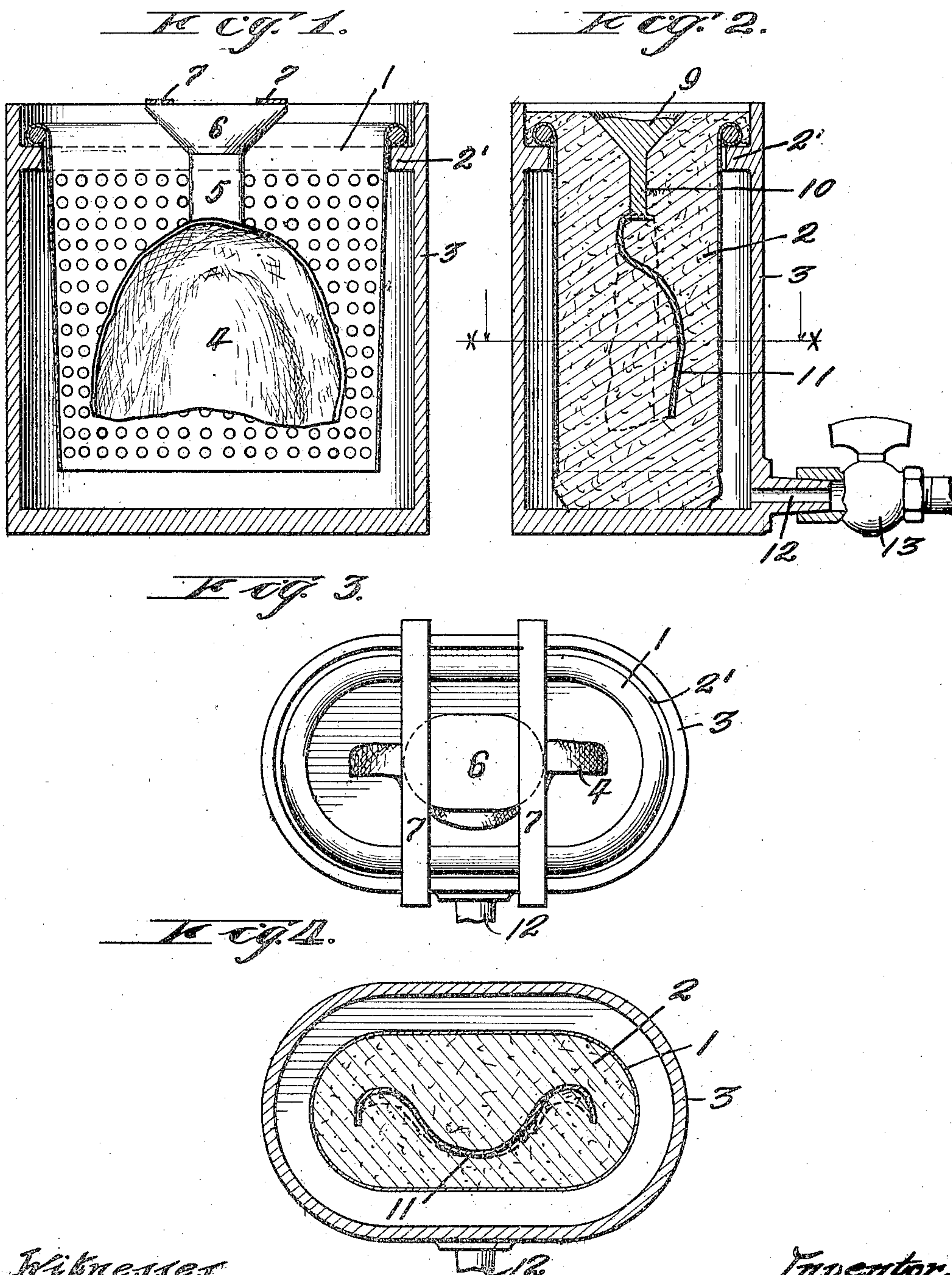


F. N. WETHERBY.
 APPARATUS FOR CASTING DENTAL FILLINGS.
 APPLICATION FILED MAR. 27, 1911.

994,225.

Patented June 6, 1911.



Witnesses

G. L. Farrington
 J. D. Bremer

By

Inventor.

Franklin A. Wetherby
 Edwin A. Wheeler
 Attest.

UNITED STATES PATENT OFFICE.

FRANKLIN N. WETHERBY, OF MILWAUKEE, WISCONSIN.

APPARATUS FOR CASTING DENTAL FILLINGS.

994,225.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed March 27, 1911. Serial No. 617,033.

To all whom it may concern:

Be it known that I, FRANKLIN N. WETHERBY, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Apparatus for Casting Dental Fillings, of which the following is a specification.

My invention relates to improvements in apparatus for casting dental plates, fillings or the like, from gold and other suitable metals, and it pertains more especially, among other things, to the device for forcing molten gold or other suitable metal into a suitable mold, which has previously been provided therefor.

The construction of my apparatus and the method of using the same is explained by reference to the accompanying drawings, in which—

Figure 1 represents a vertical section thereof. Fig. 2 also represents a vertical section of the device shown in Fig. 1, drawn at right angles thereto, provided with a core of investment material. Fig. 3 is a top view, and Fig. 4 is a transverse section, drawn on line $x-x$ of Fig. 2.

Like parts are identified by the same reference numerals throughout the several views.

1 represents a screen cage, in and by which an investment core 2 formed of a compound of plaster of Paris and other substances, is suspended from the inwardly projecting flange 2' at a slight distance from the bottom and the surrounding walls of the receptacle 3. The screen cage 1 may be formed of perforated sheet metal, as shown in Figs. 1 and 2, or it may be made of wire screen cloth, or other similar material, if desired.

4 is a pattern, which in the present case represents a dental plate, and the same is suspended from the top of the receptacle 3 by the vertical member 5, upwardly diverging member 6, and transversely arranged bars 7, which bars 7 are adapted to rest upon the upper edge of the receptacle 3, whereby the pattern is centrally suspended within the cage 1. The pattern is preferably made of wax or other similar substance, which is readily melted and evaporated. When the wax has been evaporated and thus withdrawn from the core, it leaves a mold by which the plate, filling or other desired object is formed from the molten metal.

In using my apparatus, the cage 1 is first

suspended from the flange 2' within the receptacle 3. When this is done, the pattern 4 is suspended from the top of the receptacle 3 by the transversely arranged bars 7 and their intermediate parts, when the cage is then filled with the investment material in a semi-fluid condition. When the investment material has remained in the cage a short time, it becomes hardened and set around the pattern. When this is done, the temperature of the core is raised until the pattern, which I have stated is formed of wax, is entirely evaporated, thus leaving a cavity within the core conforming in shape to the shape of the wax which has been thus removed, and when this is done, the apparatus is ready for use. The gold or other metal is then placed in the cup shaped receptacle 9, which has previously been formed in the upper end of the core by the member 6 of the mold. The heat is then applied to the metal until it is melted. As soon as the metal has been melted and a partial vacuum formed in the receptacle 3 around the core, owing to the excessive atmospheric pressure upon the upper surface of the molten metal, it is caused to quickly flow down through the vertical aperture 10 into the aperture 11, which has previously been formed by the wax pattern. When this is done, the apparatus and the metal therein, are permitted to cool, whereby a cast metal plate or filling is produced which exactly conforms to the shape of the pattern, which has been prepared therefor.

It will be understood that the core is sufficiently porous to permit the air to be withdrawn from the metal receiving aperture and the air is thus withdrawn more or less rapidly according to the area of the surface of the core exposed, and for this reason, the core is preferably suspended in a perforated receptacle or wire cage, whereby the air is free to escape more readily therefrom, and whereby the vacuum is more quickly formed in said aperture than it would be possible to produce the same with the investment material supported in a more closely fitting inclosure.

It will be understood that the receptacle 3 is adapted to be connected with a vacuum chamber through a duct 12 and air cock 13, from which vacuum chamber the air has previously been exhausted and that as soon as the metal has been melted, said cock 13 is opened, whereby a vacuum is quickly

formed in the receptacle 3, and whereby the molten metal is caused by atmospheric pressure to quickly flow from the receptacle 9 into the aperture 11 of the core, which has
5 previously been formed by the pattern. Heretofore it has been common to close the mouth of the receptacle 3 with an air tight cover, whereby the air is excluded from such receptacle and is compelled to enter the
10 same through the receptacle 9 and vertical duct 10. By my improvement, however, such cover is entirely dispensed with and the mouth of the receptacle 3 above and around the screen cage 1 is sealed by the in-
15 vestment material. The so called investment material is formed of a compound of plaster of Paris, cement or other similar substances.

Having thus described my invention, what
20 I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the described class, the combination of a receptacle open at its upper end, a core formed of investment material, means for suspending said core from
25 and at a distance below the upper end of said receptacle, means for sealing the mouth of said receptacle above the core suspension means, an exhaust duct adapted to communicate between said receptacle and a vacuum
30 chamber, and an air cock for controlling the escape of air from said receptacle to said chamber.

2. In a device of the described class, the
35 combination of a receptacle, open at its upper end provided at a short distance below

its upper end with an inwardly projecting flange, a screen cage suspended from said inwardly projecting flange, a core formed of investment material located within said
40 cage and adapted to close and seal the mouth of said receptacle above said flange and cage, an exhaust duct adapted to communicate between said receptacle and a vacuum chamber, and means for controlling the es-
45 cape of air from said receptacle to said chamber.

3. In a device of the described class, the combination of a receptacle open at its upper end only, provided at a short distance
50 below its upper end with an inwardly projecting flange, a screen cage suspended from said inwardly projecting flange, a core formed of investment material located within said cage and adapted to close and seal
55 the mouth of said receptacle above said flange and cage, said core being provided at its upper end with a cavity for molten metal, near its center with a mold aperture and a duct communicating between said cav-
60 ity and said mold aperture, an exhaust duct adapted to communicate between said receptacle and a vacuum chamber, and means for controlling the escape of air from said receptacle to said chamber.
65

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

FRANKLIN N. WETHERBY.

Witnesses:

JAS. B. ERWIN,
IRMA D. BREMER.