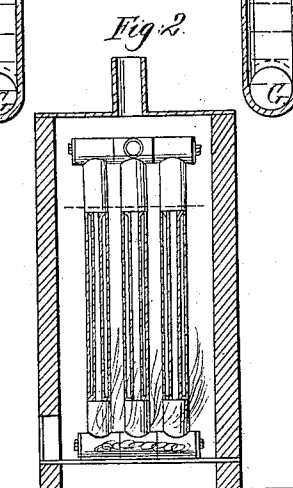
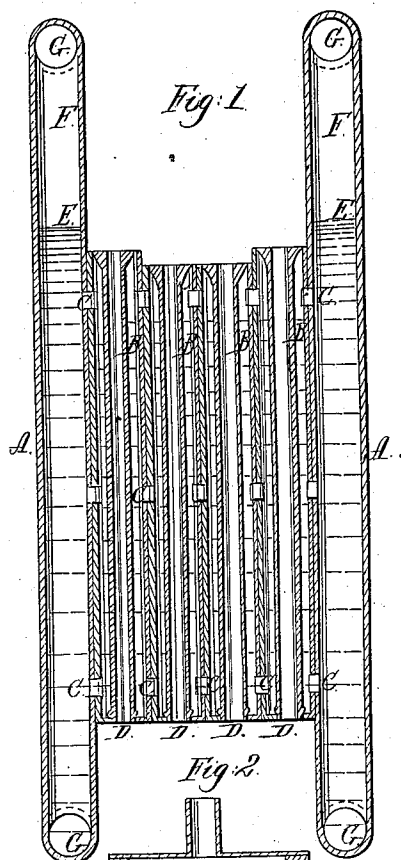


C. Bean
Sectional Steam Boiler.
N^o 81,330. Patented Aug. 25, 1868.



Witnesses:
Wm A Morgan
J C Cotton

Inventor:
C. Bean
per Murray & Co
Attorneys.

United States Patent Office.

CHARLES BEAN, OF EAST DOUGLASS, MASSACHUSETTS.

Letters Patent No. 81,330, dated August 25, 1868.

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, CHARLES BEAN, of East Douglass, in the county of Worcester, and State of Massachusetts, have invented a new and useful Improvement in Sectional Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in steam-generators, whereby they are rendered more durable and more effective than those of the usual construction; and the invention consists in the construction of the boiler in sections of uniform size, and united, as will be hereinafter described.

Figure 1 represents an elevation of the section, showing the construction, and provision made for the circulation of the water, and the action of the heat or products of combustion.

Figure 2 represents three of the sections united, as when in use for the generation of steam.

Similar letters of reference indicate corresponding parts.

As the boiler is but a duplication of parts, or a series of sections of the same construction secured together, as seen in fig. 2, it is not deemed necessary to show more than one section to illustrate my invention.

The section is formed of two outside upright tubes, A, and any required number of inner tubes, B, the whole being cast together in one piece, but with apertures, C, which allow of the circulation of water between them all.

Within the tubes C, and secured steam-tight at top and bottom, are flues or fire-tubes, D, through which a portion of the products of combustion passos.

E indicates the water-line, and

F the steam-space.

When the sections are thus formed, they are secured together by bolt-rods passing through the orifices, G, as seen in the group, fig. 2.

They are set in an arch of masonry, or covered by an iron casing, the furnace or fireplace being beneath.

The smoke and products of combustion pass up through the flues D, and between the tubes B, and escape through a properly-constructed chimney from the arch.

The feed-water is forced into any of the outside tubes, A, and the steam may be taken from the upper part of any of the same tubes, as may be found most convenient.

It will be seen that, by this arrangement, the iron is put into the very best possible form for resisting pressure, and that a very extended heat-radiating surface is exposed for the generation of steam.

Although in contact with the water, the steam will be more or less superheated in the tubes A.

The tubes A would be connected by a common steam-pipe, from which the steam would be discharged to the engine, or to wherever required.

By constructing a boiler in this manner, it can be increased in size at pleasure, by adding more sections, and, being thus put together in sections, it is rendered portable, and can be put up in situations where boilers of the ordinary construction cannot find entrance, on account of their bulk and weight.

It is well understood by engineers that metal in the small tubular form is best calculated to withstand pressure, and small tubes, when properly situated, are certainly best and most effective for generating steam.

The water in the tubes B, in the form of a thin sheet, fills an annular space around the fire-flues, so that the whole surface of the tubes is rendered effective.

If, from any cause, a section should fail, it can readily be removed, and the space filled by another, or if another section is not at hand, the adjoining sections may be brought together, thus dispensing with the section altogether.

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

The construction and combination of the section, formed of the tubes A B and the flues D, with the apertures C, substantially as herein shown and described.

CHARLES BEAN.

Witnesses:

WM. M. GARDNER,
JOHN ABBOTT.