

M. J. JOHNSON.
ELECTRIC FURNACE.
APPLICATION FILED DEC. 1, 1910.

1,035,596.

Patented Aug. 13, 1912.

Fig. 1.

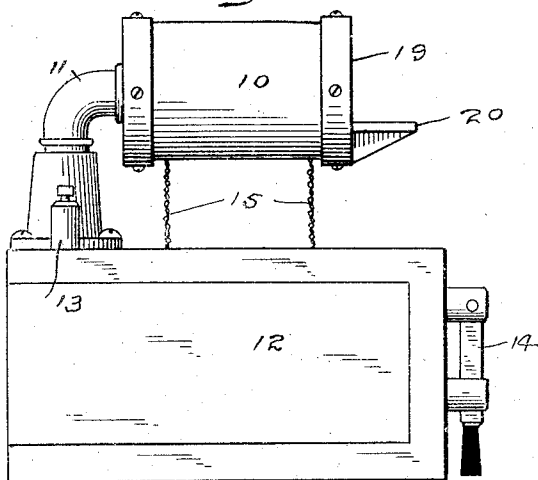


Fig. 2.

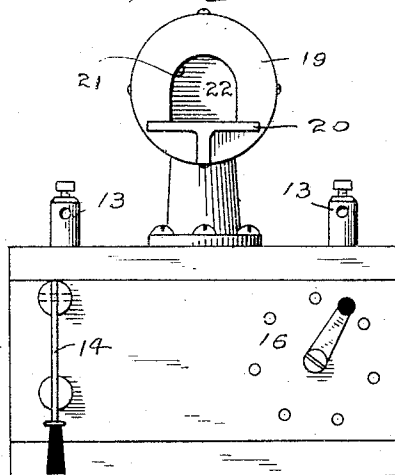


Fig. 3.

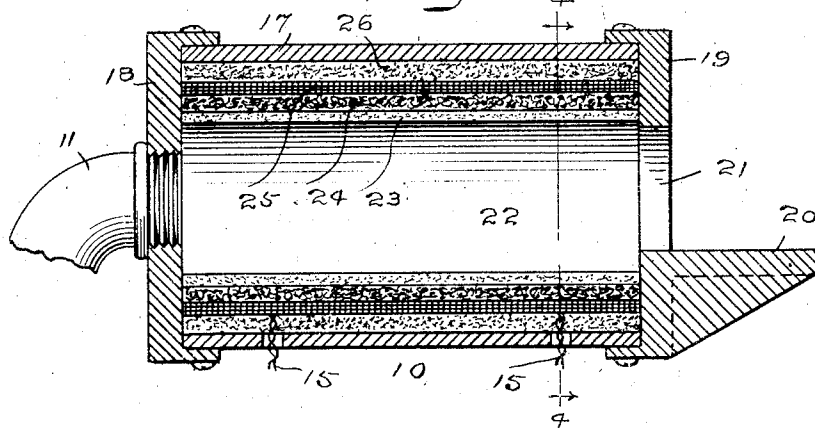
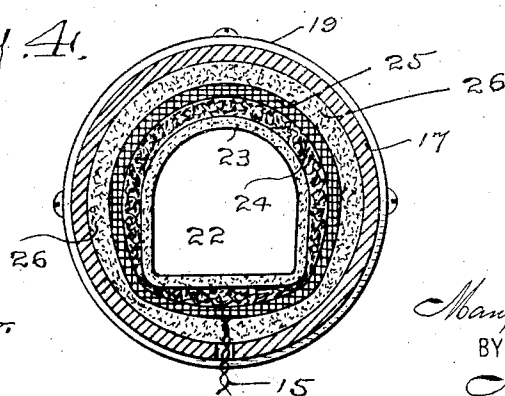


Fig. 4.



WITNESSES:

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ELECTRIC FURNACE.

1,035,596.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed December 1, 1910. Serial No. 595,083.

To all whom it may concern:

Be it known that I, MANFRED J. JOHNSON, a citizen of the United States, residing at Naugatuck, county of New Haven, State of Connecticut, have invented an Improvement in Electric Furnaces, of which the following is a specification.

This invention has for its object to provide an electric furnace or muffle adapted for general use and especially adapted for the hardening of tools and for dentists' use and for the making and repairing of small metallic articles, which shall be less expensive to produce and far more durable than any furnace of this class heretofore placed upon the market.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements and combinations which will be hereinafter described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawing forming a part of this specification, Figure 1 is a side elevation of my novel furnace; Fig. 2 an elevation as seen from the right in Fig. 1; Fig. 3 a longitudinal section on an enlarged scale; and Fig. 4 is a transverse section on the line 4—4 in Fig. 3, looking in the direction of the arrows.

10 denotes the body of my novel furnace or muffle, which is shown as carried by an arm 11 which may be attached to any suitable fixture in convenient position for use. In the present instance I have shown the arm as secured to a transformer indicated by 12.

13 denotes binding posts for the attachment of line wires, 14 a switch for controlling the passage of the current to the transformer, 15 current wires leading from the transformer to the furnace and 16 a switch for controlling the passage of current to the furnace or muffle. The transformer is not an essential feature of the invention and may or may not be used depending of course upon the current and the use to which the furnace is to be applied.

The body of the furnace comprises a casing 17 which is preferably made of aluminum and is detachably secured to a head 18

which is itself detachably secured to the arm. At the other end of the casing a head 19 is detachably secured. Head 19 has cast integral therewith a hearth 20 and is provided with an opening 21 leading into the chamber 22 of the furnace. The wall or lining of this chamber consists of a quartz tube, indicated by 23, which is molded to the required form. Outside of this quartz tube I provide a resistance layer 24 which consists of powdered carborundum and powdered carbon in approximately equal proportions held together by means of silicate of soda or any suitable binder and baked onto the quartz tube. Outside of this resistance layer I preferably place suitable non-conducting material, as for example a layer of asbestos paper indicated by 25, and between the asbestos paper and the casing a layer of furnace cement, for example ordinary asbestos and clay cement, indicated by 26. The current wires lead from the transformer into and through the resistance layer, in which they are disposed in any suitable manner and from which they pass back to the transformer. The resistance layer is covered by the layer of asbestos paper and that in turn is covered by the layer of furnace cement so that the energy of the current is utilized in heating resistance layer 24 and the quartz lining, thereby producing a high temperature in the chamber.

Having thus described my invention I claim:

1. A furnace of the character described comprising a quartz lining, a resistance layer outside said lining consisting of powdered carborundum, powdered carbon and silicate of soda baked upon the lining, electrical connections to the resistance layer and non-conducting material outside the resistance layer.

2. A furnace of the character described comprising a quartz lining, a resistance layer outside said lining, a layer of asbestos paper outside the resistance layer, an aluminum casing and a layer of furnace cement between the asbestos paper and the casing.

3. A furnace of the character described comprising a casing having a detachable

heads, an arm connected to one of said heads by which the casing is supported, a quartz lining, a resistance layer and non-conducting material between the resistance layer
5 and the casing.

4. A furnace of the character described comprising a quartz lining, a resistance layer of the character described baked thereon, an aluminum casing and non-con-

ducting material between the resistance 10 layer and the casing.

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

MANFRED J. JOHNSON.

Witnesses:

H. H. GORTON,
EDWARD C. MILLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."