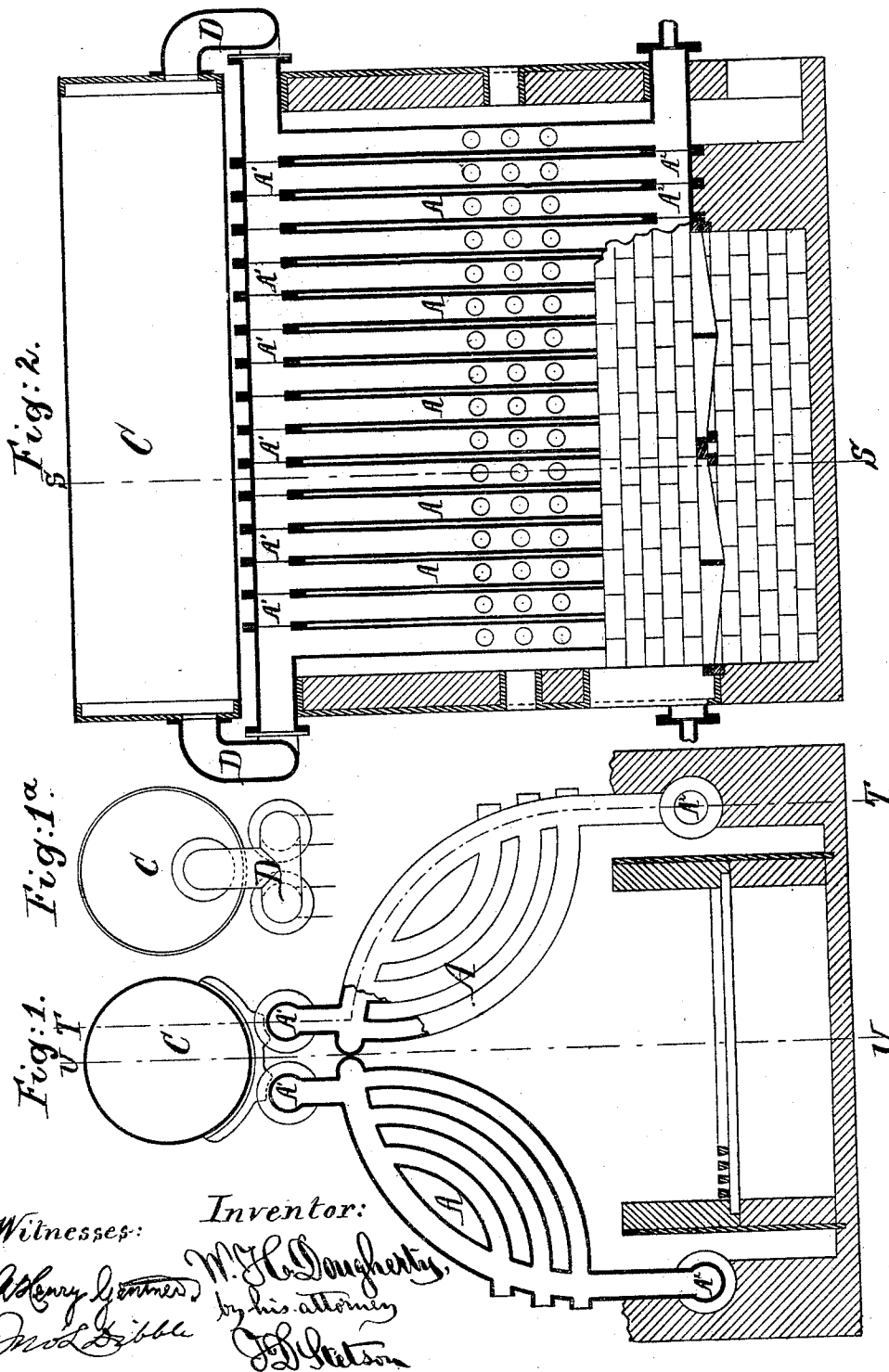


W. H. DOUGHERTY.
SECTIONAL TUBULAR BOILER.

No. 176,129.

Patented April 18, 1876.



Witnesses:
Attesty James M. H. Dougherty,
by his attorney
J. H. Nelson

UNITED STATES PATENT OFFICE

WILLIAM H. DOUGHERTY, OF NEW YORK, N. Y.

IMPROVEMENT IN SECTIONAL TUBULAR BOILERS.

Specification forming part of Letters Patent No. **176,129**, dated April 18, 1876; application filed March 1, 1876.

To all whom it may concern:

Be it known that I, WILLIAM H. DOUGHERTY, of New York city, in the State of New York, have invented certain new and useful Improvements in the Construction of Sectional Boilers, of which the following is a specification:

My improved boiler is formed of sections extending across the length of the boiler, and discharging the steam, as fast as generated, into a capacious drum or separating-vessel, which may be of boiler-iron, double-riveted, or otherwise formed to endure a high pressure with safety. The general form and most of the details of the boiler may be as shown in the patent to David Renshaw, October 21, 1873. But I have found a difficulty in the construction of the upper portion of the said Renshaw boiler, which this invention is intended to obviate. In the Renshaw patent the several sections are all connected to the drum, and any imperfection in the workmanship, or any irregular contraction or expansion, tends to induce a bad joint at the place of junction. I have improved the construction by connecting together the several sections below the drum, and connecting the whole to the drum at only a few points, preferably at the ends alone.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a vertical section on the line S S in Fig. 2. Fig. 1^a is an end elevation of a portion. Fig. 2 is a longitudinal section on the irregular line T T, a portion being on the central line U U, as will be readily understood.

Similar letters of reference indicate like parts in all the figures.

A A¹ A² represent the several sections, formed of cast-iron, and secured firmly together when in use. A¹ A¹ are short lengths of a longitudinal channel or passage formed in the upper portions of the several sections A, and forming a capacious and easy passage for the steam, or the mingled steam and water rising in the central sections, to allow the said fluid or fluids to flow freely in either

direction. They correspond in construction to the ordinary longitudinal passages A², formed at or near the bottom of each section. C is the drum, a hollow horizontal cylinder, which may be made of thick boiler-iron strongly riveted or welded, and provided with ordinary connections for the junctions of steam-pipes, a safety-valve, and the like. D D are inverted T-shaped castings, each formed with suitable bends and flanges, for a junction at the upper end with a proper orifice in the end of the drum C, and at the ends of the horizontal branches below, for proper junctions with the longitudinal passages A².

It will be understood that the sections may be increased or diminished in number, at pleasure, care being taken to provide a drum, C, of corresponding length.

In constructing long boilers formed of many sections, there may be one or more intermediate connections between the parts A¹ and the drum C. For ordinary short boilers I prefer the connections at the ends alone.

My construction greatly simplifies the fitting up and putting together of the parts.

These several sections A A¹ A² may be faced rapidly and perfectly on a common planer. The sections may be held together by bolting through the flanges.

Each junction-piece D may be faced on a planer at a single operation, for its junction both with the passages A¹ and with the drum C.

The improvement avoids the making of joints in other planes, which would involve a slow treatment of each section.

The parts are sure to come together correctly, or in case of bad workmanship, or the warping or distortion of any part, but little labor is required to bring the parts into position, or to make the other parts conform thereto.

The mass of sections may spring or become distorted in various directions—as, for instance, the central sections may warp upward or downward relatively to the end sections, and no injury will result.

I claim as my invention—

The within-described improvement in sectional boilers, having the junctions A¹ at the

top, in combination with sections A, standing crosswise of the structure, and with the drum C, standing lengthwise of the structure, provided with the connections D, all adapted to serve as and for the purposes herein specified.

In testimony whereof I have hereunto set

my hand this 26th day of February, 1876, in the presence of two subscribing witnesses.

WM. H. DOUGHERTY.

Witnesses:

R. HENRY GENTNER,

C. C. STETSON.