

J.C. Stevens,

Steam Boiler Tube.

No. 99,998.

Patented Feb. 15. 1870.

Figure 1.

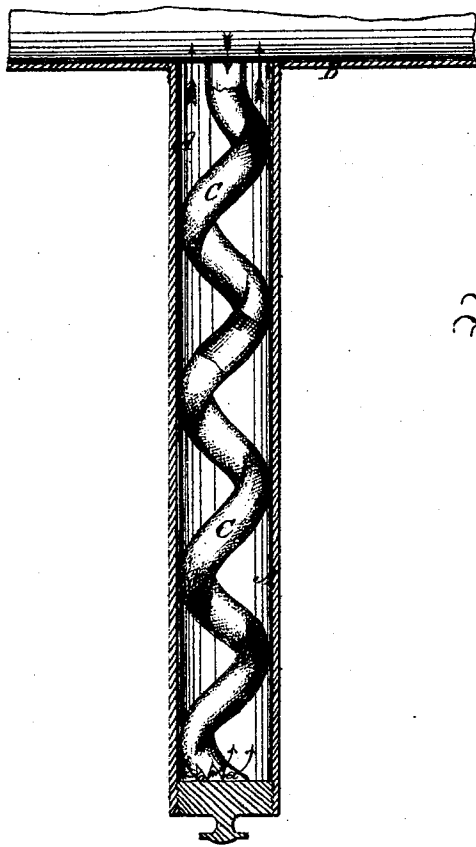


Figure 2.



Witnesses
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JOHN C. STEVENS, OF SOUTH NORWALK, CONNECTICUT.

Letters Patent No. 99,998, dated February 15, 1870.

CIRCULATING-TUBE FOR 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, JOHN C. STEVENS, of South Norwalk, in the county of Fairfield, and State of Connecticut, have invented certain new and useful Improvements in Circulating Tubes for Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which make part thereof, and in which—

Figure 1 represents a vertical longitudinal section of one of the water-tubes of a steam-generator, showing my improved circulating spiral tube therein.

Figure 2 represents a horizontal section through the water-tube, and the spiral circulating-tube therein.

My invention relates to means for producing a circulation of water within tubes of a steam-generator, which are in direct contact with the chamber of combustion, and consists in the employment of a spiral tube within the water-tube of the boiler, for the purpose of producing a perfect uniform circulation of the water in and through said tube in a spiral course, in such manner that while the water shall pass over and be in contact with the entire heating surface of the water-tube, it shall have an equal and uniform flow in descending through and ascending around the spiral tube.

The construction of boiler to which my improvements are applicable is that where the water-tubes, either inclined or vertical, are made to extend into the chamber of combustion; and in the accompanying drawings—

A represents one of such vertical water-tubes.

These tubes are of suitable diameter, closed and sealed at their lower ends, and communicate at their upper ends with the interior of the boiler to the crown sheet B, to which they are secured in any suitable manner.

Within each of these tubes a circulating-tube, C, is placed, so as to rest upon the bottom of the water-tube. It is open at both ends, and also communicates

with the water in the boiler. It may be made of any suitable thin metal, but a composition of metals is preferable, and in its cross-section its area is slightly greater than the circulating area of the water-tube A.

This circulating-tube C is of spiral form, the folds being graduated so as to allow an easy flow of the water through them, and the circle described by these folds is equal to the interior diameter of the water-tube, so that it may be inserted therein and form a continuous spiral surface in contact with the interior of the water-tube.

The water from the boiler passes into and descends, in a spiral course, through the circulating-tube C into the water-tube A through the openings *a* at the lower end of said spiral tube, and in ascending around the latter it is brought continuously in contact with the hot sides of the enclosing-tube A throughout the length of said circulating-tube, and, with the steam generated in the tube, passes into the boiler.

The folds of the circulating-tube C support it in a vertical position within the water-tube, so that it requires no fastening either at its upper or lower end.

Having thus described my invention,

I claim—

1. The spiral tube as a circulating medium in a water-tube of steam-generators, substantially as described.

2. The circulating tube, so constructed that the water will descend through it in a spiral course, and ascend around it in direct contact with the interior of the water-tube, also in a spiral course, substantially as described.

3. The circulating-tube C supported within the water-tube A by its folds, substantially in the manner herein described.

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Witnesses:

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