

(No Model.)

J. P. OLIVER.

FURNACE.

No. 395,344.

Patented Jan. 1, 1889.

Fig. 1. a.

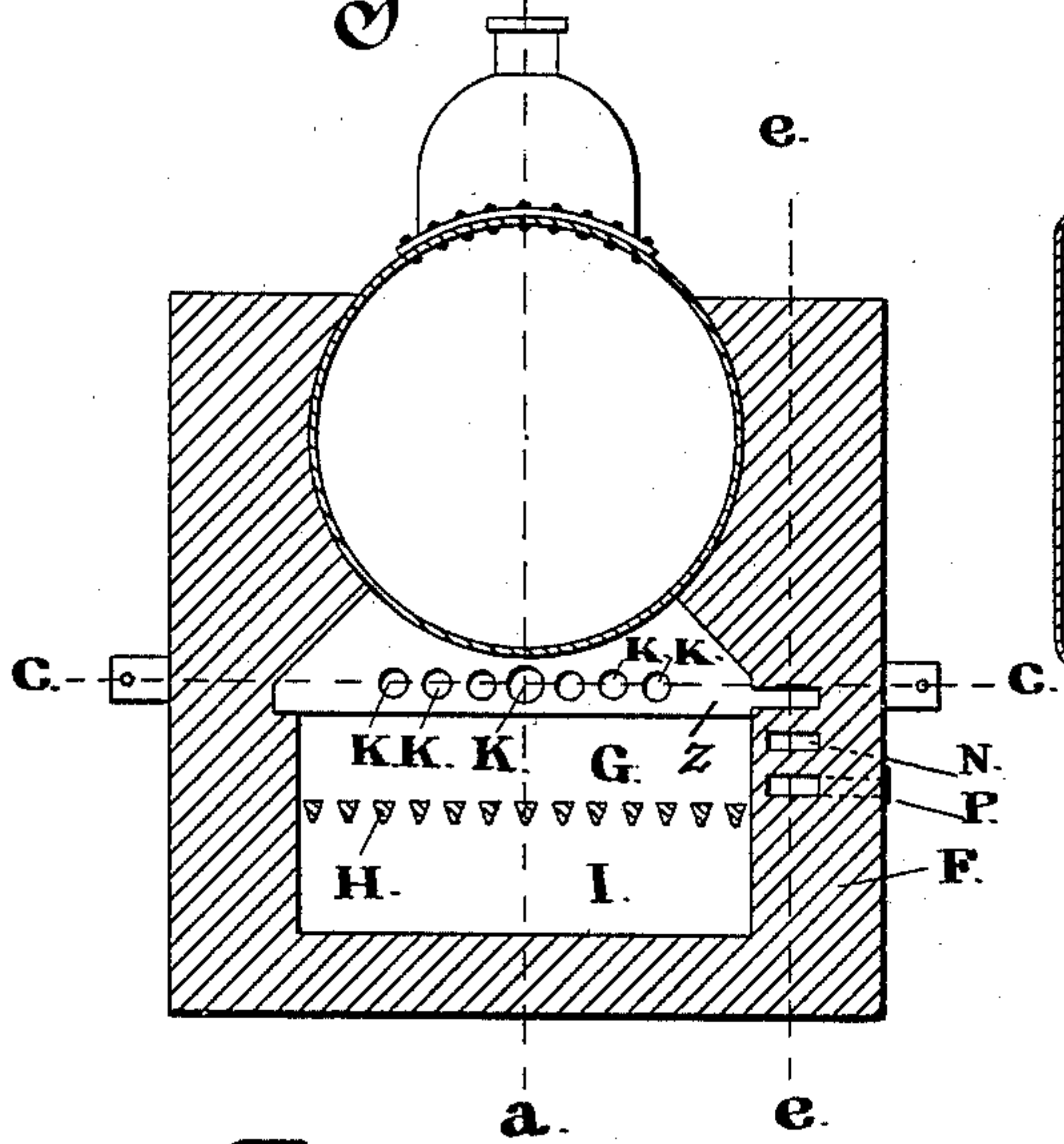


Fig. 2.

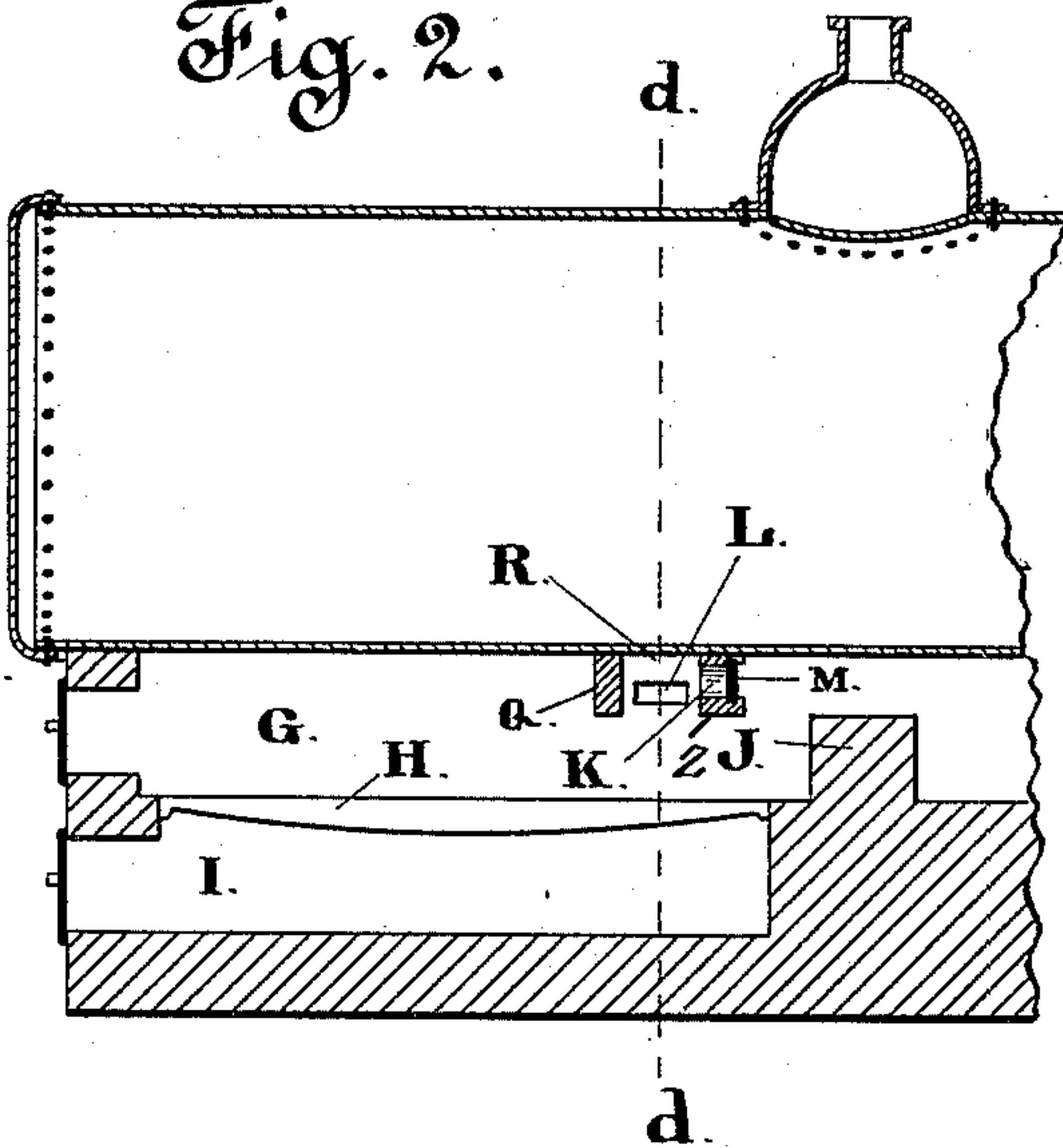


Fig. 3.

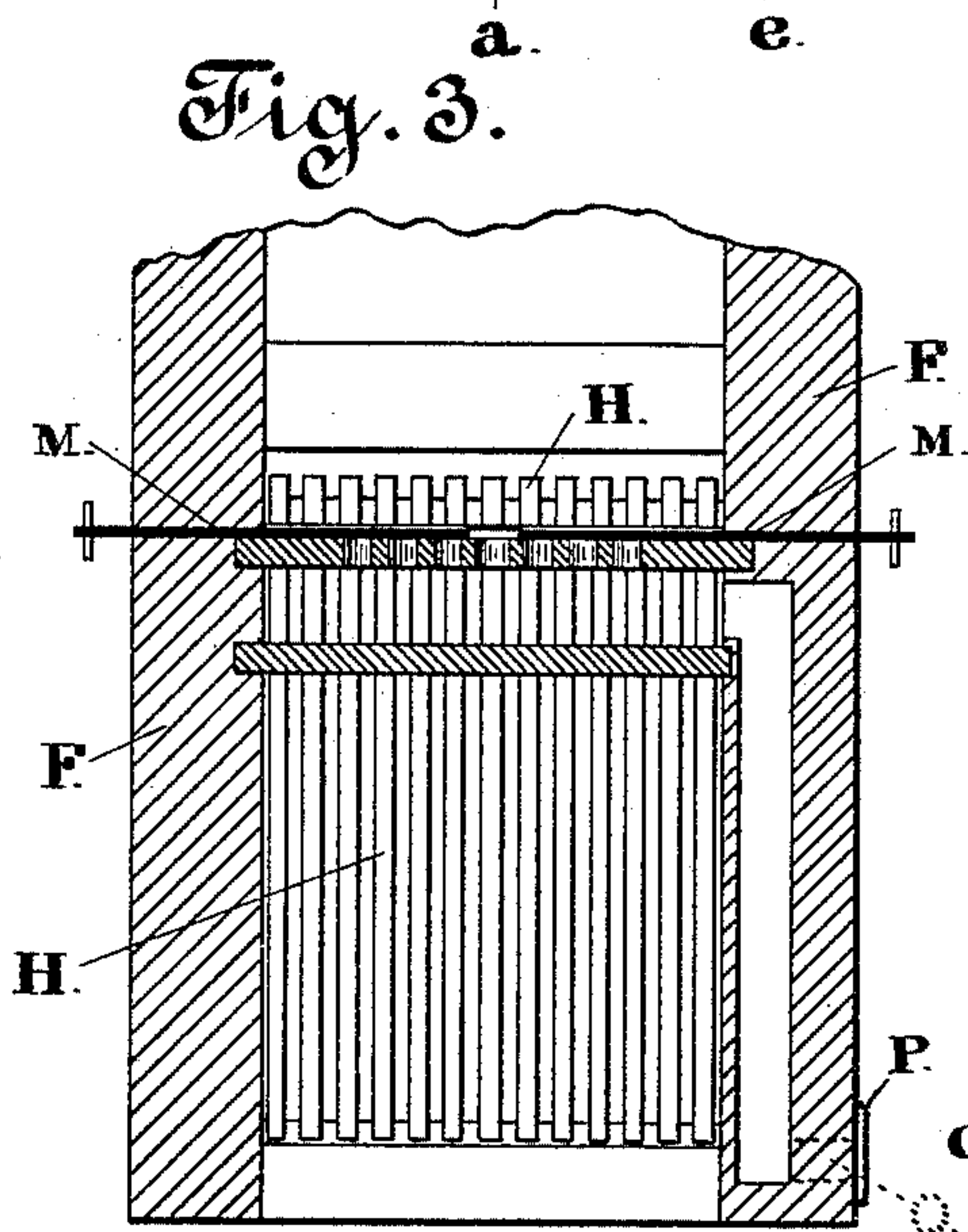


Fig. 4.

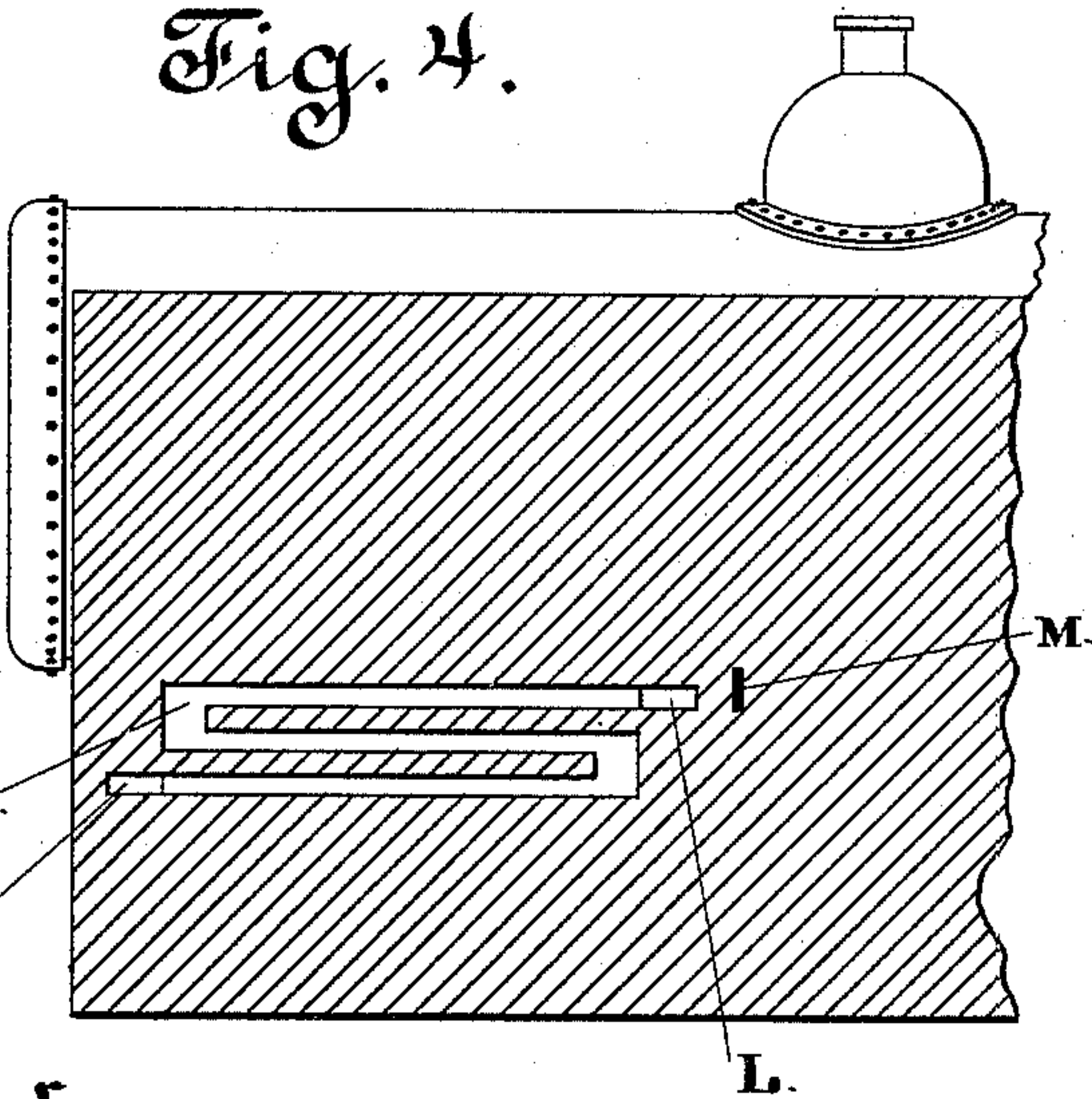
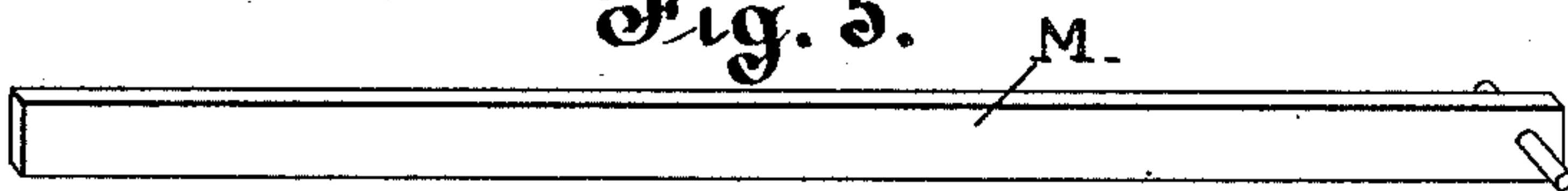


Fig. 5.



Attest.

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UNITED STATES PATENT OFFICE.

JOSEPH P. OLIVER, OF OAKLAND, CALIFORNIA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 395,344, dated January 1, 1889.

Application filed August 27, 1888. Serial No. 283,826. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. OLIVER, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented a new and useful Improvement in Furnaces for Increasing Combustion in Steam-Boiler Furnaces, of which the following is a full, clear, and exact description.

Figure 1 is a sectional elevation showing the whole cut through the dotted lines *d d*, Fig. 2. Fig. 2 is a sectional elevation broken off, showing the same cut through dotted lines *a a*, Fig. 1. Fig. 3 is a sectional plan view showing the same cut through the dotted lines *c c*. Fig. 4 is a sectional elevation showing the same cut through the dotted lines *e e*. Fig. 5 shows an enlarged view of one of the slides M.

F represents the outer wall of the furnace; G, the fire-box; H, the grate-bars; I, the ash-pit; J, the bridge-wall; K, the hot-air-supply openings; L, the air-receiving passages; M, the damper valves or slides for regulating the discharge of heated air.

N represents the returning-passages for receiving the cold air and heating the same.

O represents the passage connecting the returning-passages N with the outside; P, the outside or cold-air dampers.

Q represents a deflector to throw the draft down in front of the fresh-air supply to mingle the heated air with the fresh air.

I construct the outside wall, F, of any well-known form. I also apply my invention to any well-known style of furnace now in use.

The fire-box G, grate-bars H, ash-pit I, and bridge-wall J are also of any well-known construction for boiler-furnaces.

I construct to the rear of the wall Q a wall, Z, which is provided with the hot-air openings K, controlled by the slides M, as shown, under the bottom of the boiler, to allow the passage of heated air, which is received through the air-heating passages N, which are run back and returned forward, and back to where they connect with the connecting-passage L. The outside passages, O, are supplied with dampers P, to regulate the cold air.

I generally form the sliding dampers M of fire material similar to that generally employed for that class of construction, such as fire-brick or tile.

The following is the operation of the same: The fire burning on the grate and heating up the fire-box heats the air in the returning-passages N and causes it to rise and pass up into the passages M. The outside dampers, P, are then opened to admit the required amount of fresh air to supply oxygen for complete combustion. The slides or valves M are moved in for the purpose of throwing the fresh air into the center under the boiler and in the center of the flame or heat-crater; or they may be moved outward to allow the same to spread out into the side flame under the boiler, according to the heat of the flame.

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

1. In combination with a boiler-furnace, the deflector Q, the depending wall to the rear of the said deflector, having the openings K, slides or valves M, and the air-passages N, O, and L, for the purpose of supplying fresh air and increasing combustion, constructed, arranged, and operated substantially as and for the purposes set forth.

2. The combination, with a boiler-furnace, of the depending wall Z, having the air-openings K and slides M, for the purpose of regulating the passage of fresh air through said wall, substantially as set forth.

3. The combination, with a boiler-furnace having the return flues or passages N, of connecting-passages L and O, whereby fresh air may be supplied and partially heated, the deflector arranged beneath the boiler, the depending wall in rear of the said deflector provided with openings, and the slides M for closing the same, substantially as specified.

JOSEPH P. OLIVER.

Witnesses:

JOHN H. REDSTONE,
A. T. DOZIER.