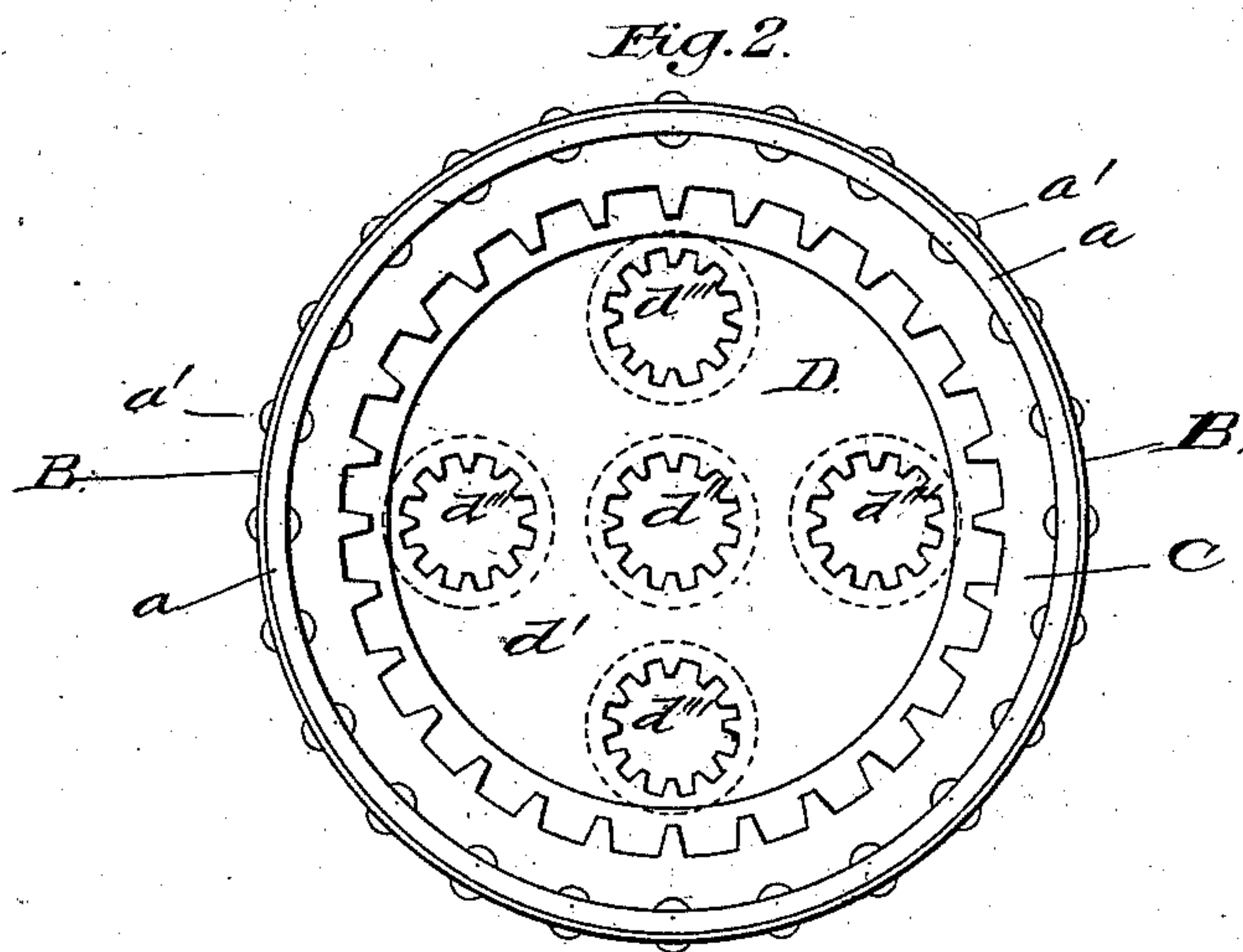
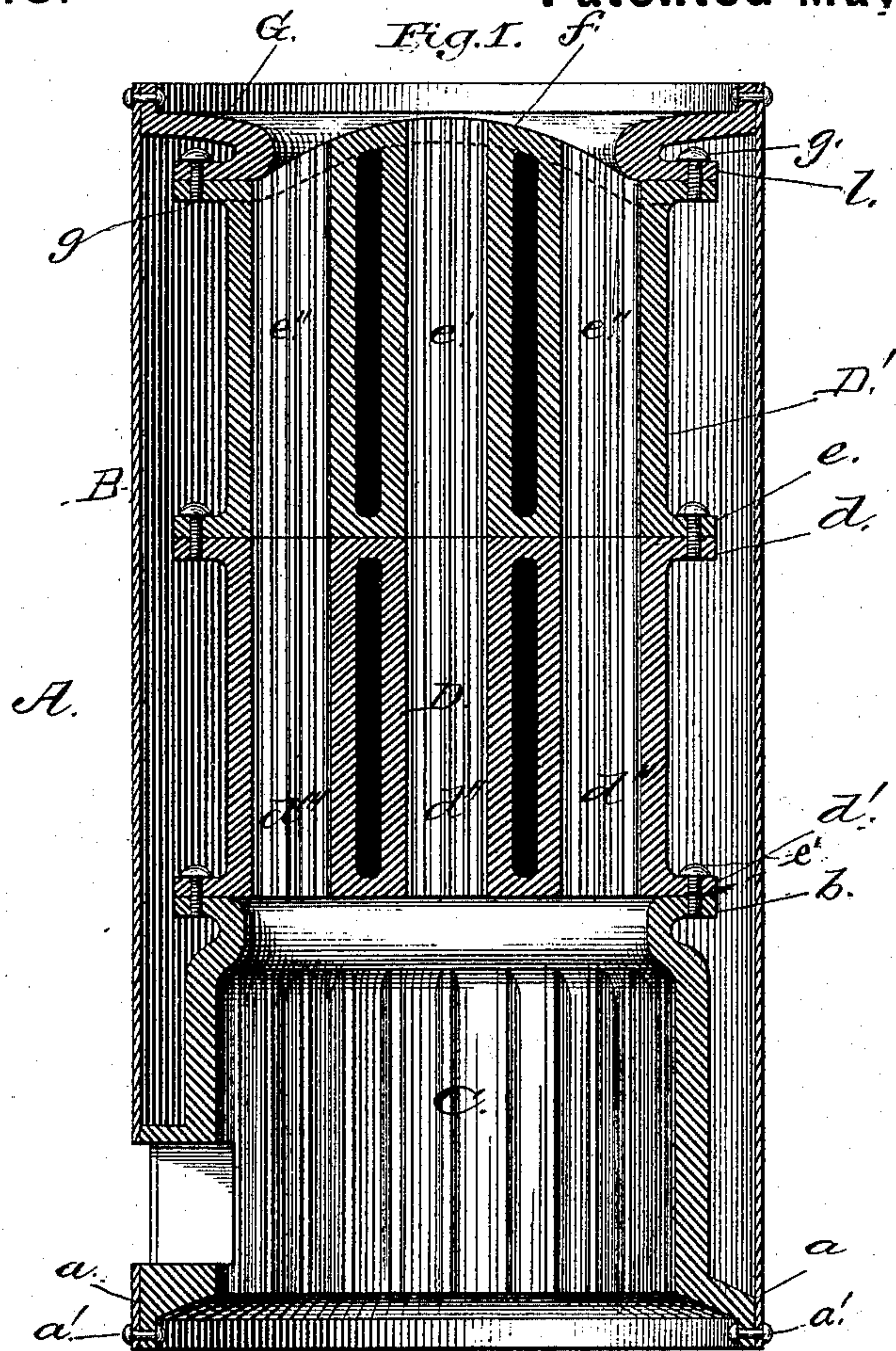


(Model.)

F. TRUMP.
Steam-Boiler.

No. 228,143.

Patented May 25, 1880.



WITNESSES

John A. Ellis.
J. J. Measi.

INVENTOR

Fuller Trump,
by E. W. Anderson,
his ATTORNEY

UNITED STATES PATENT OFFICE.

FULLER TRUMP, OF SPRINGFIELD, OHIO, ASSIGNOR TO JOHN W. BOOK-
WALTER, OF SAME PLACE.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 228,143, dated May 25, 1880.

Application filed April 7, 1880. (Model.)

To all whom it may concern:

Be it known that I, FULLER TRUMP, of Springfield, in the county of Clarke and State of Ohio, have invented a new and valuable Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical central section of my improved boiler, and Fig. 2 is a bottom view thereof.

This invention has relation to improvements in steam-boilers of that description having cast-metal interiors.

The object of the invention is mainly to prevent the cracking of the crown-sheet during the operation of casting it, or during the heating and cooling of the same, owing to the unequal expansion and contraction thereof; and it consists in the construction and novel arrangement of parts, as hereinafter shown and described.

In the annexed drawings, the letter A designates an upright or vertical boiler, in connection with which I propose to illustrate my invention. B is a cylindrical wrought-metal shell, and C a cast-metal cylinder of somewhat less diameter exteriorly than the shell, and constituting the fire-chamber or furnace. This chamber is provided at its lower end with a vertical flange, *a*, secured to the lower edge of the shell by means of bolts *a'*, and at its upper edge with a horizontal flange, *b*, by means of which it is secured to the flue-section D next above. This section has also a flange, *d'*, fitting snugly on flange *b* of the furnace-section C, and secured thereto by the through-bolts *e'*.

The section D is composed of two horizontal disks, *d* *d'*, having a central flue, *d''*, and a number of side flues, *d'''*, the whole being cast in one piece, and the flues being sufficiently far apart to form water-spaces between them. There may be one or more of these sections, according to the height of the boiler.

Above the section D is another section, D', constructed with a disk, *e*, at its lower part, of the same diameter as the disk *d* and fitting snugly thereon, and with flues *e'* *e''* in corresponding positions with the flues *d''* *d'''*, and forming the upward continuation thereof. The flues *e'* *e''* terminate above in a transversely concavo-convex plate, *f*, the convexity of which is upward.

The section D' is secured by means of bolts *g* to a cast annulus, G, fitting snugly within the shell, and having a flange, *l*, for the reception of the bolts.

It is preferred to make the flue part of the boiler in sections, in order that the casting thereof may be made with less risk.

The rounded or arched form of the crown-sheet *f* of the boiler is superior to the flat form in this, that in casting the latter the shrinkage of the metal near its perimeter is so much greater and in advance of the parts nearer the center that the strain is unequal and sometimes causes the sheet to open or fracture near its periphery; but the rounded form of the sheet obviates the unyielding rigidity of the flat sheet, and permits it to cool off after casting without danger of breaking or cracking.

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

1. The combination, with a steam-boiler, of a flue-casting provided with upper and lower flue-sheets, the upper one of which is arched, said casting being provided with flanges and flues, the whole cast in one piece, as specified.

2. The combination, with the arched cast-metal flue-sheet *f*, its flues *e'* *e''*, and the wrought-iron shell B, of the connecting-annulus G, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FULLER TRUMP.

Witnesses:

F. C. GOODE,

O. B. JOHNSON.