

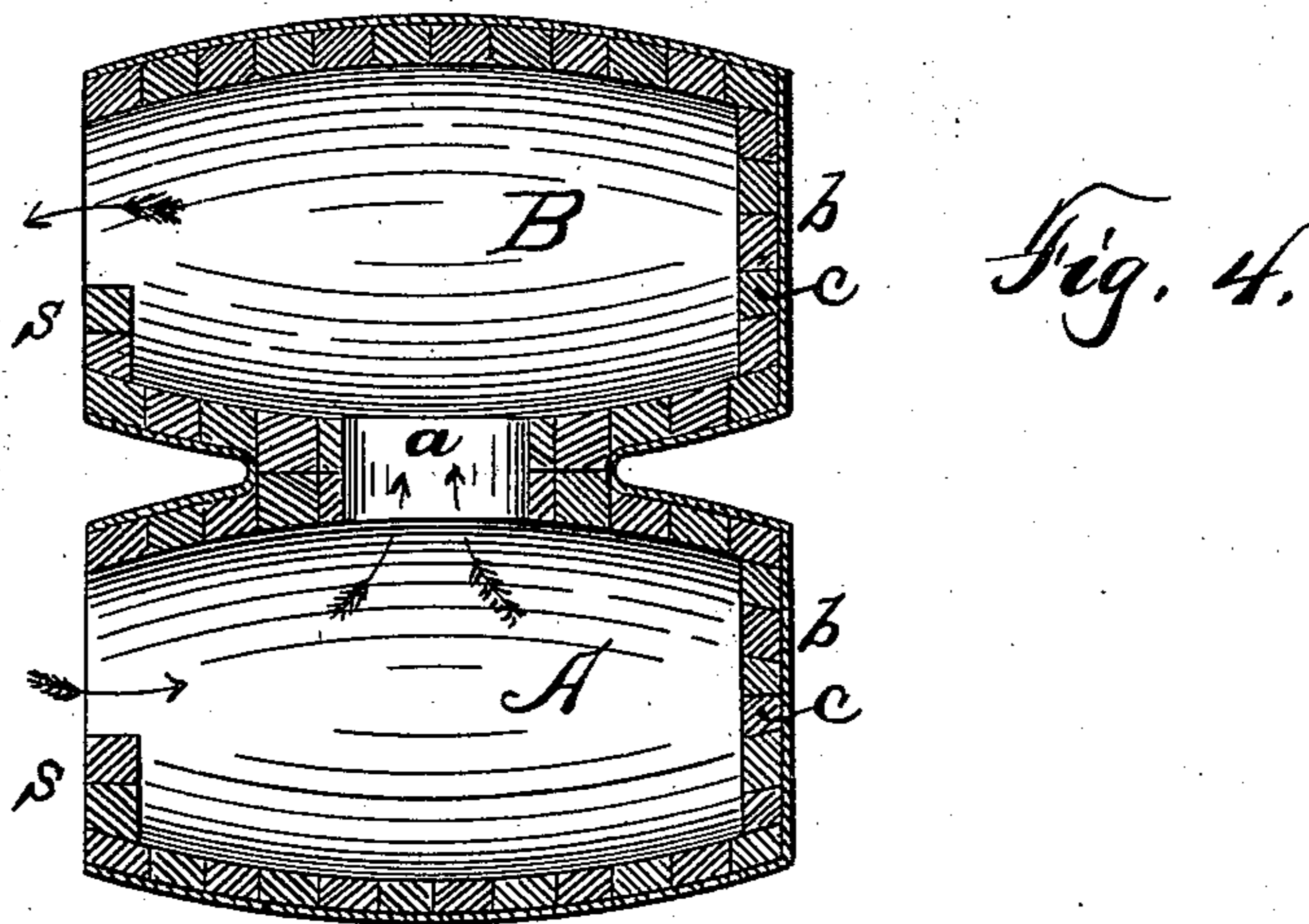
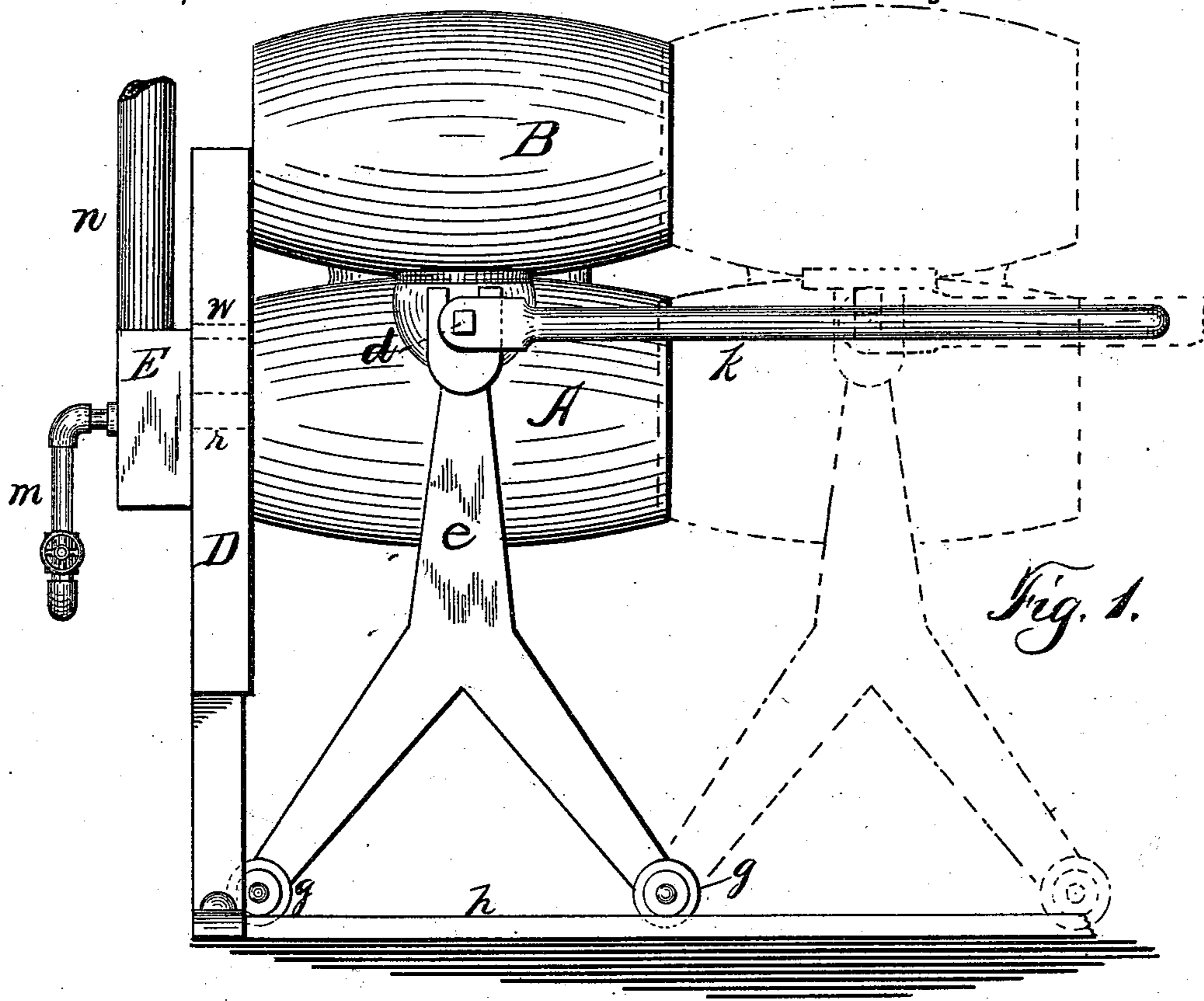
(No Model.)

2 Sheets—Sheet 1.

A. N. GAYLORD.
REVERBERATORY MELTING FURNACE.

No. 560,406.

Patented May 19, 1896.



WITNESSES:

H. A. Carhart,
C. H. Marvin

INVENTOR

Arthur N. Gaylord

BY

Smith & Arison

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

A. N. GAYLORD.
REVERBERATORY MELTING FURNACE.

No. 560,406.

Patented May 19, 1896.

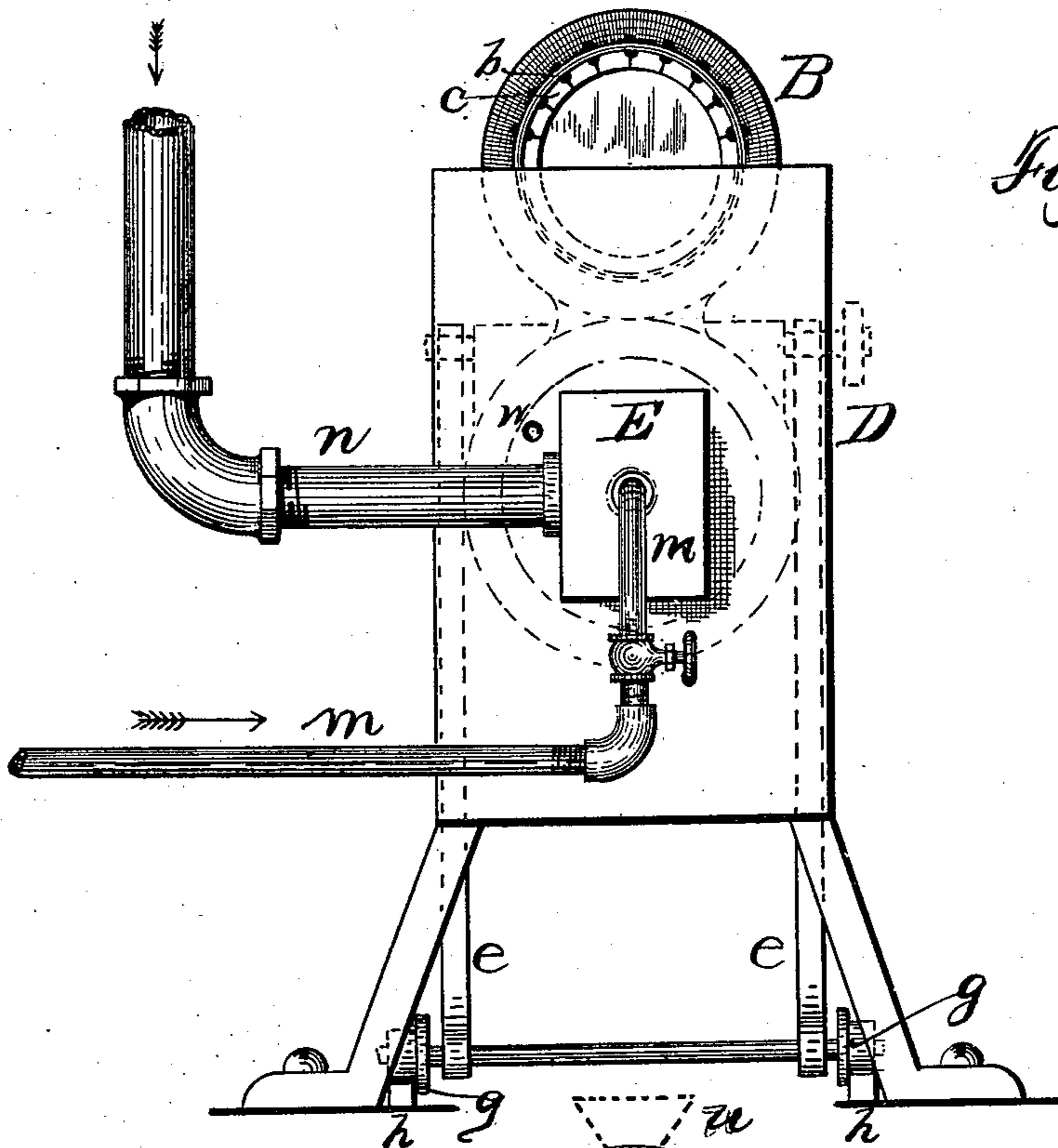


Fig. 2.

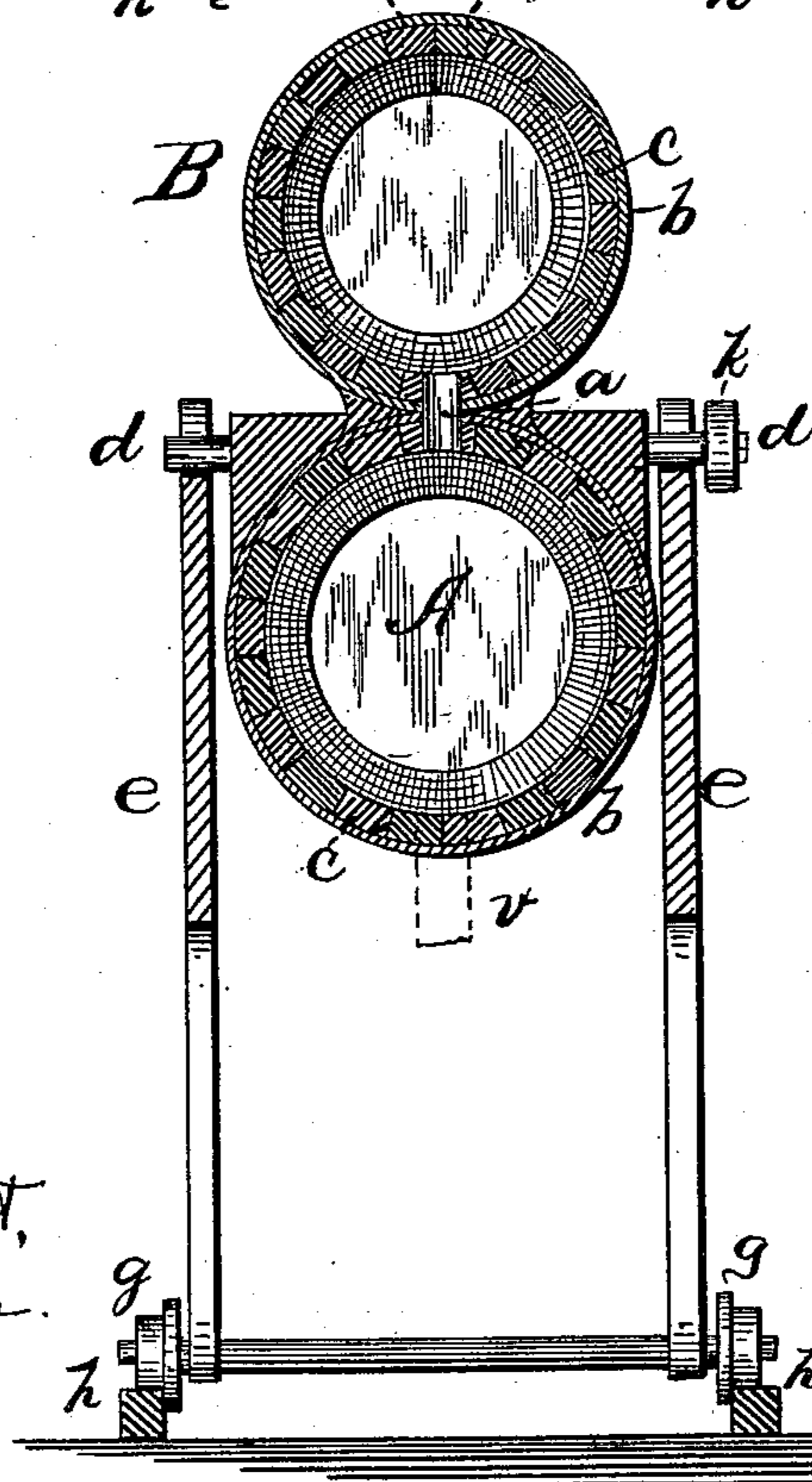


Fig. 3.

WITNESSES:

H. A. Carhart,
C. W. Marvin.

INVENTOR

Arthur N. Gaylord

BY

Smith & Brinson

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ARTHUR N. GAYLORD, OF AUBURN, NEW YORK.

REVERBERATORY MELTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 560,406, dated May 19, 1896.

Application filed March 7, 1895. Serial No. 540,923. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR N. GAYLORD, of Auburn, in the county of Cayuga, in the State of New York, have invented new and useful
5 Improvements in Reverberatory Melting-Furnaces, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to reverberatory melting-furnaces, and particularly to that class
10 adapted to employ very high heats, as in melting brass, which is now commonly done in crucibles.

My object is to produce a reverberatory furnace adapted to take the place of crucibles in
15 melting metals and do the work much quicker and at a greatly-reduced cost, comprising a primary and a secondary chamber connected together and consisting of a tubular melter and reservoir combined, which is the primary
20 chamber, and a receiver for the metal to be melted, which is the secondary chamber, connected together by a passage, and all mounted upon and balanced or substantially balanced
25 upon side trunnions having their bearings in standards, (or set up stationary,) and a front (stationary or movable) which closes the open end of the melter and upon which is mounted an oil-burner which supplies the heat to the
30 primary or melting chamber, which heat passes off from this chamber upward into the other chamber or chambers, and thence out through its open end, to be conducted in the ordinary way to a chimney, said connected
35 chambers being mounted upon a carriage, the wheels of which travel upon rails, so that the apparatus can be moved forward up to the front to close the open end of the primary chamber and back away from it to open it, so
40 that by tilting the molten metal can be poured out into ladles or ignot or other molds.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically
45 set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of the apparatus. Fig. 2 is a side elevation thereof. Fig. 3
50 is a vertical transverse sectional elevation. Fig. 4 is a longitudinal vertical section of the receiver and melter.

A is the primary or melting chamber, and B the secondary or feeding chamber, the latter being mounted upon the other and connected thereto by the passage *a*. Both are
55 shown as consisting of an outer metallic shell *b* with an interior lining *c* of suitable refractory material, as fire-brick, and both being interiorly concaved, like unto barrels, and supported by trunnions *d*, journaled in standards
60 *e*, mounted upon wheels *g*, traveling upon rails *h*. One of said trunnions is outwardly squared to fit into a handle *k*, by means of which the apparatus is tilted to pour the molten metal
65 into molds for casting ingots or other articles or into ladles to be carried around a foundry for casting in the usual way.

D is a stationary front and screen combined, which, as shown in Fig. 1, closes the open end
70 of the primary chamber.

E is a hydrocarbon-burner, of ordinary construction, such as the one patented to Frank B. Meyers under Letters Patent No. 399,770,
75 dated March 19, 1889, or No. 400,588, dated December 3, 1889, and manufactured under one or both of said patents by the Standard Oil-Fuel Burner Company, of Fort Plain, New York, *m* being the pipe feeding the liquid fuel or vapor to the burner and provided
80 with an ordinary valve for regulating the supply or feed, and *n* being the air-pipe connected to the burner, and, if desired, connected to a suitable fan, so as to create a blast.

The dotted lines *r* in Fig. 1 indicate the
85 orifice through the front, through which the hot blast from the burner is discharged into the primary chamber.

It is operated as follows: The burner is started with or without any material in either
90 chamber, or with it in both, or only the feed-chamber, and when the primary chamber has become heated to or substantially to the desired temperature the material to be melted is thrown or shoveled into the secondary
95 chamber, and either falls through the passage *a* into the primary chamber or part so falls and part is melted in the secondary chamber and runs down into the primary, according to the size of the pieces, and the
100 molten material collects in the concavity, which is, in fact, the hearth thereof. Then when enough is melted the apparatus is drawn back and tilted by the handle *k* and

the metal poured into ingot or other molds or into ladles. A dam *s* can be used in either or both chambers to enable either or both to retain a larger quantity of material to be melted or after it is melted. The blast from the burner is concentrated in the primary chamber, quickly raising it to the desired high heat, according to the metal to be melted, and also raising the secondary one to substantially approximately the same temperature, and is then discharged through the open end of the secondary and conducted away by any ordinary means. It will be seen that highly refractory metals can be readily melted in this apparatus, such as have heretofore required the use of crucibles, and at a great saving of expense for fuel, &c., and that no combustible is necessary upon the hearth.

I do not limit myself to the precise form of parts here shown and described, nor to any particular form of connecting-passage between them, so long as the chambers are vertically connected interiorly and the hydrocarbon-burner discharges directly into the primary and through it, and the blast is thence conducted into the secondary chamber.

The dotted lines *u* indicate a hopper which can be mounted upon the secondary and connected to the interior thereof, to be used when easily-melted metals are to be melted, and *v* (dotted lines) indicates a discharge-opening from the primary chamber, which can be used in some cases to discharge the molten metal, as when the primary chamber is not mounted upon a carriage, into ladles or molds, such opening to be plugged or stopped to stop the discharge in the usual way with cupolas.

The dotted lines *w* indicate an ordinary peep-hole, through which the contents may be inspected and stirred, if desired.

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

1. A furnace composed of two chambers placed vertically one above the other and connected at or near their centers by a vertical passage, one of the chambers being provided with trunnions; combined with a standard or support upon which the chambers are journaled, a front or screen for closing the front of the lower chamber, and a heater or oil-burner connected to the front, and which discharges flame into the lower chamber, substantially as shown.

2. A furnace composed of two chambers placed vertically one above the other, and connected by a vertical passage, each chamber having an opening through its front end, one of the chambers being provided with trunnions, combined with a movable support upon which the chambers are journaled, a stationary front or screen, a burner mounted thereon, and discharging into the lower chamber, substantially as described.

3. A furnace composed of two chambers mounted vertically one above the other and connected by a vertical passage, each chamber having an opening through its front end, trunnions upon one of the chambers, a lever for tilting the chambers, combined with a standard or support, a screen which closes the front end of the lower chamber, a burner mounted upon the screen, and means for separating the chambers from the screen so that the chambers can be tilted to discharge their contents, substantially as set forth.

In witness whereof I have hereunto set my hand on this 26th day of January, 1895.

ARTHUR N. GAYLORD.

In presence of—

W. H. SEWARD, Jr.,
HOWARD P. DENISON.