

John U. L. Feemster.
Method of Casting Dental Plates.

108245

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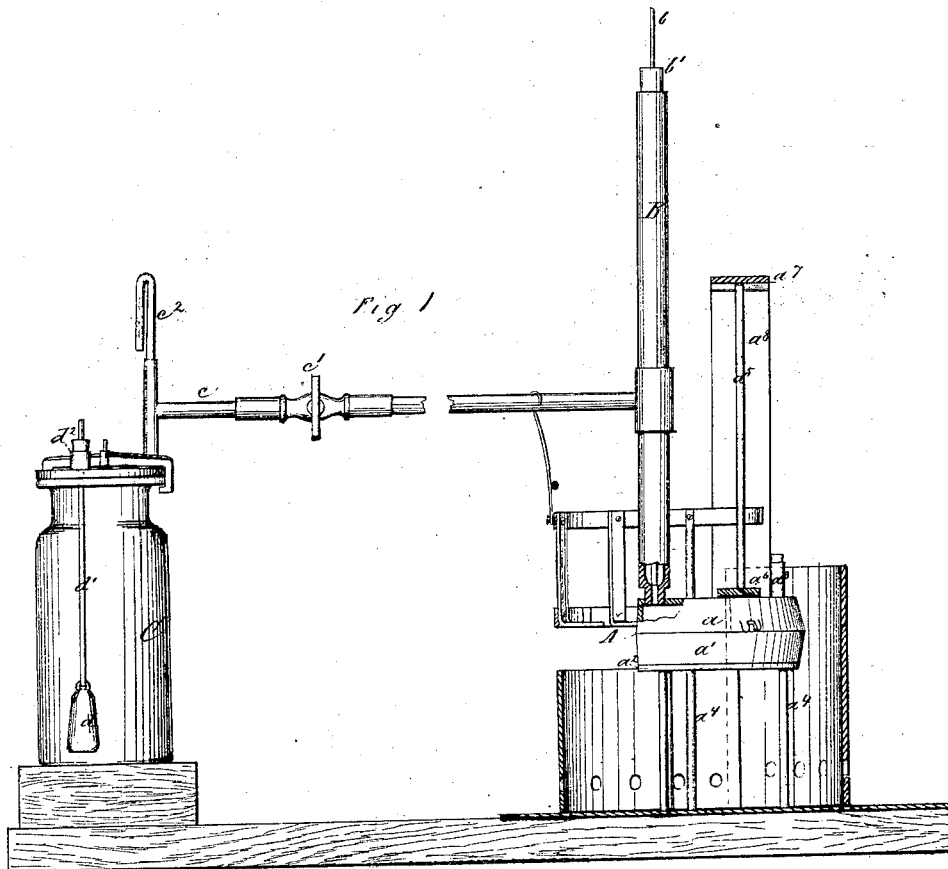


Fig 2. Fig 3.



Fig 4.



Witnesses:

H. J. Tracy
J. E. Hayes

Inventor

John U. L. Feemster.

By H. W. Beadle Attorney.

United States Patent Office.

JOHN U. L. FEEMSTER, OF GREENCASTLE, INDIANA, ASSIGNOR TO HIMSELF AND GEORGE W. SCOTT, OF SAME PLACE.

Letters Patent No. 108,245, dated October 11, 1870.

IMPROVEMENT IN CASTING DENTAL PLATES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN U. L. FEEMSTER, of Greencastle, in the county of Putnam and State of Indiana, have invented a new and improved Method of Casting Dental Plates; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention consists—

First, in a method of casting dental plates, the novelty of which lies in the employment of gas instead of air to force the molten metal into the cavities of the mold; and

Second, in the specific construction and arrangement of the apparatus for carrying my method into effect.

In the drawing—

Figure 1 represents a side elevation of my improved apparatus, shown partially in section; and

Figures 2, 3, and 4 represent views of teeth, as manipulated by me.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of operation.

The method employed is as follows:

The mold is formed in any suitable manner, and is confined in a flask of proper form.

Connecting with the flask is a reservoir for the molten metal, and connecting with this reservoir is a pipe through which deoxidizing gas is conducted from a suitable retort.

The molten metal is admitted into the flask at the proper time by any suitable means, and at the same time the gas is also admitted, so that the metal is forced into every minute cavity of the mold by the elastic pressure of the gas.

The means employed for carrying this method of casting into effect will now be described.

A represents a flask constructed in three parts, *a*, *a'*, and *a''*, and provided with a vent-tube, *a'''*.

This flask, when in position, rests upon the vertical rods or standards *a'*, and is held from displacement by means of the stay-rod *a''*, which rests upon the cross-bar *a'''* below, and presses against the cross-bar *a'''* above, the latter being supported by means of the side-standards *a''*, as shown.

The cross-bar *a'''* is rendered adjustable by means of screw-rods upon the standards *a'*, in order that the stay-rod *a''* may be easily inserted in place, or removed at any time, as may be desired.

A crib, of suitable construction, with proper casings, is placed about the flask, to contain charcoal, or other combustibles, for properly heating it.

B represents the reservoir, in which the molten

metal is placed. It is provided with a plug-rod, *b*, and stopper *b'*.

C represents a retort, of any suitable construction, in which the gas is generated. It is connected to the reservoir B by means of the pipe *c*, provided with the stop-cock *c'*, and having also the gauge *c''* to indicate the pressure of gas on the retort.

Any kind of deoxidizing gas may be generated in this retort, but I preferably use hydrogen, which is generated by filling the retort about one-quarter full of dilute sulphuric acid, and by placing zinc therein, in any suitable manner.

For convenience I attach a mass of zinc, *d*, to the lower end of a copper rod, *d'*, the upper end of which latter passes up through a stuffing-box, *d''*, in the top of the retort.

By means of this construction I am enabled, when sufficient gas has been generated, which will be indicated by the gauge, to raise the zinc out of the acid, and thus prevent further action in the retort.

I am aware that aluminum plates for teeth have been cast under pressure of air, but a great advantage is obtained by the substitution of a deoxidizing gas:

First, because the mechanical force desired can be readily obtained by the chemical action which forms the gas by simply bringing the necessary elements into contact, without further care or attention, while the employment of air requires delicate and expensive apparatus.

Second, by the employment of hydrogen or other deoxidizing gas, the surface of the fused metal is kept clean and bright, and is clear from the filth of oxide, which always forms on the surface when it is exposed to the action of the air, and, consequently, a more perfect union is formed between the parts as the mold becomes filled.

The operation of casting will now be described:

The vent-pipe and reservoir-pipe are secured in position, and the flask is placed upon the standards *a'*, as shown, and secured in place by means of the stay-rod *a''*, as before described.

Heat is now applied in any suitable manner until the flask is heated to about 900° Fahrenheit, which is a dull red heat.

The reservoir B is now heated, of course, to the melting point of aluminum.

The melted metal is now poured therein, the stopper being removed therefrom, until a sufficient supply is contained therein.

The stopper being replaced to prevent the escape of gas, the plug-rod is raised, and, at the same time, the stop-cock *c'* is turned.

The result of this operation is that the hot metal is forced by the pressure of the gas in the retort,

into every cavity of the mold, and a perfect casting is necessarily obtained.

As soon as this operation is completed the lower part of the grate is removed and the fire cleaned away to permit the flask to cool, while the fire above keeps the reservoir sufficiently heated to enable it to discharge hot metal into the flask to fill the space made vacant by contraction. When the flask is sufficiently cool the plate may be removed.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The method of casting plates described, consisting of the employment of deoxidizing gas in con-

nection with the molten metal, as and for the purpose set forth.

2. The retort C, constructed specifically as described, with its stuffing-box d^2 , rod d^1 , zinc d , and gauge c^2 , pipe c with cock c^1 , reservoir B with rod b , and flask A, when the parts are arranged as described, for the purpose set forth.

This specification signed and witnessed this 18th day of July, 1870.

JOHN U. L. FEEMSTER.

Witnesses:

R. E. HAWLEY,

JOSEPH S. MCCLARY.