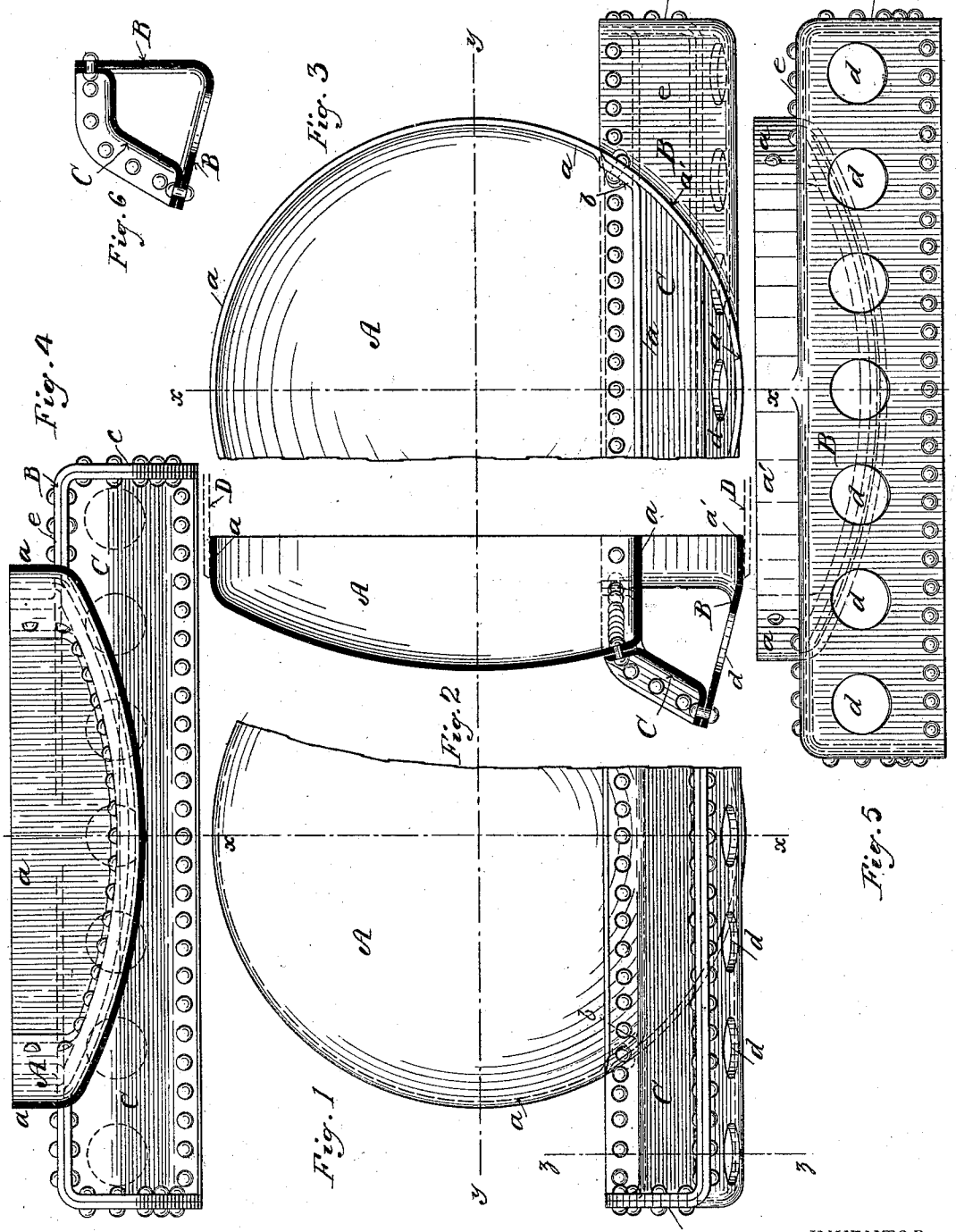
(No Model.) 2 Sheets—Sheet 1.

G. H. BABCOCK & C. P. HIGGINS.

DRUM HEAD AND MANIFOLD FOR SECTIONAL STEAM GENERATORS.

No. 368,564. Patented Aug. 23, 1887.



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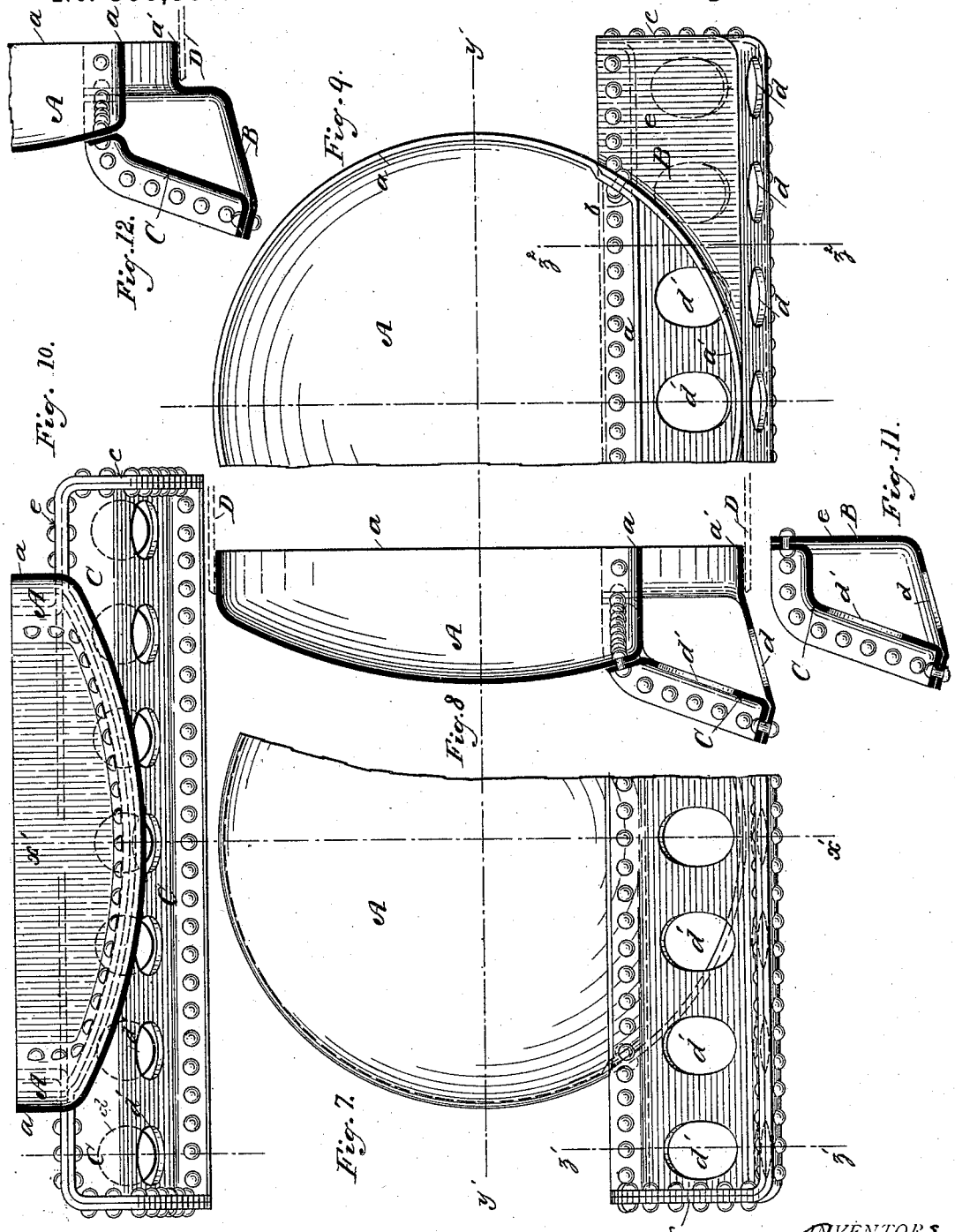

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UNITED STATES PATENT OFFICE.

GEORGE H. BABCOCK, OF PLAINFIELD, NEW JERSEY, AND CAMPBELL P. HIGGINS, OF BROOKLYN, NEW YORK.

DRUM-HEAD AND MANIFOLD FOR SECTIONAL STEAM-GENERATORS.

SPECIFICATION forming part of Letters Patent No. 368,564, dated August 23, 1887.

Application filed March 3, 1887. Serial No. 229,584. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. BABCOCK, residing at Plainfield, county of Union, State of New Jersey, and CAMPBELL P. HIGGINS, residing at Brooklyn, county of Kings, State of New York, citizens of the United States, have invented certain new and useful Improvements in Drum-Heads and Manifolds for Sectional Steam-Boilers, of which the following is a specification.

This invention relates to the construction of manifolds or connecting-boxes and drum-heads for use in making connection between a drum and a communicating series of water-tubes of a sectional water-tube steam-boiler; and the said invention consists of an improved combined construction of the drum-head and the manifold, whereby they are produced from wrought-metal plates, and whereby great rigidity of the several parts is attained.

In order that others skilled in the art to which our invention appertains may be enabled to understand and use the same, we will proceed to describe its construction in detail, having reference to the accompanying drawings, and point out in the appended claims its novel characteristics.

Figure 1, Sheet 1, is an exterior end elevation, partly broken away, of a front drum-head with a manifold combined therewith; Fig. 2, a vertical central section of Fig. 1, taken on the line *x x;* Fig. 3, an interior elevation of the same; Fig. 4, a horizontal section of the same, taken in the plane *y y;* Fig. 5, an inverted plan view thereof; and Fig. 6, a cross-section on the line *z z*, Fig. 1. Fig. 7, Sheet 2, is an exterior end elevation, partly broken away, of a rear drum-head with a manifold combined therewith; Fig. 8, a vertical central section of Fig. 7 on the line *x' x';* Fig. 9, an interior elevation of the same; Fig. 10, a horizontal section of the same, taken in the plane *y' y';* Fig. 11, a cross-section on the line *z' z'*, Fig. 7; and Fig. 12, a cross-section on the line z^2 z^2, Fig. 9.

The features of the invention thus embodied in the accompanying drawings consist, first, of the segmental drum-head A, having a flange, *a*, which extends about its curved periphery to the points *b*, thence horizontally across, relatively corresponding to the chord of a circle, and comprising a portion of the top of the manifold; second, of the wrought-metal plate B, of a box form, preferably produced by means of dies and hydraulic pressure in a well-known manner, comprising the tube-sheet, the back *e*, and the ends *c* of the manifold, and having the curved flange *a'*, which completes the remaining arc of the circular flange *a;* third, of a flanged cover-plate, C, which is riveted or otherwise secured to the parts aforesaid, forming the remainder of the top and the front of the manifold.

Figs. 6, 11, and 12 serve to more fully illustrate the conformation of the parts B and C.

The flange *a* is so formed at the points *b* as to receive the ends of the flange *a''* and present a flush periphery for the reception of the exterior shell, D. (Indicated by dotted lines in Figs. 2, 8, and 12.)

The horizontal portion of the flange *a* acts both as a stiffening-beam for the structure and as a deflecting-plate for directing the steam-and-water current lengthwise of the drum.

The tube-sheet B is provided with a series of circular perforations, *d*, for the reception of the water-tubes, which are expanded or otherwise fixed therein. For the purpose of entering the tubes at the desired angle to the axis of the drum the perforated portion of the tube-sheet may be inclined in either direction to said axis, as illustrated by Figs. 2 and 8, or may be made parallel therewith. In case the inclination of the tube-sheet is such as to render the water-tubes accessible by a tube-cleaning implement, as in Fig. 8, the cover-plate C is for that purpose provided with a series of perforations, *d'*, corresponding to the perforations *d*, and having a form suitable for the introduction of hand-hole plates.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a combined drum-head and manifold for a water-tube boiler, a flange forming a chord of the circle and adapted to act both as a stiffening-beam for the head and as a deflecting-plate for the current of steam and water entering through the manifold, substantially as specified.

2. A combined wrought-metal drum-head and manifold for a water-tube boiler, consisting of, first, a domed flanged segment; second, an irregular portion having holes for the re-

ception of tubes and provided with a flange which supplements and completes the circle of the segment, and, third, a cover-plate provided with hand-holes and riveted or welded to both the other parts, substantially as specified.

3. A combined wrought-metal drum-head and manifold for a water-tube boiler, consisting of, first, a domed flanged segment; second, an irregular portion having holes for the reception of tubes and provided with a flange supplementing and completing the circle of the segment, and, third, a cover-plate uniting the two and riveted or welded thereto, substantially as specified.

4. A combined wrought-metal drum-head and manifold for a water-tube boiler, consisting of a flanged segment of a circle and a manifold having a flange adapted to complete the said circle, substantially as described.

5. A combined wrought-metal drum-head and manifold for a water-tube boiler, in which the manifold forms a portion of the circular part of the drum-head, substantially as described.

6. A combined drum-head and manifold for a water-tube boiler, formed of wrought metal, and, as a whole, adapted to be inserted within the periphery of a drum, substantially as shown.

GEO. H. BABCOCK.
CAMPBELL P. HIGGINS.

Witnesses:
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