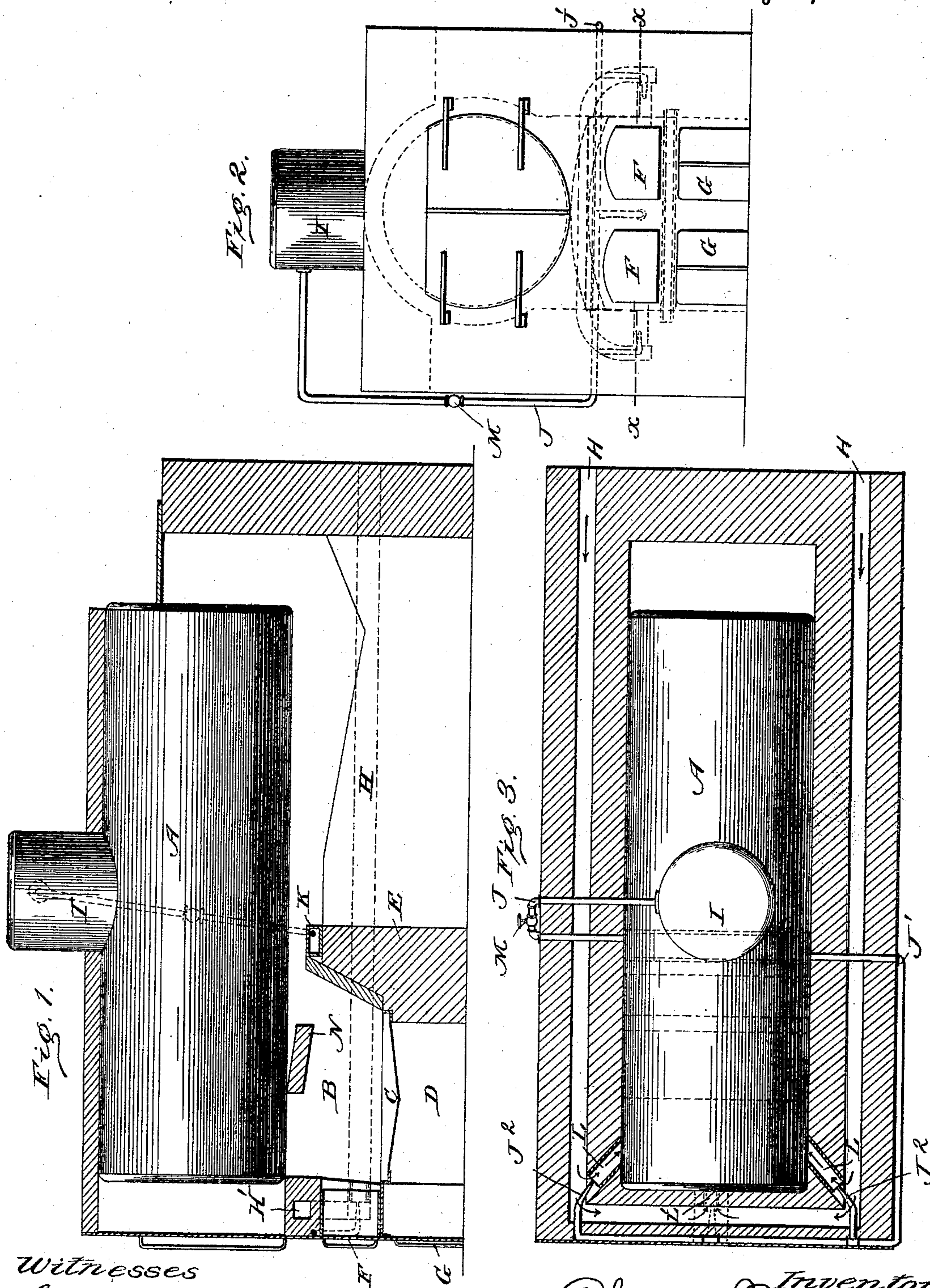


(No Model.)

C. RINCK.
STEAM BOILER FURNACE.

No. 500,777.

Patented July 4, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES RINCK, OF CINCINNATI, OHIO.

STEAM-BOILER FURNACE.

SPECIFICATION forming part of Letters Patent No. 500,777, dated July 4, 1893.

Application filed March 17, 1893. Serial No. 466,493. (No model.)

To all whom it may concern:

Be it known that I, CHARLES RINCK, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Steam-Boiler Furnaces; 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 that class of steam boiler furnaces wherein steam and air are injected onto or over the mass of burning fuel.

My invention consists in injecting steam gas, or superheated air, in a mingled or mixed state, onto or over the burning mass or into the flame, and in causing the mingled gases to pass under, or be acted upon, by a reverberatory arch to force such mingled gases down upon or into the highly heated fuel, whereby to insure perfect combustion of the otherwise wasted or unconsumed products, and to certain novel features in the construction and arrangement of parts, all as hereinafter explained, illustrated in the drawings, and specifically pointed out in the claim.

In the accompanying drawings, wherein like letters of reference point out similar parts on each figure:—Figure 1, is a vertical longitudinal section of my improved furnace showing the boiler and dome in full lines; Fig. 2, a front view of the same. Fig. 3, is a horizontal section on the line x, x , of Fig. 2.

The furnace, or walls thereof, in which the boiler, A, is located may be built up in any preferred manner and of the usual material used for such purposes and provided with the fire-box, B, grate-bars, C, ash-pit, D, bridge wall, E, with fire doors F, and ash-pit doors, G, all of which may be of any usual or preferred form and arrangement.

Formed or built in the side walls of the furnace, at points above the plane of the grate bars, are chambers or air ducts, H, H, one on each side thereof, shown in the drawings as extending from the rear end of the furnace to the front thereof where they communicate with a similar chamber or duct, H', of arched conformation, extending over the fire doors forming a continuous chamber or duct to cause

the air to be thoroughly heated for a purpose hereinafter explained. The side chambers communicate with the fire-box through inclined ducts, L, and the central duct through an inlet, L', located between the fire-doors and discharging at such angles relative to each other that the air shall be distributed over the entire flame surface, or be thoroughly diffused and mingled with the rising products from the burning mass.

The flues may be arranged differently than as above described only so that they shall discharge into or from the front of the furnace.

Connected to the dome, I, of the boiler, are steam pipes J, which extend down therefrom and communicate with a steam-box or coil, K, located in this instance at the top of the bridge wall, and to which box or coil is connected a steam pipe, J', which extends therefrom to and around the front of the furnace and having branch pipes or nozzles, J², opening into the discharge outlets from the air ducts, forming an injector to draw the air into the flues to be mingled therewith and with the rising gases from the burning fuel and by which to insure the mingling therewith of a proper amount of oxygen and steam gas in a finely divided state to secure the proper and perfect combustion of the same. To further assist in obtaining such proper construction an arch, N, composed of fire brick or tile, is located in the fire box extending from a point at or near the center thereof and inclining back toward the bridge wall, forming a reverberatory arch acting to force the mingled products down onto the flame at the point of greatest heat.

A cock, M, is located in the steam pipe for regulating the supply of steam, so that the steam can be admitted in such quantity as desired, or when needed, and acting to regulate the quantity and force of the superheated air.

Having thus fully described my invention and the manner of its operation, what I claim as new, and desire to secure by Letters Patent of the United States of America, is—

In a steam boiler furnace, air ducts arranged to convey or deflect the air diagonally from the sides across the fire pot, and in a direct line from the front, steam pipes opening

into the air ducts, a receptacle located in the
path of the flame for superheating the steam,
connecting with the boiler and steam pipes, a
reverberatory or deflecting arch located over
5 the grate bars, and means for controlling the
admission of steam and with it the air, sub-
stantially as and for the purpose set forth.

In testimony that I claim the invention
above set forth I affix my signature in pres-
ence of two witnesses.

CHARLES RINCK.

Witnesses:

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JNO. A. CALDWELL.