No. 759,909. PATENTED MAY 17, 1904.

R. M. PELTON.

ELECTRICAL FURNACE.

APPLICATION FILED DEC. 3, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

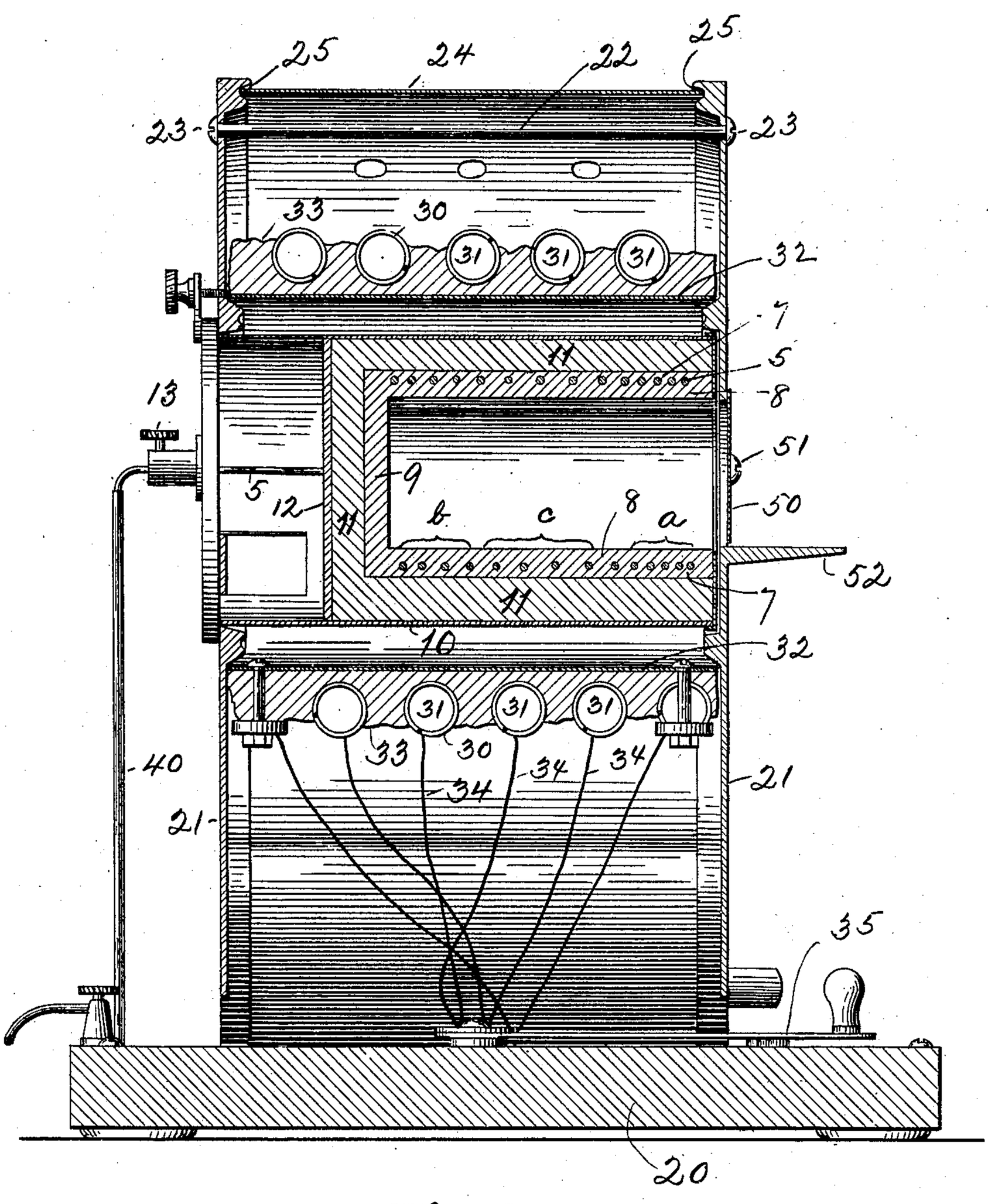

Fig. 1.

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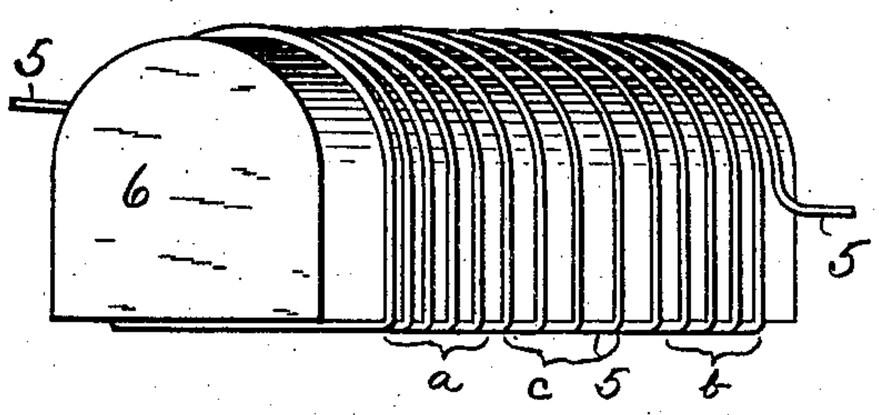

Fig. 2.

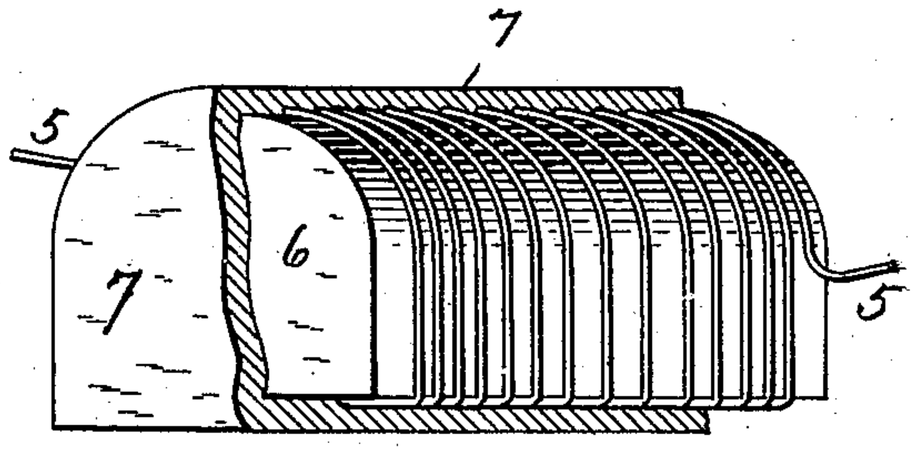

Fig. 3.

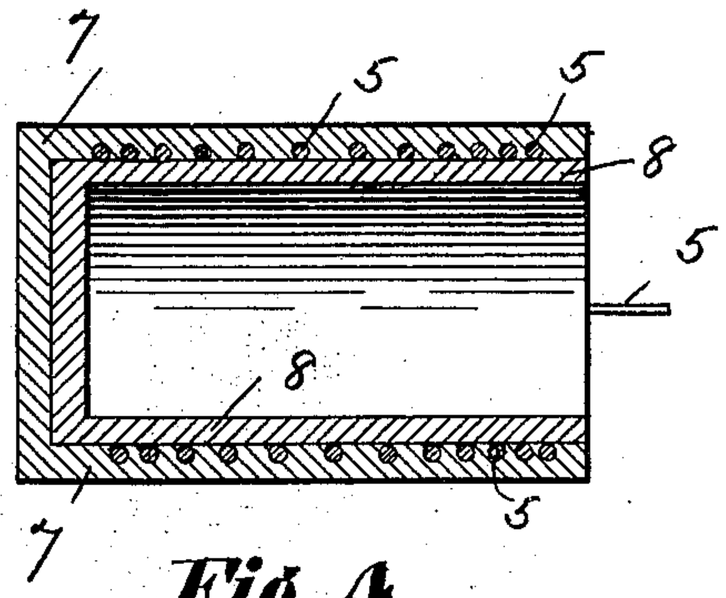

Fig. 4.

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UNITED STATES PATENT OFFICE.

RICHARD M. PELTON, OF DETROIT, MICHIGAN.

ELECTRICAL FURNACE.

SPECIFICATION forming part of Letters Patent No. 759,909, dated May 17, 1904.

Application filed December 3, 1902. Serial No. 133,686. (No model.)

To all whom it may concern:

Be it known that I, RICHARD M. PELTON, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Dentists' Furnaces, of which the following is a specification.

My invention relates to dentists' furnaces, and especially the variety thereof which is electrically heated by means of coils of heating-wire wound around a muffle or crucible of suitable refractory material.

The object of the invention is to provide an electrical furnace specially well adapted for the use of dentists for the fusing of porcelain and other material and which will have maximum efficiency; and to this end the invention consists in certain peculiarities in the construction thereof, substantially as hereinafter described, and particularly pointed out in the subjoined claims.

In the drawings, Figure 1 is a central vertical longitudinal section of my improved dentist's furnace. Fig. 2 is a perspective view of the core, around which is wound the electrical heating-wires. Fig. 3 is a similar view showing an outer covering of refractory material applied to the coils of wire after they have been wound around the core, parts thereof being broken away to show the concealed parts underneath. Fig. 4 is a central vertical section of the muffle as finished with its lining of refractory material underneath the coils of wire after the core has been removed.

In the drawings, 5 5 5 are heating-wires, preferably made of platinum. They are first wound around a core or form 6, made of wood or any suitable material, which has been fashioned into the shape of the interior of the muffle. In the winding the coils are preferably placed relatively close together at *a*, where the open end of the muffle is to be, so as to compensate for the storage of heat at the middle and closed end of the muffle, slightly farther apart at *b*, where the closed end of the muffle is to be, and much wider apart at *c*, where the middle portion of the muffle is to be, whereby the heat is uniformly distributed throughout the interior of the entire muffle and the danger of destruction of the heating-wires is avoided. After the wires 5 5 have been so wound and the coils so spaced they are covered while still on the form 6 with an outer layer 7 of fire-clay or other refractory material. This is applied by mixing the same with water. When it has dried, it serves to hold the coils in position and permits of the removal of the form 6. After such removal the surface inside of the wires is coated with an inner layer 8 of refractory material similar to that used for the layer 7, and the whole muffle 9 thus formed is dried and baked and is ready to be placed in its casing. It will be seen that the wires 5 5 are embedded between two layers of refractory material. It will be understood, of course, that the wires 5 are provided with free ends projecting through the walls of the muffle in order to connect them with the electrical conductors. The muffle 9 as thus made has a flat bottom and an arched top. It is then placed within a substantially cylindrical shell or casing 10, made of any suitable metal, the space between the shell and the muffle being packed with wet asbestos 11 and a wall of refractory material 12 being placed over the rear end of the asbestos packing and baked there to keep it in place. The wires 5 project through the layer 11 and wall 12 and are attached to suitable binding-posts 13 in the rear of the shell.

The whole furnace is supported upon a granite base 20. Secured to this by screws or in any suitable manner are two upright castings 21 21, each provided with suitable apertures to admit of access to the muffle or furnace proper and held together by connecting rods 22, secured at their ends by screws 23. A shell 24, of sheet metal, fits into a groove 25 in each casting 21 and incloses the entire apparatus, thus keeping the heat in, preventing meddling with its parts, and forming a more sightly structure.

Inside of the shell 24 and between the two castings 21 21 are located the resistance-wires 30, which are suitably insulated and are so arranged that they surround or encircle the muffle, whereby said muffle is placed within the rheostat, thus securing compactness and maximum efficiency in respect of the reten-

tion of heat. In the construction herein shown these resistance-wires are arranged in coils 31 31, wound around a metal drum or barrel 32, and are suitably spaced and insulated from each other by means of asbestos packing 33. The coils 31 31 terminate in wires 34 34, which are in electrical connection with contact-points located on the granite base 20 and a switch-lever 35, which cuts them in or out of circuit in the usual manner. This is a very convenient construction.

At the rear of the apparatus are the wires 40, connecting with the heating-wires 5 5 through the binding-posts 13.

In front of the open end of the muffle is a mica door 50, pivoted on a screw 51 or otherwise suitably secured in place. The front casting 21 is provided with a projecting flange or platform 52 in front of the mica door. The mica being transparent permits of the examination of the materials within the muffle and yet can readily be removed to open the muffle when it is desired to do so.

What I claim is—

1. A dentist's furnace comprising a muffle having a hollow shell of refractory material closed at one end by a non-wired wall and open at the other end, the said shell having heating-wires coiled continuously completely around it from its open end to the said non-wired wall, and arranged to distribute less lengths of resistance-coils per unit in length of the muffle in the middle portion of the furnace than at either end thereof and less at the closed end of the furnace than at the open end of the same, substantially as described.

2. A dentist's furnace comprising a muffle having a hollow shell of refractory material closed at one end by a non-wired wall and open at the other end, the said shell having heating-wires completely embedded in it, coiled continuously completely around it from its open end to the said non-wired wall, and arranged to distribute less lengths of resistance-coils per unit in length of the muffle in the middle portion of the furnace than at either end thereof and less at the closed end of the furnace than at the open end of the same, substantially as described.

3. A dentist's furnace, comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a metal drum or barrel surrounding the muffle, a plurality of resistance-wires arranged in coils around the same and insulated therefrom and means for cutting the same in and out of circuit with an energizing-conductor.

4. A dentist's furnace, comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a surrounding layer of material which is a non-conductor of heat, a metal drum or barrel surrounding the muffle, a plurality of resistance-wires arranged in coils around the same and insulated therefrom and means for cutting the same in and out of circuit with an energizing-conductor.

5. A dentist's furnace, comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a metal drum or barrel surrounding the muffle and a plurality of resistance-wires arranged in coils around the same and suitably spaced and insulated from each other by a heat-non-conducting material, and means for cutting the same in and out of circuit with an energizing-conductor.

6. A dentist's furnace comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a metal drum or barrel surrounding the muffle, a plurality of insulated resistance-wires arranged in coils around the same, terminal wires connected to said coils and in electrical connection with contact-points outside of the apparatus and means for cutting the same in and out of circuit with an energizing-conductor.

7. A dentist's furnace, comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a surrounding layer of material which is a non-conductor of heat, a metal drum or barrel surrounding the muffle, a plurality of insulated resistance-wires arranged in coils around the same, terminal wires connected to said coils and in electrical connection with contact-points outside of the apparatus and means for cutting the same in and out of circuit with an energizing-conductor.

8. A dentist's furnace, comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a metal drum or barrel surrounding the muffle and a plurality of resistance-wires arranged in coils around the same and insulated therefrom, terminal wires connected to said coils and in electrical connection with contact-points outside of the apparatus, and means for cutting the same in and out of circuit with an energizing-conductor.

9. A dentist's furnace comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a movable wall, a metal drum or barrel surrounding the muffle, a plurality of resistance-wires arranged in coils around the same and insulated therefrom, a shell or case inclosing the parts enumerated, and means for cutting the resistance-wires in and out of circuit with an energizing-conductor.

10. A dentist's furnace, comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a surrounding layer of material non-conductive of heat, a metal drum or barrel surrounding the muffle, a plurality of resistance-wires arranged in coils around the same and insulated therefrom, a shell or case inclosing the parts enumerated and means for cutting

the resistance-wires in and out of circuit with an energizing-conductor.

11. A dentist's furnace, comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a surrounding layer of material non-conductive of heat, a metal drum or barrel surrounding the muffle, a plurality of resistance-wires arranged in coils around the same, and suitably spaced and insulated from each other by a heat-non-conducting material, a shell or case inclosing the parts enumerated and means for cutting the resistance-wires in and out of circuit with an energizing-conductor.

12. A dentist's furnace comprising a muffle of refractory material closed at one end by a fixed wall and at the other end by a removable wall, a metal drum or barrel surrounding the muffle, a plurality of resistance-wires arranged in coils around the same and insulated therefrom, a shell or case inclosing the parts enumerated, terminal wires connected to said coils and in electrical connection with contact-points outside of the inclosing shell and means for cutting the same in and out of circuit with an energizing-conductor.

13. An electrical furnace comprising a muffle provided with heating-wires, and a rheostat comprising resistance-wires suitably insulated and encircling said muffle.

14. An electrical furnace comprising a muffle provided with heating-coils, a rheostat having resistance-wires suitably insulated and encircling said muffle and a casing inclosing said rheostat.

15. An electrical furnace comprising a muffle provided with heating-wires, a casing for said muffle, a barrel encircling said casing, suitably-insulated resistance-wires extending around and supported by said barrel, and means for cutting said wires into and out of circuit.

16. An electrical furnace comprising a muffle provided with heating-wires, a casing for said muffle, comprising insulating material surrounding said muffle, a barrel surrounding said casing and arranged out of contact therewith, a rheostat comprising suitably-insulated wires supported by and extending around said barrel, and an exterior casing inclosing said muffle, barrel and rheostat and having means for giving access to said muffle.

Witness my hand this 26th day of November, 1902, at the city of Detroit, in the county of Wayne and State of Michigan.

RICHARD M. PELTON.

Witnesses:
WM. L. JANUARY,
TERRESSIA M. HOWARD.