

G. E. Van Amringe.

Tube for Steam Generator.

N^o 85,149.

Patented Dec. 22, 1868

Fig. 1.

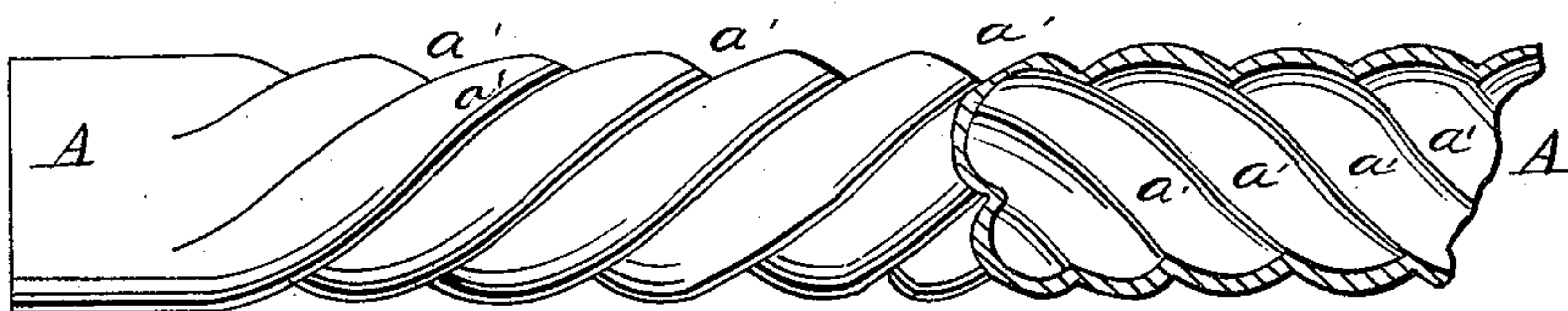
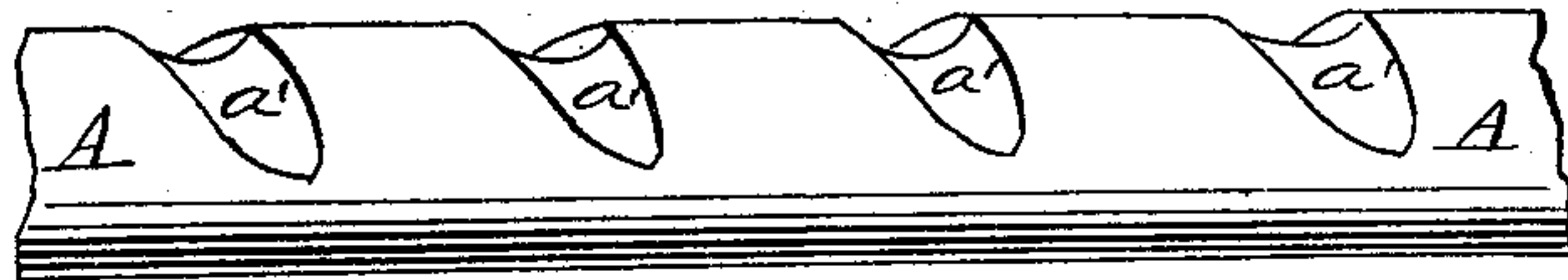


Fig. 2.



Witnesses:

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per *Wm. C. [Signature]*
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United States Patent Office.

GEORGE E. VAN AMRINGE, OF NEW YORK, N. Y.

Letters Patent No. 85,149, dated December 22, 1868.

IMPROVEMENT IN TUBES 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, GEORGE E. VAN AMRINGE, of the city, county, and State of New York, have invented a new and useful Improvement in the Tubes or Flues of Steam-Boilers; 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 drawings, forming part of this specification.

Figure 1 is a side view, partly in section, of a portion of a steam-boiler flue, illustrating my invention.

Figure 2 illustrates a modification of the same.

Similar letters of reference indicate corresponding parts.

My invention has for its object to improve the construction of the tubes of steam-boilers so as to economize the heat, or, in other words, to obtain a greater practical effect from the same amount of fuel than when the tubes are constructed in the ordinary manner; and

It consists in the construction of the tubes in one piece, with spiral or transverse corrugations extending wholly or partially around said tubes, as hereinafter more fully described.

A represents a tube of a steam-generator, which is corrugated spirally, as shown in fig. 1.

The corrugations α may extend entirely around the tube, as shown in fig. 1, or they may be formed only upon the upper part of said tube, as shown in red in fig. 2. The corrugations α may be formed at any desired angle with the axis of the tube, or they may be formed at right angles with said axis.

By this construction, as the flame, smoke, and other products of combustion pass through the tube A, they impinge upon the inwardly-projecting surfaces of the corrugations α , and receive a waving or swirling motion, the effect of which is to cause all the particles of said products of combustion to come into immediate and frequent contact with the inner surface of the tube

A, so that a much larger amount of heat is abstracted from said products of combustion, and communicated to the water surrounding the tube, thus producing a much greater practical effect than is possible when the products of combustion pass through a smooth, straight tube, or one corrugated longitudinally, or parallel with the axis of said tube.

It should be observed that when the products of combustion pass through the tube A, they impinge upon the inwardly-projecting surfaces of the corrugations α , but when the products of combustion pass along the outer surface of the tubes, they impinge upon the outwardly-projecting surfaces of the said corrugations, so that, in every case, the products of combustion are thrown into a waving or swirling movement, and the greatest possible amount of heat is abstracted from them.

This invention is equally applicable to all varieties of tubular steam-boilers, whether they may be the small tubes of locomotive-boilers, or the large tubes of marine boilers, and with equal advantage.

I am aware of the patents granted to B. J. Miller, April 5, 1838, Richard Montgomery, October 29, 1850, and March 19, 1867, and to James H. Sturdy, January 15, 1867, and I do not, therefore, claim what is therein claimed; but, having thus described my invention,

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

The construction of the tubes of steam-generators, being composed of one piece, substantially as herein set forth.

The above specification of my invention signed by me, this 21st day of August, 1868.

G. E. VAN AMRINGE.

Witnesses:

JAMES T. GRAHAM,
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