

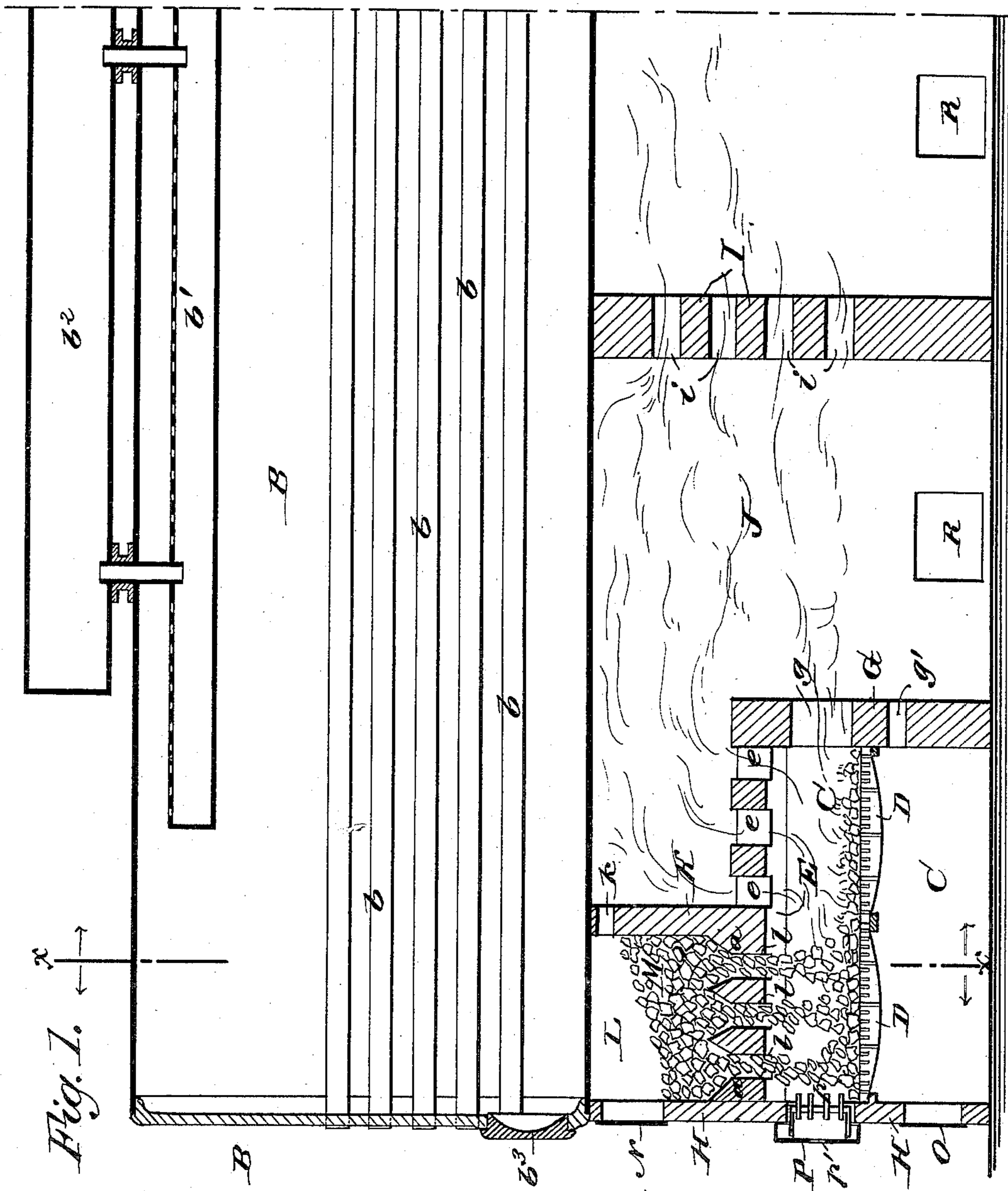
(No Model.)

2 Sheets—Sheet 1.

J. MAILER.
BOILER FURNACE.

No. 330,136.

Patented Nov. 10, 1885.



WITNESSES:

Wm. Beyer
C. Bedgwick

INVENTOR:

J. Mailer
BY *Munn & Co*
ATTORNEYS.

(No Model.)

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Fig. 3.

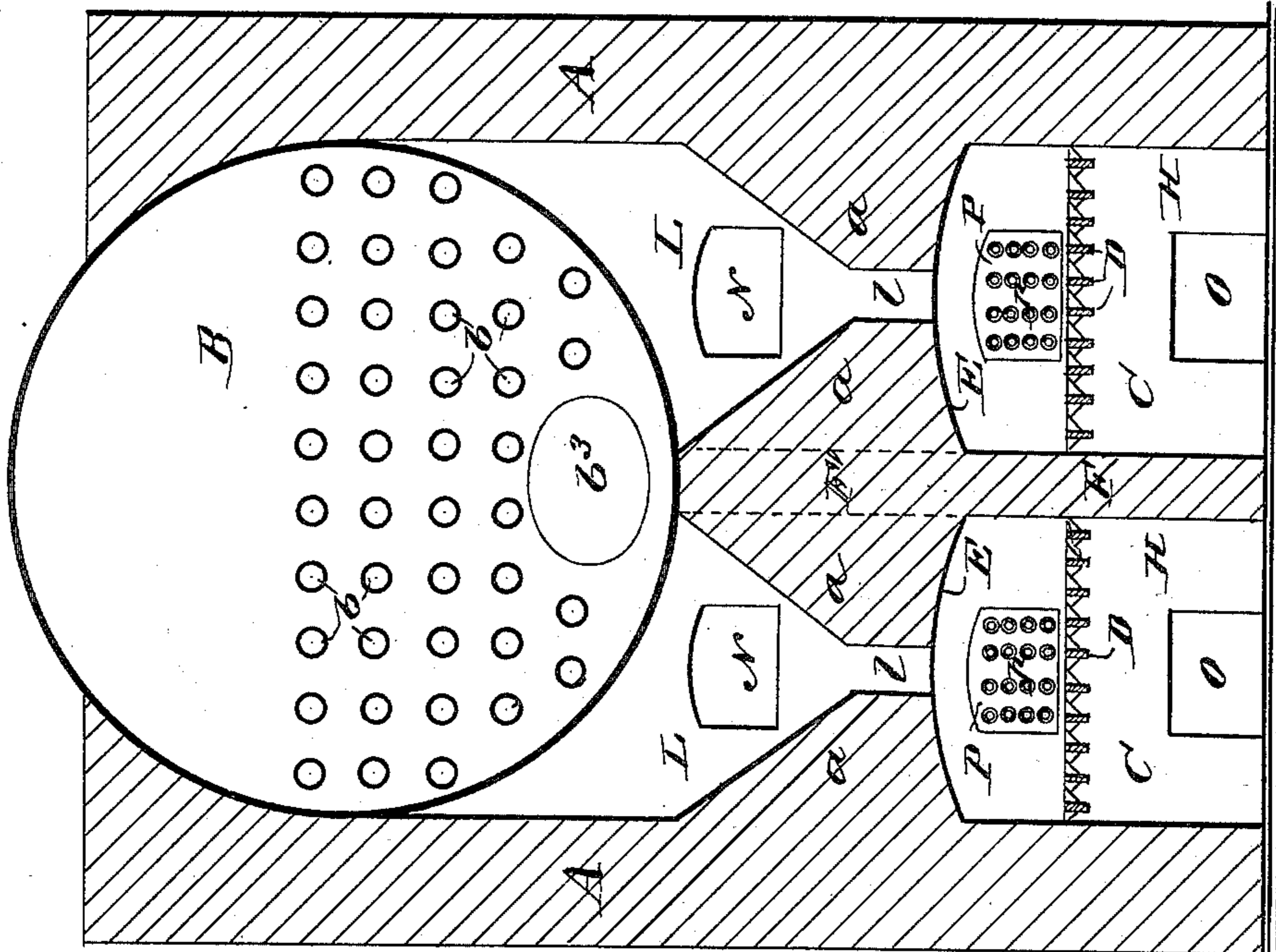
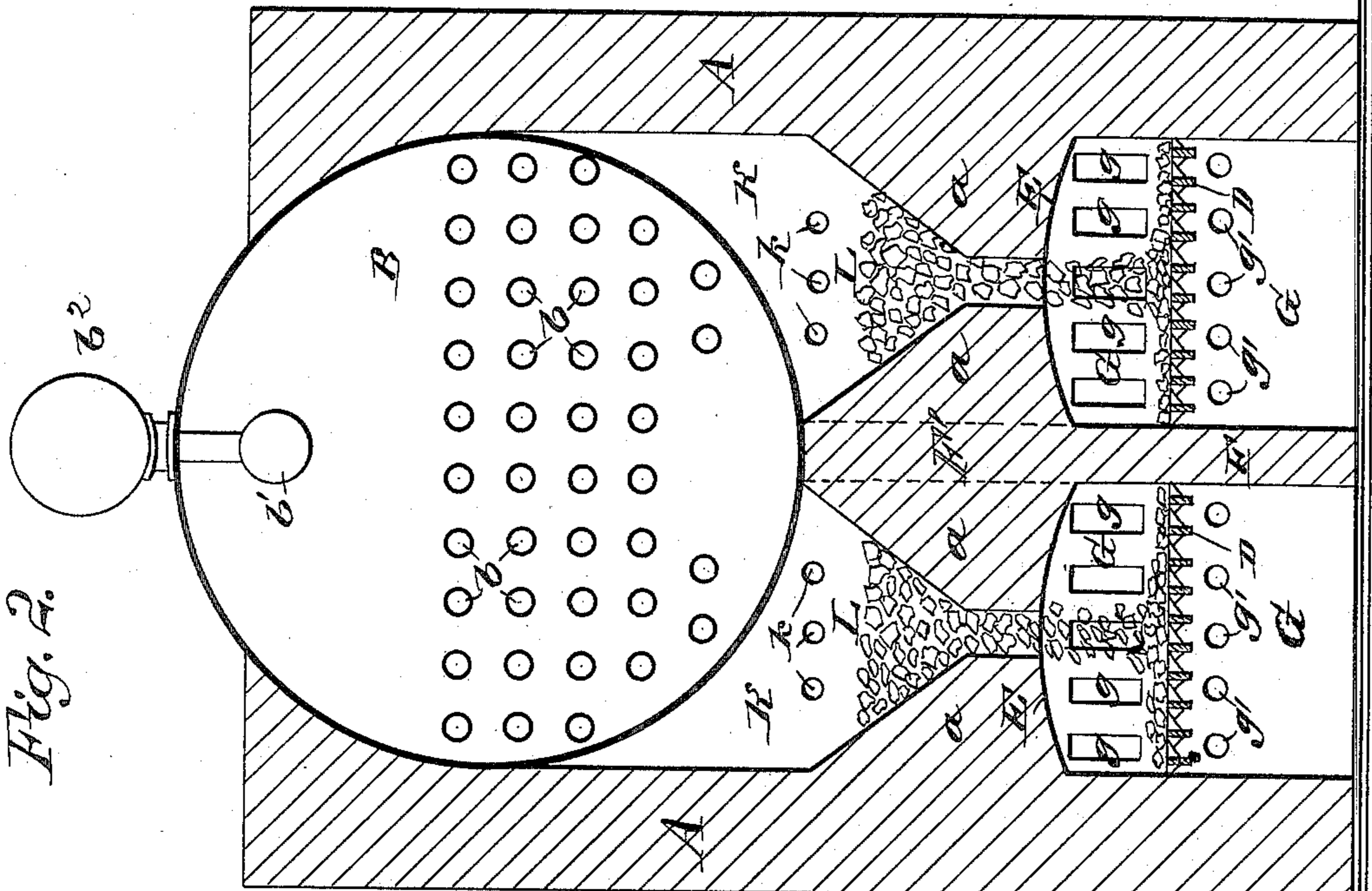


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN MAILER, OF SAN FRANCISCO, CALIFORNIA.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 330,136, dated November 10, 1885.

Application filed January 7, 1885. Serial No. 152,206. (No model.)

To all whom it may concern:

Be it known that I, JOHN MAILER, of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Boiler-Furnace, of which the following is a full, clear, and exact description.

The object of my invention is to improve the construction of boiler-furnaces.

The invention consists in a boiler-furnace constructed with a fuel-magazine above and opening into its fire-box, and with passages leading from the fuel-magazine and fire-box into a rear combustion-chamber. Tube-lined and apertured doors are provided to admit air to the fuel as it feeds from the magazine to the fire-grates, the whole construction providing for a more regular supply and economical consumption of the fuel, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation through the forward end parts of a boiler and furnace constructed in accordance with my invention. Fig. 2 is a transverse vertical sectional elevation on the line *xx*, Fig. 1, looking toward the rear, and Fig. 3 is a like section on line *xx*, looking toward the front, of the boiler.

The letters *A A* indicate the side walls of the furnace, in which the boiler *B* is set. The boiler shown is an ordinary steam-boiler having fire-tubes *b*, an anti-priming tube or cylinder, *b'*, connected with a steam-drum, *b²*, from which the steam is taken, and a man-hole at *b³*; but any suitable style of boiler or evaporator may be set over the furnace.

As shown, the furnace is built with two fire-boxes or chambers, *C C*, with grates *D* set therein, and with their roofs *E* arching over from the central partition-wall, *F*, to the opposite side walls, *A A*. The transversely-ranging wall *G*, forming the backs of the fire-boxes *C*, is set about half-way between the front wall, *H*, of the furnace and the rear wall, *I*, of the forward combustion-chamber *J*. About at the center of the fire-box roofs *E*, I build a transverse wall, *K*, which extends upward to the under side of the boiler, and I

run the partition-wall *F* up to the boiler, as in dotted lines at *F'*, Figs. 2 and 3, whereby fuel-magazines *L L* are formed over the fire-boxes *C*, one for each fire-box.

Enlargements *a* at the sides of the walls *A H F' K*, having inclined and converging faces, together with apices on the parts of the roof *E*, at about the lateral centers of the fuel-magazines, give the magazine-floors a hopper shape, so that the fuel *M*, supplied to the magazines through their doors *N*, will feed down automatically through the openings *l l l* in the fire-box roofs *E* onto the front parts of the grates *D* below. Three comparatively small openings, *l*, as shown, are preferred for each magazine and fire-box, allowing a gradual and steady feed of the fuel to the grates *D*, and I prefer to set the grates about one foot or a little more from the crowns of the fire-box roof-arches *E*, so that a proper supply of fuel will be maintained on the grates to promote economical fuel consumption.

I make openings *k* through the wall *K* for the escape to the combustion-chamber *J* of any gases which may form in the fuel-magazines, and openings *e*, made through the fire-box roofs *E*, behind the magazines, and also openings *g*, made in the wall *G*, allow the products of combustion to escape from the fire-boxes into the combustion-chamber *J* from above the grates *D*. Openings *g'* in the wall *G* below the grates *D* will pass air admitted at the ash-pit doors *O* to the combustion-chamber *J*, and openings *i* in the wall *I* pass the products of combustion to the rear chambers and flues of the furnace.

I make the fire-box doors *P* substantially as described in a United States Patent No. 247,080, granted to me September 13, 1881, said doors having short tubes *p*, which are fitted in their back plates and receive air through openings *p'* of their front plates and pass it to the fire-box.

Cleaning-doors *R* are provided at convenient places in the furnace-walls.

The operation is as follows: The fire may be built on the grates *D* with fuel introduced at either doors *N* or *P*, and the magazines *L* will then be charged with the fuel *M*, which feeds downward as it is consumed. The fire-door tubes *p* supply air to the fire-boxes *C*, and

- the products of combustion pass through openings *e g* into the chamber J, where any gases passing through the magazine-outlets *k* mingle with them and are consumed, and the ash-pit doors may be opened to admit more or less air through the openings *g'*, all the products of combustion passing rearward to the flue through the openings *i* in wall I, and an almost complete combustion of the fuel being secured.
- 10 The fuel-supply in the magazine may easily be maintained, and should the steam-pressure fall unduly at any time the fuel from the magazine may be pushed back over the grate-surface to any desired depth to intensify the fire
- 15 and increase the steam-pressure, and when the fires are to be cleaned all the fuel in the magazines will be allowed to feed down to the grates, and when the cleaning is accomplished the magazines will again be filled.
- 20 The magazines being placed over the front ends of the fire-boxes, the fuel is fired from behind, insuring more complete combustion and maximum economy of fuel.
- It will be understood that but one fuel-magazine and fire-box may be used in small furnaces, and nests of boilers may be set with any required number of fire-boxes and corresponding superposed fuel-magazines, substantially as above described.
- 25 Having thus described my invention, what

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

1. In a boiler-furnace, the combination, with the fire-box C, of the fuel-magazine L, located above the fire-grates and beneath the boiler-shell, and formed with a back wall, K, supported on fire-box arch E at about the lengthwise center of said arch, and having openings *l* into the fire-box, and openings *k* into the combustion-chamber L, and said arch E having openings *e* into the chamber J behind the fuel-magazine, substantially as herein set forth.

2. A boiler-furnace constructed with a fuel-magazine, L, located above and opening at *l* into its fire-box C, and opening also at *k* into the combustion-chamber J, and said fire-box having passages *e g*, leading into the chamber J, in combination with air-inlet doors fitted to the fire-box, substantially as herein set forth.

3. The combination, in a boiler-furnace, of the fire-box C, having outlets *e g g'*, the fuel-magazine L, located above and opening at *l* into the fire-box, and having a door, N, and outlets *k*, the combustion-chamber J, and the fire-box and ash-pit doors P O, substantially as herein set forth.

JOHN MAILER.

Witnesses:

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