T. M. BERGE.

FURNACES FOR ASSAYING.

No. 181,304. Patented Aug. 22, 1876.

Fig. 1

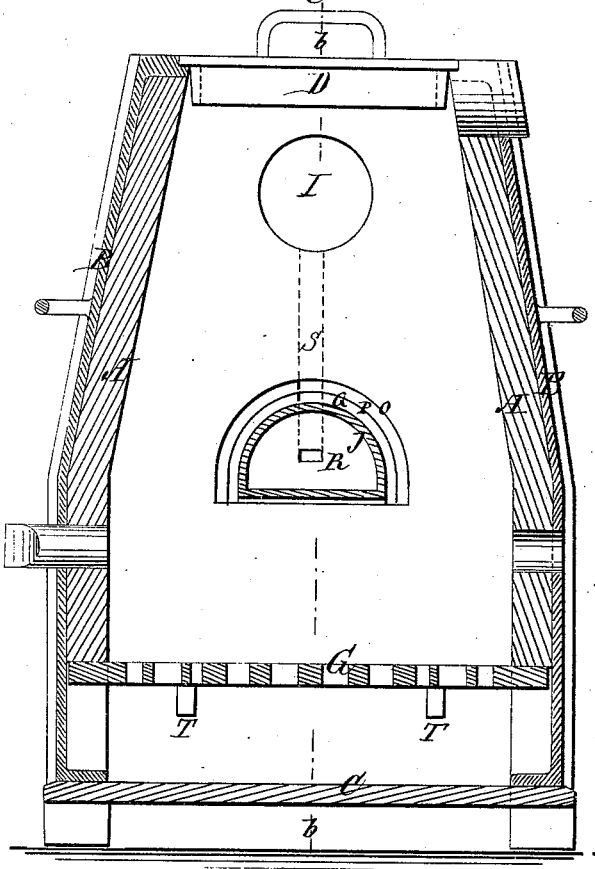


Fig. 2

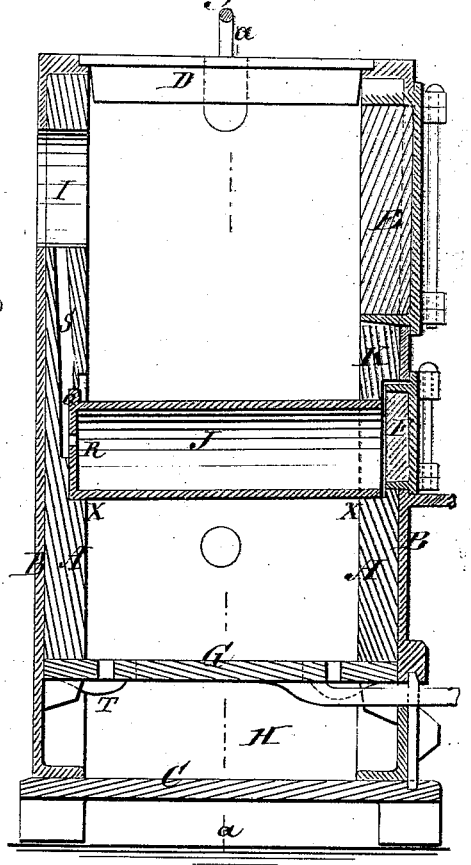


Fig. 3

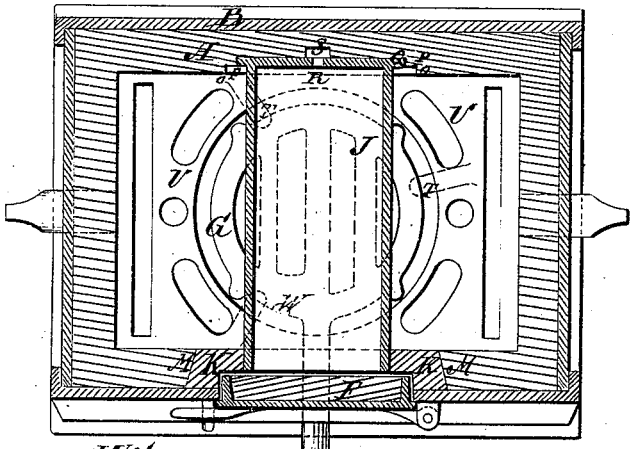
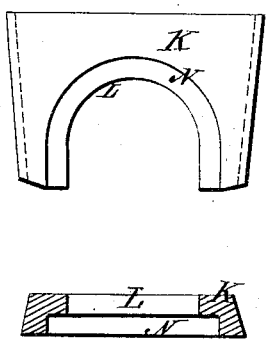


Fig. 4



Witnesses

Geo. Mabbett

Augustus Van Wagenen

Inventor:

Theo M. Berge

UNITED STATES PATENT OFFICE.

THEODOR M. BERGE, OF NEW YORK, N. Y.

IMPROVEMENT IN FURNACES FOR ASSAYING.

Specification forming part of Letters Patent No. **181,304**, dated August 22, 1876; application filed March 1, 1876.

To all whom it may concern:

Be it known that I, THEODOR M. BERGE, of New York city, have invented an Improved Furnace for Assaying, Enameling, and for other purposes, of which the following is a specification:

My invention consists of a contrivance of devices for enabling the employment of interchangeable muffles in assay and other like furnaces, in order that the capacity of the muffle may be suited to the requirements of the case in hand at all times, thus making the furnace better adapted for varying quantities, conditions, and kinds of work, and securing greater accuracy.

My invention also consists of an arrangement of the opening for the escape of the gaseous substances, in such manner that the coal-dust and other impurities will be effectually prevented from falling into the muffle, as they do in the common arrangement, by which the assay is less perfect and accurate.

Figure 1 is a sectional elevation of my improved furnace, taken on line *a a*, Fig. 2. Fig. 2 is a section on line *b b*, Fig. 1. Fig. 3 is a horizontal section. Fig. 4 is a side elevation and section of a removable mouth-piece for using different ones to suit muffles of different sizes.

The furnace is designed to be portable, and to that end is constructed of fire-clay inner walls A and metal outer walls B, built on a suitable base, C, for standing on the floor, and adapted for moving the furnace from place to place. D is a removable cover; E and F, doors; G, grate; H, ash-pit, and I smoke-pipe. J represents the muffle, in which the metals and other substances to be treated are placed. It extends across the furnace, and rests on a ledge, X, of the front and back wall, so as to be readily put in and taken out for changing when different sizes are required. K is a removable mouth-piece to the opening in the front wall for the muffle. It is made removable for employing different ones adapted to the muffles of different sizes. It closes around the top and sides of the muffle by its notch L in the lower end, being dropped down from the opening of door E in the dovetail notch M of the fire-brick wall. The ledge N closes around door F. The notch L of each mouth-piece will be fitted to the particular muffle with which it is to be used.

To fit the different sizes in the back wall, it is constructed with a ledge, O, to fit the largest sizes, and another ledge, P, for the next size, and the muffles of smaller sizes are provided with a flange, Q, to fit the ledge P. Thus, I secure tight joints at the ends of the removable muffles of different sizes without difficulty or delay when changing them.

Heretofore the opening R for the escape of the gaseous products of the assay has been made in the top of the muffle, and the flue S, for conveying them off, has been arranged directly over it, so that ashes and other matters have dropped from the flue I into the muffle, and mingled with the metals and other substances under treatment to the injury of the same, and making the assay inaccurate, I therefore make the said passage horizontal in the end of the muffle, and extend the flue S below it sufficiently to receive and retain the droppings.

In order that the heat may be cooled off as soon as possible after it has done its work, so as to economize time, I have the grate arranged on projecting lugs T of the bottom plate U for its support, and have a notch, W, in it, which, being turned to the adjacent lug T, lets the grate, together with the fire, fall into the ash-pit for being drawn out quickly. The cooling of the furnace is also facilitated by the walls being surrounded by the atmosphere.

The advantage of having muffles always adapted in size and capacity to the work in hand is very important, as will be apparent to the skilled assayer for various reasons, besides the wider range of uses for which it adapts the furnace.

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

1. An assaying-furnace having the front and back walls constructed and arranged to

receive muffles of different sizes, and make close joints with the ends of the same, substantially as described.

2. The muffle J, having a flange, Q, in combination with the furnace-wall, having the ledge P of larger dimensions than the muffles, substantially as described.

3. The muffle having the escape-passage R for the gaseous products located in its end wall, in combination with a furnace having the flue S extending below said passage, substantially as specified.

THEO. M. BERGE.

In presence of—
WM. VAN WYCK,
AUGUSTUS VAN WYCK.