T. T. Prosser.

Steam Boiler.

No. 39,530. Patented Aug. 11. 1863.

Fig. 4.

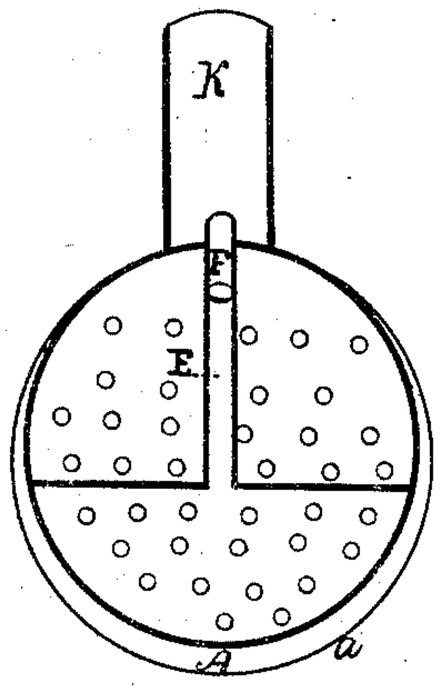


Fig. 1.

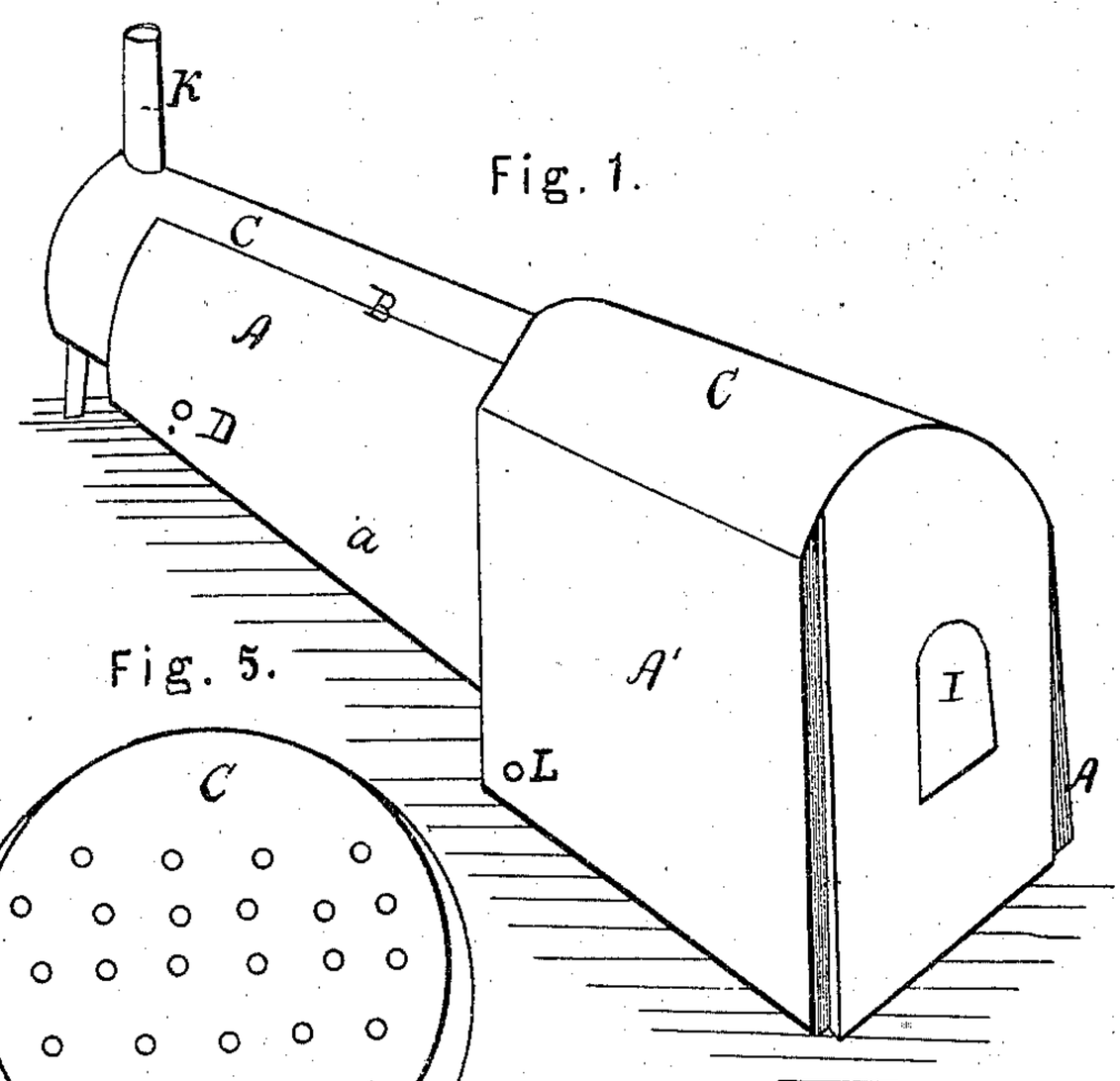


Fig. 5.

Fig. 3.

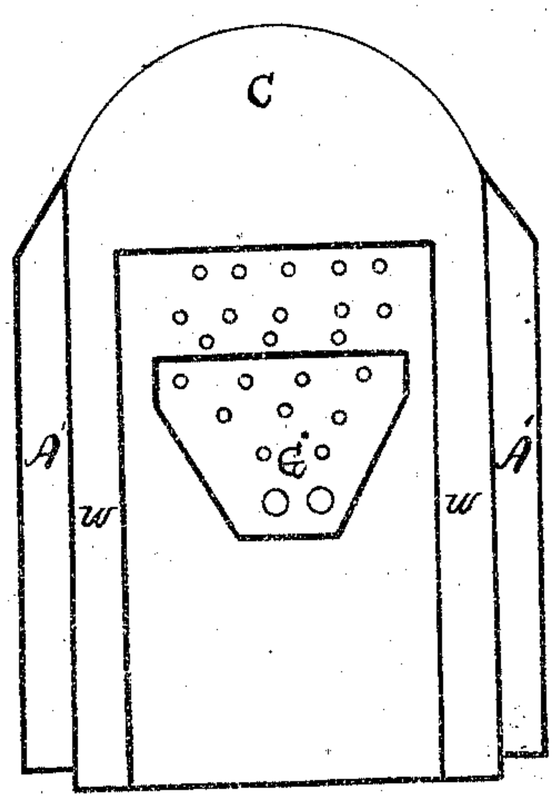
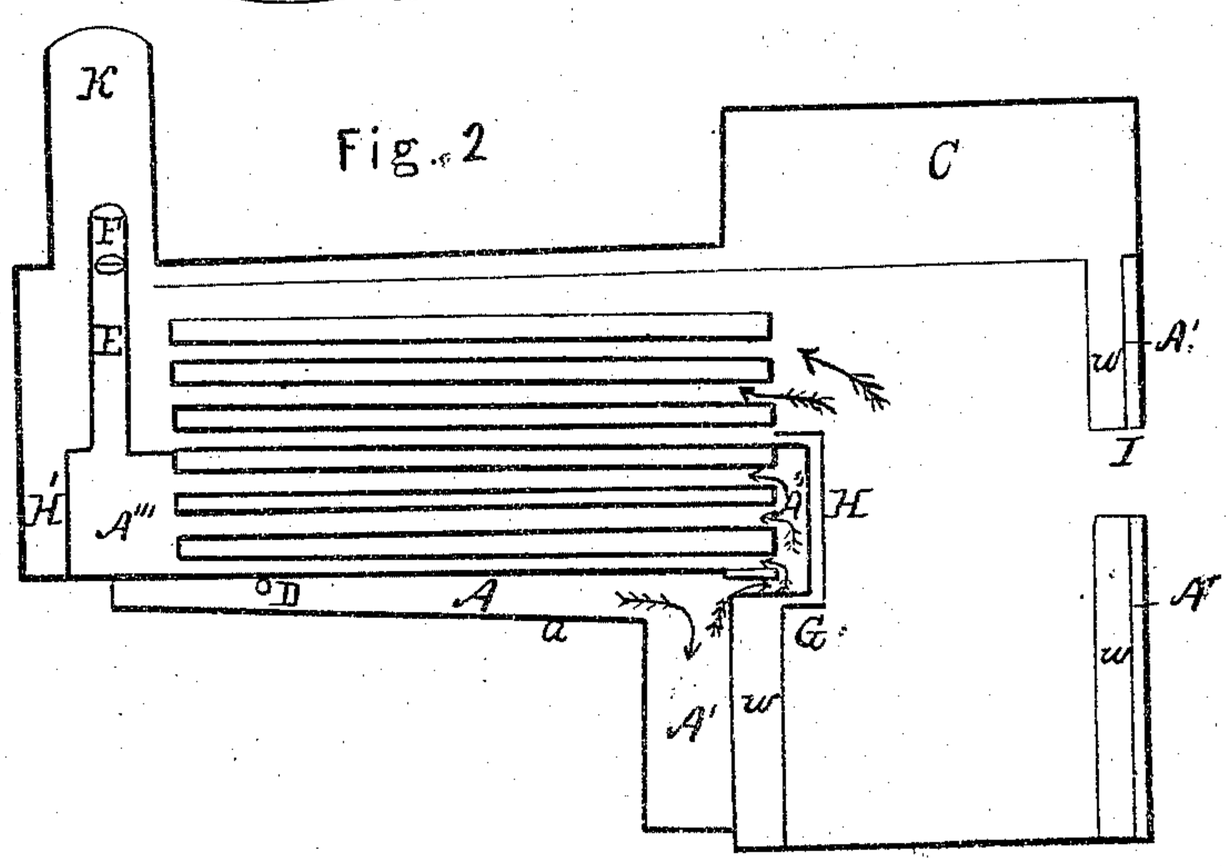


Fig. 2



Witnesses:
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UNITED STATES PATENT OFFICE.

TREAT T. PROSSER, OF FOND DU LAC, WISCONSIN, ASSIGNOR TO HIMSELF AND M. C. AND K. A. DARLING, OF SAME PLACE.

IMPROVED STEAM-BOILER.

Specification forming part of Letters Patent No. **39,530,** dated August 11, 18.3; antedated January 31, 1863.

To all whom it may concern:

Be it known that I, TREAT T. PROSSER, of the town and county of Fond du Lac, and State of Wisconsin, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation thereof, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of a tubular or locomotive boiler with my improvement attached; Fig. 2, a longitudinal section; Fig. 3, a cross-section through the fire-box; Fig. 4, a cross-section in the smoke-box; Fig. 5, a cross-section of the boiler, &c., between the fire-box and smoke-box.

The nature of my improvement consists in attaching a jacket to the boiler and fire-box, into which I cause the exhaust-steam of the cylinder to be discharged, and from which it passes through a portion of the tubes, or flue or flues, to the exhaust-pipe in the smoke-box. I thus cause the exhaust-steam, which heretofore has been allowed to escape as soon as it has performed its duty in the cylinder, to perform the additional function of heating in part the water in the boiler.

In the drawings hereto attached I have shown my invention as applied to a tubular or locomotive boiler. By a little modification, however, it can be equally as well applied to ordinary flue-boilers or other boilers.

In Fig. 1, A shows the chamber formed by the bottom of the boiler and the jacket *a*, which, it will be seen, extends from the smoke-box to the chamber A′, which latter surrounds the waste-space of the fire-box *w w*, Figs. 2 and 3. In front, and embracing a certain number of the tubes of the boiler, there is placed a cap, H, which communicates with the chamber A′ by means of the tubes G, Figs. 2 and 3, and with the aforesaid tubes of the boiler.

H′ is another cap in the smoke-box, covering the same tubes and water-space as H.

A, in Figs. 4 and 5, shows sections of the chamber A in Fig. 2.

B is the junction of the jacket *a* with the boiler, which should be as near as possible the water-line of the boiler; C, the steam-chamber; D, an opening into the chamber A, through which the escape-steam from the cylinder is admitted; E, the escape-pipe; F, a valve therein, and K the chimney or smoke-stack.

A‴ is the box formed by the cap H′, and becomes thereby also the steam-box for the exhaust; I, the fire door. By this arrangement it will be seen that, instead of exhausting the steam from the cylinder directly into the exhaust-pipe, as is usually done, I cause it to exhaust into the chamber A. When coming into contact with the bottom of the boiler, it gives out through it a large portion of its still remaining heat to the water therein. From thence this steam passes to and fills up the chamber A′, which surrounds the water-space of the fire-box, and then through the pipe G, Figs. 2 and 3, into the chamber A″, formed by the cap H, thence through the tubes inclosed by this cap to the chamber A‴, formed by the cap H′, and then through the usual exhaust-pipe, E. The object of this transit of the exhaust-steam through the tubes in the boiler and causing it to surround the water-space of the fire-box is the same as that referred to in its introduction into chamber A—namely, to absract from it all the heat possible before allowing it to make its final escape. More or less water of condensation may be produced from this exhaust-steam, but whatever the amount may be, it will collect in the chamber A′, from whence it may be pumped back into the boiler, or allowed to escape. Such tube or flues as may not be covered by the caps H and H′ of course remain open and perform the same function as in boilers without my improvement. The cap H has a water-space connected with the water-space *w* of the fire-box.

Having thus fully described my invention, what I claim therein, and desire to secure by Letters Patent of the United States, is—

1. The application of the exhaust-steam of the engine to the boiler, for the purpose and in the manner set forth.

2. The combination of the chambers A, A′, A″, and A‴ and the inclosed tubes or flues with the exhaust-pipe or pipes of the engine, in the manner and for the purpose set forth.

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