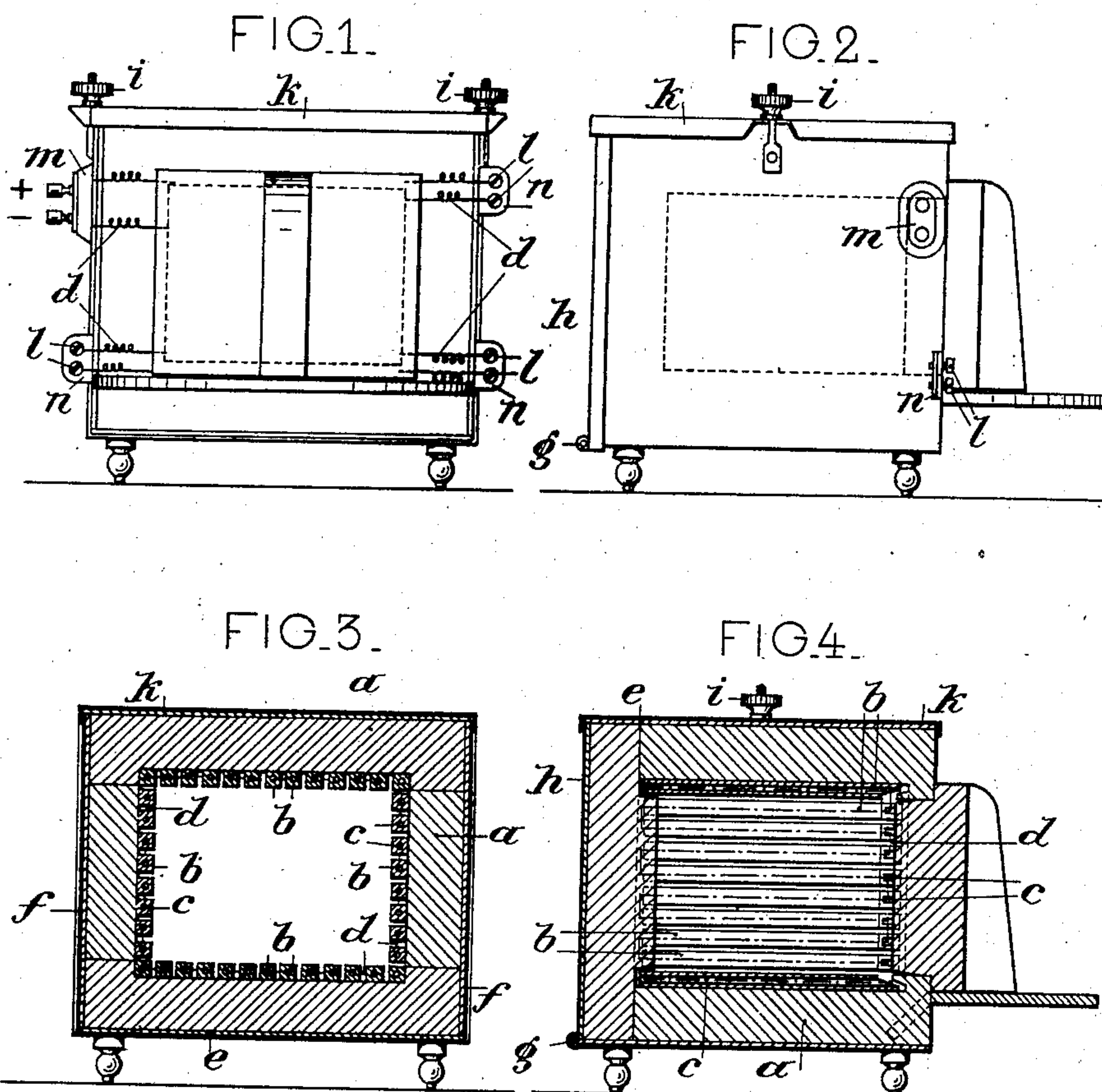


R. WINTER.
ELECTRIC FURNACE.

APPLICATION FILED AUG. 7, 1901.

NO MODEL.



Witnesses:
J. B. Roman
[Signature]

Inventor
Robert Winter
By *[Signature]* Attorney

UNITED STATES PATENT OFFICE.

ROBERT WINTER, OF BERLIN, GERMANY.

ELECTRIC FURNACE.

SPECIFICATION forming part of Letters Patent No. 724,069, dated March 31, 1903.

Application filed August 7, 1901. Serial No. 71,247. (No model.)

To all whom it may concern:

Be it known that I, ROBERT WINTER, a subject of the German Emperor, residing at Berlin, Germany, have invented certain new and useful Improvements in Electric Furnaces for Dental and other Purposes, (for which I have made application for Letters Patent in Great Britain under No. 13,367, dated the 1st of July, 1901, and in Germany, dated the 29th of June, 1901,) of which the following is a specification.

In the electric furnaces for dental purposes used up to the present time the heating-plates containing the electrically-heated wires extended over the entire inner sides of the furnace. In consequence of the very strong heat to which they are subjected the plates change their structure and shape, become strongly bent, and frequently finally break into several pieces, being only kept together by the electric wires. As these heating-wires, however, are quite immovably embedded in the plates, they also break as soon as after interruption of the electric current they become cold and contract to their original length, while, on the other hand, the broken plates do not permit such contraction to the required degree. To avoid this drawback of electric furnaces, according to the present invention the heating-walls of the furnace are not constructed in the form of plates, but are built up of a number of single hollow rods containing the wires quite loosely, while they themselves rest freely with their ends in grooves provided in the heating-space of the furnace. Between each two of such hollow rods preferably small spaces may be provided, so that the sides of the rods in the same manner as their front faces can radiate the heat received from the incandescent electric wires. It will be understood that the heating-walls in such a manner built up of a number of single hollow rods cannot when in use by the action of the heat break into quite irregular pieces, and therefore they also cannot cause any breaking of the wires by preventing the same from contracting.

In the drawings accompanying the specification one mode of constructing the present electric furnace is illustrated.

Figure 1 is a front view of the furnace; Fig.

2, a side elevation; Fig. 3, a vertical cross-section, and Fig. 4 a vertical longitudinal section.

On the inner side of the thick fixed walls *a* of the furnace are loosely provided the heating-walls, each of them formed of a number of single rods *b*, of fireproof insulating material. These rods, which are bored through their entire length, are secured in position by placing their ends in notches provided in the front and back part of the casing *a*. The length and thickness of the rods are so determined that they also under the influence of the heat can freely expand in all directions, so that any jamming of the rods when incandescent is entirely avoided. The rods can be arranged close together, but preferably small spaces, as shown in the drawings, are left in order that the side faces of the rods can also radiate their heat into the heating or melting spaces. Any suitable means—for instance, small projections (not shown) on the sides of the rods—may be provided to keep them apart, thereby forming said spaces. The heating-wires *d* rest perfectly free within the passages *c* of the rods, so that the wires when becoming hot as well as cold can without any jamming move freely within said passages *c*. The ends of the wires *d* are by means of screws *l* clamped down to projections *n*, provided on the casing *a* of the furnace. Metal plates *e*, *f*, and *h*, which may be connected together by hinges, are provided to keep the parts of the casing *a* of the furnace in place. A lock-plate *k*, clamped down by means of screws, serves to keep said metal plates in position.

I claim—

1. In an electric furnace the combination with the outer walls of rods, of fireproof and insulating material, covering the inner faces of said walls, grooves in opposite walls of the casing of the furnace, to freely receive the ends of said rods, passages in said rods, heating-wires, resting freely in said passages and means for securing the outer ends of the wires to the furnace, substantially as described.

2. In an electric furnace the combination with the outer walls of rods, of fireproof and insulating material, covering the inner faces of said walls, said rods being so arranged as to

leave small spaces or grooves between them,
grooves in opposite walls of the casing of the
furnace to freely receive the ends of said rods,
passages in said rods, heating-wires, resting
5 freely in said passages and means for secur-
ing the outer ends of the wires to the furnace
substantially as described.

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

ROBERT WINTER.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.