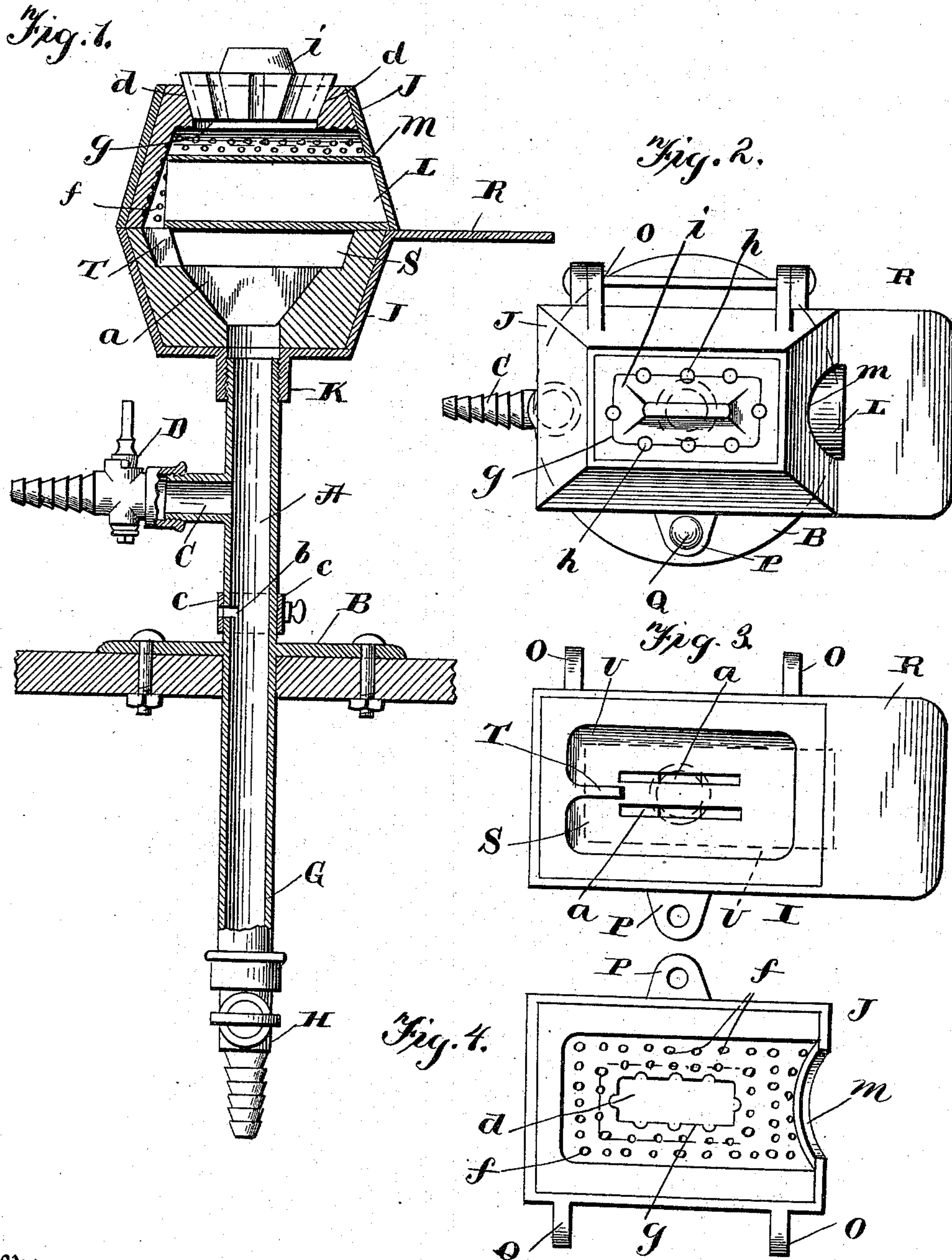


(No Model.)

G. W. SCHWARTZ & B. J. CIGRAND.
DENTAL FURNACE.

No. 573,361.

Patented Dec. 15, 1896.



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GEORGE W. SCHWARTZ AND BERNARD J. CIGRAND, OF CHICAGO, ILLINOIS.

DENTAL FURNACE.

SPECIFICATION forming part of Letters Patent No. 573,361, dated December 15, 1896.

Application filed January 31, 1896. Serial No. 577,585. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. SCHWARTZ and BERNARD J. CIGRAND, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dental Furnaces; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to improvements in dental furnaces for the purposes of baking porcelain crown, bridge, and inlaying work, and similar uses.

The object of our invention is to produce a very simple, effective, and rapid furnace, whereby there is a quick and intense generation of heat equally distributed throughout the entire surface of the muffle placed therein, the same being so constructed that it can be opened up to give complete and entire access to the interior thereof and then clamped together securely without the means of the usual packing, and prevent the escape of heat.

Our invention further consists in the particular details of construction for accomplishing the specific purposes to be hereinafter referred to.

Figure 1 is a vertical sectional view taken longitudinally of the furnace. Fig. 2 is a top plan view of the same. Fig. 3 is an interior plan view of the lower or stationary portion of the furnace. Fig. 4 is a similar view of the upper or hinged portion of the furnace.

A is a pipe constituting a bench gas-fixture having the flange B for securely attaching it thereto. Above the flange is a laterally-extending gas-supply pipe C, having the usual regulating-cock D, with the usual nipple for the attachment of a rubber or other supply-tube. A downward extension of the pipe A below the bench is provided, as shown at G, and this is provided with a regulating-cock H to regulate the supply of air to the inflowing gas to the laterally-extending pipe above.

The furnace is composed of two members I and J, the one, I, being a stationary member and provided at its lower side with a screw-threaded socket K to receive the ex-

ternally-screw-threaded end of the supply-pipe A, whereby the furnace can be attached to or detached from the pipe for convenience in enabling other appliances to be connected to the pipe, if desired, and for affording other advantages and convenience in the handling of the furnace independent of the pipe.

The two members of the furnace are tapered from their inner edges outward, as shown, and they are divided at their center or widest portion, thus enabling them to be opened out or separated without any interference from the muffle L, placed therein and containing the material that is to be baked. This muffle is composed of platinum, as is usual, and the upper half or member of the furnace is provided at one end with the inlet or receiving opening M, into which the outer end of the muffle fits, and is packed by asbestos or clay. The two members of the furnace are hinged together, as shown at O, at their sides, and at the opposite side from the said hinge are the perforated ears P, which receive the clamping-bolt Q, by means of which the two members of the furnace are clamped together so tightly as to prevent any escape of the heat therein.

Formed integral with the lower or rigid portion or member I of the furnace is an outwardly-extending apron R, which is in the same plane as the edge of the member and is adapted to receive and hold any of the parts or other devices being used in connection with the furnace, and also serves as a guide for the placing of the muffle in position.

By referring to the interior plan view of the lower or rigid member I of the furnace it will be noticed that it is provided with a cavity or depression S, and at the opposite end from the apron there is a central inwardly-projecting lip T, which forms a rest for the inner end of the muffle, and also forms at each side of the inner end of the muffle and projecting beyond the end of the muffle the two passages or recesses U. Owing to this form of cavity or depression there is a uniformity of circulation within the furnace around the muffle, so that it is uniformly and quickly heated, the said end passages U serving to permit the passage of the heat around and under the inner end of the muffle, as will be clearly understood.

The clay forming the interior of the lower member I of the furnace is provided with the two parallel longitudinal supply-openings *a*, which communicate with the upper end of the pipe A and receive the mixed air and gas for burning. The object of having these two parallel openings extending longitudinal the muffle is to cause a uniform supply of heat to opposite sides of the muffle, thus preventing the supply of heat at a single point upon the muffle and by the intermingling of the two flames cause a spreading of the flame or heat around the bottom of the muffle, as will be readily understood. Attention is also directed to the outwardly inclined or flared end walls of these parallel openings, which cause the ends of the flames to spread outward longitudinal the muffle and to supply the heat equally throughout its entire length.

By means of the regulating-cock at the depending air-inlet pipe we are enabled to regulate the force of air-blast and to cause an increased or accelerated movement for increasing the volume of heat. In devices of this character a whistling noise is very common and which is extremely objectionable. For the purpose of avoiding and preventing this whistling noise we provide the pipe A with an opening *b* between the air-inlet and the gas-inlet, and this opening is provided with a regulating-sleeve *c*, by means of which its size can be adjusted. This opening intercepts the inflow of air, and we find it to entirely prevent this annoying whistling noise without impeding or deterring in any manner the generation of heat within the furnace.

The dome-shaped top *d* of the upper or hinged member of the furnace has its entire surface provided with the cavities *f* for the purpose of increasing its radiating-surface, which causes a more rapid and a more intense heat upon the muffle, as will be clearly conceived.

The top of the hinged member I of the furnace is provided with a longitudinal opening *g*, and the wall of this opening is provided with vertical openings or grooves *h*. A cover or cap *i* is provided for the said opening, and the walls or sides of this cap are provided with corresponding grooves, which, together with the grooves in the wall of the opening, form passage-ways for the products of combustion from the furnace. This opening is made smaller at its inner end, and the cover or cap is correspondingly shaped, so that the cap can be wedged therein. By making this opening oblong or longitudinal the muffle the products of combustion or flame in passing around the muffle is more uniform throughout its entire length, owing to this oblong opening, which of course creates a draft throughout substantially the length of the muffle, and thereby a

uniformity of heat throughout the length of the muffle.

By means of a furnace of the above construction we produce a very rapid, efficient, and cheap dental furnace, overcoming the objections to furnaces of this character which have been heretofore used.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A dental furnace comprising separate upper and lower members adapted to be clamped together, the upper member having a muffle-opening *m*, extending to its lower edge, the adjacent upper edge of the lower member forming the lower wall of the muffle-opening, the lower member having an outwardly-projecting integral apron *R*, having its upper surface flush with the upper edge of the lower member and below the opening *m*, and thereby flush with the lower end of the muffle-opening substantially as shown.

2. A dental furnace adapted to receive a muffle, the furnace having a concaved bottom, a burner formed in the bottom thereof, an inwardly-projecting lip at the rear end of the concaved bottom, and a muffle having the outer end resting upon the outer edge of the concaved wall, and its inner end resting upon the said lip, with its rear wall at a point inside the rear end of the concaved bottom to form the passages *U*, whereby uniformity of circulation under and around the muffle is secured, the same adapted as described.

3. A dental furnace having an upper or dome-shaped wall provided with cavities for the purpose of increasing the heat radiation thereof.

4. A dental furnace, the upper or dome-shaped portion having a longitudinal or oval-shaped opening, and a cap placed therein, the walls of the cap and opening being shaped to form escape-openings for the products of combustion in combination with the muffle placed therein longitudinal the said oblong opening, for the purpose set forth.

5. The combination with a dental furnace, of a burner supply-pipe, a main air-inlet for said pipe, a gas-supply inlet for said pipe situated between the furnace and the main air-inlet, and an auxiliary air-inlet for said pipe situated between the main air-inlet and the gas-inlet to prevent whistling, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE W. SCHWARTZ.
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Witnesses:

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