

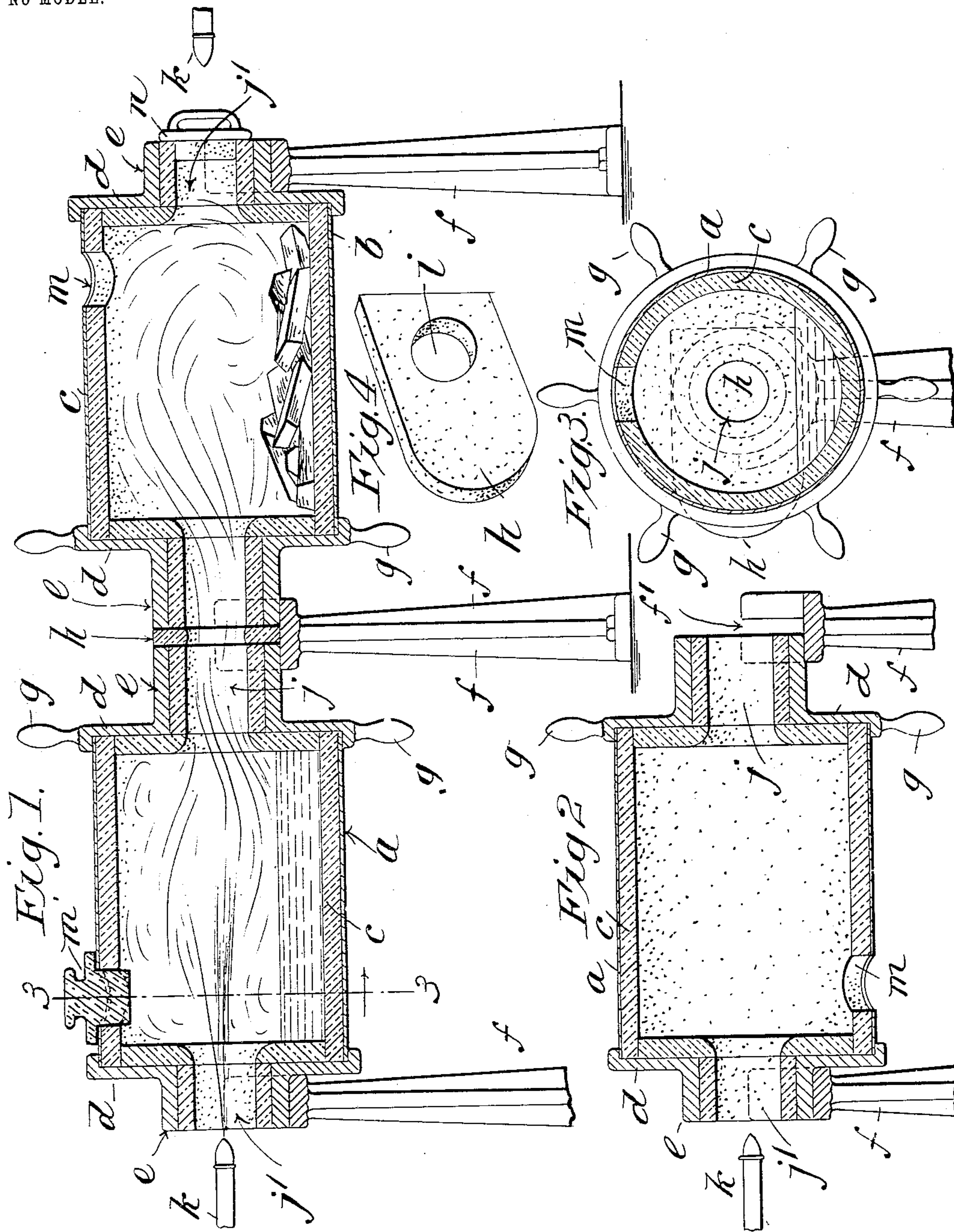
No. 750,748.

PATENTED JAN. 26, 1904.

J. F. BARKER.
MELTING FURNACE.

APPLICATION FILED AUG. 8, 1903.

NO MODEL.



Witnesses:
J. D. Garfield
H. D. Clemons

Inventor,
John F. Barker
by Chapin &
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN F. BARKER, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO THE
GILBERT & BARKER MANUFACTURING COMPANY, OF SPRINGFIELD,
MASSACHUSETTS, A CORPORATION.

MELTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 750,748, dated January 26, 1904.

Application filed August 8, 1903. Serial No. 168,740. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. BARKER, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Melting-Furnaces, of which the following is a specification.

This invention relates to furnace constructions, and is in the nature of an improvement on that type of small melting-furnaces such as are frequently used in the place of crucibles for melting metals—such as brass, copper, tin, &c.—and which are adapted more particularly to the use of gaseous or liquid fuel.

The object of this invention is to provide an improved furnace construction of this general type whereby the time between "heats," as it is termed, is greatly reduced and whereby the quantity of fuel per unit of metal melted is also greatly reduced. It is a well-known fact that these furnaces as generally used at present are wasteful of heat—that is to say, the heat as employed more than fills the furnace, the surplus passing out through an opening in the upper part and sometimes blowing back through the aperture through which the fuel enters.

This invention consists in a construction in which two of the furnaces are combined and are provided with a communicating passage between the two and means to introduce the fuel into either one or both of said furnaces, the latter being independently rotatable, all as will be now fully described and then clearly summarized in the claims.

In the drawings forming part of this application, Figure 1 is a sectional elevation of a construction embodying this invention. Fig. 2 is a similar view of one furnace in another position. Fig. 3 is a cross-section of Fig. 1 on line 3 3 looking in the direction of the arrow. Fig. 4 is a perspective view of a gate to close the passage between the furnaces.

Referring now to the drawings, *a* and *b* indicate two melting-furnaces constructed in the usual manner—that is, with cylindrical bodies of iron provided with a suitable refractory lining, as *c*, and iron heads to which these

bodies are secured, (indicated by *d*,) these heads being also lined with some material such as is used for the body. On the two heads of each body a hub *e* is provided, which is tubular and is also properly lined to protect it from the heat. These hubs have bearings in suitable standards *f*, whereby the furnaces are rotatably supported independently one of the other. Any means may be employed for effecting this rotation, a suitable way being to cast spokes *g* on the heads *d* in the manner substantially shown in the drawings.

The furnaces are mounted in the standard *f* in axial alinement, and between the adjoining ends of the hubs resting in the central standard a space is left, and the standard is slotted centrally, as at *f'*, and transversely thereof in such manner that said slot will register with the space between the adjoining ends of the hub, and in this space there is located the sliding gate *h*, (shown in Fig. 4,) which is made of some refractory material, as fire-clay. In one end of this gate is a hole *i*, which registers with the tubular passage *j*, leading from one furnace to the other. By the manipulation of this gate this passage *j* may be either partially or entirely closed.

Opposite the center of the tubular passage *j'* in the outer end of each furnace is located the burner or fuel-injector *k*. In each furnace there is an opening *m*, preferably located near that end thereof at which the fuel is introduced. A suitable stopper *n* is employed to close one of the tubular passages *j'* for the purpose described farther on. If desired, the injectors *k* may be made to swing away from their position opposite the axis of the furnace when it is desired to insert the stopper *n*. Another stopper *m'* is employed to close that one of the openings *m* which is nearest the fuel-entrance for the purpose hereinafter described. By means of this construction metal is poured from the furnaces *a* and *b* alternately, the operation being as follows: Both furnaces are charged with metal to be melted through the openings *m*, and if, as in Fig. 1 of the drawings, the contents of the furnace *a* are to be melted first the stopper *n* is used to close the passage *j'* in

the outer end of the furnace *b* and the stopper *m'* is used to close the opening *m* in the furnace *a*. Fuel is then directed into the passage *j'* in the outer end of the furnace *a*, the gate *h* being so placed as to leave the passage between the furnaces open. Fuel now enters the furnace *a*, as shown in Fig. 1, and striking against the farther end thereof a portion of it rebounds, thus filling the interior of the furnace, the stopper *m'* effectually preventing any escape of the heat therefrom through the opening *m*. From this furnace the heat passes through the passage *j* into the furnace *b*, its passage into this latter furnace being assisted by the axial location of the burner *k*. The heat thus entering the furnace *b* is largely absorbed by the contents thereof, the opening *m* at the farther end of this furnace serving merely as a vent to carry off the products of combustion and to maintain a proper circulation of heat, the passage *j'* in the outer end of the furnace *b* being of course closed.

It has been found in practice with two furnaces equipped and arranged in the manner herein described and without increasing the quantity of fuel that by the time the charge in the furnace *a* is melted the charge in the furnace *b* has taken up enough of the heat passing thereinto from the furnace *a* to become heated up to a cherry red. The furnace *a* being now ready to pour, the gate *h* is passed in to close the passage *j*, the stopper *n* is removed from the furnace *b*, and fuel from the burner *k* opposite said passage is turned into the furnace, heat from this burner being applied for the time being only to this furnace. After pouring the furnace *a*, which is rotated to bring the opening *m* therein beneath it, it is then rotated back to the position shown in

Fig. 1 and a new charge is introduced therein, whereupon the gate *h* is moved to open the passage *j* and permit the surplus heat from the furnace *b* to operate on the charge of the furnace *a*, and thus the operation is repeated, the outer end of the furnace *a* having the stopper *n* inserted therein.

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

1. The combination in a melting-furnace, of two separate chambers to receive charges of material, said chambers being independently revoluble on a common axis, and there being a passage from one chamber to the other; together with means to introduce gaseous or liquid fuel into either one of said chambers.

2. The combination in a melting-furnace, of two separate chambers to receive charges of material, said chambers being independently revoluble on a common axis, there being a passage from one chamber to the other, a gate in said passage, and means to introduce gaseous or liquid fuel into either one of said chambers.

3. The combination of two cylindrical furnaces, independently revoluble on a common axis, there being an axially-located opening in each end of each furnace, the openings in the contiguous ends of said furnaces constituting a passage from one to the other; a gate in said passage; there being a charging and pouring opening in each furnace near the outer end thereof, together with means to introduce gaseous or liquid fuel into either furnace.

JOHN F. BARKER.

Witnesses:

L. E. DRAPER,
J. H. GRANT.