

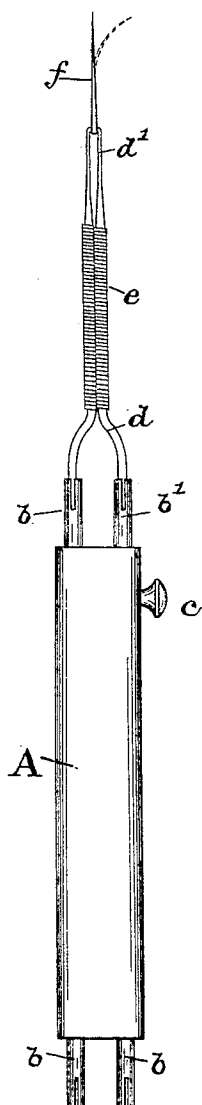
(No Model.)

E. E. CRUZEN.
ELECTRIC HEATER.

No. 598,303.

Patented Feb. 1, 1898.

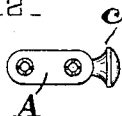
Fig. 1.-



WITNESSES -

Charles B. Mann Jr.
Chapin A. Ferguson

Fig. 2.-



INVENTOR -

Elmer E. Cruzen
By Chas B. Mann

ATTORNEY -

UNITED STATES PATENT OFFICE.

ELMOR E. CRUZEN, OF BALTIMORE, MARYLAND.

ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 598,303, dated February 1, 1898.

Application filed August 7, 1897. Serial No. 647,428. (No model.)

To all whom it may concern:

Be it known that I, ELMOR E. CRUZEN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

In preparing cavities of teeth for filling the canal in the root is often found exposed, and this also requires to be treated and then cleansed preparatory to being filled. It is important that this canal, which in some teeth is tortuous instead of straight, be effectually dried before inserting the filling. Efforts to effect this drying have been attended with difficulty, and the methods resorted to have proved ineffectual. To accomplish this drying of the whole length of the canal quickly, I have provided a flexible metal probe which may be inserted while cold into the root-canal, heated by electricity to expel all moisture in the canal, and then withdrawn.

The instrument is shown in the accompanying drawings, in which—

Figure 1 is a side view of the electric drier. Fig. 2 is an end view of same.

The instrument is intended to be held in one hand of the operator, while a flexible probe heated by an electric current is inserted into the nerve-cavity or root-canal of the tooth, where its heat dries out the moisture in the canal.

The letter A designates an insulated handle containing two metallic conductors, which extend longitudinally through the handle and at each end have couplings *b b'* for the attachment of circuit-wires (not shown) connected with a battery. Near one end the handle has inclosed an ordinary spring circuit-breaker which is arranged to be normally open or to keep one of the said metallic conductors broken. A spring push-button *c* projects at the side of the handle, and when this is pressed inward by the thumb or finger the circuit-breaker referred to is closed and the electric current will flow through the conductors to which the couplings *b b'* are attached. The

construction and operation of these parts in the handle are well known and are not deemed necessary to be shown in the drawings, as they are not my invention. Attached to the couplings *b b'* at that end near which the push-button *c* is located is a loop or return-circuit wire *d*, more or less of which is covered with a wrapper *e*, of insulating material. At the extremity this loop for a short length is composed of fine wire *d'* or wire much smaller in cross-section than the other portion which has the insulating-wrapper *e*. When the electric current is on, the fine-wire extremity *d'* becomes heated.

I provide a probe *f*, of copper or similar flexible metal, thicker at one end and tapered to a point at the other end, and attach the thick end of the probe to the fine-wire extremity *d'* of the loop, which is of higher resistance. By this construction the pointed end of the flexible probe may be readily inserted into the root-canal of a tooth even where the canal is tortuous, and the probe *f* will be heated by the electric current, and the heat of the probe will quickly dry out any moisture in said canal and put it in condition to be filled.

Having thus described my invention, what I claim is—

An electric heater for drying canals in the roots of teeth, comprising an insulated hand-piece; two wires of an electric circuit passing through the hand-piece and projecting from one end thereof and covered and lashed together by an insulating-wrapper, *e*, and a wire-loop extremity of said circuit of higher resistance; and a metal probe, *f*, attached by one end to said high-resistance extremity and having a flexible point, whereby the probe may be inserted in the root-canal and heated by an electric current, as set forth.

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

ELMOR E. CRUZEN.

Witnesses:

CHAPIN A. FERGUSON,
CHARLES B. MANN, Jr.