

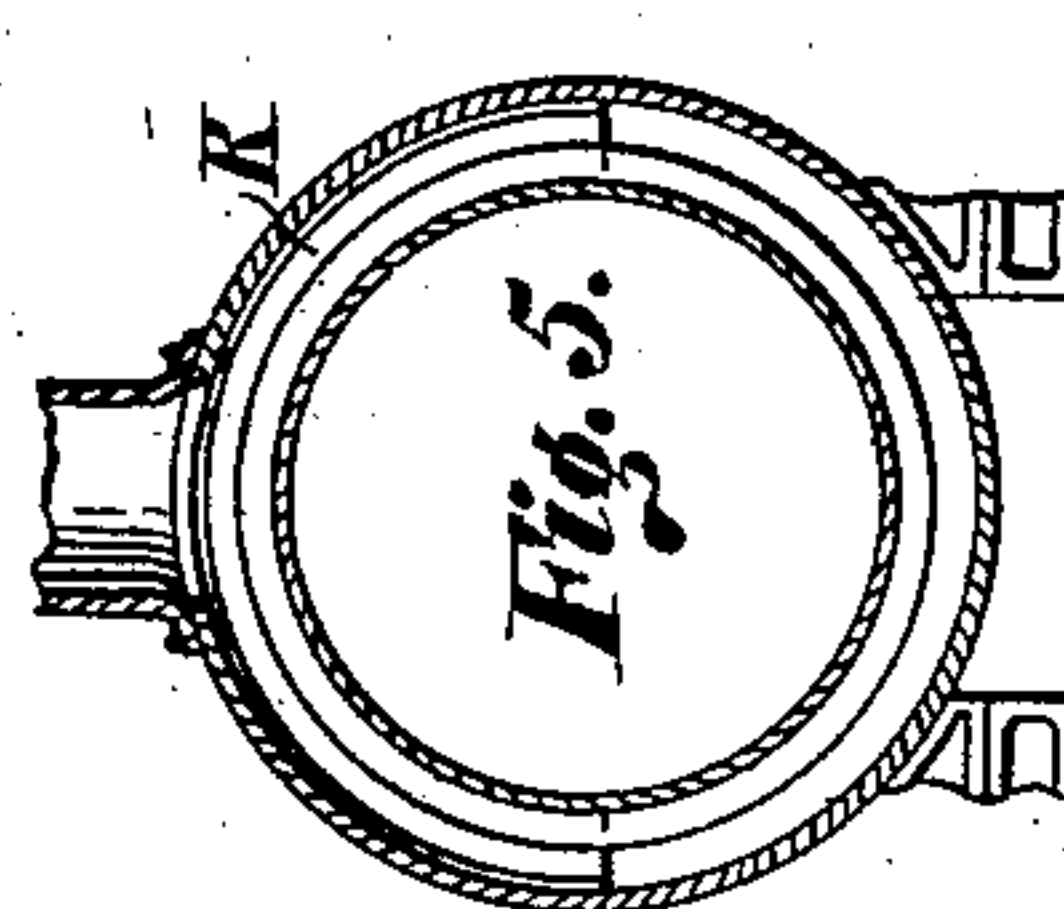
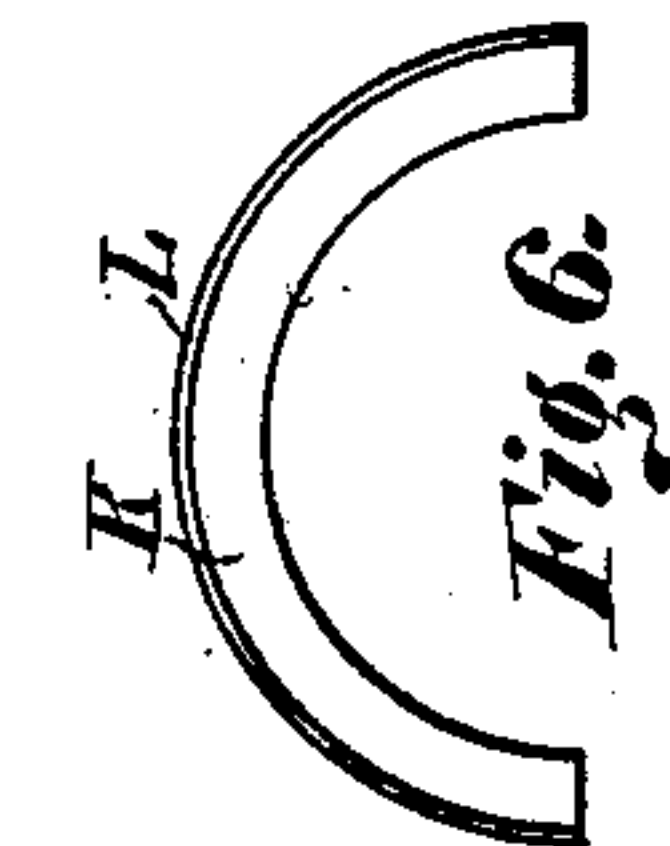
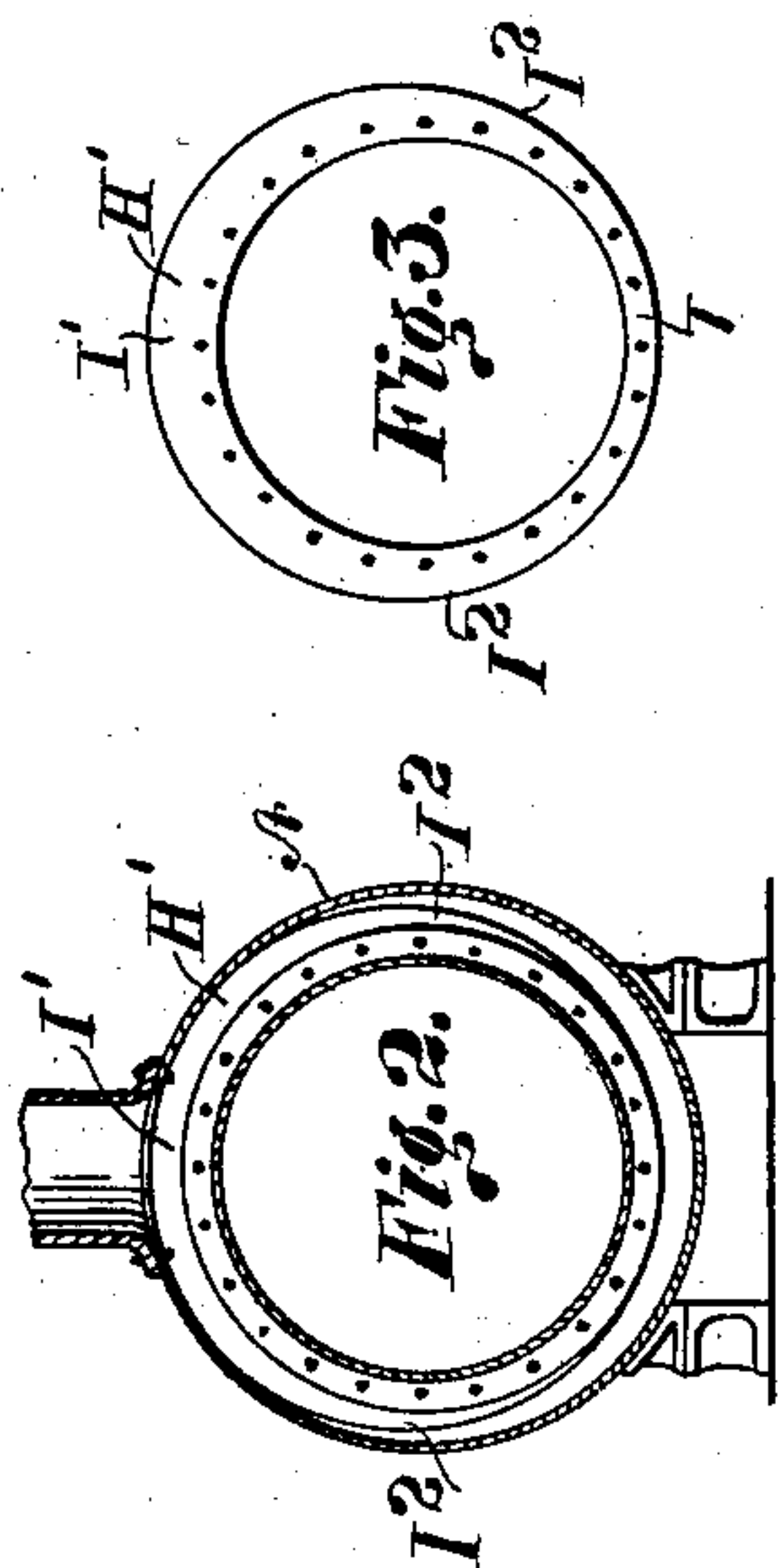
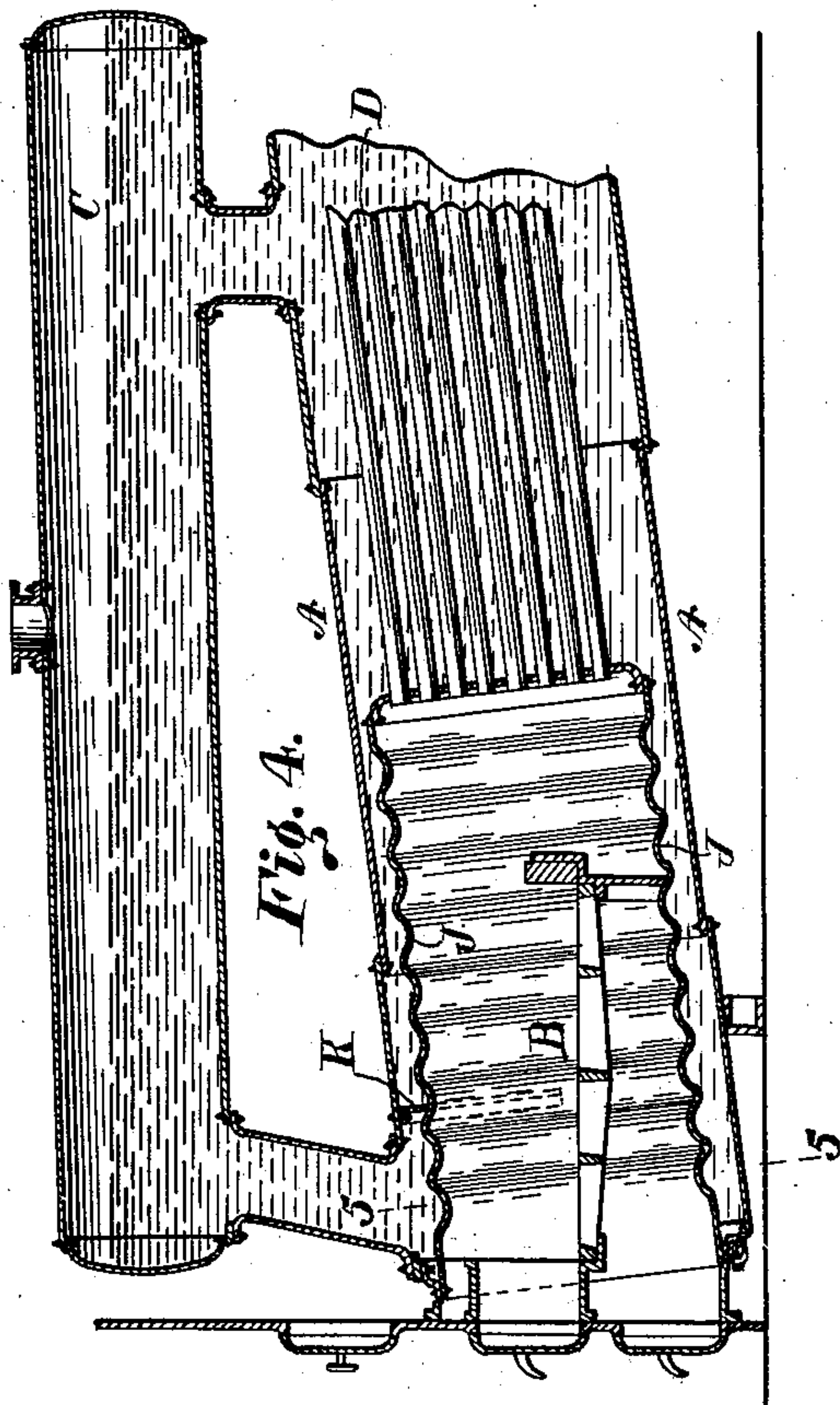
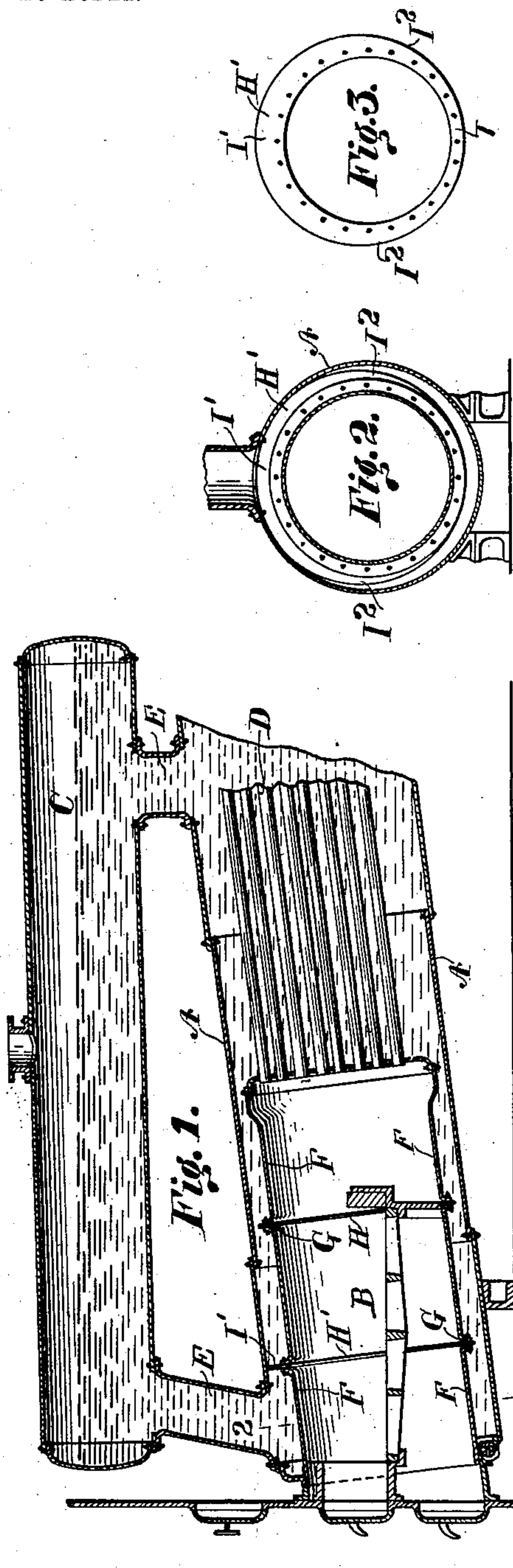
No. 755,046.

PATENTED MAR. 22, 1904.

D. W. ROBB.
STEAM BOILER.

APPLICATION FILED APR. 9, 1903.

NO MODEL:



Witnesses
J. M. Dinsbach
Wm. J. Fox

David Newthworth Robb Inventor.
By his Attorney Phillips Abbott

UNITED STATES PATENT OFFICE.

DAVID W. ROBB, OF AMHERST, CANADA.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 755,046, dated March 22, 1904.

Application filed April 9, 1903. Serial No. 151,732. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. ROBB, a citizen of the Dominion of Canada, and a resident of the town of Amherst, Province of Nova Scotia, Dominion of Canada, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

10 Figure 1 illustrates a longitudinal sectional view of a boiler embodying my improvements. Fig. 2 is a cross-sectional view of the same on the line 2 2 of Fig. 1, the grate being omitted. Fig. 3 is a view of the combined calking-ring and baffle-plate separated from the other parts. Fig. 4 is a longitudinal sectional view similar to Fig. 1, but showing a fire-box or furnace-section of different construction. Fig. 5
15 is a cross-section on the line 5 5 of Fig. 4, the grate being omitted. Fig. 6 is a view of the baffle-plate shown in Figs. 4 and 5 separate from the other parts.

My invention relates to steam-boilers of the internal fire-box type provided with means
25 whereby continuous water circulation is secured.

The object of the invention is to improve the construction of the internal fire-box and to provide means for improving the water
30 circulation. After somewhat-extended experience with boilers of this construction I have ascertained that it is desirable to direct and control the circulation of the water by the interposition of what may be called a "partial"
35 baffle-plate, which shall intercept or obstruct the circulation of the water in such manner as to compel it to make a more extended or comprehensive circuit. I preferably so construct the baffle-plate that it at the same time acts
40 as a calking-ring for the shell-plates of the fire-pot. I illustrate it, however, in two forms. In one instance it does not so act.

Referring now to the drawings, A, B, C, and E, Figs. 1 and 2 are respectively the
45 shell, furnace, steam-drum, and fire-tubes of a boiler of the class stated. The shell A has preferably considerable longitudinal inclination, while the steam-drum C is or may be practically horizontal and is connected to the shell by water legs or trunks E E at or near

each end. The shell of the fire-box (shown at F in Fig. 1) is preferably constructed with what are known as the "Adamson" flanged joints G G, consisting of two outwardly-turned flanges of the edges of the plates, with a separate calking-ring between them, with rivets
55 passing through both flanges and ring. This joint leaves a straight surface inside and possesses considerable elasticity longitudinally apart from its quality of exposing no rivets to the fire that are not covered with water on the other side. It also affords greater resistance to collapse against external pressure. The rearmost joint in the fire-box, as shown in Fig. 1, is calked with an ordinary calking-ring H.
60 In the other joint, however, the calking-ring H' (see Figs. 2 and 3) is made eccentric, so that whereas at its lower arc (shown at I in Fig. 3) it is only substantially as wide as the flanges on the fire-box plates at its upper arc (shown
65 at I') it is so much wider than the flanges as to fill in the space between the outer shell A and the flanges, and this widened part of the ring constitutes a baffle-plate and closes the said space throughout a considerable part of the
70 upper portion thereof, gradually drawing in, however, as shown at I² I², Figs. 2 and 3, because of its eccentric or crescent shaped construction until its projection beyond the flanges of the fire-box plates passes away at
75 or near the lower arc thereof. This baffle-plate will obviously compel the circulating water descending through the water legs or trunks E near the front of the boiler to pass
80 down the sides of the fire-box instead of moving along the crown thereof rearwardly to complete another circuit.

If the fire-box be not constructed with the Adamson joints, a plain cylindrical or corrugated fire-box may be used, as shown at J,
85 Fig. 4. In this event I construct a special baffle-plate K. (See Figs. 5 and 6.) In this case the baffle-plate does not enter into the construction of the fire-box, but rides upon it transversely and is held in the same relative
90 position as the baffle-plate H' (shown in the other figures) by a flange L, (see Fig. 6,) which may be riveted to the shell. It may, however, be suitably stayed to the shell of the fire-box. The special method of confining it is
100

immaterial. If the construction is as shown in Fig. 4, the corrugations on the shell of the fire-box will afford considerable resistance to collapse against outside pressure, while at the same time they will yield longitudinally, affording compensation for lengthwise expansion and contraction.

In Figs. 5 and 6 I show this form of baffle-plate of equal width throughout. Obviously, however, its downwardly-extending ends may be narrowed to permit more or less water to pass through, as occasion may require, so that it will resemble in this respect the baffle-plate shown in Figs. 2 and 3.

It will be obvious to those familiar with the art to which this invention belongs that modifications may be made in the details of construction without departing from the essentials of the invention. I therefore do not limit myself to the details shown and described.

I claim—

1. The combination in a boiler provided with means whereby continuous water circulation is afforded, of an internal fire-box made of plates having flanged joints and a calking-ring in one of said joints made eccentric, the upper part of which ring extends from said plates to the crown of the boiler-shell.

2. The combination in a boiler provided with means whereby continuous water circulation is afforded, of an internal fire-box made

of plates having flanged joints, a calking-ring in one of said joints which projects inwardly from the plates toward the boiler-shell more and more from below upwardly, so that at its upper part it extends to the crown of the boiler-shell and cuts off the space between the shell and the plates.

3. The combination of a boiler provided with means whereby continuous water circulation is afforded, of an internal fire-box made of plates having outwardly-extending flanges, bolts through the flanges and a baffle-plate arranged transversely of the boiler, the upper part thereof extending from the plates to the crown of the boiler-shell.

4. The combination in a boiler provided with means whereby continuous water circulation is afforded, of an internal fire-box, a baffle-plate of eccentric construction located between the fire-box and the shell-plates of the boiler which closes the space between them at the top, but increasingly opens it from the top downward.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID W. ROBB.

Witnesses:

G. W. COLE,

W. C. RODGER.