

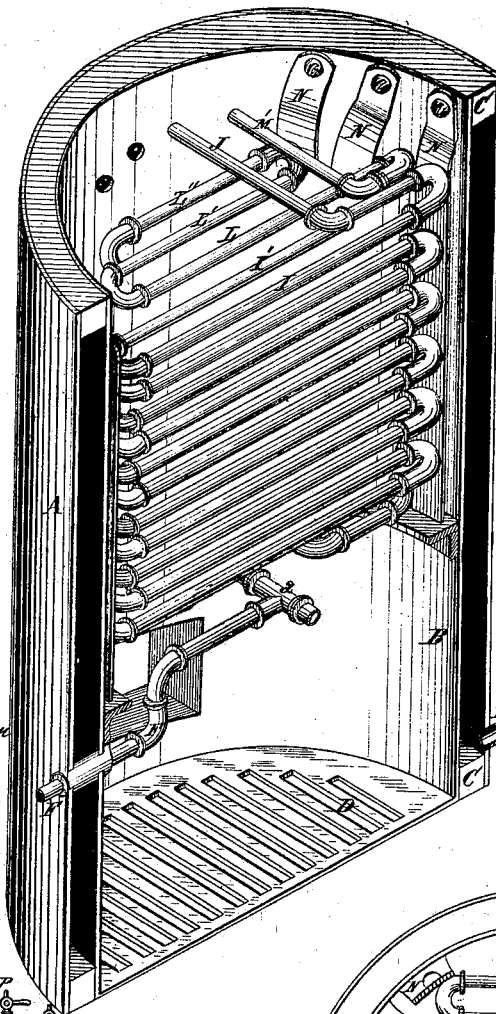
Strens & Kamman.

Steam Generator.

No. 111,298.

Patented Jan. 31. 1871.

Fig.1



Attest

Henry Millward
Elitha F. Layman

Inventors

Christopher Ahrens &
Frank Hammann
By J. Millward
Attorney

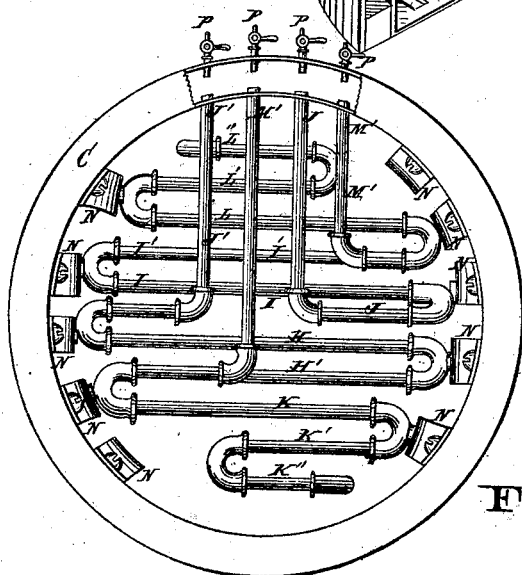


Fig. 2

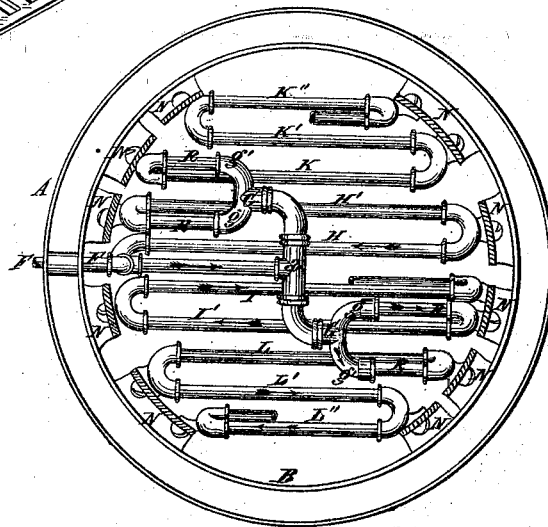


Fig. 3

UNITED STATES PATENT OFFICE.

CHRISTOPHER AHRENS AND FRANK KAMMAN, OF CINCINNATI, OHIO.

IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. **111,298**, dated January 31, 1871.

To all whom it may concern:

Be it known that we, CHRISTOPHER AHRENS and FRANK KAMMAN, of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Steam-Generators; and we do hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable one skilled in the art to which our invention appertains to make and use it, reference being had to the accompanying drawing, making a part of this specification.

Nature and Objects of Invention.

Our invention relates to the boiler patented by A. B. Latta, June 6, 1854, and April 10, 1855, designed specially for steam fire-engines, having continuous pipes in sections, (in the fire-chamber,) through which the water is forcibly circulated, being received from and discharged into a water-jacket, exposed inside to the fire; and our invention consists in a certain method of separating into sections and so disposing the pipes that they can be placed within a circular water-jacket and yet give continuous pipes of equal length in each section.

Our invention further consists in a simple device by which the presence or absence of water in the discharge ends of the coils of pipe may be determined at any time, this device being designed to dispense with exterior overflow-pipes hitherto necessary in this class of boiler.

Description of the Accompanying Drawing.

Figure 1 is a sectional perspective view, exhibiting the interior of our improved boiler, with the chimney removed. Fig. 2 is a plan, showing the disposition of the pipes at the top of the boiler, and the device for determining the state of overflow of the coils or sections. Fig. 3 is a plan of the under side of the boiler, showing the entry of feed-water to the sections, and the manner of separating the feed equally between four sections and disposing of the pipes within the circle.

General Description.

A and B represent, respectively, the outer and inner circular shells of the water-jacket, united at the top and bottom by the rings C. D represents the grate, which may be of any

approved construction. The shell A B C is surmounted by the customary cover and chimney, which must be easily detachable from the shell, in order that the pipes may be conveniently exposed for repairs. The jacket is supplied with water from an ordinary boiler-feeder or force-pump through pipe E. The water is carried in the jacket up to a point a little above where the coil commences, the remainder of the space in the jacket being reserved for steam. The coils of pipes which occupy the interior of the jacket receive the necessary supply of water in the same way as the Latta boilers, before referred to—that is, by means of a “circulating-pump,” which draws water from the jacket, forces it at any speed desired through the coils, and discharges it again into the jacket in the form of steam or highly-heated water.

F is the pipe leading from the circulating-pump.

For the purpose of dividing the coil into four separately-removable vertical sections, the entire distribution of the pipes of which will occupy a circle, we split at *a* with a T-fitting, provided internally with a knife-edged “splitter.” This serves to give each half of the circle half the water-supply. The supply-pipe for each half is again similarly divided by the forked fittings at G, the branches *g* of which feeding two continuous coils of two vertical rows each, H H' and I I', which are discharged at J J'.

Each of the branches *g'* supplies three vertical rows, K K' K'' and L L' L'', of continuous coils, which are discharged at M M'. The four branches *g' g' g'' g'* therefore feed four distinct sections, either of which, by unscrewing the right-and-left hand pipe-connections at the extreme ends, and detaching its supporting-bars N, can be removed for repairs. The arrangement of pipes, also, into two sections of two vertical rows each and two sections of three vertical rows each not only enables us to fill the circle, but provides for an equal length of pipe for each section, which is a very important consideration in this class of boilers, as it prevents the water going through one or more sections only, and leaving the others without water. The discharge ends J J' M M' are fitted steam-tight to the shell B, and discharge water or steam from the coil directly

into the jacket. Directly opposite the discharge-apertures of these pipes we fit the faucets P, for the purpose of determining whether water is issuing from each section of the coil, or steam, and if steam, of what temperature, judging by the color, as the water or vapor will shoot across the space between the shells A B and through the faucets P, if the latter are open. This simple device dispenses with the diving exterior pipes with gage-cocks, hitherto used in the Latta boiler.

The pipes R and the pipes J J' M M' may either connect with the supply-pipe and jacket by right-and-left-hand screws or by union-couplings.

Either device will permit the removal of the sections bodily for repairs, when the bars N, to which the return-bends of the coil are secured for support, are disconnected at top and bottom from the inner jacket, B.

Claims.

1. In combination with the circular water-

jacket A B, the arrangement of the circulating coil of pipes into separately-detachable and separately-operating sections by means of fittings a and G, each section having vertical rows of continuous pipes H H' I I' K K' K'' L L' L'', varying in number of rows to conform to the circle, as described, and for the purpose specified.

2. In combination with the water and steam jacket A B, extending up to a point above the discharge ends of the coil, the gage-cocks P, located and operating in the described relation to the discharge-apertures of the pipes J J' M M'.

In testimony of which invention we hereunto set our hands.

CHRISTOPHER AHRENS.
FRANK KAMMAN.

Witnesses:

FRANK MILLWARD,
J. L. WARTMANN.