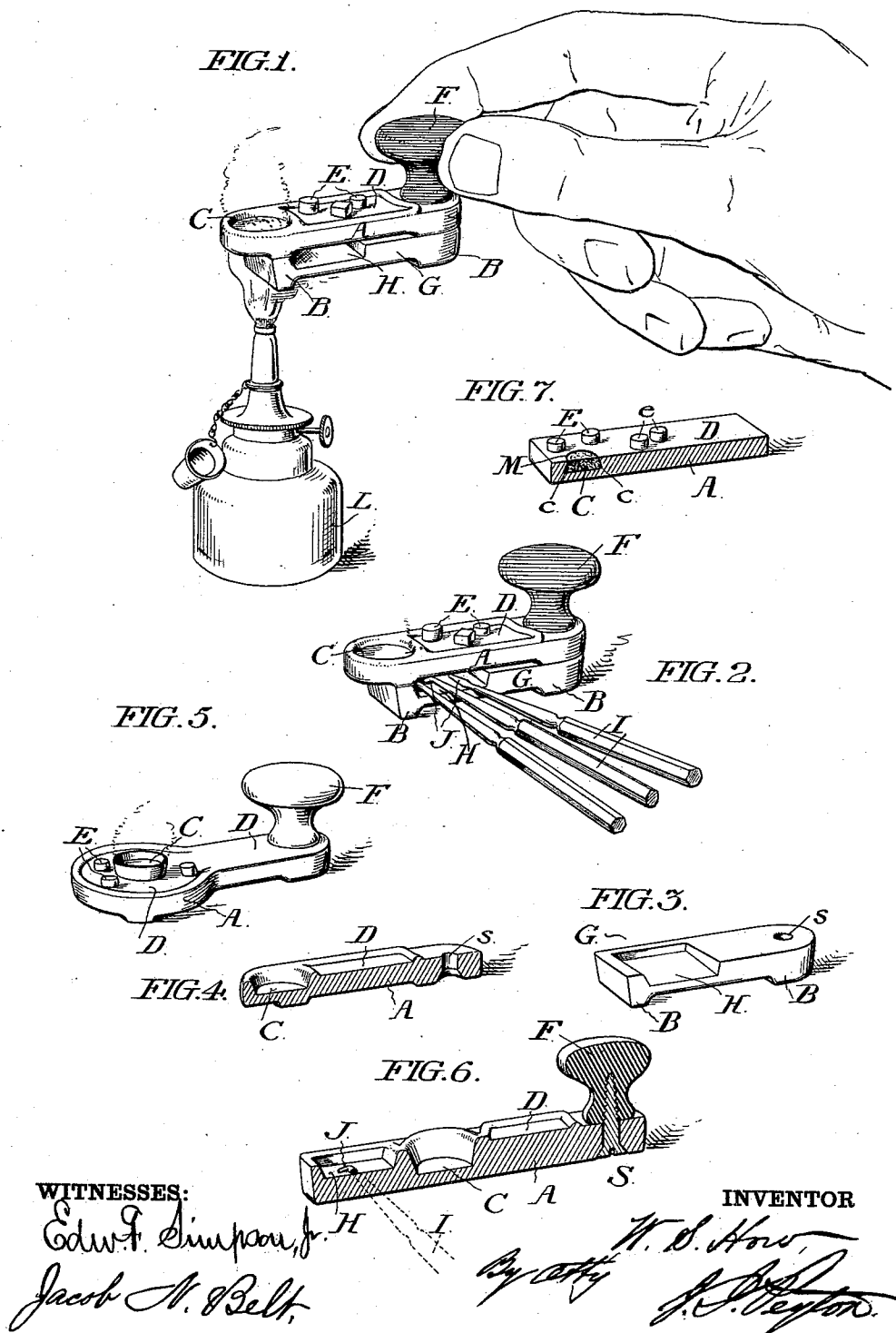


(No Model.)

W. S. HOW.
DENTAL HEATER.

No. 469,884.

Patented Mar. 1, 1892.



UNITED STATES PATENT OFFICE.

WOODBURY STORER HOW, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF SAME PLACE.

DENTAL HEATER.

SPECIFICATION forming part of Letters Patent No. 469,884, dated March 1, 1892.

Application filed January 19, 1892. Serial No. 418,546. (No model.)

To all whom it may concern:

Be it known that I, WOODBURY STORER HOW, of the city and county of Philadelphia, in the State of Pennsylvania, have invented
5 certain new and useful Improvements in Thermoscopic Heaters for Use by Dentists and Others, of which the following is a specification.

My invention relates to means for heating
10 sundry substances which, when to be used, require to be softened or rendered plastic by heat, the heater being particularly applicable for use by dentists in softening gutta-percha compounds employed as filling materials for
15 teeth preparatory to application thereof.

My object mainly is to produce a simple, inexpensive, and efficient heater of this kind, provided with means by which to indicate
20 when it has been brought to a definite temperature; and, further, my object is to provide for properly heating the filling or packing instruments employed in applying and securing the filling materials.

In the accompanying drawings, which show
25 a suitable embodiment of my improvements with some modifications thereof, Figure 1 is a view in perspective of a suitable device, which is represented as being held in position for heating. Fig. 2 is a similar view of the
30 device when resting upon a table or other support after heating, with the instruments to be used having their points in position to be heated. Figs. 3 and 4 are views in perspective of different parts of the device, one
35 being in section. Fig. 5 is a view in perspective of a modification, and Figs. 6 and 7 are sectional perspective views of other modifications.

In Figs. 1, 2, 3, and 4 the heater is shown as
40 made in two parts or sections A and G, which are detachably connected, as by a screw (see S, Fig. 6) engaging holes *s* in the sections and entering a handle F over and at one end of the heater. The handle is of wood or other
45 non-conducting material, and the heater may be composed of metal, glass, porcelain, slate, or steatite, the latter being preferable. The heater has feet B, so that when it is placed upon a table or like support it has contact
50 therewith only by its feet. A cup or holder C for an indicating substance—such as in

turn to be explained—is provided in the upper surface of the heater at its end opposite that to which the handle is secured, and this surface of the heater adjacent to the holder
55 C and between it and the handle constitutes an open or uncovered support or exposed receptacle D for material to be softened or rendered plastic. A flange or raised border surrounds this receptacle, which though thus
60 inclosed to a certain extent or in one acceptance of the term, is uninclosed in the sense as here intended, that it is exposed to view and open to access instead of being shut in or completely inclosed or covered. A receiver
65 H for the points J of the packing-instruments I is located beneath the material-receptacle D, being formed in the lower section G of the heater and covered by the upper section A thereof. As represented, the instrument-re-
70 ceiver H has a sloping bottom.

The materials to be softened or rendered plastic to which the above-described heater is particularly adapted require, preliminarily
75 to use, a heat of, say, from 180° to 230° Fahrenheit.

In operation a few drops of water, as a heat-indicating substance, are put in the holder C, and the desired number of pieces or pellets E of filling material are placed
80 upon the material-receptacle D near the holder, if the softening-point is high or approximately that (212° Fahrenheit) at which water boils, or more or less distant from the holder, according to how much lower
85 may be the softening-point or degree of temperature required to render the material properly plastic. The heater is then by means of its handle held so that the plane of a gas-
90 burner or lamp L impinges directly upon its holder end and is kept in this position until the water in the holder boils, when the heater is removed from the flame and placed upon a table, &c. The packing-points of the instruments are then inserted into their receiver.
95 As will be obvious, by the time the water is raised to the boiling-point the holder end of the heater or portion thereof in direct contact with the flame will have been brought to a
100 higher temperature. In this way it will be seen that the instrument-receiver, which is at or adjacent to the highly-heated end of the

heater, will have been brought to a sufficiently high heat to bring the packing-points to the desired temperature—say about 215° Fahrenheit—to enable the operator after removal of a softened pellet with a packer-point to use such point at the proper temperature for packing the softened material. By its oven-like form the instrument-receiver is obviously well adapted to retain the heat imparted to it.

By making the receptacle exposed or open, the pellets thereon, being uninclosed, may at all times be under the eye of the operator and be placed as desired, or their positions changed without obstruction or loss of time.

The heater may be made in one piece instead of in upper and lower sections, pivotally and detachably connected, as shown. By making the device in two pieces the parts (see Figs. 3 and 4) may be used independently, and each section may be fitted with a handle.

Fig. 5 shows a one-piece heater in which the instrument-receiver is dispensed with and which permits of the placing of a relatively large quantity of material close to the heat-indicating substance in the holder C, which is shown as made thin and separate from the heater upon or in a recess of which it rests.

Fig. 6 shows another one-piece heater, with the material-receptacle D and the instrument-receiver H on opposite sides of the holder C for the heat-indicating substance. When feet for supporting the heater are omitted, as in this construction, it is obvious that after first heating the device by placing the holder portion thereof over a flame and then placing it upon a table the heat will be sooner dissipated because of the large surface (the entire bottom of the heater) in contact with the table.

Fig. 7 shows a modification in which the handle is dispensed with and the heater formed with a comparatively extensive level surface constituting the receptacle for the material to be heated. The material may be placed close to the holder for the heat-indicating substance, as at E, or any desired distance therefrom—as, for instance, as indicated at e.

Instead of employing water or other liquid and relying upon the boiling thereof to indicate the temperature of the heater various other heat-indicating substances may be employed, among them any suitable fusible metal or metallic alloy placed in proper quantity in the holder C of any of the heaters shown, and the melting-point of which is known and may thus be relied upon as indicating with sufficient exactness the heater's temperature.

When water is used as the heat-indicator, common salt may be added to it to raise its boiling-point, when so desired, and an acid, oil, spirit, &c., having, respectively, a definite boiling-point may serve as the heat-indicator.

The holder C (shown in Fig. 7) is especially

designed for fusible metal, it being made of dovetail form or widened toward and at the bottom, as indicated at c, so that upon cooling and hardening the metal M will be retained for use without risk of accidental displacement.

The heater may be pivotally supported in a suitable way so as to adapt it to swing horizontally over and away from a gas-burner or lamp-flame. A piece of glass or mica may be placed over the holder C and material to be heated placed on the glass or mica, through which the boiling of the liquid or melting of the metal may be observed.

It is obvious that by the application of the flame-heat to the heater at a point more or less remote from the holder instead of immediately beneath it and in suitable relation to the instrument-receiver the relative temperatures of the receiver and material-receptacle may be modified at will.

Although I have in detail described heaters especially adapted for use by dentists in a specified manner, I wish it understood that my improvements are not restricted to such use and that the heaters may be modified in form and dimensions to adapt them to any desired and suitable use in connection with a heat-indicating substance of any visibly definite character.

I claim as my invention—

1. The heater of a class applicable to dentists' use, provided with means adapted for indicating when it has been brought to a definite temperature and having the uninclosed material-receptacle adjacent to the heat-indicator, substantially as set forth.

2. The heater of a class applicable to dentists' use, provided with the holder constituted by the cup or cavity formed therein for the heat-indicating substance and having the uninclosed material-receptacle adjacent to the holder, substantially as set forth.

3. The heater of a class applicable to dentists' use, having the holder for the heat-indicating substance, the handle, and the material-receptacle, substantially as set forth.

4. The heater of a class applicable to dentists' use, having the holder for the heat-indicating substance, the material-receptacle, and the receiver for instruments, &c., substantially as set forth.

5. The heater of a class applicable to dentists' use, provided with the widened holder to contain and prevent displacement of the heat-indicating substance and having the material-receptacle adjacent to the holder, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

WOODBURY STORER HOW.

Witnesses:

GEORGE W. SELTZER,
ROBT. E. GORDON.

It is hereby certified that in Letters Patent, No. 469,884, granted March 1, 1892, upon the application of Woodbury Storer How, of Philadelphia, Pennsylvania, for an improvement in "Dental Heaters," an error appears in the printed specification requiring the following correction, viz.: In line 89, page 1, the word "plane" should read *flame*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 8th day of March, A. D. 1892.

[SEAL.]

CYRUS BUSSEY,
Assistant Secretary of the Interior.

Countersigned:

W. E. SIMONDS,
Commissioner of Patents.