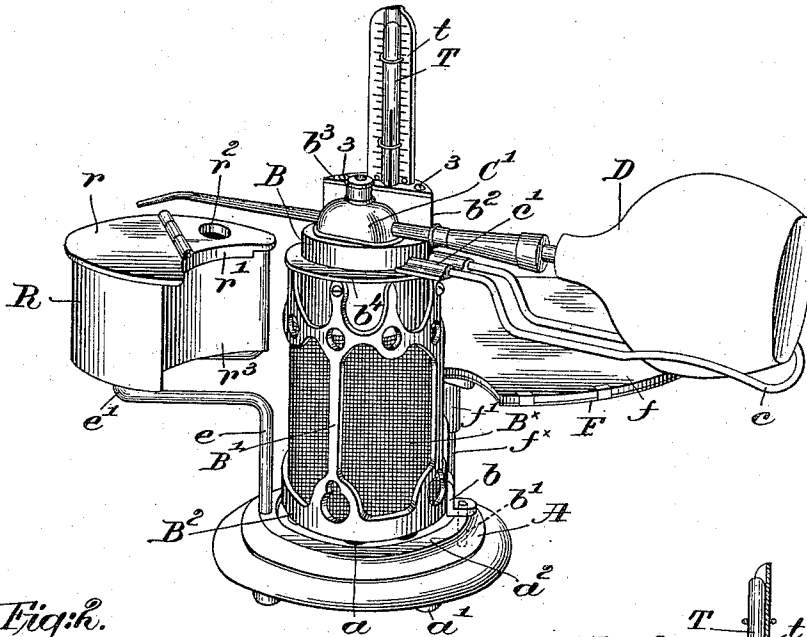


Fig:2.

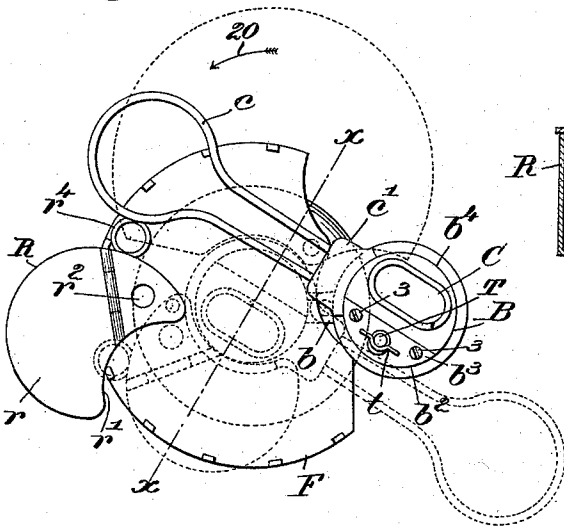
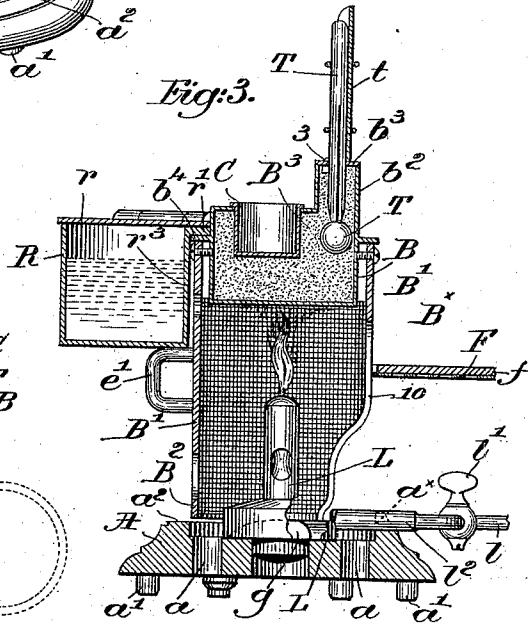


Fig:3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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DENTAL HEATER AND ANNEALER.

SPECIFICATION forming part of Letters Patent No. 535,590, dated March 12, 1895.

Application filed July 11, 1894. Serial No. 517,185. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. LIBBY, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Dental Heaters and Annealing Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

In the practice of dentistry as now conducted the many operations to be performed call for apparatus of a more or less varied character, and the simplicity of such apparatus and the rapidity with which different forms may be changed and handled have a direct bearing upon the amount and character of the work performed by the dentist. Accuracy is of great moment, and yet in several operations the judgment of the operator is at present the sole guide, as for instance, in the use of the hot air syringe or chip blower.

When it is desired to use the instrument it is held over the flame of a lamp until the operator thinks the temperature of the heating chamber is about right, when as a matter of fact the temperature may be many degrees removed from that desired. After its use the instrument cools down, and must be again heated, so that in addition to the inaccuracy described, its use involves much loss of time to both operator and patient. Again, it is frequently desirable that a gutta percha heater or an annealing tray may be brought into temporary service rapidly and without necessitating the arrangement of separate and more or less extensive paraphernalia, for the different apparatus must be put aside out of the way after use, but so far as I am aware the different operations of heating gutta percha or annealing gold are now carried on with the aid of separate apparatus, one of which is removed before the other is brought into use.

This invention has for its object the production of a heater and annealing apparatus particularly adapted for dentists' use, the same comprising various parts and features whereby different operations may be carried on without loss of time, the arrangement of the several parts being compact, simple, readily and quickly operative, and in condition for immediate use at all times.

In accordance therewith my invention con-

sists in the construction, arrangement, and operation of various parts of a dental heating and annealing apparatus to be hereinafter described and particularly pointed out in the claims.

Figure 1 is a perspective view of an apparatus embodying my invention, the hot air syringe or chip blower being shown in position to be heated. Fig. 2 is a top or plain view of the apparatus shown in Fig. 1, the relative position of the parts, however, being changed, and Fig. 3 is a sectional view taken on the line $x-x$, Fig. 2, with the parts in dotted line position of said Fig. 2.

I have herein shown the various parts of the apparatus as mounted upon or supported on a suitable base A, having air openings a therein and preferably resting on feet a' , to raise it a slight distance from the usual table or shelf.

The lamp L, partly broken out in Fig. 3, and provided with a nipple l , by which it may be connected to a suitable gas pipe, not shown, and the stop-cock l' , may be and is of usual Bunsen form, the lamp being detachable from the base and held in position by a notched lug a^x , shown in dotted lines Fig. 3, to receive the part l^2 connecting the nipple and the lamp.

The base A is made quite heavy and of sufficient size to form a firm support for the different parts carried thereupon and to be described.

The sand bath, consisting of a metallic case B, is held in the upper part of a cylindrical frame-work B' having an interrupted base ring B², on one end of which is formed or secured thereto an ear b provided with a pin b' , shown only in Fig. 1, to enter a hole in the flanged portion a^2 of the base, whereby the frame B' and the bath B are pivotally supported on the frame-work and adapted to swing laterally relatively thereto into the position shown in Figs. 1 and 3, over the lamp, such position corresponding to the dotted line position shown in Fig. 2, or to one side and away from the lamp, as in full lines Fig. 2. The frame B' is filled in with wire gauze B^x to protect the flame of the lamp L from drafts when in use and to the better retain its heat, the gauze being cut away at one side, as at 10, Fig. 3, to permit passage therethrough of the lamp when the bath and its frame are swung into the full line position shown in Fig. 2.

The bath B is herein shown as having an upturned portion b^2 , closed by a cover b^3 secured thereto in any suitable manner, as by screws 3, the said cover forming a carrier for a thermometer T and its index plate t , the bulb T' of the thermometer extending down into the bath B where it is surrounded by the sand or other material B^3 with which the bath is filled.

Preferably I use fine sand as it retains the heat for a considerable period, but any other desired substance in proper granular form may be used, such as carbon, and by the term "sand bath" hereinafter used I do not restrict myself to the use of sand alone.

The sand bath is provided with a concave receiver C, herein shown as a capsule or shell, set into an opening in the top of the bath and projecting into the sand or other material therein, the receiver being shaped to be entered by the heating chamber C' of a hot air syringe or chip blower D, shown only in Fig. 1, the bulb of said instrument being supported in a detachable holder c formed of wire bent into suitable shape and having its ends inserted in a clip c' secured to or forming part of the sand bath B.

By referring to Figs. 1 and 3 it will be obvious that when the sand bath is swung into position over the lamp to be heated thereby, the temperature of the bath will be accurately registered on the index of thermometer, and the temperature of the receiver C will be that of the bath, so that if an object be placed in the receiver its temperature will very shortly be raised to the temperature of the bath and can, in consequence, be accurately determined by a glance at the thermometer T. This feature is of great utility in the use of the hot air syringe or chip blower, for instead of holding the heating chamber C' of such instrument over the flame of a lamp, as is now the practice, until the operator thinks it has been sufficiently heated, the chamber C' of the instrument may be placed in the receiver C, the bulb resting on the holder c , and in a very short time the chamber will be heated to substantially the temperature of the sand bath, so that the operator will know to what extent the air will be heated when applied to the tooth. The temperature having been imparted to the syringe will be retained thereby for about two minutes and a half if the thermometer registers a temperature of about 300° Fahrenheit, and when the syringe has performed its work for the time being it can be returned to the bath and held thereby without further care by the operator.

In order to provide means for heating water to different temperatures without necessitating the use of separate and cumbersome apparatus, I have secured a standard e to the base A, upon which standard I have pivoted the water reservoir R, preferably made of metal and having a metallic top r , the reservoir being provided with a small opening r^2 for the escape of steam. The inner side, as

r^3 , of the reservoir is shaped to correspond with the exterior of the said bath, and as in this embodiment of my invention the said bath is substantially cylindrical, the side r^3 of the reservoir is correspondingly curved, so that the reservoir may be swung up against and into contact with the sand bath when the latter is in heating position over the lamp, such position of both the sand bath and water reservoir being shown in section Fig. 3, and in dotted lines in the plan view Fig. 2, a flanged portion r' on the water reservoir at such time resting on the flange or annular ledge b^4 of the water bath. When the reservoir is swung up against the sand bath it will be very rapidly heated by conduction and the water in the reservoir may be made to boil in a very short time. The heat imparted to the reservoir can be readily regulated by moving it toward or from the sand bath.

The standard e , to which the reservoir is pivoted, is outwardly bent or offset, as at e' , Figs. 1 and 3, to permit a tray F to be swung around into full line position, shown in Fig. 2, said tray being provided at its under side with a hub f' , see Fig. 1, adapted to embrace an upright f^x secured to the base, so that the tray may be laterally swung, the plane of its path of movement passing through the offset portion e' of the standard e . This tray may be perforated, as shown in section Fig. 3, and may have secured thereon a cover f of asbestos, or other similar material adapted to receive gold to be annealed.

When the sand bath is in the position shown in Figs. 1 and 3, the annealing tray is swung outwardly to one side, but when the operator desires to anneal he swings the sand bath and its supporting frame into full line position Fig. 2, and turns the tray F from its full line position Figs. 1 and 3 and dotted line position Fig. 2 in the direction of the arrow 20, into full line position Fig. 2, thereby bringing the tray over the lamp to receive heat therefrom. The tray is cut away at its rear side to facilitate its movement and avoid interference with the frame-work B' of the sand bath.

The metal top or lid r of the water reservoir R serves as a gutta percha heater and absolutely prevents any burning or overheating of the gutta percha, and the reservoir acts practically as a water bath therefor.

Heretofore, so far as I am aware, the gutta percha has been heated on a metal plate held over the flame of a lamp, and improper heating and burning of the gutta percha frequently occurs.

An annular holder r^4 , shown only in Fig. 2, may be secured to the outer side of the water reservoir and is convenient for holding a small vial containing an obtundent which can be conveniently heated by its proximity to the water.

A lug or projection g , shown in full and dotted lines Fig. 3, is secured to the top of the base in the path of the bottom ring B² of the sand bath frame-work, the said lug hav-

ing an inclined or cam shaped upper surface upon which the said ring rides when the bath is turned into heating position over the lamp to slightly lift the frame-work and act as a friction catch to hold it from accidental displacement.

Preferably the water reservoir is made detachable from the standard *e*, and, as will be evident from the foregoing, the sand bath and its frame-work may be removed entirely from the base by withdrawing the pin *b'* from its bearing, and so too, the annealing tray may be removed by lifting its hub *f'* from the standard *f*^x.

By the apparatus herein described I am enabled to assemble in a simple, compact and convenient manner apparatus whereby a variety of dental operations may be performed without loss of time or inconvenience to the operator, a very slight touch being sufficient to swing the sand bath into or out of operative position relative to the lamp, and the temperature in the water reservoir can be regulated with great nicety. As soon as one operation has been finished, as for instance, if the annealing tray has been in use and in the position shown in full lines Fig. 2, it is but the work of an instant to swing it to one side into its dotted line position and to bring the sand bath into position over the lamp to be heated.

The weight of the base *A* is sufficient to hold the various parts of the apparatus steady and firm, whether in their operative or inoperative position, and the lamp *L* is supplied with air by means of the openings *a'* in the base.

The hot air syringe or chip blower is within convenient reach of the operator at all times, and when a portion of the apparatus is not in use it is not necessary to clear it away, as it were, to make room for some other device to assist in the performance of another operation.

My invention is not restricted to the precise construction and arrangement of parts as herein shown, for it is obvious that the same may be varied somewhat without departing from the spirit and scope of my invention.

I claim—

1. In a dental heater, a sand bath, a thermometer having its bulb inclosed in and to indicate the temperature of the bath, and a concave receiver extended into the top of the bath and adapted to receive the heating chamber of a syringe or chip blower, combined with a lamp to heat the bath, substantially as described.

2. A base, and a lamp mounted thereon, combined with a sand bath, a laterally swinging support therefor pivotally supported on the base and adapted to move the bath over the lamp to be heated thereby, or to one side

thereof, and a holder carried by the support and to support a syringe or other tool, substantially as described.

3. A base, and a lamp supported thereon, combined with a sand bath, a laterally swinging support therefor pivotally mounted on the base and adapted to move the bath over the lamp to be heated thereby, and a water reservoir also pivotally supported on the base and adapted to be moved toward the sand bath to be heated thereby when the latter is over the lamp, substantially as described.

4. In a dental heater, a base, a lamp, and a sand bath supported on the base and adapted to be heated by the lamp, combined with a water reservoir pivotally supported on said base and having its inner side shaped to conform to the exterior of the bath, whereby said reservoir may be swung against the bath to be heated thereby, substantially as described.

5. In a dental heater, a base, a sand bath pivotally supported thereon and adapted to be swung to one side when not in use, and an annealing tray also pivotally supported on the base and adapted to be swung into position over the lamp when the said bath is not in use, combined with a lamp on the base and below the paths of movement of said bath and tray, substantially as described.

6. In a dental heater, a base, a sand bath and a water reservoir pivotally supported on the base and adapted to be swung laterally above it, and independently of each other, and an annealing tray also pivotally supported on the base to swing laterally beneath the path of movement of the reservoir, combined with a lamp mounted on the base, to heat either the bath or the tray when swung thereover, substantially as described.

7. A base, a lamp mounted thereon, a sand bath pivotally mounted upon the base and adapted to be swung over the lamp to be heated, a water reservoir, and a standard to support the reservoir, provided with an outwardly bent portion, combined with an annealing tray pivotally supported on the base and adapted to be swung over the lamp, its path of movement passing through the bent portion of the standard, substantially as described.

8. In a dental heater, a base, and a lamp thereon, combined with a sand bath pivotally supported on the base and adapted to be swung over or away from the lamp, and a catch to hold the bath in position over the lamp, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY F. LIBBY.

Witnesses:

JOHN C. EDWARDS,
KATHERINE F. SCOTT.