

No. 696,079.

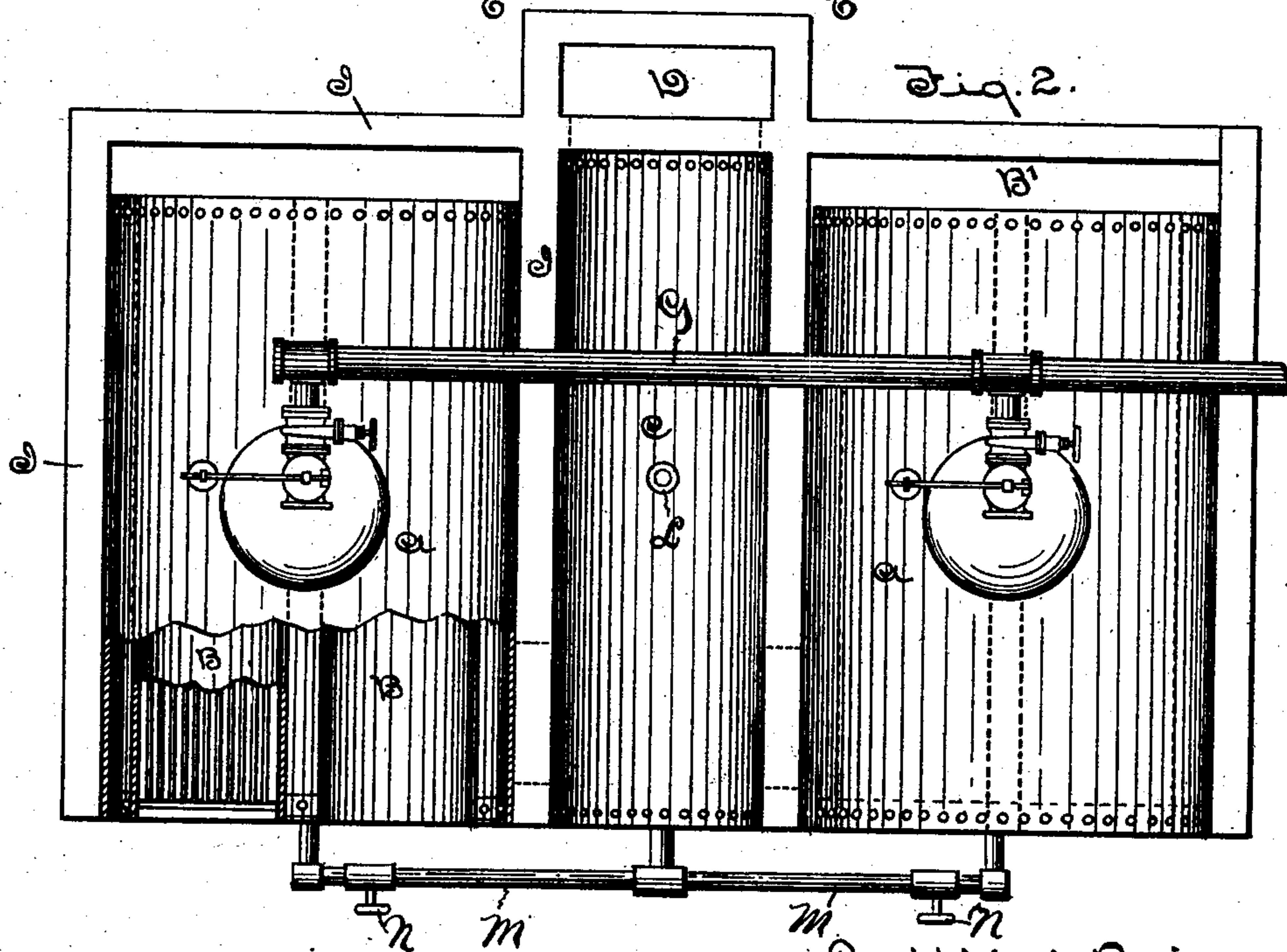
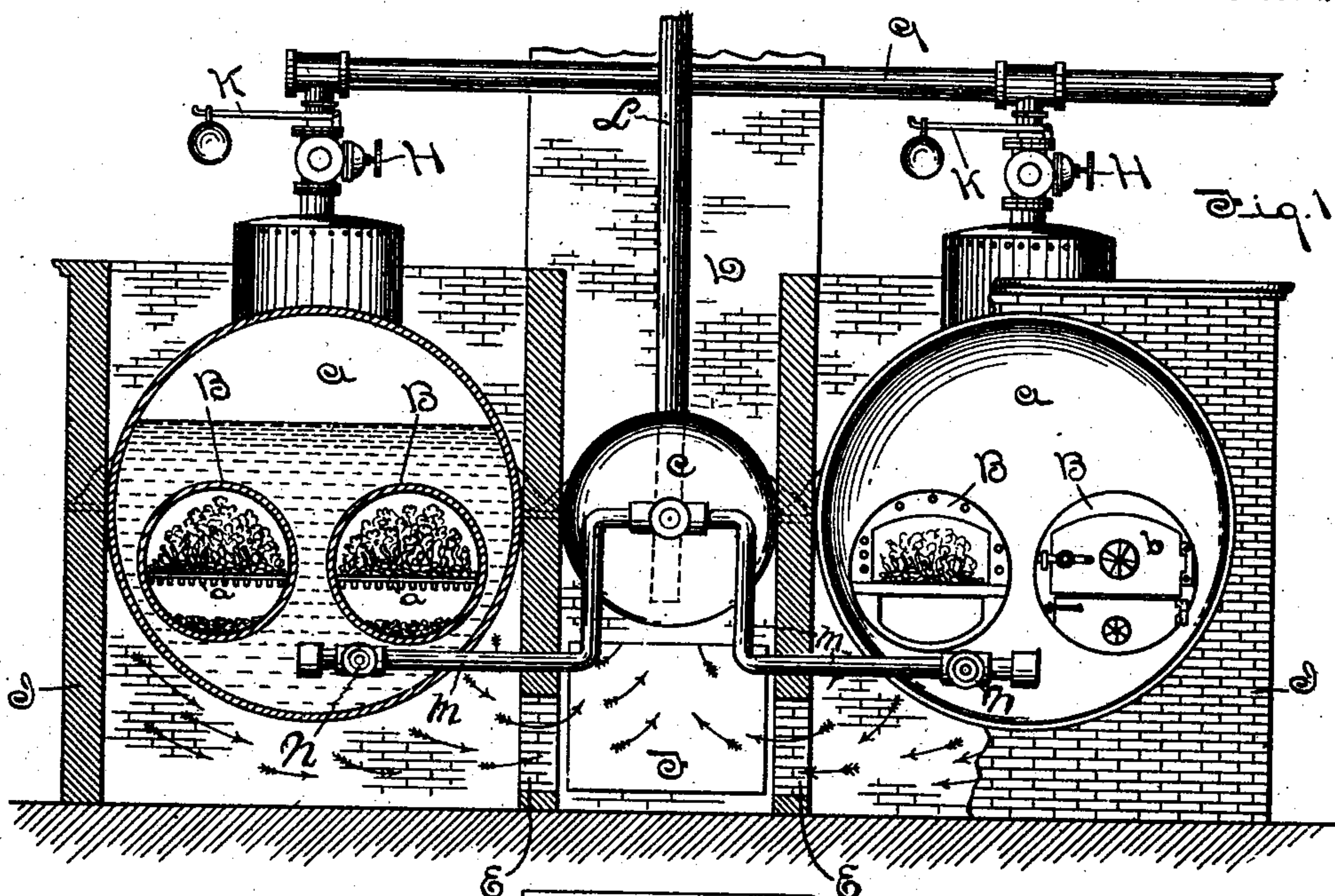
Patented Mar. 25, 1902.

G. RAISSE.
STEAM BOILER.

(Application filed May 1, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
George Oltsch
Hugo Oltsch

Gottlieb Raissle
Inventor
R. Schmitt
Attorney

No. 696,079.

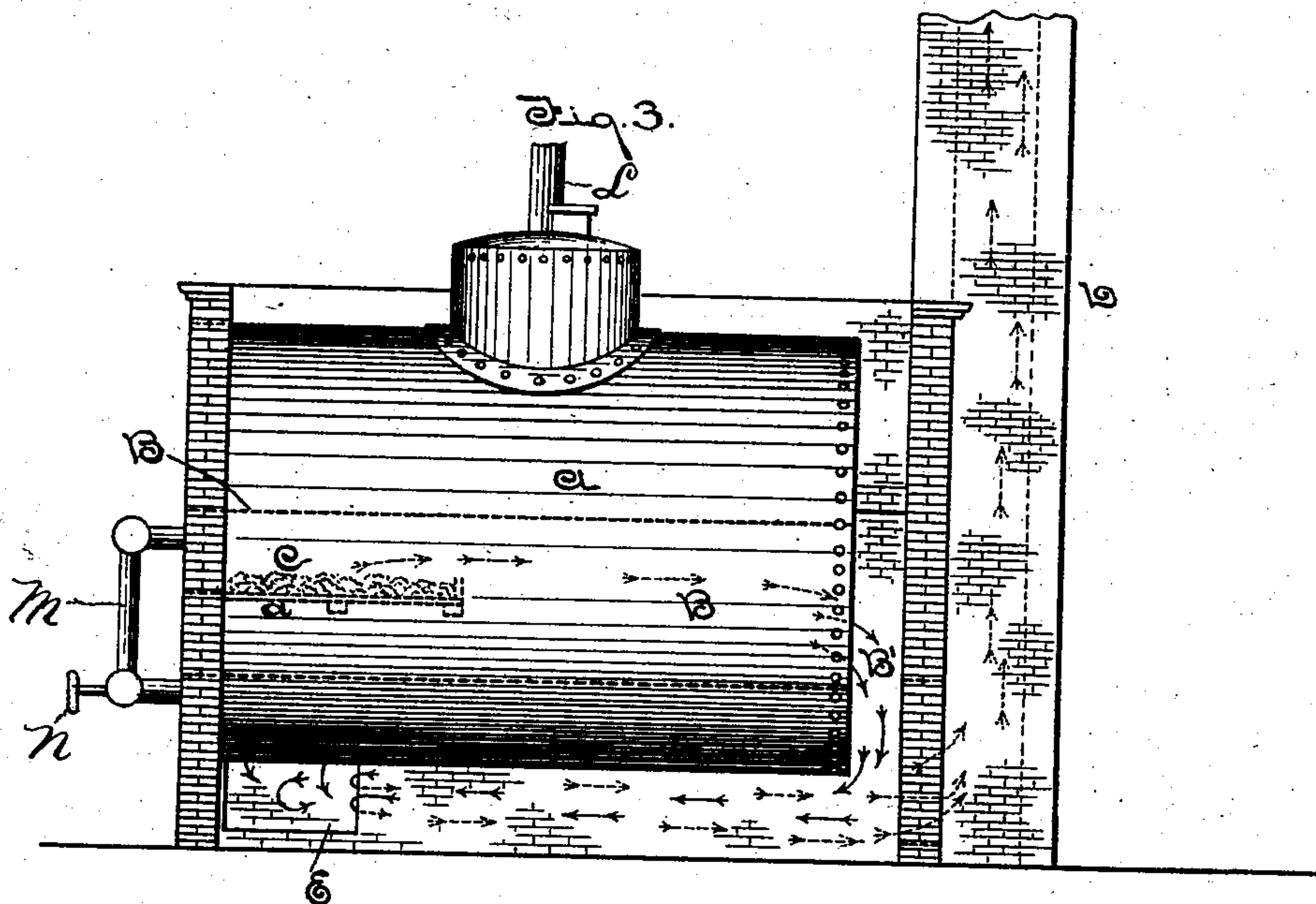
Patented Mar. 25, 1902.

G. RAISSE.
STEAM BOILER.

(Application filed May 1, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:
George Oltsch
Hugo Oltsch

Gottlieb Raissle.
Inventor.
By *Shuman & Dalton*
Attorneys

UNITED STATES PATENT OFFICE.

GOTTLIEB RAISSLE, OF SOUTH BEND, INDIANA.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 696,079, dated March 25, 1902.

Application filed May 1, 1901. Serial No. 58,347. (No model.)

To all whom it may concern:

Be it known that I, GOTTLIEB RAISSLE, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in steam-boilers; and its object is to arrange two or more boilers in parallelism and interpose a primary water-heater between each set of boilers, both boilers and heaters being in the same plane and so located that either one or both of the boilers may be used and the same results obtained.

My invention consists more particularly of boilers arranged horizontally and provided with longitudinal fire-tubes, in the front ends of which are located the fire-chambers and through which the products of combustion pass to the back of the boilers into a chamber beneath the boilers, through which the products return and contact with the entire lower surface of the boilers, thus obtaining an increased heating area. A primary heater supplied through any available source is supported in a chamber beneath the boilers, and the products of combustion pass beneath this heater before making their exit through the chimney. Hence one boiler may be used while the other is under repair and the central heater receive the same action from the products, the course of which is not in the least obstructed by the employment of only one heater, and thus the same result is attained.

For a full understanding of the merits and advantages of my invention reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is an end view of one set of boilers, the front wall of the boiler-setting for the left-hand boiler being removed, showing the interior construction of the same and the course of the products as they return from beneath the boilers. Fig. 2 is a top plan view of the set, the front portions of one boiler being broken away to show the fire-chamber in the fire-tube. Fig. 3 is a longitudinal section

through the boiler-setting, the boiler being shown in elevation.

Like characters of reference indicate corresponding parts throughout the several views.

Referring to the drawings, I designates the brick wall of a boiler-furnace setting, which incloses the sides and back of the boiler, the latter extending through the front and flush with the outer surface of the wall. Mounted between the walls are the boilers A, provided with longitudinal fire-tubes B, in the front of which are located the fire-chambers, and in which chambers are the grates *a*. Each boiler is preferably provided with two parallel fire-tubes, as shown, and a suitable door *b* at the end, through which access is gained to the same. Mounted in the chamber between the boilers is a heater C, which is supplied through any available source, and in the rear of this heater is the chimney D, through which the products make their exit. The products of combustion pass through the fire-tubes B to the chamber B' at the rear of the boiler, thence down and under the boilers, the entire under half of the outer surface of each boiler being exposed to the products and providing an increased heating area. An opening E is made through the wall near the bottom and at the front end of the same. The products pass through this opening into the chamber F between the boilers and beneath the heater C and act upon the entire under half of the heater as they pass rearwardly through the chamber F, making their exit through the chimney D in the rear of the boiler. By this arrangement the products not only act on the boilers proper, but also the primary heater C, and thereby not only attain a high degree of efficiency and saving of fuel so far as the boilers themselves are concerned, but also utilizing the heat for the heater C which would be otherwise wasted.

By closing the openings E one boiler may be used while the other is under repair and the same results attained, since the products from the other boiler would not be obstructed in their course, but pass into the chamber F beneath the heater C and out the chimney D.

The boilers are connected at the top by means of a steam-pipe G, which connects with the steam-domes of each boiler, and the

supply of steam to the pipe G may be closed by the valve H, located in the pipe connecting the pipe G, and each boiler is provided with a suitable safety-valve K. By locating the grate and fire-chamber within the fire-tube none of the products are wasted, and the fire-tubes being large the action of the products upon the water surrounding the tube is very great.

10 The heater C is supplied with water through the pipe L and is kept full or nearly full at all times, and the boilers are supplied from it by means of the pipes M M, located in front of the heater and boilers. Near the ends of each pipe M is a valve N to cut off the supply to either boiler when only one boiler is being used. The water being first heated in the heater C, the lime and other mineral impurities have ample time to become separated from the water therein, whereby water of a pure quality and higher degree of temperature is provided for supplying the steam-producing boiler or boilers A, and the boilers may be used for the purpose of making steam for heating purposes or for producing motive power.

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

30 1. The combination with a boiler or boilers, and a primary heater located between the same, of a boiler-furnace setting surrounding the boiler and heater and separating the boilers from the heater, longitudinal fire-tubes within the boilers provided with a fire-chamber, a chamber beneath the boilers through which the products pass after leaving the fire-tube and by means of which the entire lower surface of the boiler is subjected a second time to the action of the products, openings

in the walls which separate the boilers from the heaters to conduct the products into the chamber beneath the heater, and which heater is subjected to the action of the products as they pass through said chamber, a steam-pipe connected with the two boilers, and a supply-pipe connected with the heater, valves for controlling the steam from each boiler to the steam-pipe, whereby either one or both the boilers may be used, substantially as and for the purpose set forth.

2. The combination with boilers, each having fire-tubes interiorly and longitudinally arranged in pairs mounted therein, of a fire-chamber within the fire-tubes, a chamber beneath the boilers through which the products return to the front thereof and whereby the boilers are a second time subjected to the heat of the products, of a primary heater intermediately disposed with and in the same plane with the boilers, walls separating the heater from contact with the boilers, openings in the said walls for admitting the products from the chambers under the boilers into the chamber under the primary heater, said heater being subjected to the action of the products passing through the last-mentioned chamber, a supply-pipe connected with the primary heater, means for supplying the boilers from the heater, upwardly-directed valved pipes connected with the dome of each boiler, and a steam-supply pipe communicating with the said upwardly-directed valved pipes.

In testimony whereof I affix my signature in presence of two witnesses.

GOTTLIEB RAISSE.

Witnesses:

GEORGE OLTSCH,
HUGO OLTSCH.