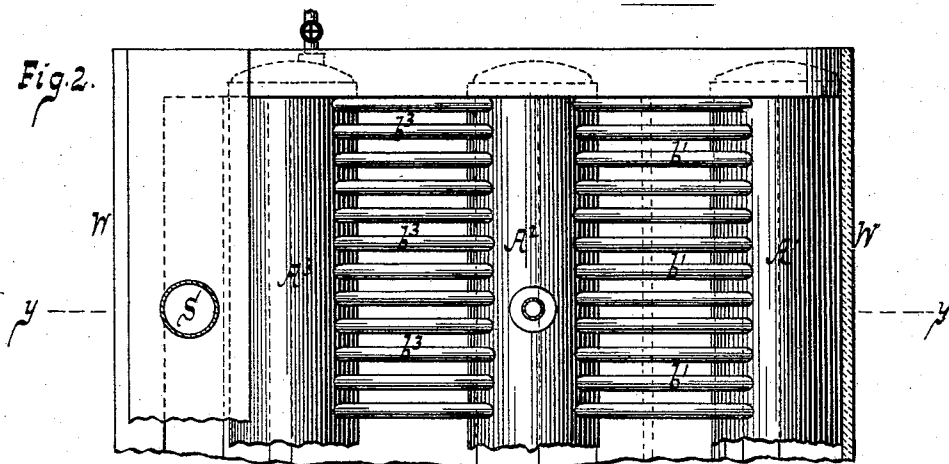
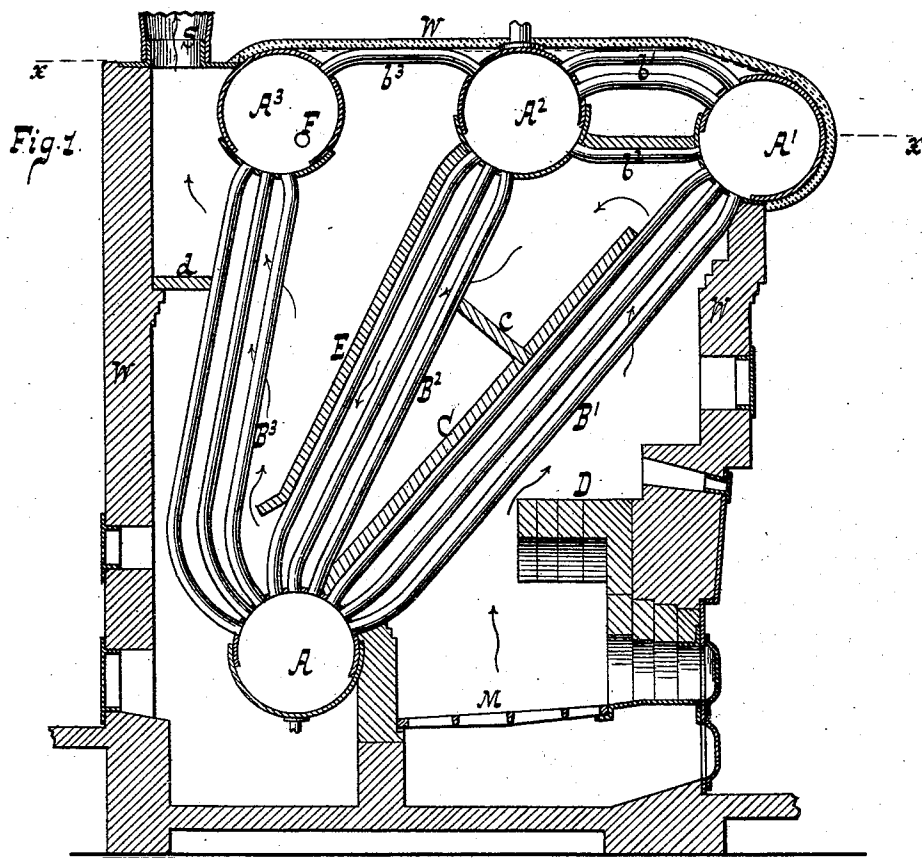


(No Model.)

A. STIRLING.
STEAM BOILER.

No. 479,678.

Patented July 26, 1892.



WITNESSES:

William Miller
Edward Wolff.

INVENTOR:

INVENTOR:
Allan Stirling
BY
Van Gantvoord & Haug
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALLAN STIRLING, OF NEW YORK, N. Y., ASSIGNOR TO THE STIRLING COMPANY, OF CHICAGO, ILLINOIS.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 479,678, dated July 26, 1892.

Application filed March 24, 1892. Serial No. 426,266. (No model.)

To all whom it may concern:

Be it known that I, ALLAN STIRLING, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Steam-Boilers, of which the following is a specification.

This invention relates to certain improvements on that class of steam-boilers which I have described in Letters Patent No. 407,260, dated July 16, 1889, said improvements being pointed out in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section in the plane *y y*, Fig. 2. Fig. 2 is a horizontal section in the plane *x x*, Fig. 1.

The letter A designates the mud-drum, and the letters A' A² the steam and water drums, which are connected with the mud-drum by water-tubes B' B², respectively, and with each other by steam-pipes *b'* and water-pipes *b*². With these drums I have combined a feed-drum A³, which connects with the mud-drum by water-tubes B³ and with the steam and water drum A² by steam-pipes *b*³. The feed-water is introduced into the feed-drum A³ through the opening F.

W W is the brick setting.

D is the fire-brick arch of the furnace.

C is a fire-brick partition provided with a shelf *c*, and E is another fire-brick partition. *d* is a shelf, and M are the grate-bars.

As indicated by the arrows in Fig. 1, the flame on striking the brick arch D is thrown between the water-tubes B', leading from the drum A into the drum A', and the partition C compels the flame to ascend between said water-tubes, and after it has passed the top edge of this partition it descends, and as it strikes the shelf *c* it is compelled to pass down between the water-tubes B², which lead from the drum A into the drum A², until it reaches the bottom edge of the fire-brick partition E, when it passes up between the water-tubes B³, which lead from the drum A into the feed-drum A³, said flame being compelled by the shelf *d* to pass between the tubes B³ before it

can escape through the smoke-stack S. From this description it will be seen that by means of the steam-pipes *b*³ the pressure in the feed-water drum A³ is the same as that in the drums A' A², and the feed-water descends through tubes B³ and enters the mud-drum A in a heated state, and from this drum the water rises through the tubes B' B² into the drums A' A², and it reaches these drums comparatively free from mud.

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

1. A water-tube boiler consisting of a single mud-drum A, two elevated steam and water drums A' A², having their steam and water spaces respectively placed in communication, the water-tubes B' B², extending from the mud-drum to the drums A' A², the feed-drum A³, the water-tubes B³, extending from the mud-drum to the feed-drum, and the pipes *b*³, connecting the feed-drum with one of the steam and water drums, substantially as described.

2. A water-tube boiler consisting of a furnace structure, a single mud-drum A, the elevated steam and water drums A' A², having their steam and water spaces respectively placed in communication, two sets of water-tubes B' B², directly connected at their upper ends with the steam and water drums and both sets connected at their lower ends with the single mud-drum, the feed-drum A³, the water-tubes B³, connecting the feed-drum with the mud-drum, the brick arch D, extending over the fireplace from the wall of the furnace structure close to the front set of water-tubes B', the fire-brick partition C, inclined between the two sets of water-tubes B' B², and the fire-brick partition E, situated between the water-tubes B² and B³, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALLAN STIRLING.

Witnesses:

J. VAN SANTVOORD,
E. F. KASTENHUBER.