

(No Model.)

T. POORE.
BOILER SETTING.

No. 365,858.

Patented July 5, 1887.

Fig 1.

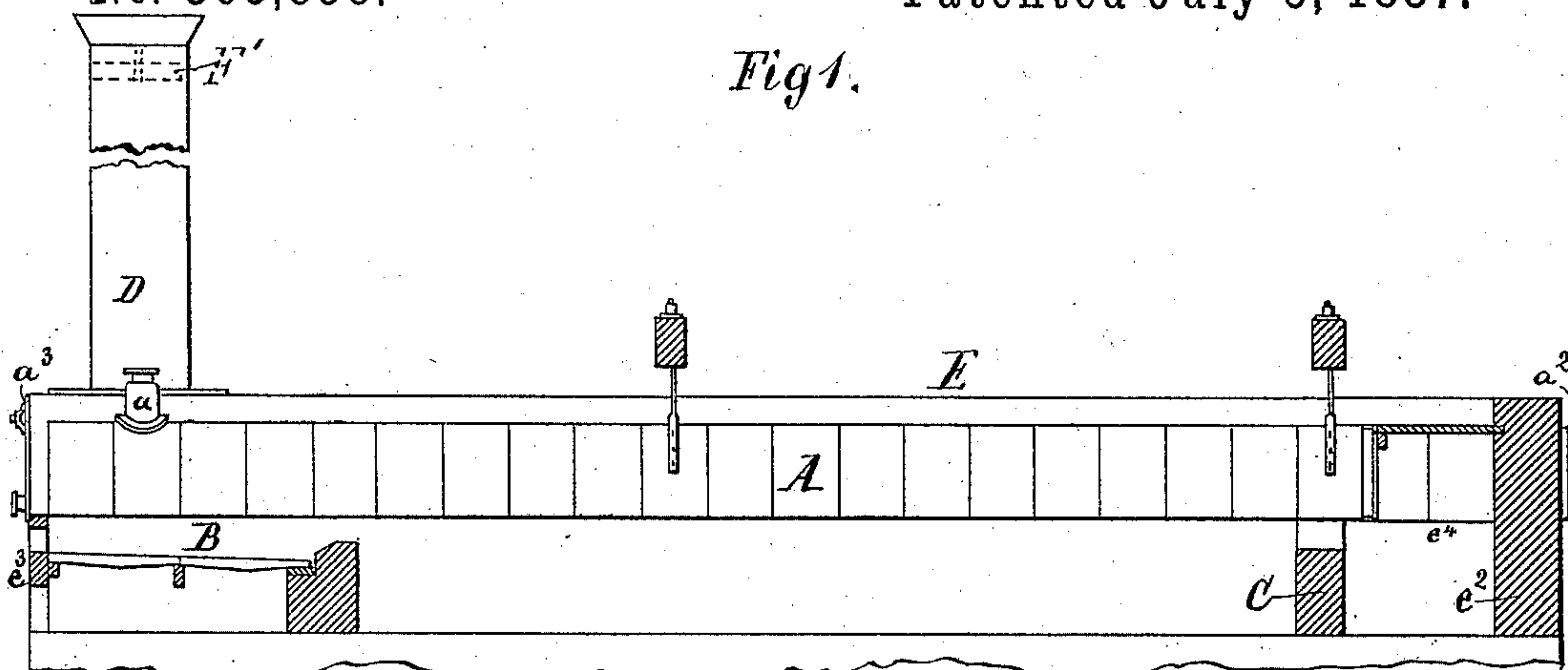


Fig 2.

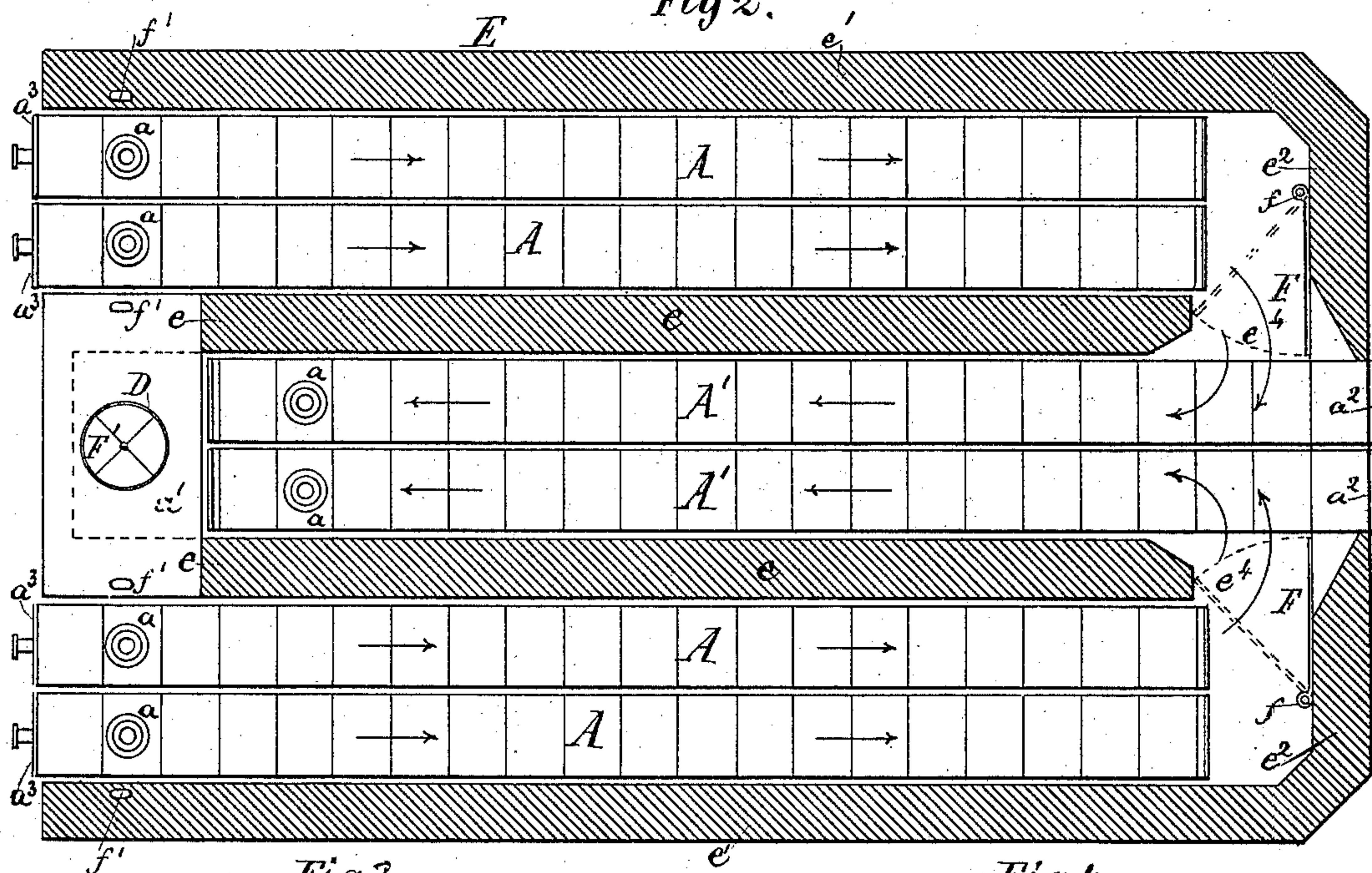


Fig 3.

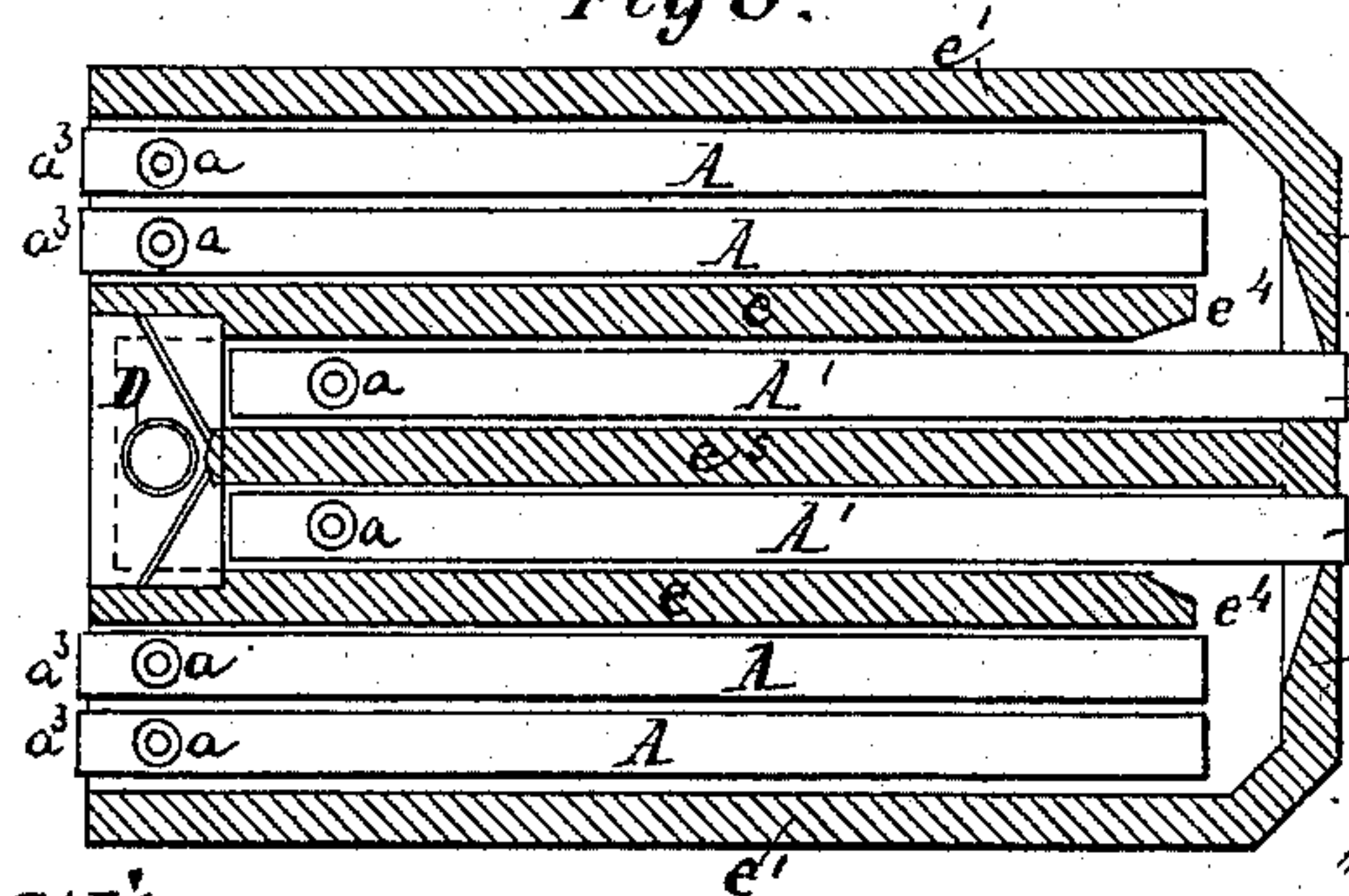


Fig 4.

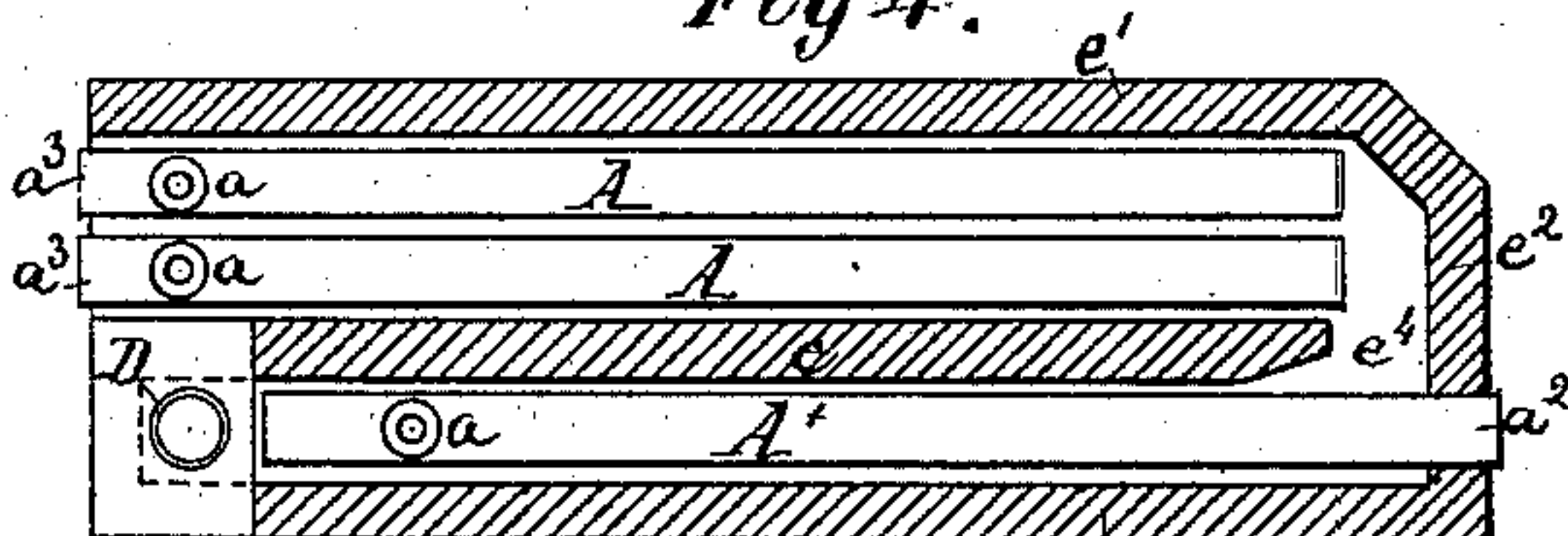
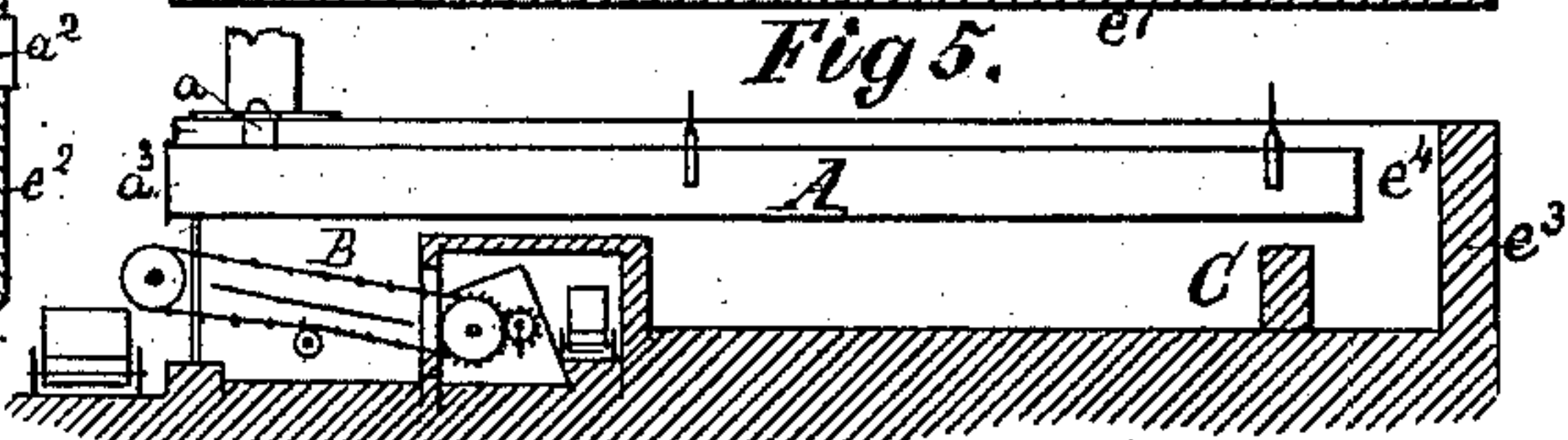


Fig 5.



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TOWNSEND POORE, OF SCRANTON, PENNSYLVANIA.

BOILER-SETTING.

SPECIFICATION forming part of Letters Patent No. 365,858, dated July 5, 1887.

Application filed October 20, 1886. Serial No. 216,737. (No model.)

To all whom it may concern:

Be it known that I, TOWNSEND POORE, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Boiler-Settings and Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to boiler-settings for cylindrical boilers; and it consists in a novel construction of a boiler-setting, by which a return-draft passage is provided for the purpose of heating boilers not directly exposed to the flames of fire on the furnace-grates.

The object of the invention is to secure a very long action of the fire and avoid the necessity of using very long boilers.

In the accompanying drawings, Figure 1 is a vertical section of the boiler-setting along a line between two of the main boilers. Fig. 2 is a top view of the boilers and a horizontal section of the setting just above the boilers. Figs. 3 and 4 are similar views of modified constructions, and Fig. 5 is a side elevation of a boiler and vertical section of the improved setting provided with an endless grate for burning culm.

The letter A in the drawings represents an ordinary cylindrical boiler without flues; B, a grate; C, fire-bridge; D, smoke-stack, and E furnace. The boilers A are of ordinary construction, and are of the class generally and preferably used in the coal regions, where "culm" can be easily and cheaply procured. As the gas combustion of such fuel is comparatively slow, most of the heat produced thereby goes up into the smoke-stack, and is lost in the old construction of boilers and boiler-settings, unless the boilers are made of very great length. The efforts made to avoid this loss by using very long boilers of small diameter has only proved a partial success, as the longest boilers known (being about fifty feet) are not sufficiently long to absorb all the heat and to cover the whole available combustion area, while the expansion and contraction of such boilers are so great as to render the safety and utility of their use doubtful. I therefore make the boilers A of about half the length of the com-

puted combustion and draft area, and arrange the said boilers in two sets side by side, as seen at A A', and place a dividing-wall, *e*, between the same, which wall, with the outer walls, *e'*, forms the fire and draft chambers of the boiler-setting. The first set of boilers, A, is exposed to the fire and heat of the grate B and fire-bridge C, while the second set, A', is exposed to the heat of the gases leaving the first set of boilers and having their combustion finished while passing under said second set to the chimney or smoke-stack D. Each of said boilers is provided with a steam-dome, *a*, and an ordinary steam-pipe or a steam-drum, by means of which they may be united, in order to deliver the steam to the engine of an establishment.

In Fig. 2 I have shown an arrangement of six boilers—two boilers, A A, at either side of two boilers, A' A', which latter absorb the heat of the return draft, and therefore are termed "return-draft" boilers. These return-draft boilers A' are generally set farther back than the boilers heated direct from the fire of the grate, in order to leave room for a chamber, *a'*, below the chimney or smoke-stack D, from which chamber the products of combustion enter the chimney with facility. The heads or end *a''* of the boilers A' project through the back wall, *e''*, of the furnace in the same manner as the heads or front ends, *a'*, of the boilers A project through the front wall, *e'*, of the same, for the purpose of facilitating the inspection and repairs of the boilers by means of man-holes in their ends.

The passages *e'* between the intermediate walls, *e*, and back wall, *e''*, may be provided with dampers F, swinging on vertical hinges *f*, or otherwise suitably applied, whereby either one of the said passages may be closed, as the dotted lines indicate, if anything should happen to the main boilers A, at one or the other side, whereby they would be disabled. This construction will not be necessary if each set of main boilers has its own return-flue, the two return-flues being separated by a central dividing-wall, *e''*, as seen in Fig. 3. By this construction the return drafts of the two sets of main boilers are prevented from interfering with each other, which cannot be quite prevented by the use of the dampers F.

The construction represented by Fig. 4 can

be regarded as one half or one side of Fig. 3, and its operation answers completely that of either part divided by the center wall, *e*.

In Fig. 5 an endless grate, B, fed from an archway and adapted for burning culm, is shown in connection with my present invention. The fuel known by the name of "culm" necessitates a powerful draft, which is procured by means of ordinary blowers, the air-channels of which are shown at *f'* in section. A blower, F', is also shown in the smoke-stack. The number of boilers A and A' used in one setting is not limited, and is in practice determined in accordance with the services required of the plant.

My invention, although especially intended for culm-burning boiler-furnaces, is suitable for all kinds of fuel, and the simplicity of its construction renders it very effective and easy to construct, operate, and keep in repair.

By arranging the boilers and their settings in the manner herein described the draft-chimney or smoke-stack is only about half the distance from the fire that it would be if the boiler were made in one length of, say, about fifty feet, and therefore is more effective upon the fire on the grate, and the boiler-setting and boiler can be constructed in a much shorter and a very little wider space, and thus room economized and damage by expansion and contraction avoided, and everything rendered more compact, while the operation is more perfect and the structure safer and more enduring.

The dampers F may be constructed to slide up and down, instead of to swing, as shown.

What I claim as my invention is—

1. The boiler-setting comprising outer side, front, and back walls, *e' e² e³*, and one or more intermediate walls, *e*, shorter at rear and front ends than the outer side walls, a grate, B, occupying a portion of the space between an outer side and front wall, and an intermediate wall, *e*, at the forward end of the setting, transverse passage *e⁴* between wall *e* and back wall, *e²*, and stack D at the front end of the setting, in combination with steam-boilers A A', the boilers A extending through the front wall and terminating at the rear end of the intermediate wall, and the boiler A' passing through the rear wall, *e²*, and terminating slightly in rear of the chamber *a'* at the smoke stack, substantially as and for the purpose described.

2. The combination of the boiler-setting comprising two forward or direct and a return flue between intermediate walls, *e e*, outer side walls, *e'*, and front and rear walls, *e² e³*, passages *e⁴*, grates B, chamber *a'*, stack D, and the dampers F, in combination with boilers A on the left and right hand side of the return-flue, and a boiler, A', the boilers A terminating at the rear ends of intermediate walls, *e e*, and the boiler A' terminating slightly in rear of chamber *a'*, substantially as and for the purpose described.

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

TOWNSEND POORE.

Witnesses:

E. F. BOYLE,
T. P. HOBAN.