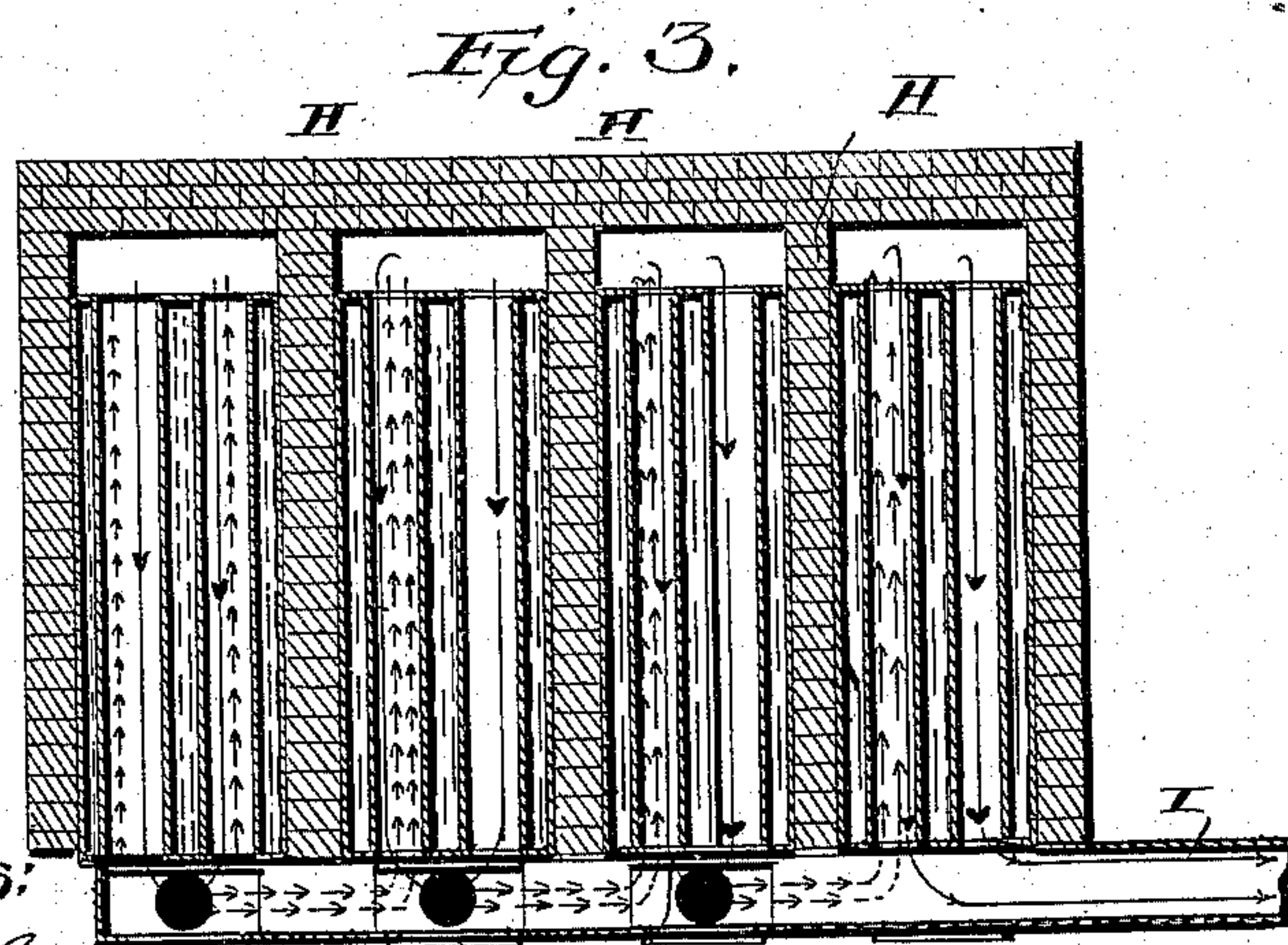
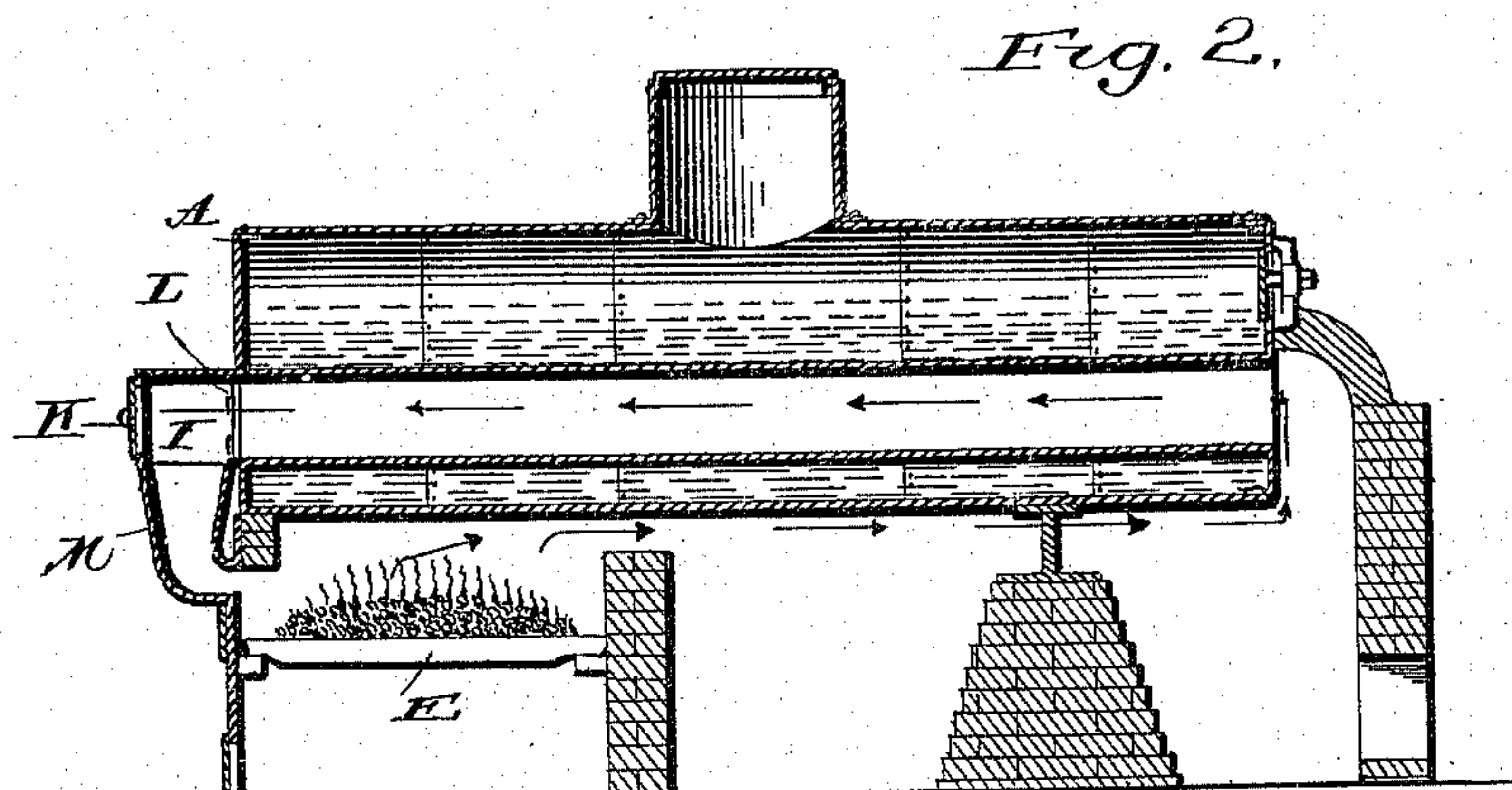
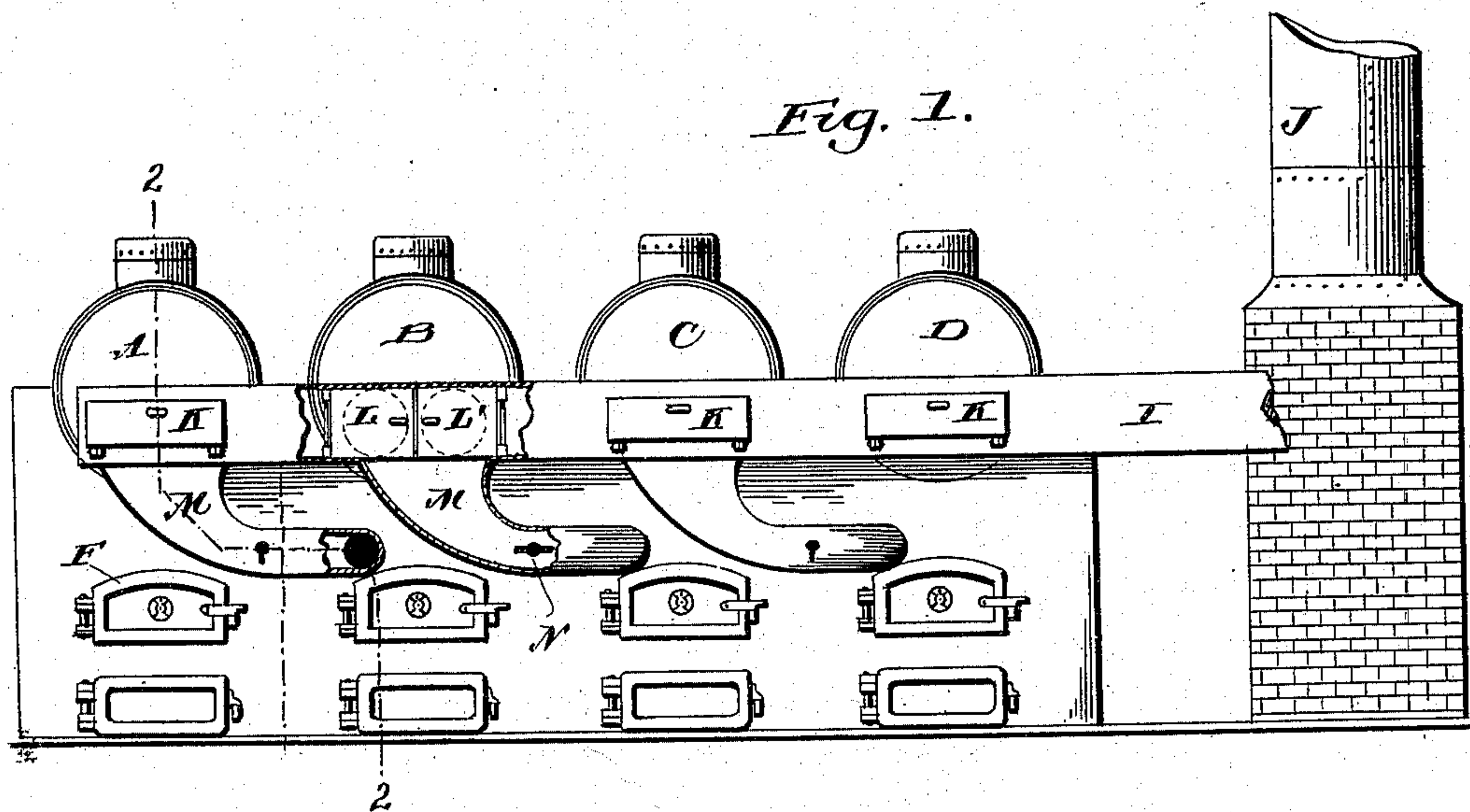


(No Model.)

J. C. DIAS.  
SMOKE CONSUMING DEVICE.

No. 567,964.

Patented Sept. 22, 1896.



Witnesses:

L. C. Villa.  
E. A. Bond

Inventor

John C. Dias,  
by E. B. Stocking atty.



# UNITED STATES PATENT OFFICE.

JOHN C. DIAS, OF WILMERDING, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD  
TO JOHN S. MCINTOSH, OF SAME PLACE.

## SMOKE-CONSUMING DEVICE.

SPECIFICATION forming part of Letters Patent No. 567,964, dated September 22, 1896.

Application filed January 25, 1896. Serial No. 576,770. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. DIAS, a citizen of the United States, residing at Wilmerding, in the county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Smoke-Consuming Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in boilers or furnaces designed for fuel-saving and smoke-consuming, the object being primarily to provide a device which will lessen the amount of fuel  
15 consumed and at the same time burn the gases and smoke that are ordinarily wasted by carrying directly to and through the stack. The smoke and products of combustion are caused to pass under a boiler and return  
20 through the flues thereof, thence down and over the grate of the next boiler, and so on. Each boiler in the series is provided with means to permit of the shutting out of the same when necessary. A separate and exterior  
25 flue is provided which leads from the first boiler in the series to the stack, and in this flue are provided the doors which serve to throw out any one boiler when desired.

30 Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the appended claim.

35 The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

40 Figure 1 is an end elevation of a series of boilers embodying my invention, with portions broken away and parts in section. Fig. 2 is a vertical cross-section on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal horizontal section taken through about the mid-height of the longitudinal flue.

45 Like letters of reference indicate like parts throughout the several views.

50 Referring now to the details of the drawings by letter, A, B, C, and D represent a series of boilers of substantially known construction adapted to be fired in the usual way. In this instance I have shown a nest of boilers of four in number; but it will be

understood that this number may be varied as may be desired.

E are the grates, F the fire-doors, and G the doors to the ash-pits. Each and every boiler is inclosed by a separate wall, as seen in Fig. 3, in which H are the division-walls between the various boilers.

I is a flue disposed at right angles to the length of the boilers and communicating with the stack J. This flue is arranged exterior of the boilers, as seen in Figs. 1 and 3, and is provided with a series of doors K, one opposite the end of each boiler. Each boiler contains at the end adjacent the door K two doors L L', as shown in Fig. 1, at the boiler B, where the flue is broken away to better disclose the construction. These doors are hinged at opposite sides of the boiler and constructed so as to close the passage through the flue I when said doors are in one position and to close the passage through the flues of the boiler when in the other position, as will be readily understood from Fig. 1. From each one of the boilers, excepting the last in the series, there extends a downwardly and curved flue or passage M, which leads from the flue I at the end of the boiler and communicates with the flues thereof, its discharge end being arranged above the grate of the next adjacent boiler in the series, as shown in Figs. 1 and 2. Each of these flues or passage-ways M is provided with a damper N, as indicated in Fig. 1. Suitable man-holes are provided for the purpose of cleaning the boilers.

In practice the fires are built under the boilers in the usual way and the smoke and gases from the first boiler pass beneath the same, as indicated by arrows in Figs. 2 and 3, thence return through the flues of the same boiler to and down through the passage or flue M across to the next adjacent boiler, as indicated in Fig. 2, entering through the opening in the front of the boiler, and the smoke and gases then pass over the fire under the boiler B, up through the flues of the same, thence down through the flue M on to the boiler C, and so on, passing directly from the last boiler of the series to the stack through the flue I. When the smoke and gases that are not consumed pass through the flues to



the last boiler of the series, they pass through the flue I into the stack and are discharged into the open air. It will thus be seen that the smoke and gases that are not consumed in the fire under the first boiler are passed on to and over the fire under the second boiler, and so on through the succeeding boilers. When it is desired to cut off the draft, in case any of the boilers are to be shut off, the doors L L' thereof are closed so as to cover the discharge through the flues of that particular boiler, thus opening a direct passage through the flue I to the next adjacent boiler. To shut off any particular boiler, the damper N in the flue M of that particular boiler is closed.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages. It may sometimes be found desirable to locate the openings that lead the gases and smoke into and over the fire in a somewhat different position from that herein illustrated.

What is claimed as new is—

The combination with a series of boilers, each inclosed by a separate wall, of a flue disposed at right angles to the length of the boilers exteriorly thereof, and communicating with the stack, doors in said flue one opposite the end of each boiler, doors at the end of each boiler adjacent to the door in the flue, said doors being oppositely hinged whereby said doors in one position close the passage through the flues of the boiler, and when in the other position close the passage through said flue, and a curved flue extending from each of the boilers, except the last in the series, and connecting the flue with the flues of the boiler, and the discharge end communicating with the fire-box of the next boiler in series; substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. DIAS.

Witnesses:

W. A. McDEVITT,  
NORTON B. TAYLOR.