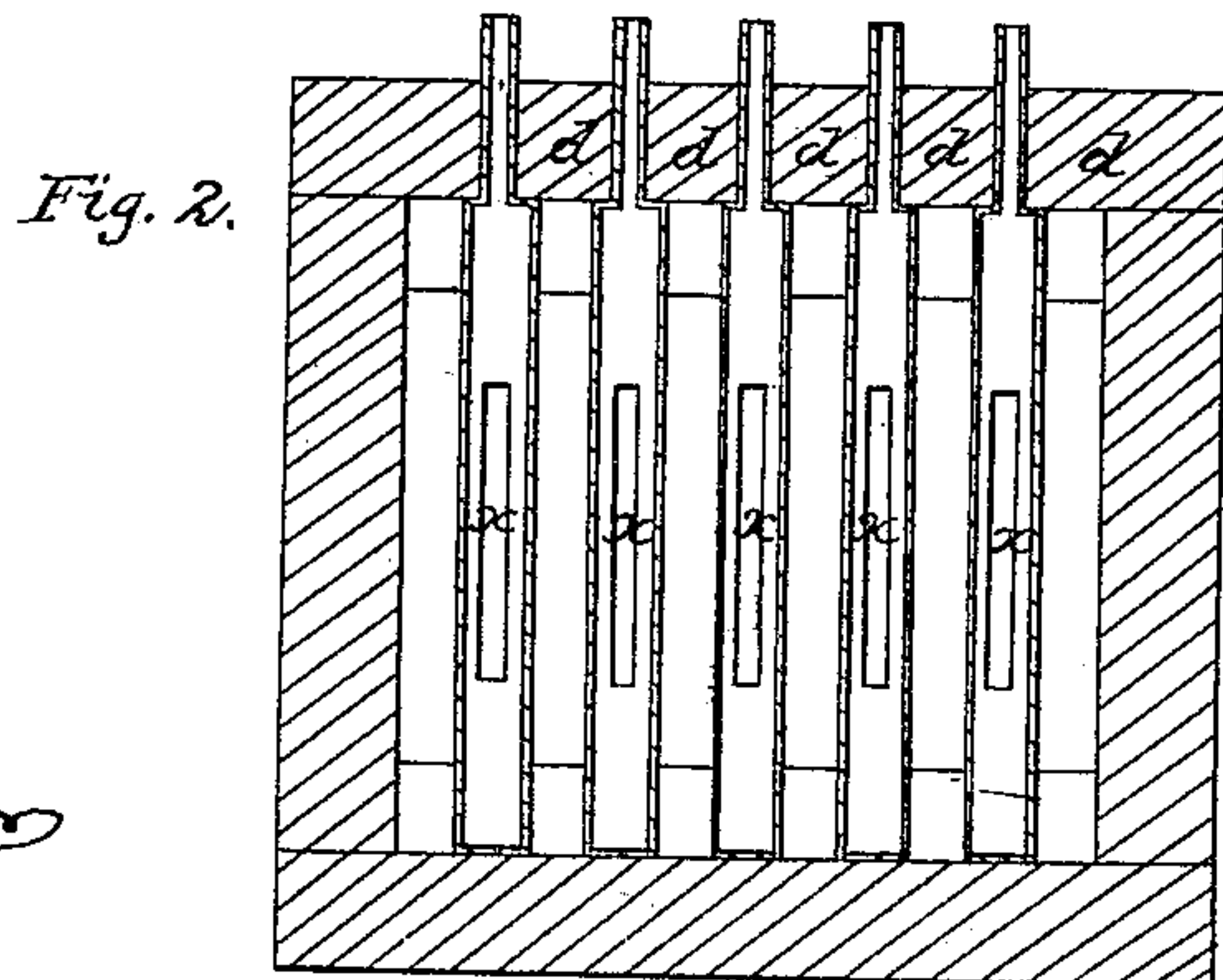
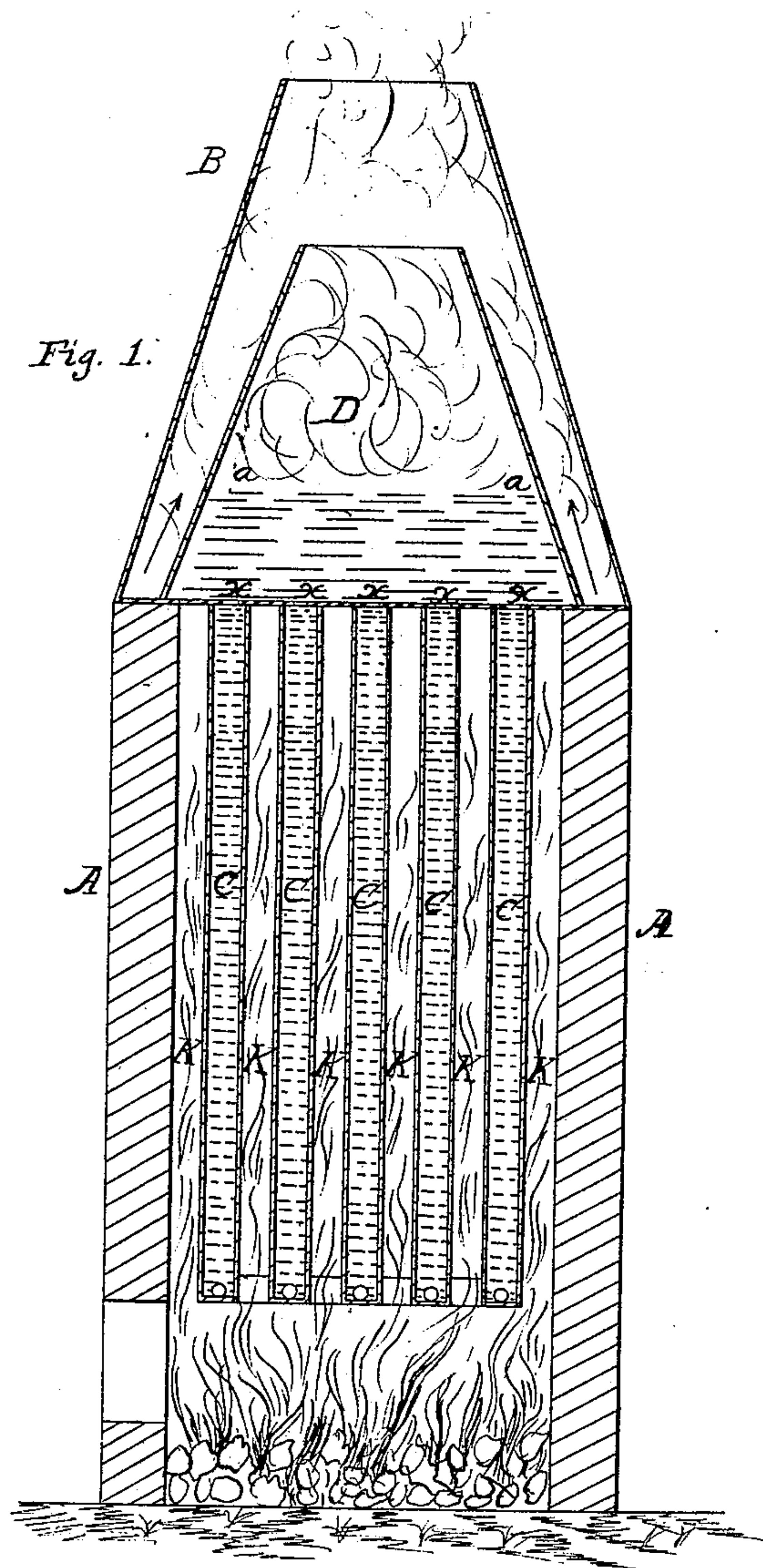


J. VAILE.  
STEAM BOILER.

No. 29,334.

Patented July 24, 1860.



Witnesses  
C. M. Alexander  
J. W. King

Inventor  
J. Vaile

# UNITED STATES PATENT OFFICE.

JONATHAN VAILE, OF MIAMI, OHIO.

## STEAM-BOILER.

Specification of Letters Patent No. 29,334, dated July 24, 1860.

*To all whom it may concern:*

Be it known that I, JONATHAN VAILE, of Miami city, in the county of Montgomery and State of Ohio, have invented certain  
5 new and useful Improvements in Steam Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in constructing vessels substantially in the manner hereinafter described.

In the annexed drawings Figure 1 represents a longitudinal vertical section. Fig. 2  
15 is a cross section.

In the figures A, represents the fire box or furnace which is built of stone or brick or any other suitable material and in a substantial manner.

B, represents the smoke stack, which is placed on top of this furnace as shown in Fig. 1.

C, C', represent a series of vessels which  
25 are made separate and distinct from each other, and which stand in a vertical position in the furnace, at a sufficient distance apart to allow of the draft passing up freely between them.

D, represents the steam chest which is placed on top of these vessels and which connects with them by means of the openings  $x, x, x$ .

$a, a$ , represents the water line in the steam  
35 chamber.—The vessels C, C, are supplied with water from the steam chest, a portion of said chest being always filled with water as represented in Fig. 1. It will be seen that these vessels are always kept full of water—  
40 and the gage cocks instead of being secured

into the vessels are attached to the steam chest.

$d, d$ , represent pipes at the lower ends of the vessels through which mud and sediment are removed when the said vessels become  
45 foul. The vessels as it will be seen are made with flat sides, being made of any desired length or width, but only from  $\frac{1}{2}$  inch to four inches thick or deep. The metal of which the vessels are made may be dove-  
50 tailed together or it may be riveted or put together in any other convenient manner. The smoke stack surrounds, in this case, the steam chamber and, the steam is drawn from said chamber through a pipe which passes  
55 through the smoke stack. These vessels may be placed on end as in this case or they may be placed horizontally. When placed horizontally an oval steam chamber is placed  
60 above the vessels and pipes connect the chamber and the vessels for keeping the said vessels filled with water and for allowing the steam to rise to the chamber above.

K, K, represent the fire spaces, or the draft of heat and fire between the vessels,  
65 said vessels as well as the steam chamber being completely surrounded with fire.

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

The combination and arrangement of the flat vessels C, C, C, the steam chamber D, the smoke stack B, and the furnace and fire spaces K, K, the whole being constructed and used substantially as and for the purpose herein specified.

J. VAILE.

Witnesses:

C. M. ALEXANDER,  
J. W. KING.