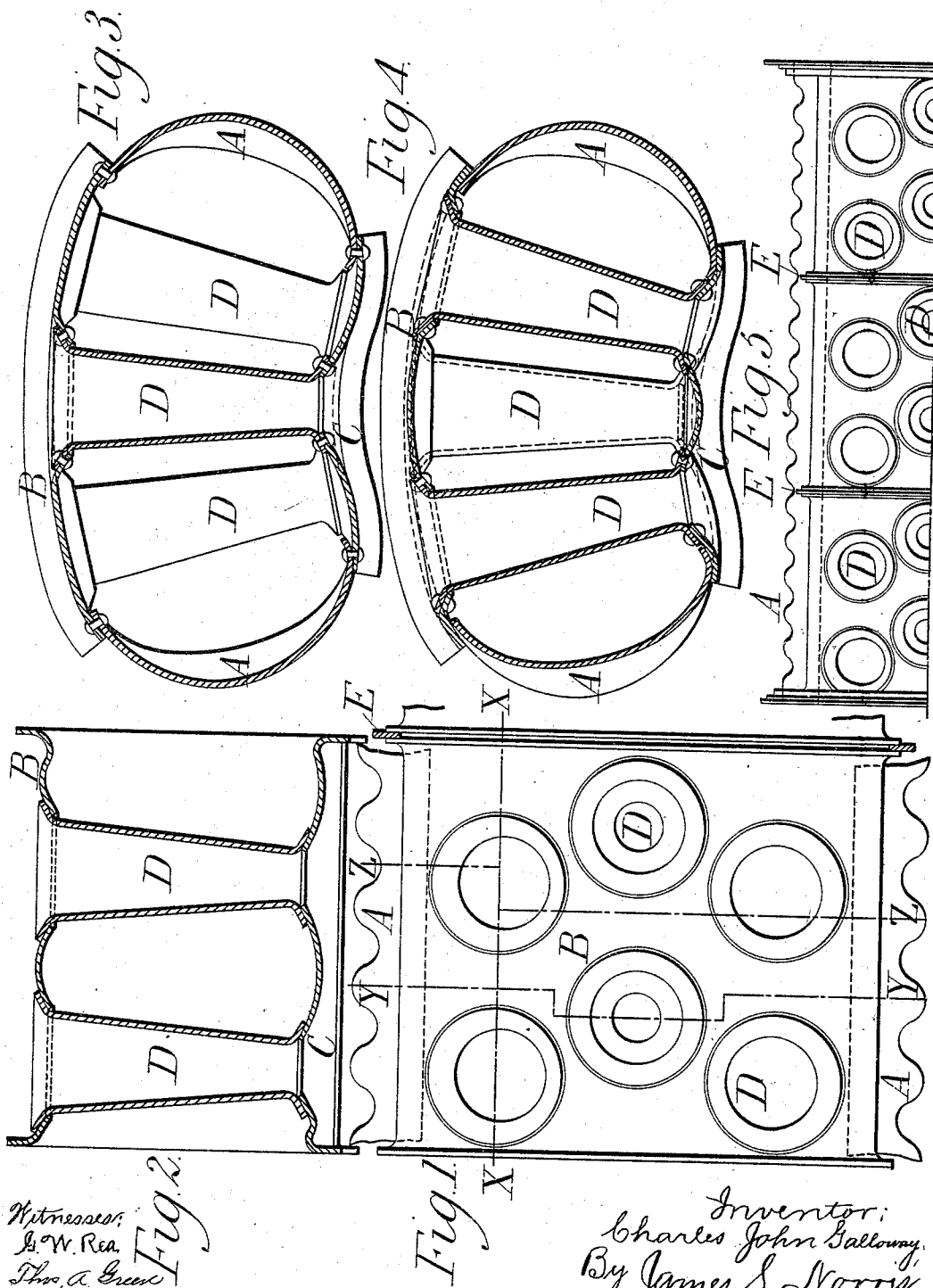


(No Model.)

C. J. GALLOWAY.
BOILER.

No. 537,763.

Patented Apr. 16, 1895.



Witnesses:
J. W. Rea,
Thos. A. Green

Inventor:
Charles John Galloway,
By James S. Norris,
Atty.

UNITED STATES PATENT OFFICE.

CHARLES J. GALLOWAY, OF MANCHESTER, ENGLAND.

BOILER.

SPECIFICATION forming part of Letters Patent No. 537,763, dated April 16, 1895.

Application filed November 16, 1894. Serial No. 529,036. (No model.) Patented in England July 10, 1894, No. 13,362; in France November 3, 1894, No. 242,613; in Belgium November 3, 1894, No. 112,535; in Italy November 26, 1894, LXXIII, 416, and in Canada December 7, 1894, No. 47,637.

To all whom it may concern:

Be it known I, CHARLES JOHN GALLOWAY, a citizen of England, residing at Knott Mill Iron Works, Manchester, in the county of Lancaster, England, have invented new and useful Improvements in Galloway Boilers, (for which I have obtained Letters Patent in Great Britain, dated July 10, 1894, No. 13,362; in France, dated November 3, 1894, No. 242,613; in Belgium, dated November 3, 1894, No. 112,535; in Italy, dated November 26, 1894, Vol. LXXIII, 416, and in Canada, dated December 7, 1894, No. 47,637,) of which the following is a specification.

My invention relates to a construction of the flue and tubes of a Galloway boiler in such a manner that the flue is greatly strengthened and has its heating surface increased, that the tubes are made of a strong and simple form and all of the same shape and size so as to be interchangeable as I will describe referring to the accompanying drawings.

Figure 1 is a plan of part of a flue with cross tubes according to my invention. Figs. 2, 3, and 4 are sections on the lines X X, Y Y, and Z Z of Fig. 1 respectively.

The flue consists of two side parts A A which are by preference corrugated except at their edges but which may also be left plain, and of an upper part B and a lower part C both of which are undulated except at their edges, which are riveted to the edges of the side parts A. Each tube D is made, as usual, tapering to an increased diameter at its upper end, and has its ends coned outward to fit the undulating surface of the parts B and C to which they are riveted. The parts B and C are made in lengths having their ends preferably flanged outward, and the flange of each length is riveted to that of the next as shown in the small scale view of several

lengths fixed together, these flanges constituting as it were transverse girders which greatly strengthen the flue. If desired, a calking or strengthening plate E may be introduced between the flanges of the contiguous lengths as shown.

Although I prefer to construct the lengths B and C with flanges as described yet in some cases they may be made without them and the contiguous ends be riveted together with lap joints.

It will be seen that by the above described conical enlargement of the ends of the tubes D, the advantage is gained that the flanges are bent at an obtuse angle to the tube, instead of being bent approximately to a right angle as in the ordinary Galloway tubes and thus a much stiffer form of support is obtained to resist the heavy strain on the flue.

Having thus described the nature of my invention and the best means I know for carrying the same into practical effect, I claim—

1. A Galloway boiler flue having its upper and lower parts constructed with undulations, and transverse tubes provided with coned ends which fit the undulations, substantially as described.

2. A Galloway boiler flue having its upper and lower parts undulated and constructed in sections having flanges at the ends for securing them together, and transverse tubes coned at the ends and fitting the undulations, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 5th day of November, A. D. 1894.

CHARLES J. GALLOWAY.

Witnesses:

HENRY GALLOWAY,
JOHN HY. PAYNE.