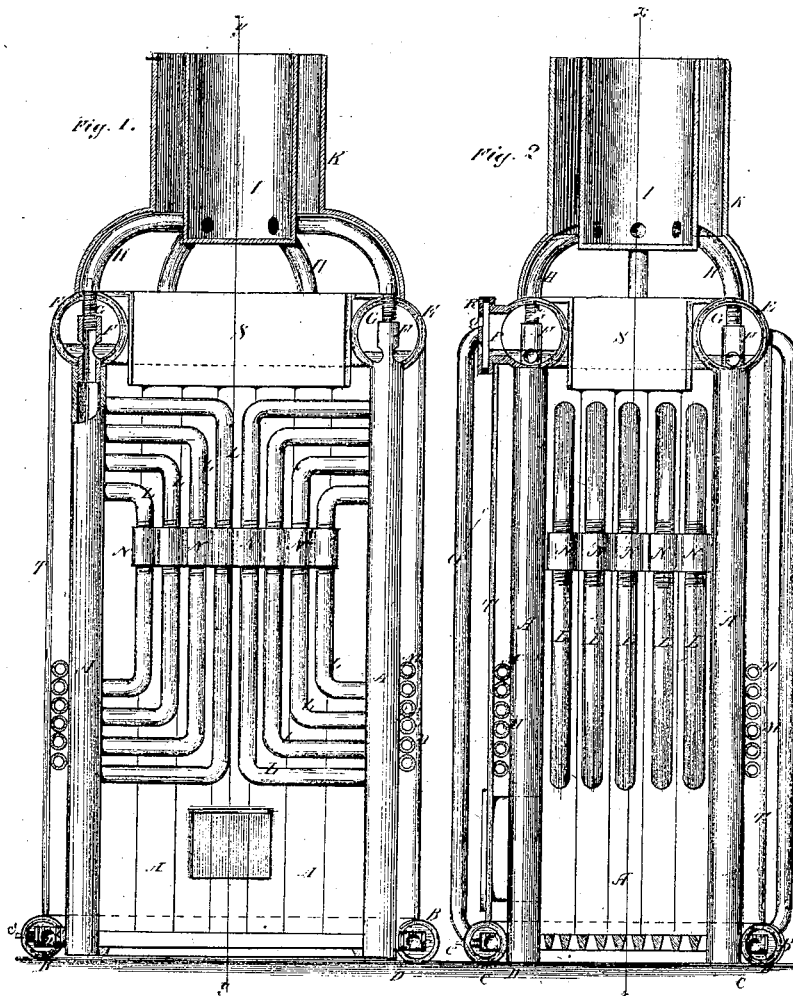


M. N. LYNN.
STEAM GENERATOR.

No. 110,862.

Patented Jan. 10, 1871.



Witnesses:

Custave Dutroch
Alex. F. Roberts

Inventor:

M. N. Lynn

PER

Minneapolis

Attorneys.

United States Patent Office.

MIRABEAU N. LYNN, OF NEW ALBANY, INDIANA.

Letters Patent No. 110,882, dated January 10, 1871.

IMPROVEMENT IN STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, MIRABEAU N. LYNN, of New Albany, in the county of Floyd and State of Indiana, have invented a new and useful Improvement in Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to new and useful improvements in the construction of sectional vertical boilers of tubes; and consists in the square vertical or other-formed shell of tubes placed side by side and connected at the ends to short large tubes, connected at their ends and arranged to form a figure corresponding in form to the cross-section of the boiler to be made, part of the said tubes forming the shell being provided at the inside with circulating-tubes, connected to them at both ends and projecting into the space above the fire, and the large transverse tubes at the ends being connected at the outside with return tubes for the promotion of the circulation, by allowing the water to return to the bottom of the tubes forming the case, and the case being covered by a coil of feed-water and exhaust-pipes, which protect it and take up and utilize the heat given off by the shell.

The invention also comprises an improved mode of joining the vertical and transverse tubes, as hereinafter more fully specified.

Figure 1 represents a vertical sectional elevation of my improved boiler.

Figure 2 represents another sectional elevation, taken in a plane at right angles to that of fig. 1.

Similar letters of reference indicate corresponding parts.

A represents the vertical tubes forming the sides of the shell.

They are placed side by side as closely as can be, and connected at the bottom to the transverse tubes B, at the sides thereof, by the tubular screw-threaded plugs C, screwing from the inside of the tubes B, through the sides, into the sides of the said tubes A.

The said tubular plugs are closed at the outer ends by the plugs C', screwing through holes in the outer sides of tubes B, and have lateral holes, D, in the sides, to cause the water in the tubes B to flow in the direction of the latter in passing in and out of the vertical tubes A.

The upper ends of the tubes A support the large lateral tubes E, and are connected to them by similar hollow plugs, F, closed at the upper ends by the

screw-plugs G, screwed in through holes in the upper sides of the large tubes E.

These large tubes E constitute the steam-dome, and are connected by the curved tubes H to a super-heater, I, arranged in a hood, K, fitted on the top of the boiler.

The transverse tubes B and E may be made whole by casting; or, if made of rolled and lap-welded metal, they may be connected at the ends by rivets or otherwise.

The tubes A, constituting two opposite sides of the shell, have at the inside a number of circulating-tubes, L, connected at both ends to them and bent outward into the space above the fire, to be acted on by the heat rising up in the said space.

For convenience in attaching these tubes to the tubes A, by screwing them at each end into the sides thereof, they are made in two parts, meeting at the ends after screwing into the said pipes A, and connected by the screw-threaded thimbles M; but they may be made in one piece and attached by tubular plugs similar to the plugs C and E.

O represents circulating-tubes attached to the transverse tubes at top and bottom, for causing a down circulation of the water outside of the shell composed of the tubes A, in which the water rises to the top.

A broad, flattened tube may be placed in one side, for convenience in making the opening for feeding the fire, which may be made wholly in the said flattened tube more easily than if the tubes are smaller, which would require some to be wholly cut off, either wholly preventing the circulation in them, or requiring them to be connected laterally with others.

I propose to encircle the case or shell formed by the tubes A by one or more coils, M, to be used for the feed-water, and for exhausting the steam into to condense it and return it with the feed-water, so as to utilize the heat radiating from the shell as much as possible.

Outside of the coils M heat-retaining packing, T, of any approved kind, may be applied.

A short flue, S, is located between the tubes E, and at the top thereof, for the purpose of conveying the products of combustion to the hood K. From thence they are transferred to the smoke-stack.

It will be observed that, by removing the plugs C and the stop-plugs C' G, the tubes A together with the tubes L belonging to them, may be taken out and others substituted, and the tubes L may be readily detached for the connection of others.

I am aware that circulating-tubes projecting into the fire-place and higher, with lower points, are not

in themselves new, and I therefore do not desire to claim them as any part of my invention.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

1. The combination of the tubes A and transverse tubes B and E, and the interior circulating-tubes L, arranged substantially as specified.

2. The combination with the above of the water-return tubes O, substantially as specified.

3. The connection of the tubes A and B or E by means of the tubular screw-threaded plugs C or F, plugged at the outer ends by the plugs C' G, and having the lateral orifices, substantially as specified.

MIRABEAU N. LYNN.

Witnesses:

JOHN H. STOTSENBURG,

THOMAS M. BROWN.