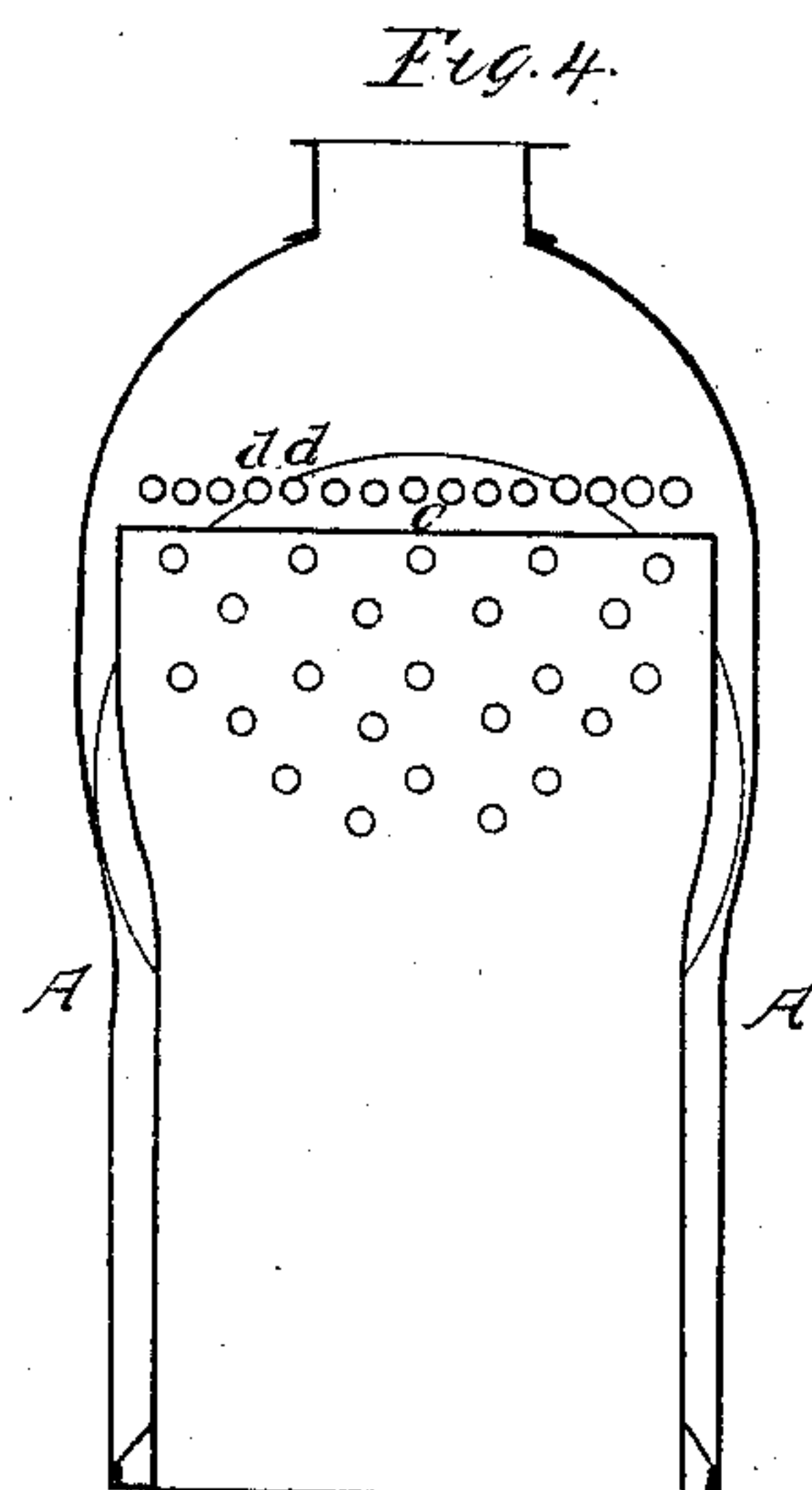
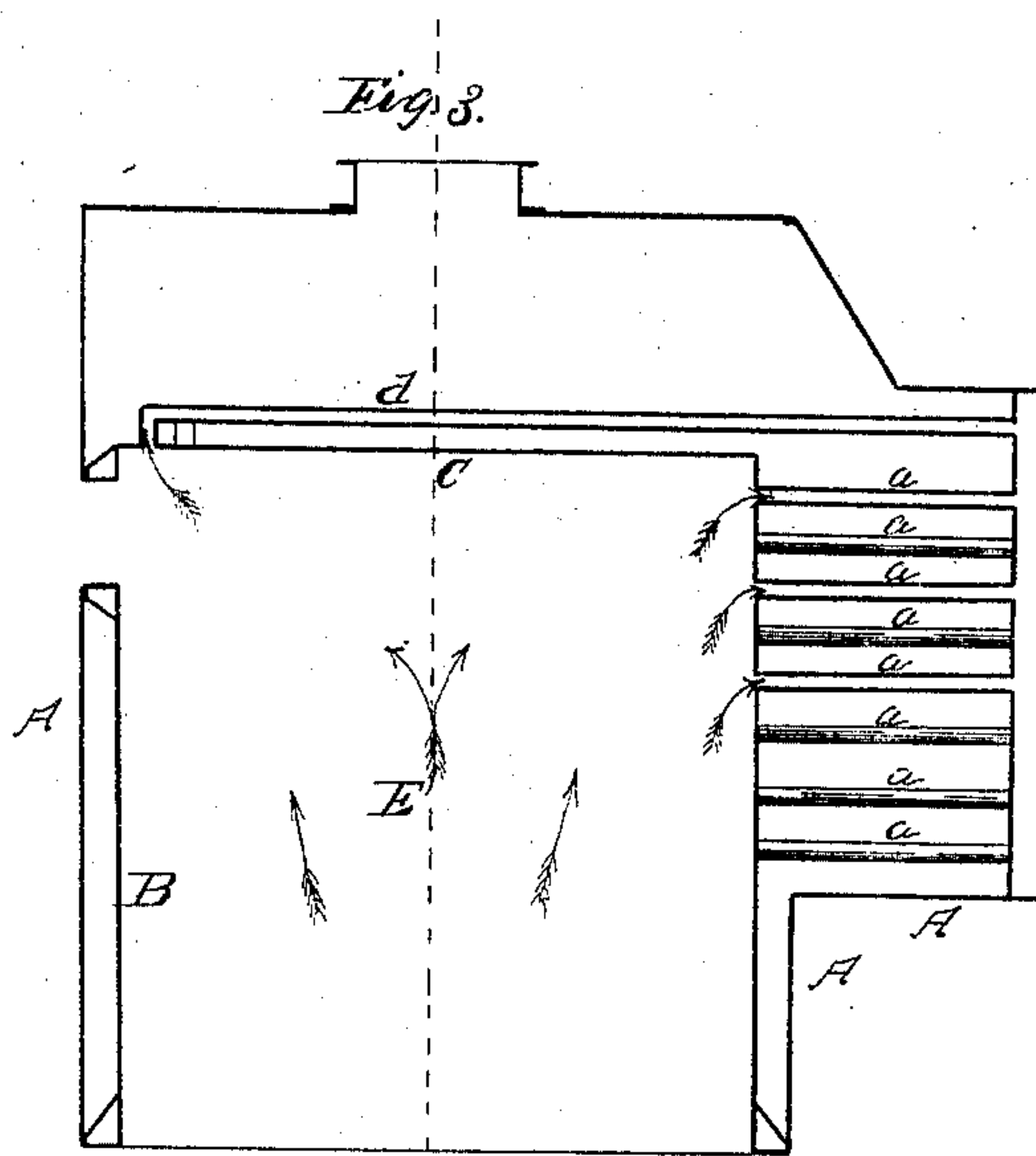
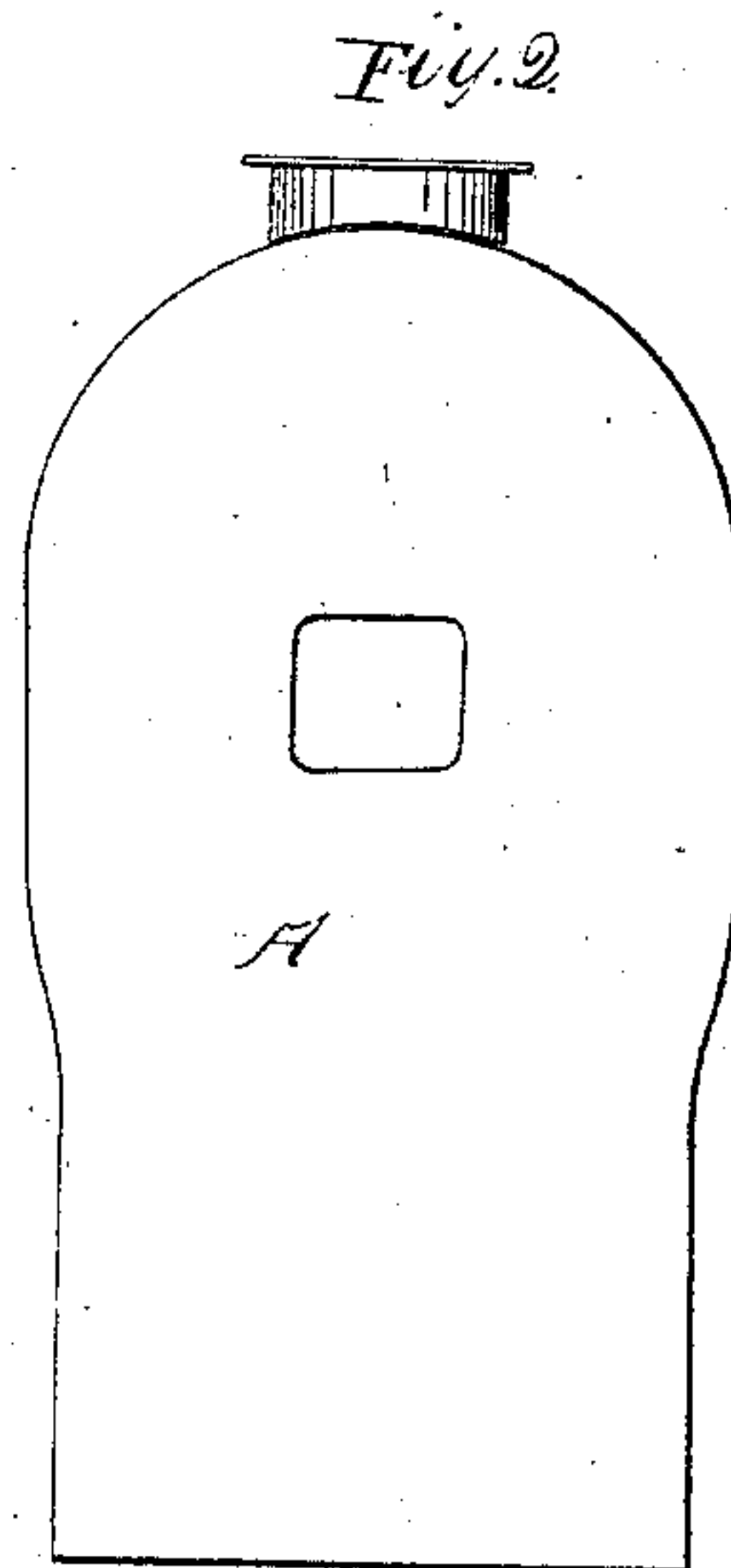
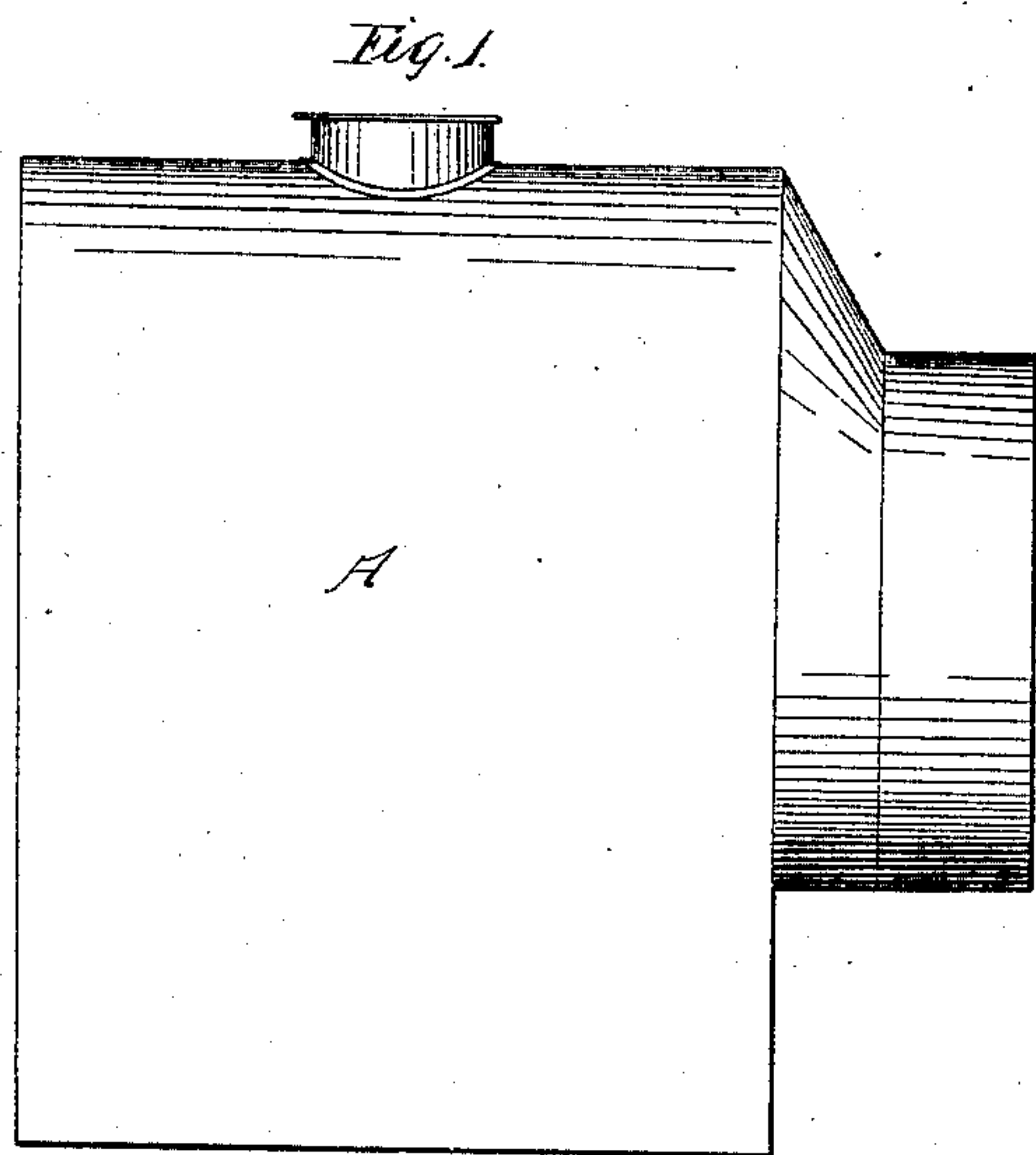


*M. M. Rounds,*  
*Steam-Boiler Fire-Tube.*  
*N<sup>o</sup> 55,785.                      Patented June 19, 1866.*



*Witnesses.*  
*John. O. Shumway.*  
*M. A. Heine.*

*Inventor.*  
*M. M. Rounds*

# UNITED STATES PATENT OFFICE.

M. M. ROUNDS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO HIMSELF AND WM. YELLNER, OF NEW YORK CITY, AND J. E. JEROLD, OF JERSEY CITY, NEW JERSEY.

## IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. 55,785, dated June 19, 1866.

*To all whom it may concern:*

Be it known that I, M. M. ROUNDS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Steam-Boilers; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the fire-box end of the boiler; Fig. 2, a front-end view of the same; Fig. 3, a longitudinal vertical central section, and in Fig. 4 a transverse section on line *x x*.

My invention relates to an improvement in the internal construction of steam-boilers, whereby the fire-surface is greatly increased and the fire made more effective; and it consists in the introduction of tubes opening through the crown-sheet into the fire-box near the front end, by which arrangement the fire is drawn to the front, thereby increasing its effective force.

To enable others skilled in the art to construct and use my improvement, I will proceed to describe the same, as illustrated in the accompanying drawings.

A is the outer case of the boiler, B the inner case, C the crown-sheet, and D the tube-sheet, all of the usual or any approved form and construction, the tubes *a a* being inserted through the tube-sheet D in the usual manner. By this construction the heat from the fire is naturally and forcibly drawn from the front end of the boiler, making the crown-sheet and front of but very little effective use, and not being

heated to the same degree that other parts of the boiler are heated is, to the extent of the difference of the heat, a disadvantage.

To render the crown-sheet more serviceable as fire-surface, I introduce tubes *d*, (see Figs. 3 and 4,) passing above the crown-sheet C, and opening into the fire-box E, near the front end, as seen in Fig. 3. The draft through the tubes *d* being equal to the draft through the tube *a*, a large portion of the heat will be drawn to the front end of the boiler, passing out through the tubes *d*, and thus drawing the heat toward the front end of the fire-box, the service of the crown-sheet will be proportionately increased.

In addition to this extra service, the tubes *d* form an increased amount of fire-surface near the surface of the water, and, if preferred, the tubes *d* may be carried a portion or the whole of their length above the surface of the water, thereby superheating the steam. In some cases this arrangement for superheating would be a great advantage; but in such cases it would be better that the tubes pass below the surface of the water to near the dome; then rising above the large amount of surface would sufficiently superheat the steam for all practical purposes.

Having, therefore, thus fully described my improvement, what I claim as new and useful, and desire to secure by Letters Patent, is—

The tubes *d*, arranged in the crown-sheet C so as to open into the fire-box, substantially as and for the purpose specified.

M. M. ROUNDS.

Witnesses:

JOHN E. EARLE,

JOHN H. SHUMWAY.