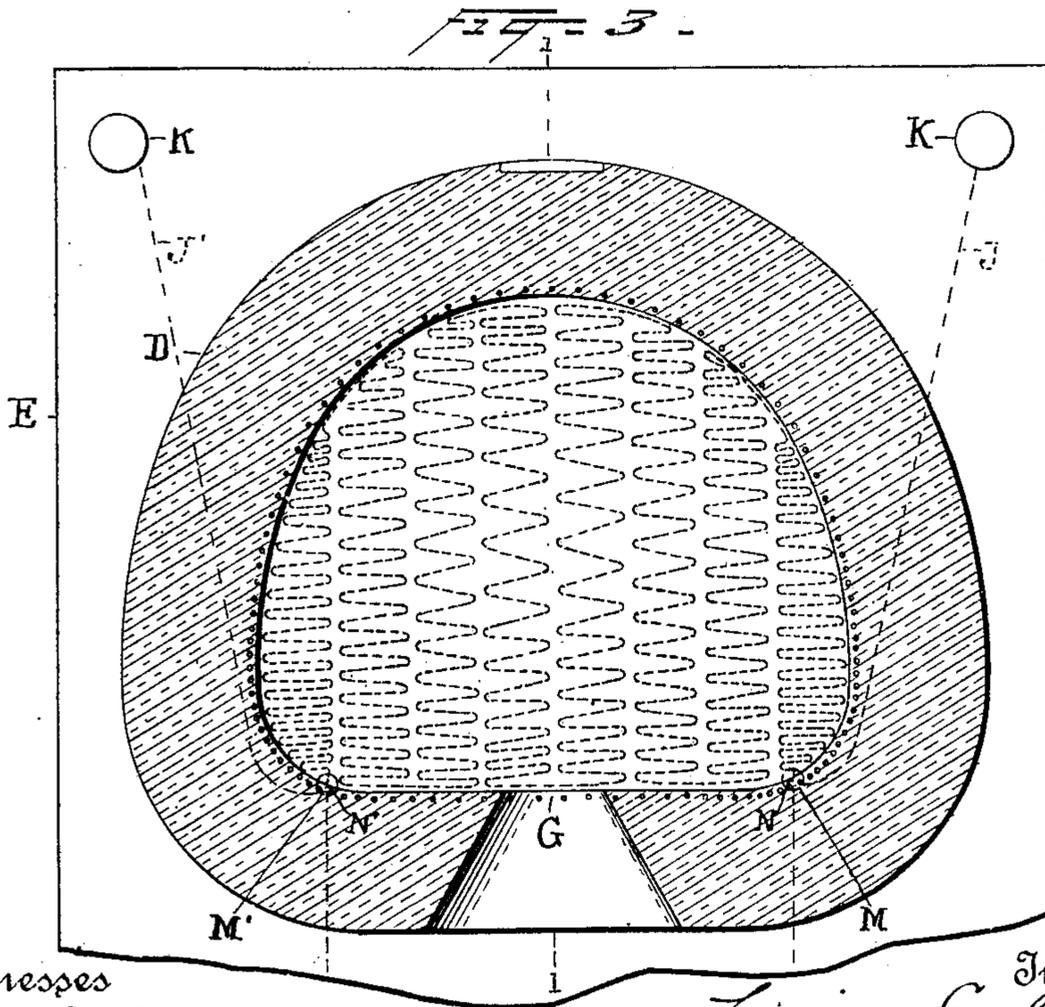
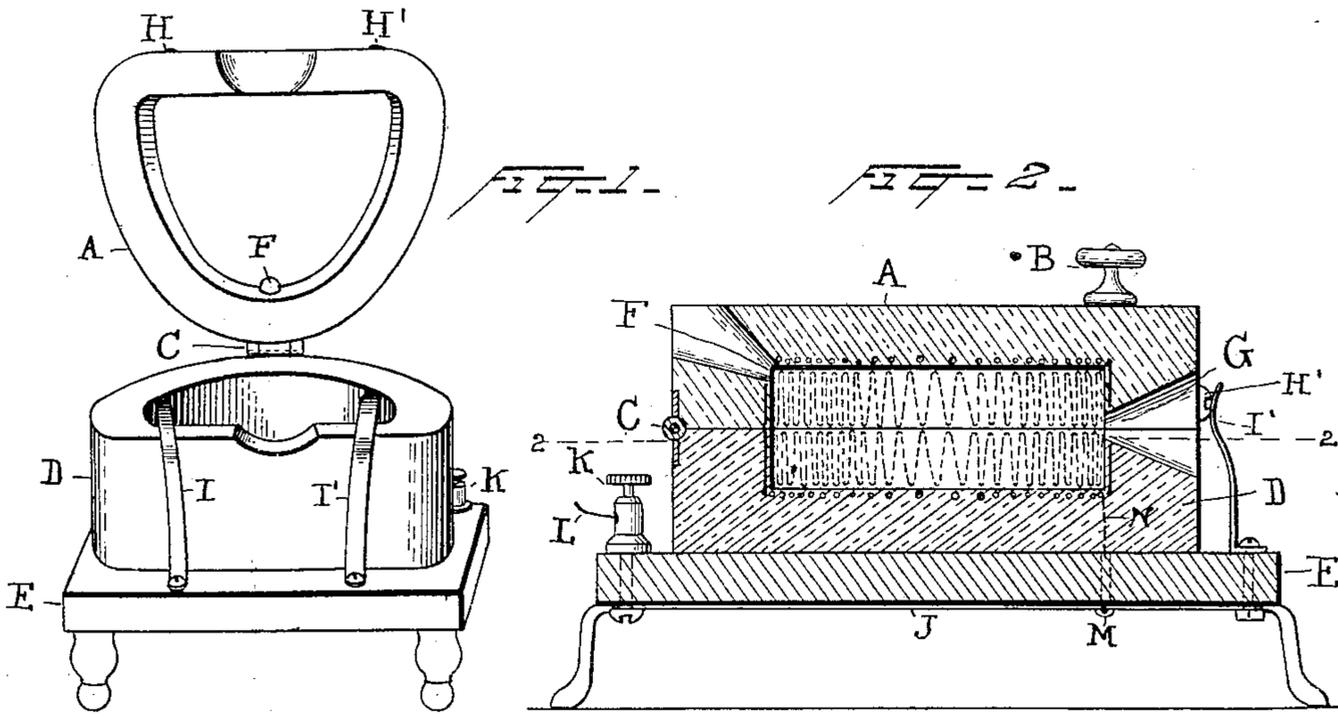


(No Model.)

L. E. CUSTER.  
ELECTRIC OVEN.

No. 596,696.

Patented Jan. 4, 1898.



Witnesses  
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# UNITED STATES PATENT OFFICE.

LEVITT E. CUSTER, OF DAYTON, OHIO.

## ELECTRIC OVEN.

SPECIFICATION forming part of Letters Patent No. 596,696, dated January 4, 1898.

Application filed March 16, 1896. Serial No. 583,289. (No model.)

*To all whom it may concern:*

Be it known that I, LEVITT E. CUSTER, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented a certain new and useful Improvement in Electric Ovens, of which the following is a specification.

My invention relates to an improvement in electrically-heated furnaces or ovens. The great defect in all other such ovens used for delicate work with which I am acquainted is that the heat within the oven is not equable, the temperature being greater in the center than at the walls of the heating-chamber. I avoid this overheating at the center of the chamber by arranging the electrical conductor or conductors so that the amount of heat given off by the conductor when the current is on increases as the conductor recedes from the point where it is nearest to the center of the heating-chamber. If a conductor capable of producing this result be supported by or embedded in the walls of the chamber and the current be turned on there will be more heat emanating from the more distant portions of the wall and proportionately less from those parts of the wall nearest the center of the chamber.

In my oven, by preference, I use one or more reflex electrical conductors of a uniform diameter, usually embedded in the walls of the chamber and doubled, as shown in the drawings, so that the loops farthest from the center of the chamber lie closest together. Consequently the conductor gives out more heat for a given area than at those portions of the walls nearer the center where the loops are wider. The heat given off at any two points as near as practicable is made to vary directly as their distance from the center of the chamber. This is found to result in an equable temperature within the chamber. In dental work, where the fusing of porcelain and other materials requires the use of great heat evenly distributed, my oven is especially valuable, and the form of the invention shown and described herein as one of the many uses to which it may be put is a convenient and novel oven for such work.

In the drawings like letters of reference indicate similar parts.

Figure 1 is a perspective view of a form of

oven to be used in dental work. Fig. 2 is a vertical cross-section of such oven cut through the line 1 1 of Fig. 3; and Fig. 3 is a horizontal cross-section on the line 2 2, Fig. 2, showing the arrangement of the heating-conductor and outlining the electrical connections of the oven.

In Fig. 2, A represents the top or cover of the oven; B, the knob by which it is raised; C, the hinge attaching it to D, the complement of A and forming the lower half of the oven. A base E, of slate or other proper material, provided with suitable legs, serves to support the oven. The walls of the oven are preferably made of clay. Just beneath the surfaces of these walls which form the faces of the receptacle or heating-chamber are embedded two reflex electrical conductors of high electrical resistance and fusing-point, one for the top A and one for the bottom D of the chamber, which double on themselves in the manner shown and which are arranged so as to completely surround the heating-chamber. These conductors are preferably buried just far enough in the inside face of the oven-wall to conceal them from view and to hold them rigidly in position. At the points most distant from the center of the heating-chamber the conductors are laid with their loops as near together as practicable, while securing insulation from each other and preventing their "buckling" under the heat. As they gradually approach nearer to the center of the chamber the loops become more and more separated from each other, until just over the center of the chamber in the top and below the center of the chamber in the bottom the loops are farthest apart. The distance between contiguous parts of these conductors is made as near as may be to vary proportionally with their distance from the center. When this is done, it is found to produce an equal temperature throughout the chamber whenever current is passed through the conductors and to avoid the excessive heat in the center of the chamber produced by all arrangements of the conductor with which I am acquainted. In this convenient form of furnace or oven for dental work the top A is provided with a small opening F, which allows a ray of light of different color from that in the chamber to enter, so that any object

within may be observed through the peep-  
 hole G in the front of the oven, notwithstand-  
 ing the intense even light in the oven. The  
 ends of the conductor in the top of the oven  
 5 are connected to two screws H H', which en-  
 ter from the outside and which serve when  
 the cover is closed down to make contact  
 with the upright springs I I'. The screws H  
 H' may be situated on the sides of the top,  
 10 when the springs I I' will be shifted to make  
 contact with them. The springs complete  
 the connection with the source of current  
 through the wires J J', the binding-posts K  
 K', and wire L, to which a current-controller  
 15 may be connected to regulate the heat in the  
 oven. The wires J J' are tapped at M M' to  
 put the conductor in the base of the oven in  
 shunt connection, through the wires N N',  
 with the other reflex conductor. This form of  
 20 oven is convenient in that, besides obtaining  
 the essential even temperature in all parts of  
 the heating-chamber, it allows inspection of  
 its contents and automatically makes con-  
 nection upon the closing down of the lid.  
 25 The variable-resistance current-controller  
 may be of any well-known form.

What I claim is—

An electrically-heated oven having a heat-  
 ing-chamber, walls of suitable materials, two  
 apertures in such walls, one to allow light to 30  
 enter the heating-chamber and the other to  
 permit observation of the interior of such  
 chamber, two or more electrical conductors  
 embedded in the walls of the oven of sub-  
 stantially uniform resistance per unit of 35  
 length, the said conductors being arranged  
 in the bottom and top halves of the walls of  
 such chamber in loops which are at progress-  
 ively-increasing distances apart as they  
 near the center of the chamber, means for 40  
 automatically making electrical connection  
 between the said conductors, means for plac-  
 ing said conductors in circuit with the heat-  
 ing-current, and means for opening the oven  
 to expose the heating-chamber, substantially 45  
 as set forth.

This specification signed and witnessed this  
 26th day of February, 1896.

LEVITT E. CUSTER.

Witnesses:

S. RUDOLPH LIGHT,  
 CHARLES W. HIPPARD.