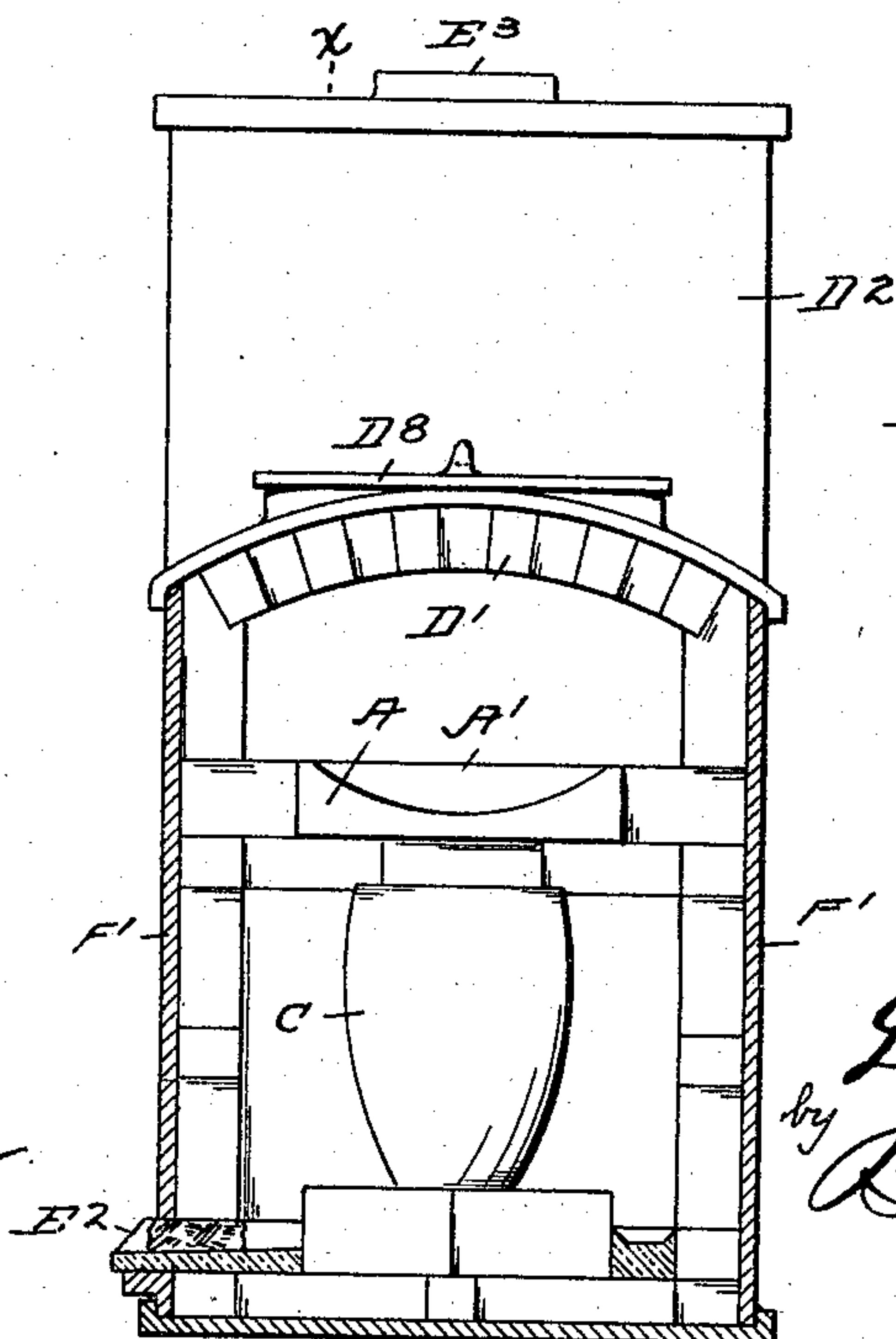
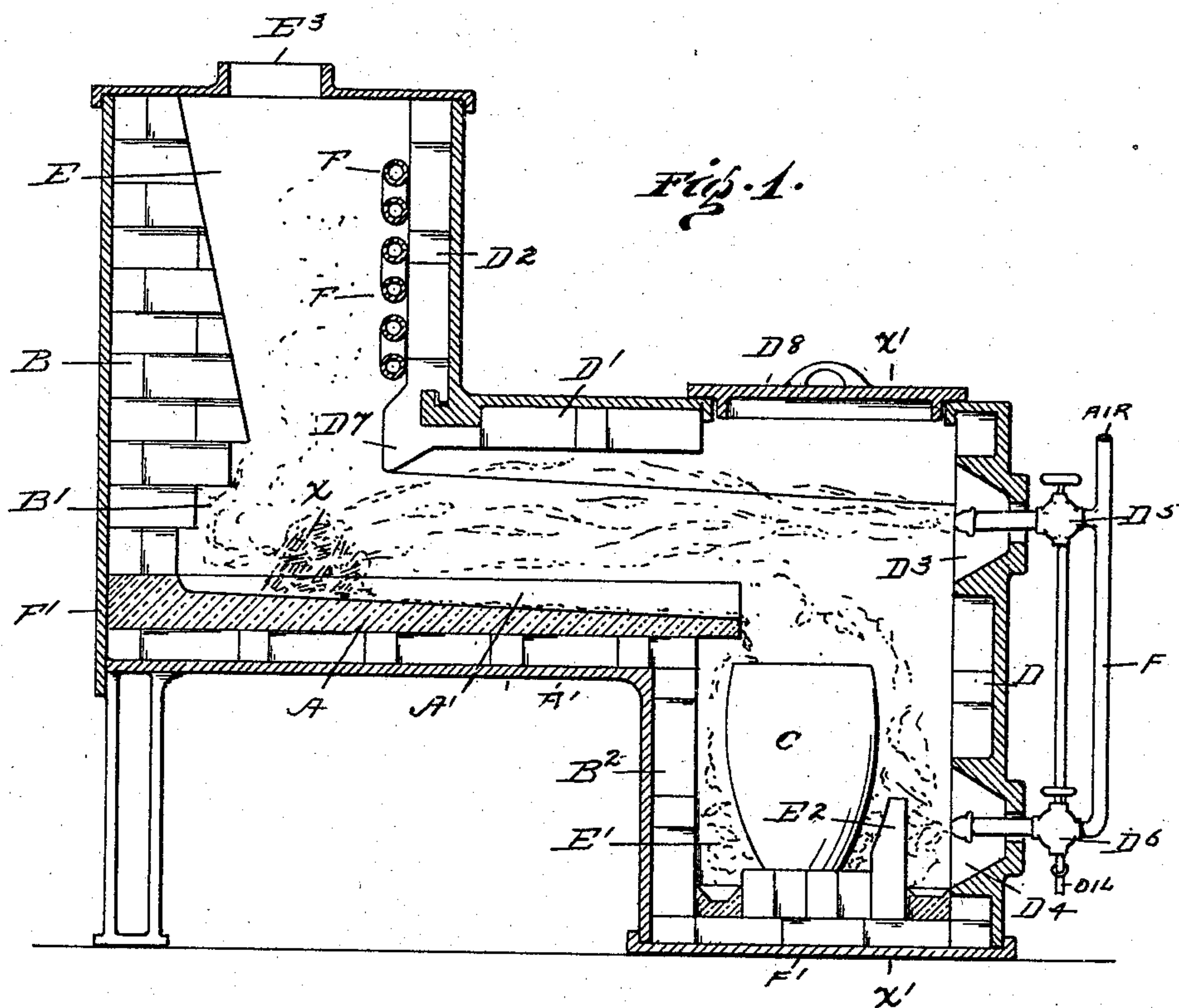


No. 782,438.

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L. DE ROME.  
FURNACE.

APPLICATION FILED JAN. 12, 1904.



Witnesses  
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# UNITED STATES PATENT OFFICE.

LOUIS DE ROME, OF SAN FRANCISCO, CALIFORNIA.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 782,438, dated February 14, 1905.

Application filed January 12, 1904. Serial No. 188,779.

*To all whom it may concern:*

Be it known that I, LOUIS DE ROME, a citizen of the United States, residing at 128 Main street, in the city of San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in furnaces, and particularly to foundry-furnaces, for the melting and combining of metals for casting purposes.

The primary object of this invention is the utilization of fuel-oils in the melting, with its consequent saving of time and fuel.

Broadly the invention consists of a depressed incline hearth surmounted by a dome and having an outlet for the products of combustion, an oil-burner having its flame directed against the metal piled upon the hearth, a well adapted to contain a crucible beneath the drip from the hearth, a second oil-burner having its flame directed around and about the crucible, the whole interior of the furnace subjected to heat being lined with suitable fire-resisting bricks and suitable openings being provided for the removal of the crucible containing the molten metal, and a suitable outlet for molten metal spilled by the bursting of a crucible within the furnace.

In the drawings, Figure 1 is a longitudinal sectional view of a furnace constructed in accordance with this invention. Fig. 2 is a transverse section on the line X' X' of Fig. 1.

In detail the construction consists of the inclined hearth A, composed of graphite or other suitable fire-resisting material, with a longitudinal trough-like depression A'. The rear wall B is built up from the head of the hearth and is given the overhang B', which gives a reactionary effect of the flame against the metal-X piled on the hearth. The foot of the hearth overhangs the wall B<sup>2</sup> to permit the molten metal to flow into the crucible C. The furnace-front D is built up vertically and supports the roof D' over the hearth. This roof may be slightly dome shape or arched to

give it strength. From the inner edge of the roof D' the vertical wall D<sup>2</sup> rises to the level of the rear wall B.

The furnace-front is pierced at D<sup>3</sup> and D<sup>4</sup> by the flared burner-openings, which allow the burners D<sup>5</sup> and D<sup>6</sup> to project into the furnace. The flame from the burner D<sup>5</sup> is projected directly on the metal on the hearth. The projecting lip D<sup>7</sup> at the angle of the roof and the wall D<sup>2</sup> directs the flame downward against the metal, and the overhang B' pockets the heat, so that the metal receives the maximum power of the flame before it rises into the flue E. The melting metal trickles down the hearth and into the crucible, which sits within the space E', which is kept at a temperature to maintain the metal at the pouring heat by the burner D<sup>6</sup>, the flame from which is directed against the baffle E<sup>2</sup>, which protects the crucible from the corrosive action of the direct flame without lowering the temperature of the space about the crucible. One of the greatest advantages of this furnace is the rapidity with which the metal is melted, thus saving the metal from burning or diminishing through volatilization. Where a combination of brass or bronze is to be formed, the more refractory ingredients, such as copper, are placed on the hearth and the more easily reduced metals, such as tin or zinc, combined therewith within the crucible. For viewing the progress of the process of melting and for removing the crucible the trap-door D<sup>8</sup> is provided through the roof D'. At the proper time the crucible is removed with tongs and poured in the usual manner of present practice.

The "heat" or charge of metal is deposited on the hearth through the opening E<sup>3</sup> in the cover of the flue, which is also the exit for the products of combustion. In the process of burning oil it is desirable to raise the temperature of the vehicle for the oil, such as air, steam, or the like. To this end it is led through the piping F within the influence of the waste heat in the space E before reaching the burners and combining with the oil fuel.

When it is desirable to dispense with the use of crucibles, the metal may be permitted to flow directly into the space E', from whence



it is drawn through the spout E<sup>2</sup>, normally closed with a clay plug, as is common with a cupola-furnace. This construction also provides a ready means for drawing off molten  
5 metal that may escape from broken crucibles.

There is no limit to the size and capacity of this type of furnace with slight mechanical changes well within the spirit of the invention. Obviously the furnace can be constructed cylindrical in cross-section instead of rectangular, as shown and described. In the  
10 present instance the furnace is made up of the cast-iron shell or sheathing F', lined throughout with fire-resisting brick or tile.  
15 This renders the smaller sizes semiportable and easily manipulated.

Having thus described this invention, what is claimed, and desired to be secured by Letters Patent, is—

20 1. A furnace consisting of an inclined hearth with an escape-flue rising from near the head thereof, a roof overhanging the hearth, a reservoir adapted to contain a crucible below the lower end of the hearth, a draw-off spout  
25 from the bottom of the reservoir, a furnace-front having burners projecting therethrough, one discharging within the reservoir, and the other directed upon the hearth, a closed opening through the said roof coincident with the  
30 reservoir, a depending lip from the said roof at the angle of the flue, and a projection of

the rear wall overhanging the head of the said hearth.

2. The herein-described furnace comprising an inclosed hearth, a burner located at the  
35 forward end thereof and directed thereinto, a lip depending from the roof of said hearth at the rear end thereof, an overhang formed on the rear wall of said hearth, a reservoir adapted to contain a crucible, and a burner therefor.  
40

3. The herein-described furnace comprising an inclosed hearth, a burner located at the forward end thereof and directed thereinto, a lip depending from the roof of said hearth at  
45 the rear end thereof, an overhang formed on the rear wall of said hearth, a reservoir adapted to contain a crucible, a burner for said reservoir, and a baffle-plate located in the latter.

4. The herein-described furnace comprising an inclosed hearth, a burner located at the  
50 forward end thereof and directed thereinto, a lip depending from the roof of said hearth at the rear end thereof, an overhang formed on the rear wall of said hearth, a reservoir adapted to contain a crucible, a burner for said reservoir, and a draw-off spout for the latter.  
55

In testimony whereof I have hereunto set my hand this 2d day of December, 1903.

LOUIS DE ROME.

Witnesses:

BALDWIN VALE,  
JNO. S. ROBBINS.