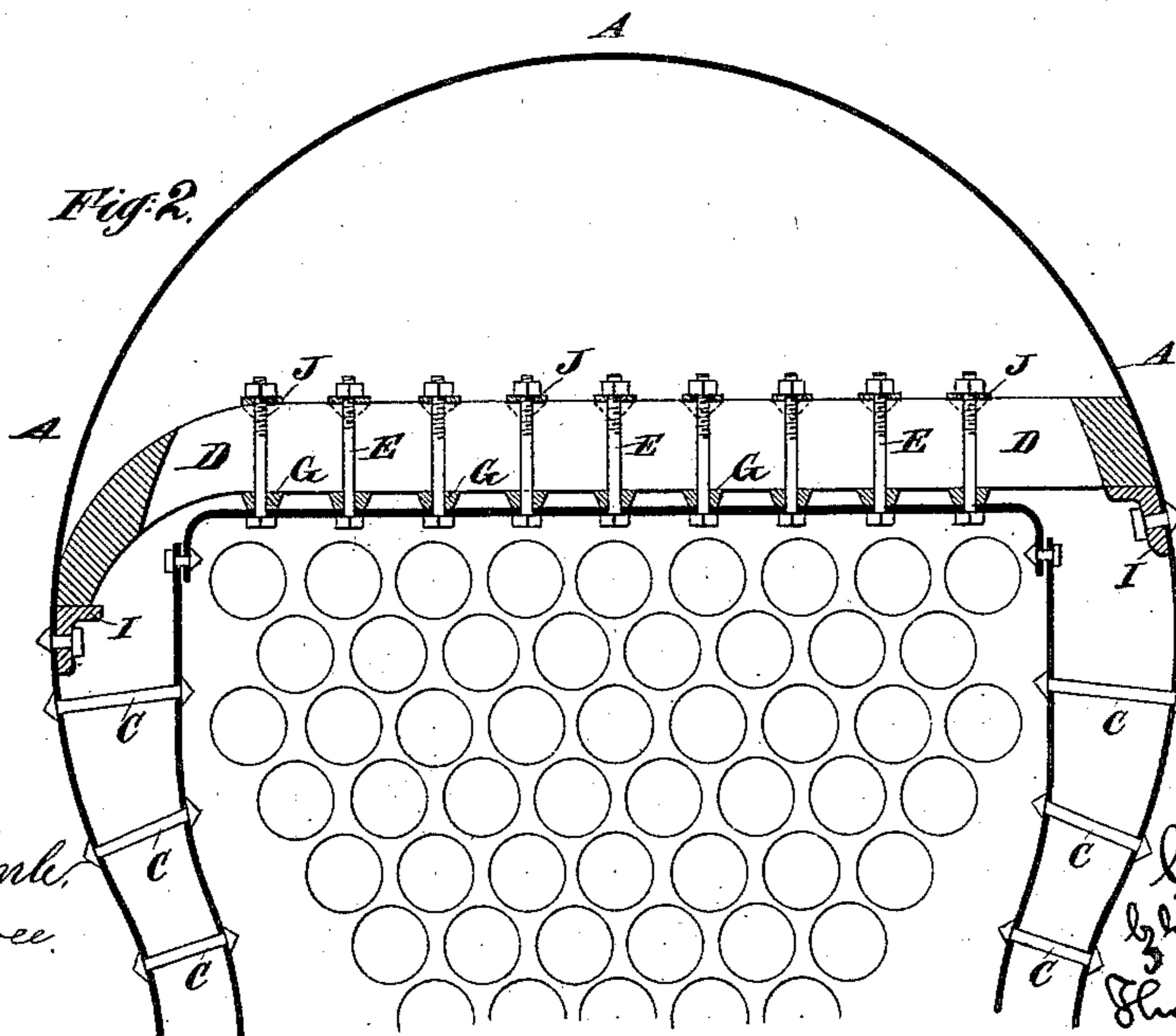
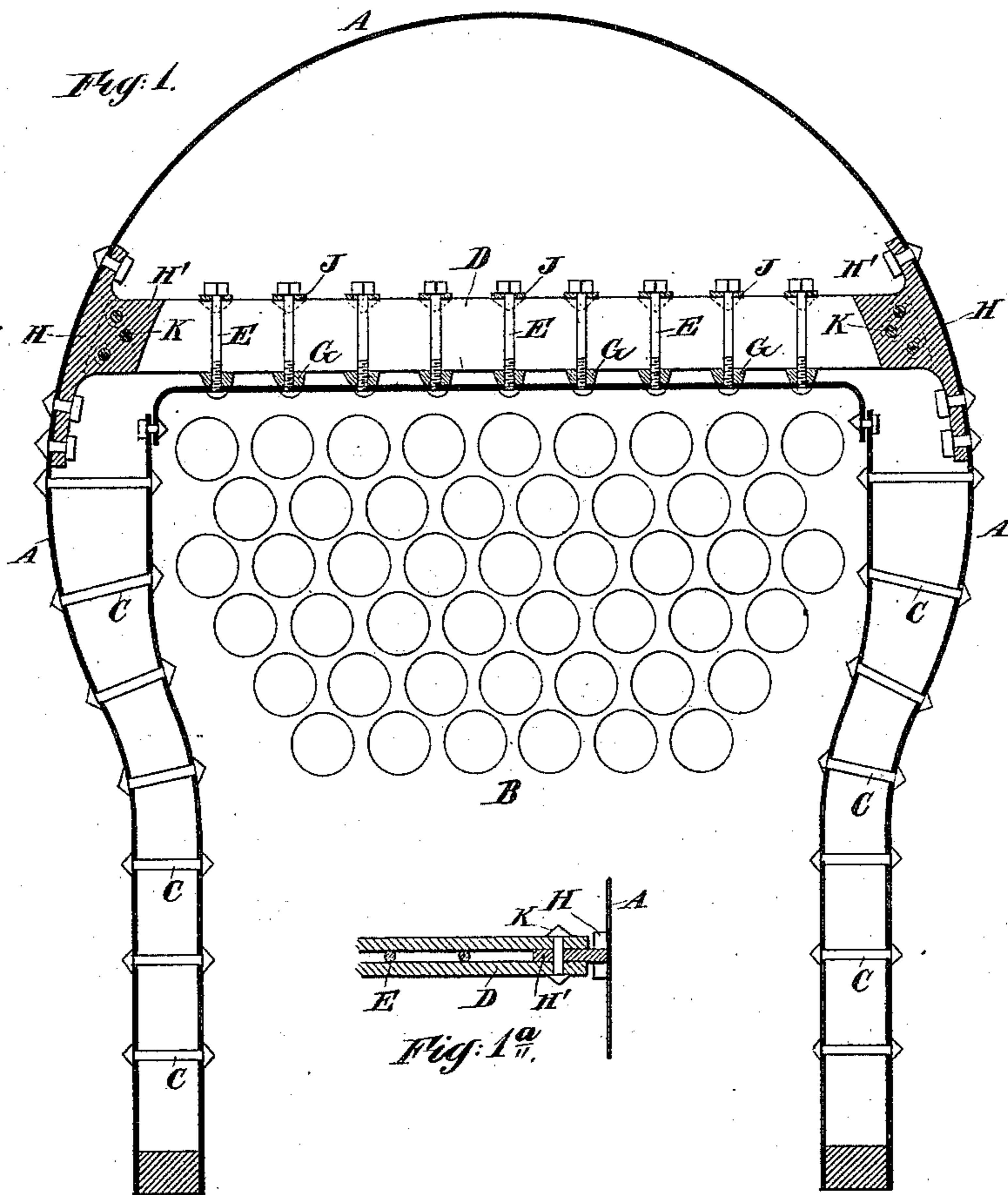


(No Model.)

G. H. GRIGGS.
LOCOMOTIVE BOILER.

No. 307,716.

Patented Nov. 4, 1884.



Witnesses:
Charles F. Smith,
J. E. Remee.

Inventor:
G. H. Griggs
by his attorney
Thomas J. Peterson

UNITED STATES PATENT OFFICE.

GEORGE H. GRIGGS, OF HORNELLSVILLE, NEW YORK.

LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 307,716, dated November 4, 1884.

Application filed April 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. GRIGGS, of Hornellsville, in the county of Steuben and State of New York, have invented certain new and useful Improvements in the Construction of Locomotive-Boilers, of which the following is a specification.

The improvement relates to the provisions for supporting the crown-sheet of the furnace to enable it to resist the pressure of the steam, which tends to force it downward. It has long been common to employ horizontal bars, known as "crown-sheet bars," arranged parallel to each other, extending across the furnace, and sometimes, instead of resting their ends on the vertical sheets which form the sides of the inside fire-box or furnace, they have been extended outward and engaged with the exterior shell of the boiler. My invention applies to this latter class. I have devised important improvements, which render the construction practicable and highly advantageous. I rivet strong crow-feet in the required positions on the interior of the shell on each side. Having temporarily introduced the crown-sheet bars and marked the points and punched or otherwise produced the proper holes therein, I rivet them firmly in position. In cases where it may be anticipated that the bars will require subsequent removal, the crown-sheet bars may be engaged with the crow-feet by bolts and nuts or other detachable fastenings. For ordinary cases I prefer to join them permanently by hot-riveting.

The accompanying drawings form a part of this specification.

Figure 1 is a vertical cross-section showing what I consider the best means of carrying out the invention. Fig. 2 is a corresponding cross-section of the upper portion, showing modifications. This figure shows one modification on the left side and another on the right side. Fig. 1^a is a horizontal section through one end of a crown-sheet bar.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the outer shell of the boiler; B, the fire-box or furnace, and C the ordinary stay-bolts connecting the same at the sides in the long-approved manner.

D is one of the series of crown-sheet stay-bolts engaging the bars D with the crown-sheet of the furnace.

G are thimbles or thick washers, made conical and placed small end downward, each surrounding a stay-bolt, E, between the crown-sheet and a bar, D.

H H are broad shoes or crow-feet curved to match to the inner face of the boiler-shell, and strongly riveted thereto. Each is formed with a vertical web or wing, H'. The several crown-sheet bars are each formed in two parts. They are placed in position with their ends matched against the two faces of the corresponding webs, H', and secured by rivets h. The upper edges of the two parts of each bar D are tied together by clamps J, which serve also as washers to receive the heads of the bolts E. The lower end of each bolt E is threaded, and is screwed into a correspondingly-tapped hole in the crown-sheet. A sufficient surplus of length is provided, which is afterward headed up on the inside of the furnace, making all secure.

Modifications may be made without departing from the principle or sacrificing all the advantages of the invention. I propose in some cases to omit the washers or thimbles G, and thus allow the fire-box to expand upward freely, lifting the heads of the stay-bolts E a little from their seats on the upper edges of the bars, and returning again to a firm bearing.

I claim as my invention—

In combination with the boiler-shell A and the crow-feet H, having vertical webs H', secured to said shell, the crown-sheet support consisting of the two parallel bars D, held in one direction by the clamps J and apart by the webs H', to which they are secured by bolts K, the bolts E, and washers G, all constructed and arranged to serve as and for the purposes set forth.

In testimony whereof I have hereunto set my hand, at New York city, New York, this 24th day of April, 1884, in the presence of two subscribing witnesses.

GEO. H. GRIGGS.

Witnesses:

J. E. RENWEE,

CHARLES R. SEARLE.