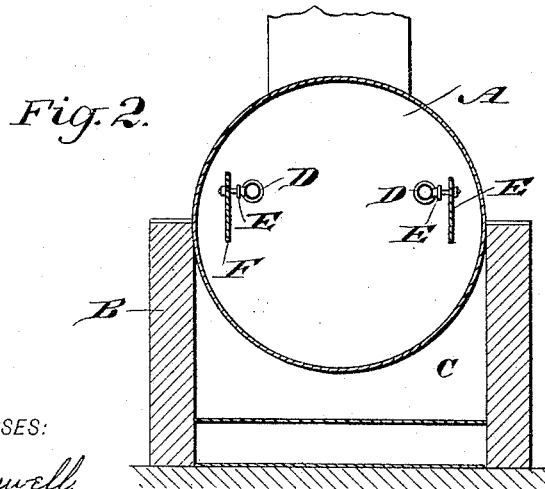
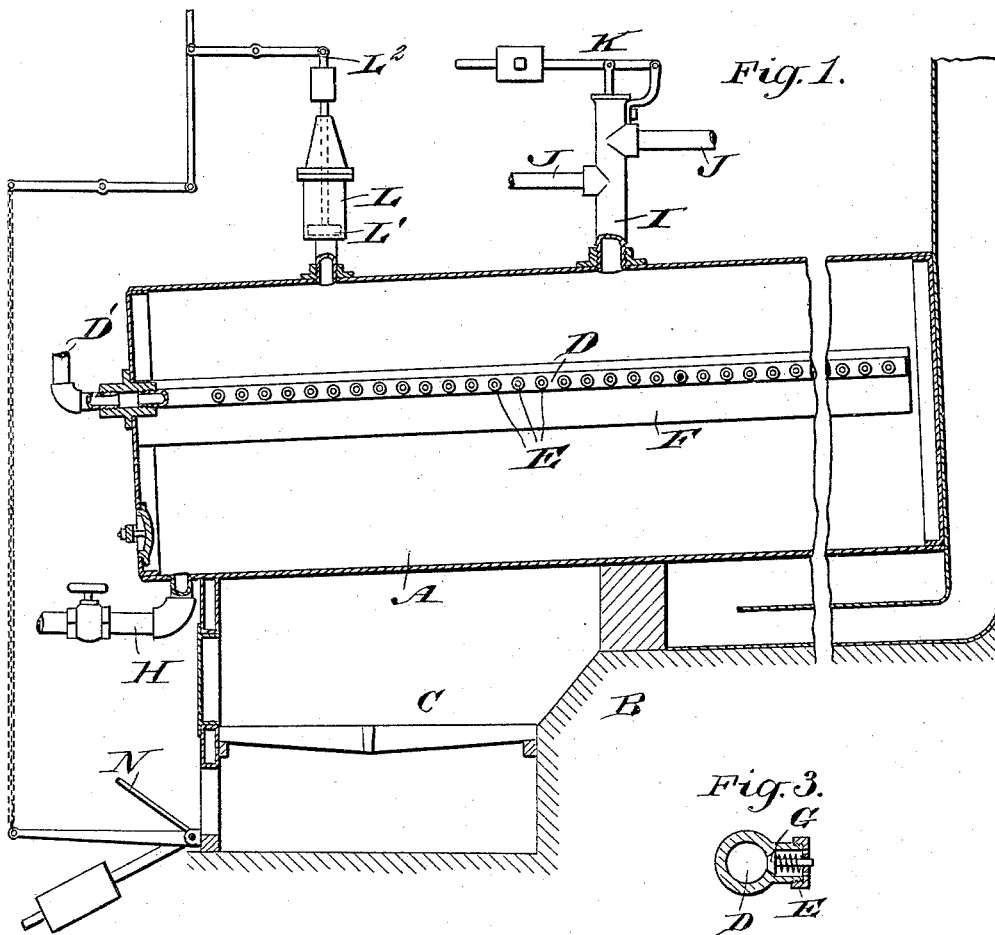


(No Model.)

M. & G. HISE.
BOILER.

No. 489,809.

Patented Jan. 10, 1893.



WITNESSES:

J. B. Conwell.
to Sedgwick

INVENTORS

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UNITED STATES PATENT OFFICE.

MAX HISE AND GEORGE HISE, OF GRAHAMTON, KENTUCKY.

BOILER.

SPECIFICATION forming part of Letters Patent No. 489,809, dated January 10, 1893.

Application filed September 8, 1892. Serial No. 445,299. (No model.)

To all whom it may concern:

Be it known that we, MAX HISE and GEORGE HISE, both of Grahamton, in the county of Meade and State of Kentucky, have invented a new and Improved Boiler, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved boiler, which is simple and durable in construction, and arranged to quickly convert the water into steam with a small amount of fuel.

The invention is an improvement in the class of steam boilers or generators, in which the feed water is discharged upon heated plates arranged within the shell or body of the same.

The features of novelty are hereinafter indicated.

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

Figure 1 is a broken sectional side elevation of the improvement; Fig. 2 is a transverse section of the same; and Fig. 3 is an enlarged transverse section of one of the nozzles.

The boiler shell A, is mounted in the brickwork B, containing the fire box C, in which the fuel is burned to heat the shell A, the smoke and gases finally passing to the chimney in the usual manner.

In practice, the brick work is built around and over nearly the entire boiler shell, leaving a space between the brickwork and boiler sufficient for the passage of heat over and around the boiler, giving almost the entire boiler shell for a heating surface. Said brickwork is arched over and above the boiler and forms a closed joint therewith only at the base of the dome and the damper controller hereinafter described.

Within the shell A is arranged a pipe or a series of pipes D, extending longitudinally within the shell and each provided with a series of nozzles E, for discharging water onto a longitudinally-extending plate F, arranged within the shell A next to the inner surface of the same. That is to say each plate is arranged parallel to a supply pipe D, and with its minor axis vertical. It is also supported by means of arms or brackets projecting hori-

zontally from the said pipe so that both form one attachment of the boiler shell.

Each of the nozzles E, shown in detail in Fig. 3, contains an inwardly closing valve G, to prevent the steam within the shell from passing into the respective pipe D through the nozzle E. The outer end of the pipe or pipes D is connected with a supply pipe D', connected with a suitable source of water supply, so that the water is passed into the several pipes D and ejected through the nozzles E onto the plates F, the water passing in jets onto the latter and being quickly generated into steam, as the plates F as well as the shell of the boiler A, are heated. Thus it will be seen that by this arrangement no water will accumulate in the shell A, but the water issuing in jets through the nozzles E will at once be generated into steam, which accumulates in the boiler.

The lower end of the boiler is provided with a discharge pipe H, for carrying off sediment, scale and other impurities which may accumulate in the boiler.

A manhole is formed in the front end of the boiler for cleaning the same whenever deemed necessary or making repairs within the boiler.

The dome of the boiler shell A is preferably in the shape of a tube I, from which lead the pipes J, to the machinery to be actuated or driven by the steam, and in the upper end of the said tube I is arranged the usual safety valve K. On the shell A is also arranged a cylinder L, connected with the interior of the boiler and provided with a piston L', the piston rod L², of which is connected by suitable levers, chains, rods or arms with a damper N, for regulating the draft to the fire box C. When the pressure of the steam in the shell A increases, the piston L' is forced outward so that the damper N is closed, and when the pressure decreases, the damper N opens to admit more air to the burning fuel in the fire box.

In the elbow at the base of the smoke stack leading from the fire box, a door may be provided, for swabbing out ashes and soot.

It will be seen that by this device water can be quickly converted into steam without any accumulation of water within the boiler.

Having thus fully described our invention,

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

1. The combination with the boiler shell, of the attachment consisting of the water
5 pipe D, having a series of valved nozzles arranged horizontally and a plate F, arranged parallel to said pipe and secured thereto by means of fixed horizontal arms, as shown and described.
- 10 2. A boiler comprising a boiler shell, plates extending therein, water supply pipes extending in the said shell and provided with noz-

zles for discharging water in jets onto the said plates, and a valve arranged in each nozzle and closing inwardly to prevent the steam 15 in the shell passing into the water pipes but permitting the water to pass into the nozzles, substantially as shown and described.

MAX HISE.
GEORGE HISE.

Witnesses:

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