

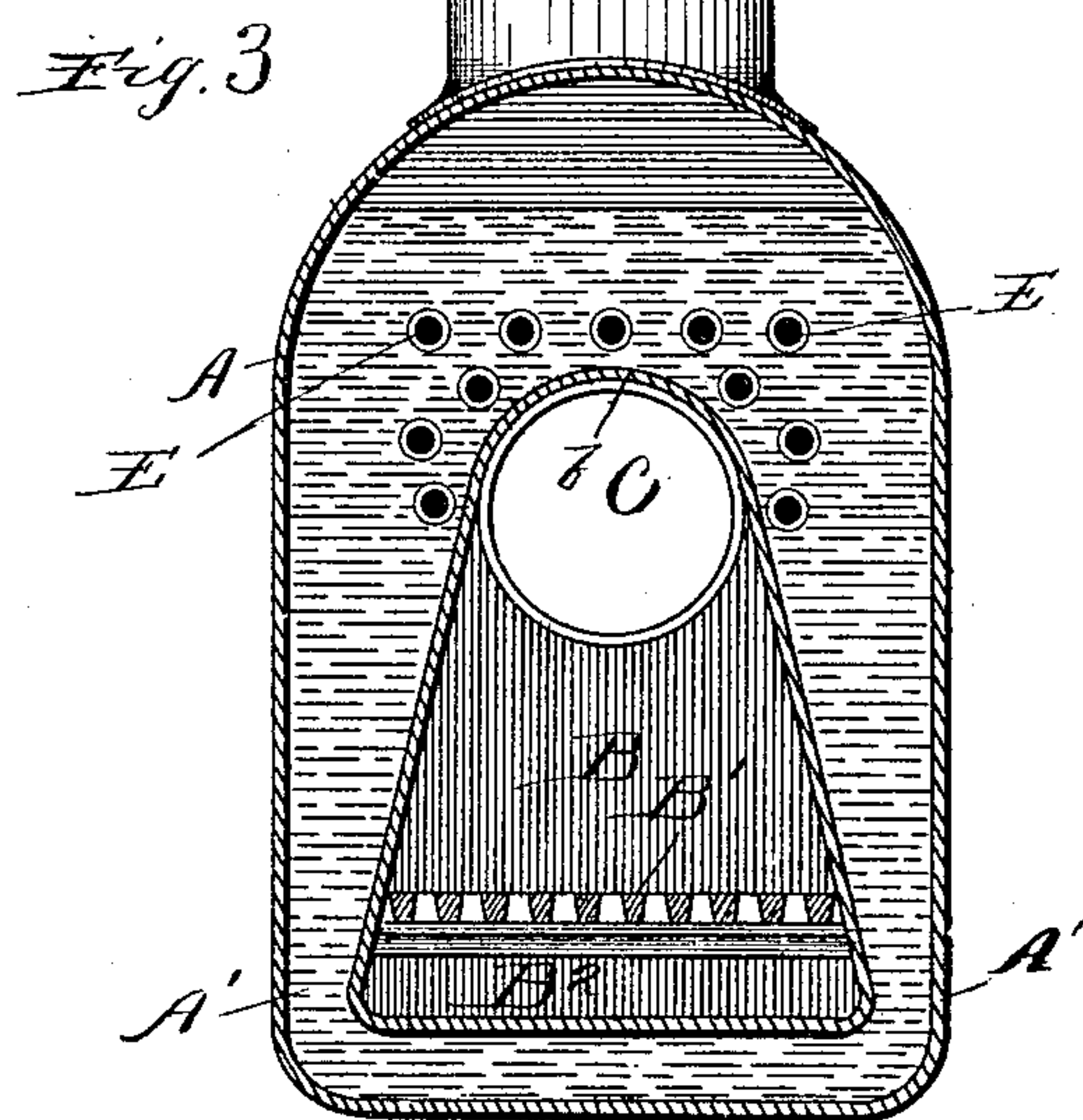
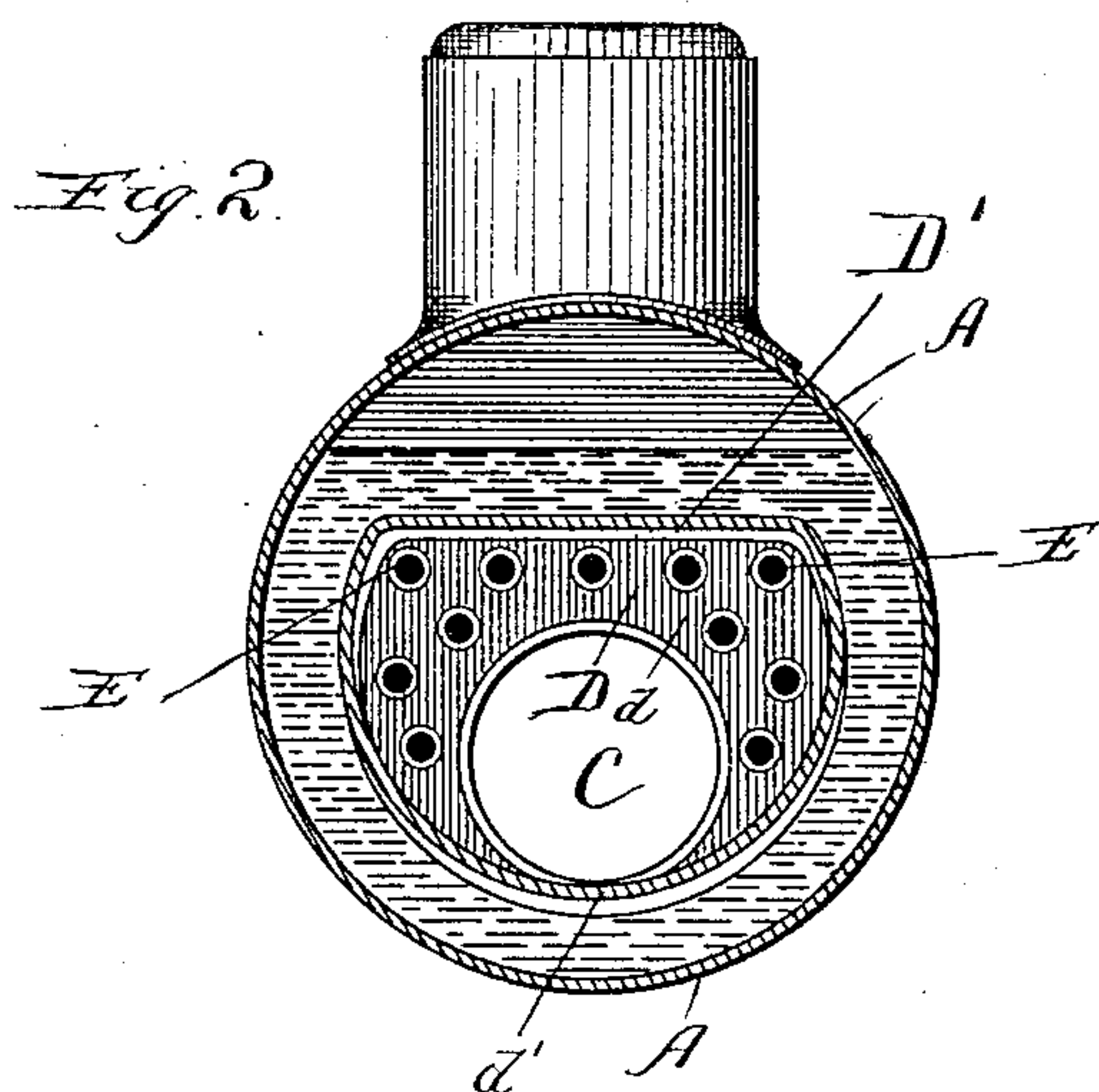
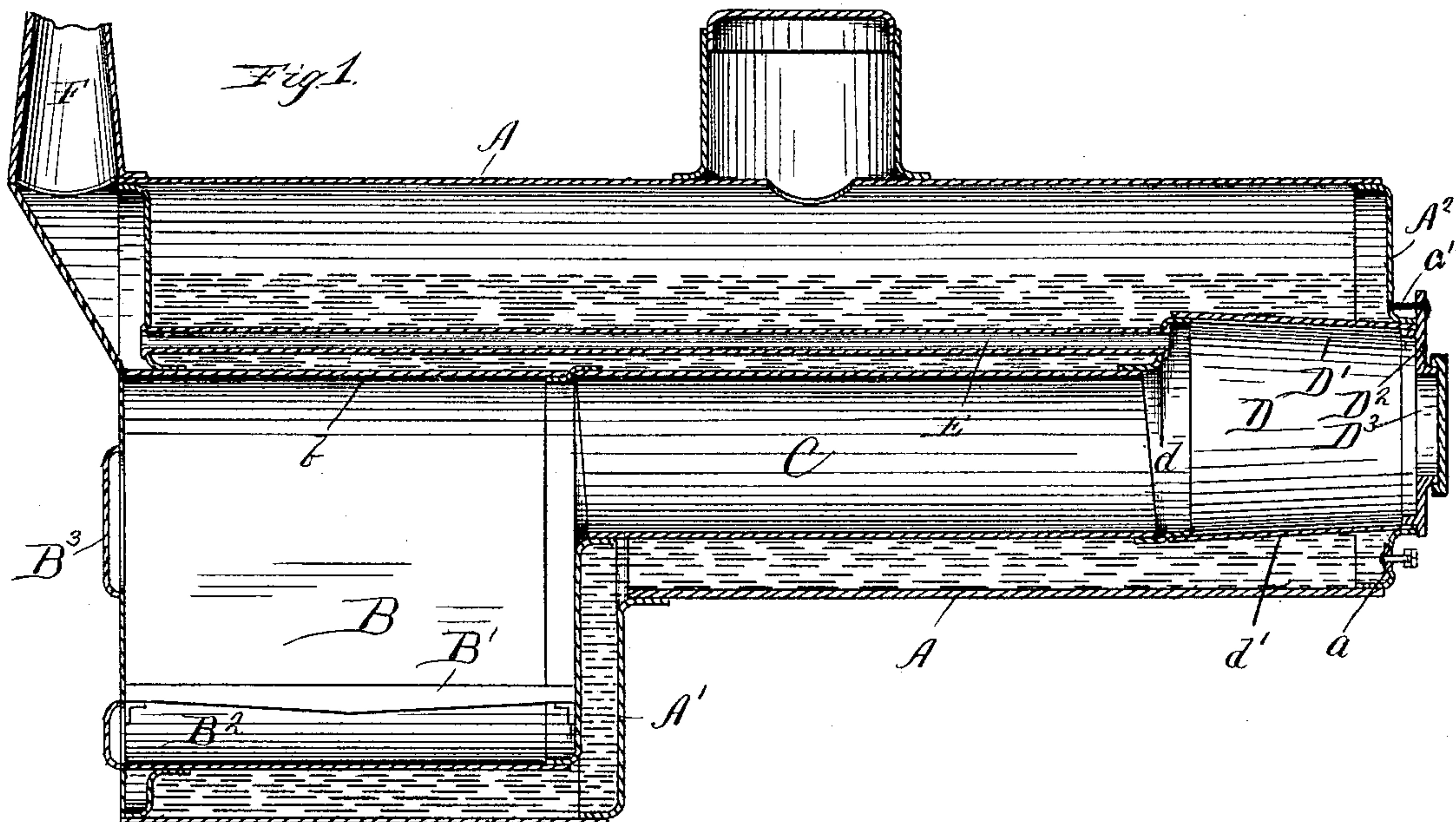
(No Model.)

W. N. RUMELY.

STEAM BOILER.

No. 389,250.

Patented Sept. 11, 1888.



Witnesses:

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A. M. Munday.

Inventor:

William N. Burnely.

By Munday, Everts & Adeock
His Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM N. RUMELY, OF LA PORTE, INDIANA, ASSIGNOR TO HIMSELF AND
MEINRAD RUMELY, OF SAME PLACE.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 389,250, dated September 11, 1888.

Application filed September 6, 1886. Serial No. 212,793. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM N. RUMELY, a citizen of the United States, residing at La Porte, in the county of La Porte and State of Indiana, have invented a new and useful Improvement in Steam-Boilers, of which the following is a specification.

My invention relates to steam-boilers of that class which have a large main flue with small return-flues and the ordinary locomotive form of fire-box at one end and a combustion-chamber at the other. The principle difficulty experienced in the practical use of this class of boilers heretofore has been in the burning out of the upper wall of the combustion-chamber, the combustion-chamber usually being made large and extending up to or almost up to the outer shell of the boiler, as indicated, for example, in the patent to Porter, No. 325,967, of September 8, 1885. I have found by experiment that in such boilers much better heating and steam-generating results may be produced by elongating the combustion-chamber and contracting it diametrically, so that its upper wall or crown-sheet will come below the water-line, and at the same time the crown-sheet, being submerged, is prevented by the same means from burning out. The crown-sheet is made flat or about flat, so that its central portion will not be so elevated nor so liable to be exposed or left dry as it would be if curved when such boilers are used on road-engines that frequently have to run on inclined roads. The crown-sheet of the combustion-chamber is also submerged.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a central longitudinal section of a steam-boiler embodying my invention, and Figs. 2 and 3 are cross-sections on lines 2 2 and 3 3 of Fig. 1.

In said drawings, A represents the outer shell of the boiler, and A' is the depressed leg surrounding or partially surrounding the fire-box B.

B' is the grate; B², the ash-pit below the grate, and B³ the door through which the fuel is fed to the fire-box.

C is the main flue, leading from the upper

part of the fire-box B to the combustion-chamber D. This main flue is surrounded by the water on all sides.

E E are the small return-flues leading from the combustion-chamber D to the smoke box or stack F.

D' is the crown sheet of the combustion-chamber, which is preferably about straight or flat in cross section, as indicated in Fig. 2, and is submerged or arranged below the water-line, as indicated in Figs. 1 and 2. By thus depressing the crown-sheet D' the capacity of the combustion-chamber is somewhat diminished, and to compensate for this in part I somewhat increase the length of the combustion-chamber. The crown-sheet and wall of the combustion-chamber are connected to the main flue through the flue-sheet d, and at its outer end it is riveted directly to the head A² of the boiler or flange thereon.

D² is the head-plate of the boiler, which closes the end of the combustion-chamber. This head-plate has a separate door or opening, D³. The upper wall or crown-sheet, b, of the fire-box may be made either flat or slightly curved, but preferably slightly curved, as indicated in Fig. 3.

As the crown-sheets of the fire-box and combustion-chamber are both arranged below the water-line, and as the crown-sheet receives a very great heat, the total heating or steam-generating capacity of the boiler is largely increased by this construction of the combustion-chamber, and at the same time the crown-sheet of the combustion-chamber is prevented from burning out. The lower wall, d', of the combustion-chamber is slightly inclined upward to give greater room for the hand-hole a for cleaning out the boiler. The end or head plate, D², is secured in place or to the head A² of the boiler by bolts a'.

In practicing my invention two main flues may be employed in place of one, and I do not limit myself to a single main flue.

I hereby disclaim the steam-boilers shown and described in Patent No. 192,481, to Barber and Porter, of June 26, 1877; in Patent No. 226,443, to Cowhig, of April 13, 1880; in Patent No. 233,102, to Kern, of October 12, 1880, and in Patent No. 225,722, to Rivet, of March 23, 1880.

I claim—

1. The combination, in a steam-boiler, of
outer shell, A, having a depressed leg, A', with
a locomotive form of fire-box B, surrounded by
5 said leg, main flue C, combustion-chamber D,
having crown-sheet D' depressed below the
water-line and riveted to the outer head, A²,
of said boiler, the water-space of said boiler
extending from one end of said shell to the
10 other and continuously over both the crown-
sheet of said fire-box and the crown-sheet of
said combustion-chamber, return-flues E, and
smoke box or stack F, said smoke box or stack
being at the fire-box end of said boiler, and
15 said return-flues leading directly from said
combustion-chamber to said smoke box or
stack, substantially as specified.

2. The combination, in a steam-boiler, of a
depressed or locomotive form of fire-box at one
20 end of the boiler, a smoke box or stack, F, at
the same end of the boiler and above said fire-
box, an elongated combustion-chamber, D, at

the opposite end of the boiler, having a flat
crown-sheet, D', depressed below the water-
line and riveted directly to the outer head, A², 25
of the boiler, main flue C, leading directly
from said combustion-chamber to said smoke
box or stack F, head-plate D², and door D³,
substantially as specified.

3. In a steam-boiler, the combustion-cham- 30
ber D, formed of the outwardly-flanged flue-
sheet d, terminating at its top below the water-
line of the boiler, the head-block A² of the
boiler, having an outwardly-flanged opening
of smaller circumference than said flue-sheet, 35
and the shell and crown-sheet of said combus-
tion-chamber, riveted to the flanges of said
flue sheet and head A², substantially as speci-
fied.

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Witnesses:

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