

(No Model.)

W. McCOY.

STEAM BLOWER AND DRIER FOR FURNACES.

No. 419,539.

Patented Jan. 14, 1890.

Fig. 2.

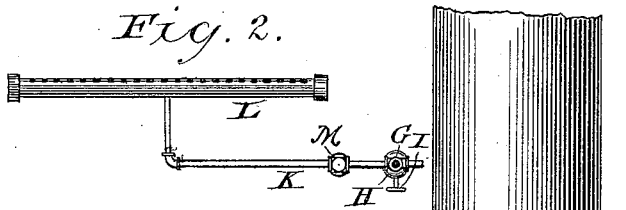
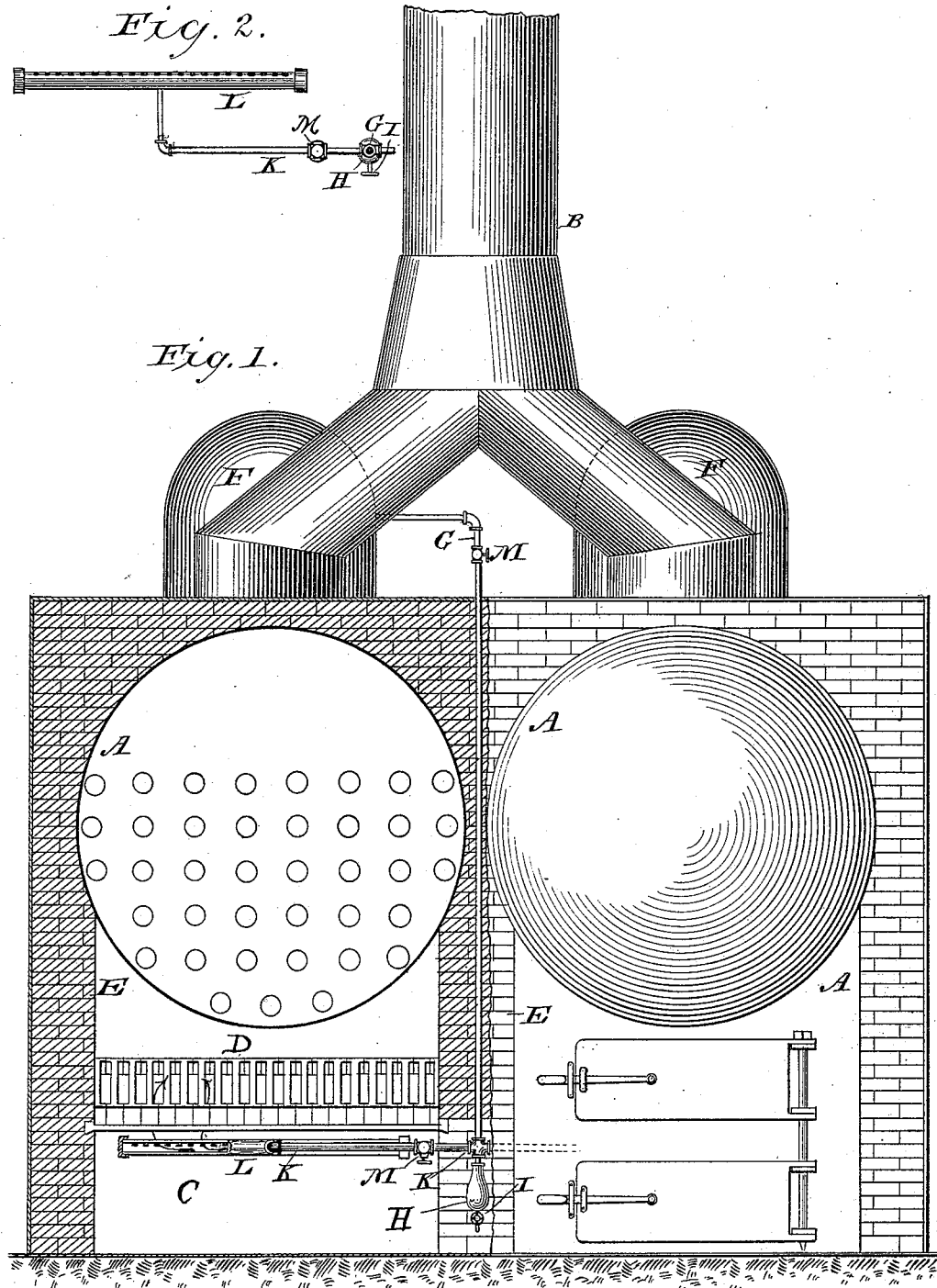


Fig. 1.



Witnesses

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STEAM BLOWER AND DRIER FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 419,539, dated January 14, 1890.

Application filed November 1, 1889. Serial No. 328,919. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MCCOY, of the city of Rome, county of Floyd, and State of Georgia, have invented certain new and
5 useful Improvements in Steam Blowers and Driers, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce a
10 device for drying steam and for supplying it in the dry state beneath the grate-bars of a furnace for the purpose of increasing the draft and promoting more perfect combustion therein, through the decomposition of the
15 steam, than is possible with the ordinary air-draft. It is desirable to introduce the blast of steam beneath the grate-bar instead of above it, as is sometimes done, because when introduced beneath the steam is more perfectly decomposed and therefore produces
20 better combustion; also, by preventing the overheating of the grate-bars and the ash-pit it affords a great saving of expense.

Heretofore it has been ascertained that
25 steam supplied in this way tends to produce the results claimed for my invention, but that it cannot be used to advantage. The trouble has been that it was impossible to supply it to the fire in a sufficiently dry state.
30 The steam, unless perfectly dry, causes moisture to accumulate below the fire and gradually reduces the heat of it, sometimes even entirely extinguishing it.

Mechanical means have been heretofore
35 suggested for trapping the water of condensation, but they have been defective in principle and have proved abortive. The remedy of superheating the steam has been tried, but it has not proved a success.

40 Devices for trapping the steam have been hitherto defective, because in their construction the qualities of water and steam have not been properly taken into account. For instance, attempts have been made to draw
45 off the water of condensation through a faucet or like outlet located in a depression or crook of the steam-pipe itself. In an arrangement of this kind a portion of the water of condensation is necessarily not drawn
50 off, but carried along by the force of the steam into the fire.

By my invention I provide that the water of condensation shall fall by force of gravity through a perpendicular pipe into a reservoir provided with a drip adapted to receive and
55 carry it away, while the steam is conducted by a short pipe to the distributor beneath the fire. By this contrivance no portion of the water of condensation which takes place in the pipe above the reservoir is caught by the
60 steam. The other pipe, being comparatively a short one and located next to the fire, it is possible to prevent any condensation within it.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of a pair
65 of steam-boilers with my blower attached. Fig. 2 is a detail view of blower and drier detached.

Referring to the letters on the drawings, A indicates one of a pair of ordinary steam-
70 boilers provided, as usual, with a stack B, fire-pit C, and grate-bars D.

E indicates the boiler-wall of ordinary construction, and F the steam-dome, preferably with which is connected a steam-pipe or like
75 conveyer G. This pipe extends the greater part of its length in a perpendicular direction, and is preferably incased within the boiler-wall E. At its lower end is attached a reservoir H of any desirable construction,
80 adapted to receive water of condensation from the steam-pipe, and provided with a drip-valve I, also of ordinary construction, to carry off the water from the reservoir. A little
85 above the reservoir, and preferably inclined so as to drain toward it, is joined to the pipe G a second pipe or discharge-outlet K. The pipe K communicates with the perforated tube or distributor L. This tube is preferably
90 located below the grate-bars of the furnace near the door which supplies air to the fire, and is pierced so that the steam shall be directed against the fire at the same angle as that of the outside draft. By this means all
95 conflict between the currents of air and of steam is avoided and a single draft of commingled steam and air is attained.

M indicates ordinary steam-valves for regulating the supply of steam to the fire. In use these valves are open and steam passes freely
100 through the pipes to the distributor L, and is there discharged in the manner described

and mingled with the ordinary draft of the furnace. The water of condensation, which takes place from the dome to the pipe K, is caught by the reservoir and carried off through the drip-valve, thus allowing the steam to pass in a perfectly dry state through the pipe K into the distributor.

My invention is adapted for use with all furnaces, and it is of course immaterial what the source of steam with which it communicates is adopted. The arrangement described shows it applied to an ordinary boiler-furnace.

My device may of course be used for drying steam for any purpose wherever dry steam may be used.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, with the source of steam, of a steam-distributor located beneath the grate-bars of a furnace, a pipe extending

perpendicularly from the source of steam to a condensation-reservoir, and a second pipe connected at one end with the other pipe above the reservoir and at the other end with the distributor, substantially as set forth.

2. A steam-drier, which consists in the combination, with a steam-conveyer adapted to be connected with the source of steam and to be located in a perpendicular position, of a reservoir to receive the water of condensation secured to the lower end of the steam-conveyer, and a discharge-outlet connected with the steam-conveyer a little above said reservoir, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

WILLIAM MCCOY.

Witnesses:

THOS. S. HOPKINS,
JOSEPH L. ATKINS.