No. 619,044. Patented Feb. 7, 1899.

W. HOSKINS.

ASSAY FURNACE.

(Application filed Nov. 7, 1898.)

(No Model.)

Fig. 1.

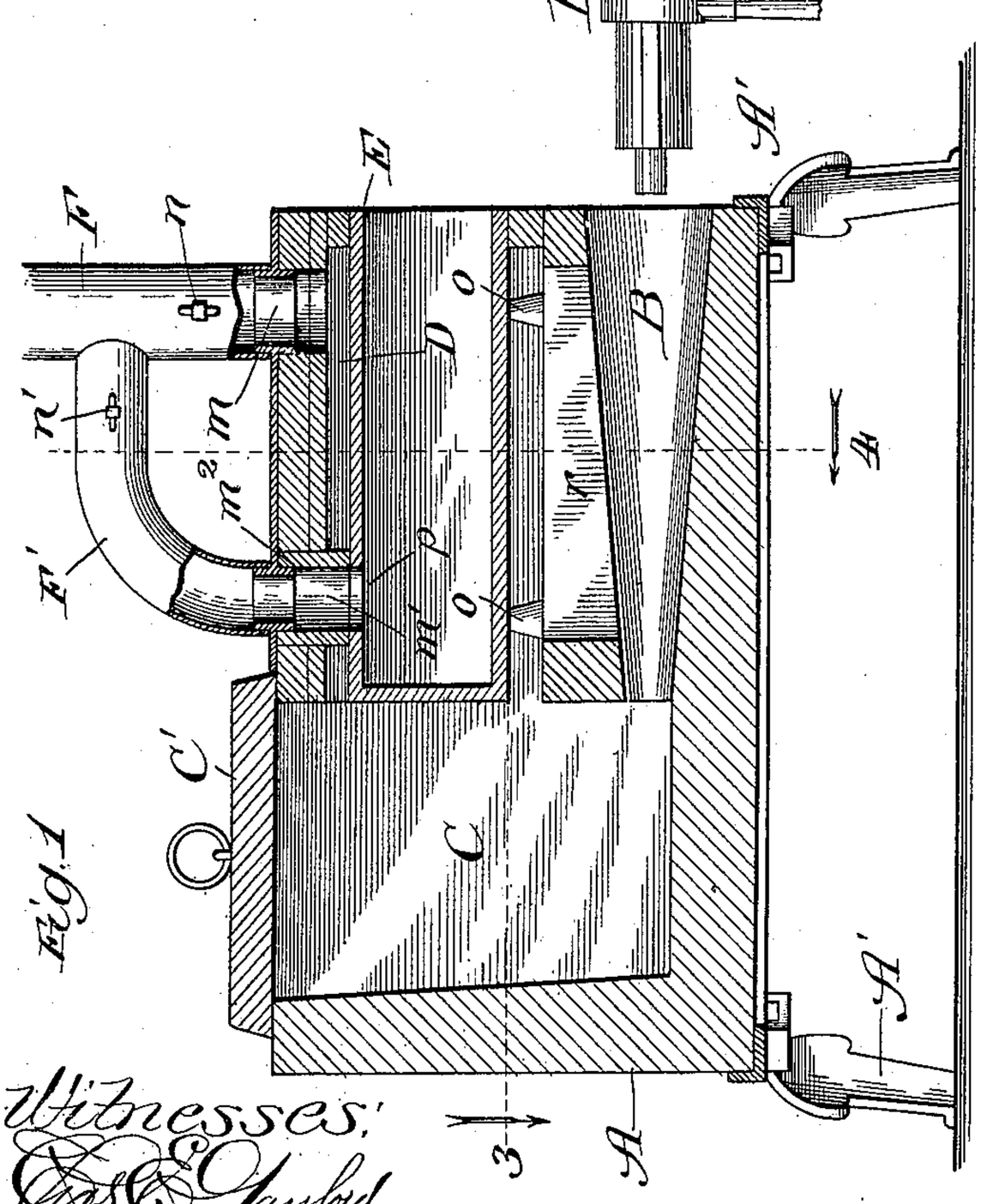

Fig. 2.

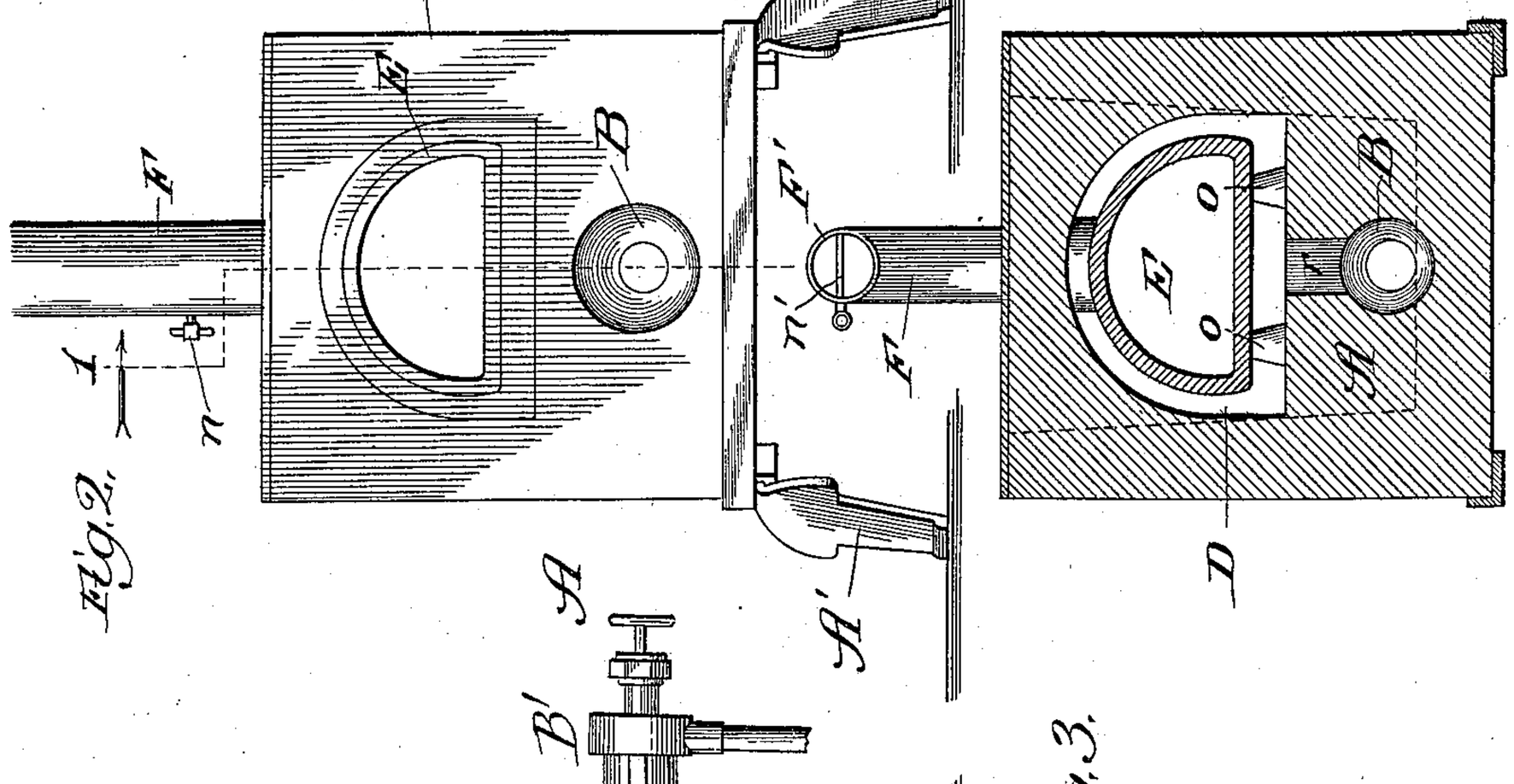

Fig. 3.

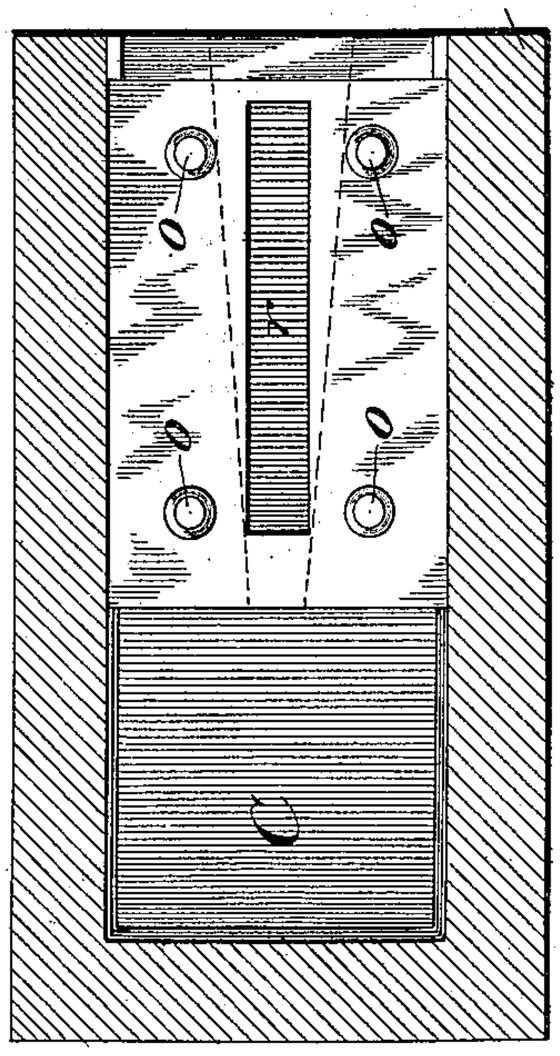

Fig. 4.

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM HOSKINS, OF CHICAGO, ILLINOIS.

ASSAY-FURNACE.

SPECIFICATION forming part of Letters Patent No. 619,044, dated February 7, 1899.

Application filed November 7, 1898. Serial No. 695,736. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HOSKINS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Assay-Furnaces, of which the following is a specification.

My invention relates to an improvement in the class of so-called "combination assay-furnaces" in which provision is made for permitting the melting and scorifying or cupeling operations to be carried on simultaneously.

The object of my invention is to provide an improved construction of furnace in the class referred to whereby both operations may be carried on simultaneously, but independently, in the sense of avoiding reduction in the temperature of either the crucible-chamber or the muffle-chamber by cooling the other.

To this end my invention consists in the construction of my improvement hereinafter described, and set forth in the claims.

Referring to the accompanying drawings, Figure 1 shows my improved furnace by a broken view, in longitudinal sectional elevation, the section being taken at the line 1 on Fig. 2 and viewed in the direction of the arrow. Fig. 2 is a view of the same in front end elevation; Fig. 3, a section taken at the line 3 on Fig. 1 and viewed in the direction of the arrow, and Fig. 4 a section taken at the line 4 on Fig. 1 and viewed in the direction of the arrow.

A is the shell of the furnace, preferably of the general rectangular form illustrated, molded out of fire-clay or other suitable highly-refractory material properly bound with metal and supported by legs A′ at the corners.

B is an inwardly-tapering combustion-chamber in the base of the shell, extending from the front end of the shell to and opening at its inner end into a crucible-chamber C in the back part of the shell and provided with a removable cover C′. Along its upper side the combustion-chamber B communicates, through an opening *r*, with a muffle-chamber D open at its inner end to the rear crucible-chamber and in which a muffle E, shown as having an opening *p* in its top, is adapted to be removably supported on studs *o o*, projecting upward from the base of the muffle-chamber at opposite sides of the opening *r*.

F is the chimney, containing a damper *n* and extending from a discharge-opening *m* for the products of combustion in the forward end of the top of the muffle-chamber. Near the rear end of the chamber D there is formed in its top an opening *m′*, containing a depending tube-section m^2 to coincide with and cover the opening *p* in the muffle E in position in the muffle-chamber, and through the openings *p* and *m′* the muffle communicates with the chimney F through a pipe connection F′ between them and shown as containing a damper *n′*.

The heat is supplied to the furnace in the usual way, as by a blast-burner B′ of the type shown in my Patent No. 267,431, dated November 14, 1882, adjusted to the mouth of the combustion-chamber B, part of the products of combustion entering the muffle-chamber D through the opening *r* to heat the muffle and part entering the crucible-chamber C and thence passing into the muffle-chamber, whence all the products of combustion escape through the chimney F.

By my improved construction, with the crucible-chamber behind and communicating with the combustion and muffle chambers, the crucible and muffle chambers are each heated by direct heat from the combustion-chamber. Thus each chamber is heated independently of the other, so that neither is subjected to cooling by conditions in the other, and surplus heat that would otherwise go off as waste up the chimney is utilized in the crucible-chamber.

The pipe connection F′ between the muffle-chamber and chimney affords a draft-flue for creating a draft through the muffle to oxidize its contents.

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

1. In an assay-furnace, the combination of a rear crucible-chamber, a lower combustion-chamber in front of and opening at its inner end into the crucible-chamber, and a muffle-chamber surmounting and communicating through its base with the combustion-chamber and opening at its rear end into the crucible-chamber and provided with a discharge-

outlet for the products of combustion for all the chambers, substantially as and for the purpose set forth.

2. In an assay-furnace, the combination of the rear crucible-chamber, the combustion and muffle chambers in front of said crucible-chamber and each communicating therewith and with the other, a chimney leading from a discharge-opening for products of combustion in the forward part of the top of the muffle-chamber and a draft-flue connecting said chimney with an opening in the rear portion of the top of said muffle-chamber, substantially as and for the purpose set forth.

3. An assay-furnace comprising, in combination, a shell A divided into a rear crucible-chamber C and a combustion-chamber B and a muffle-chamber D, in front of and communicating at their rear ends with the crucible-chamber and the one with the other through an opening r, an opening m and an opening m' respectively near the front and rear ends of the top of the muffle-chamber, a chimney F leading from the opening m, a tube-section m^2 depending in the opening m' and a draft-flue F′ connecting said tube-section with the chimney, the whole being constructed and arranged to operate substantially as described.

WILLIAM HOSKINS.

In presence of—
M. J. FROST,
R. T. SPENCER.