

H. V. BRADY.
STEAM BOILER.

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Patented Apr. 23, 1912.

2 SHEETS—SHEET 1.

1,024,058.

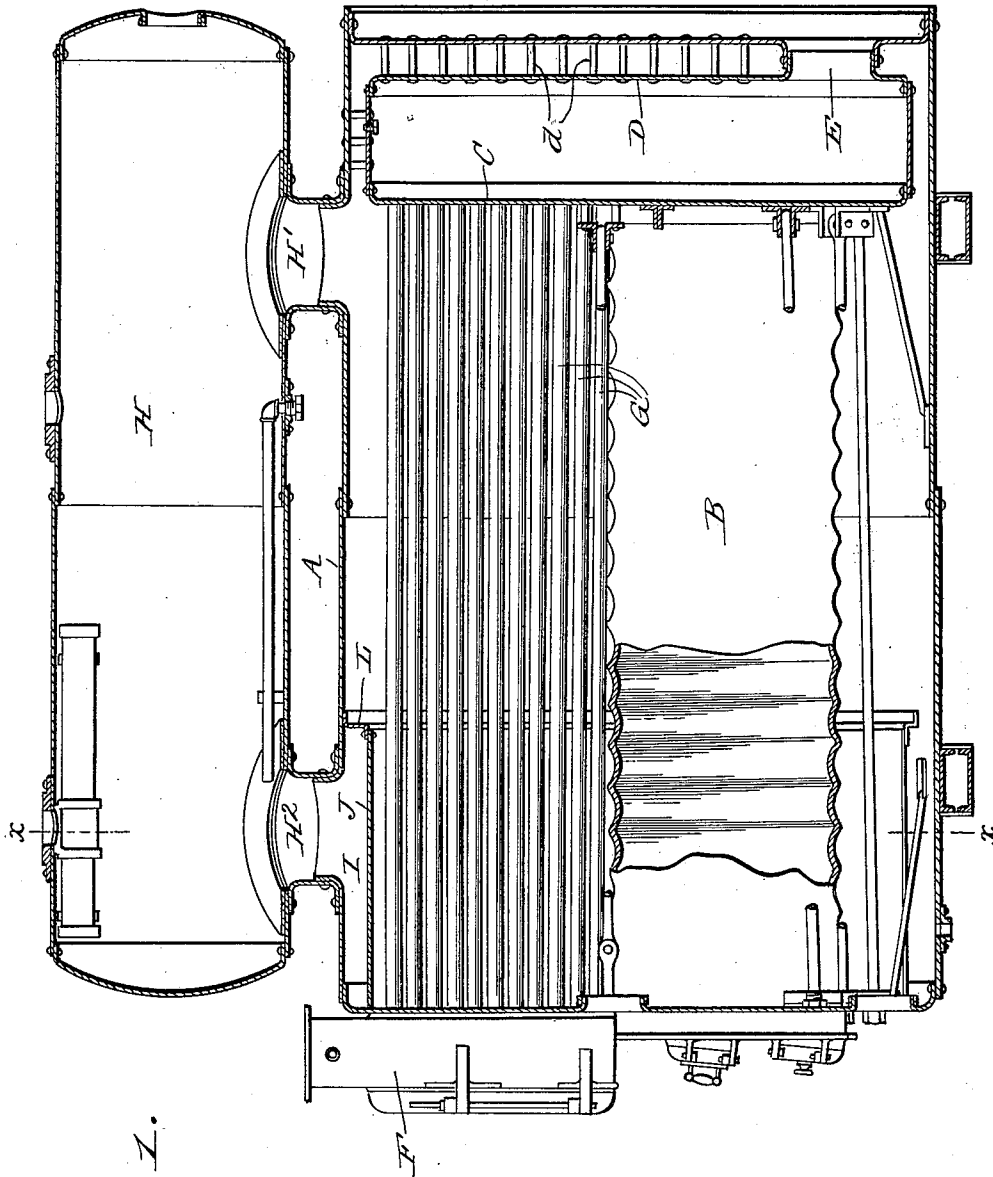


Fig. 1.

Witnesses

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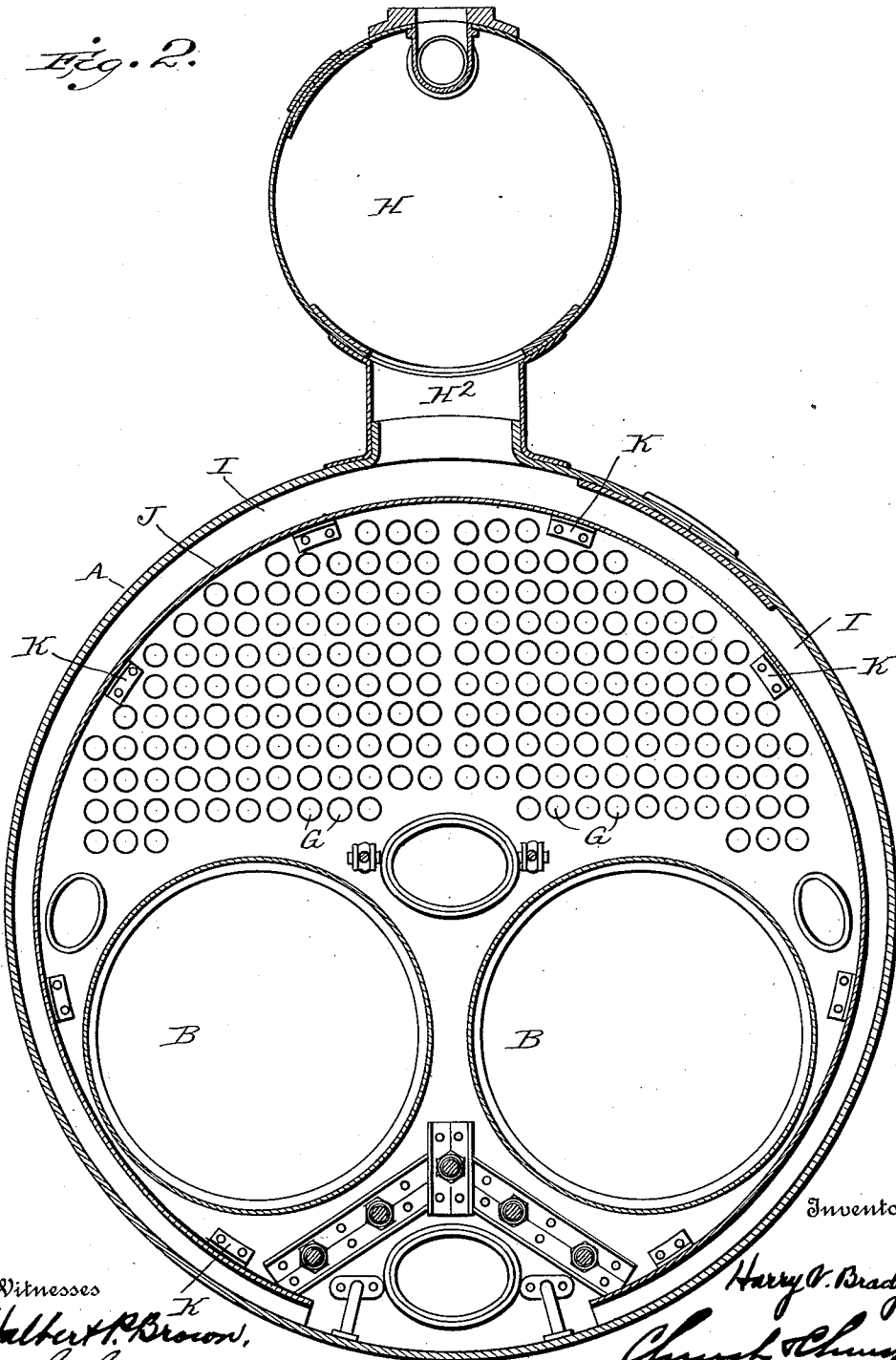
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

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STEAM-BOILER.

1,024,058.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY V. BRADY, a subject of the King of Great Britain, residing at South Framingham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

The present invention relates to improvements in steam boilers, especially designed for marine use where it is desirable that the boiler shall be self-contained and occupy a relatively small space.

To these ends the invention consists in certain novel details of construction and combinations and arrangement of parts, all as will be now described and the particular features of novelty pointed out in the appended claims.

Referring to the accompanying drawings,—Figure 1 is a vertical section taken longitudinally through a boiler embodying the present improvements; Fig. 2 is a section on line *x—x*, Fig. 1, looking toward the front end of the boiler.

Similar letters of reference in the several figures indicate the same parts.

The cylindrical shell A of the boiler is somewhat short as compared with its diameter, for the purpose of reducing the space required for the setting. The internal or fire box shell B extends from the front to the rear tube sheet, and may be of the well known transversely corrugated type as illustrated, or of any other construction as may be desired. Two of such internal fire box shells are preferably employed, arranged side by side, as illustrated in the drawings, though any number may be employed.

At the rear end, the fire box shells open into a combustion chamber, which, as illustrated, is preferably of the so-called wet-type, or arranged entirely within the boiler shell, the forward wall of the combustion chamber being formed by the rear tube sheet C. The rear wall D of the combustion chamber is connected to the rear boiler head by stay Bolts *d* and a door opening E is pro-

vided near the bottom, extending through both rear walls.

Fire tubes G connect the front and rear tube sheets, respectively, and the products of combustion pass from the combustion chamber forwardly through the body of the boiler to the smoke boxes F and thence to a suitable stack.

Located above the boiler A is a horizontal steam and water drum H, connected therewith at front and rear by water legs or necks H' and H², respectively. The circulation of the water is upwardly through the water leg H' from the boiler into the drum and thence down through the water leg H² into the front portion of the boiler. To maintain this circulation, a channel or passage formed by conduit I is provided forming a continuation of the front water leg H², and extending between the fire tubes G and the boiler shell, nearly to the bottom of the shell or in position to discharge the water below the fire boxes. In the preferred construction, two of these conduits I are provided extending down each side of the boiler and they are preferably formed by a curved metal sheet J of proper width, suitably spaced from the boiler shell, bridging the water leg opening and with its ends separated as shown. The metal sheet is secured to the front tube sheet by angle plates K, and at the rear is secured to a double flanged annulus L, which in turn is bolted to the boiler shell.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. In an internally fired boiler, the combination with the boiler shell, the internal fire box shell connecting the front and rear tube sheets and opening into a combustion chamber at the rear end, fire tubes connecting said front and rear tube sheets, a smoke box into which the tubes open at the front end of the boiler, a horizontal water and steam drum above the boiler shell, water necks connecting the proximate ends of the boiler shell and drum, and a circulating conduit extending from the front water neck down between the fire tubes and boiler shell to substantially the bottom of the boiler.

2. In an internally fired boiler, the combination with the boiler shell, the internal

fire box shell connecting the front and rear tube sheets and opening into a combustion chamber at the rear end, fire tubes connecting said front and rear tube sheets, a smoke box into which the tubes open at the front end of the boiler, a horizontal water and steam drum above the boiler shell, water necks connecting the proximate ends of the boiler shell and drum, and circulating conduits extending from the front water neck on each side of the boiler, between the fire tubes and shell and opening at the bottom of the boiler.

3. In an internally fired boiler, the combination with the fire box shell and fire tubes, of a water and steam drum above the

boiler, water necks connecting the drum and boiler shell, a curved plate bridging the front water neck opening and extending down on each side of the boiler to near the bottom of the shell and suitably spaced from the shell secured at the front to the front flue sheet, and an annulus or ring closing the space between the plate and boiler shell at the rear, whereby channels are formed leading from the front water neck to the bottom of the boiler.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."