

J. N. DENNISON.  
Boilers for Steam Fire-Engines.

No. 168,973.

Patented Oct. 19, 1875.

Fig. 1.

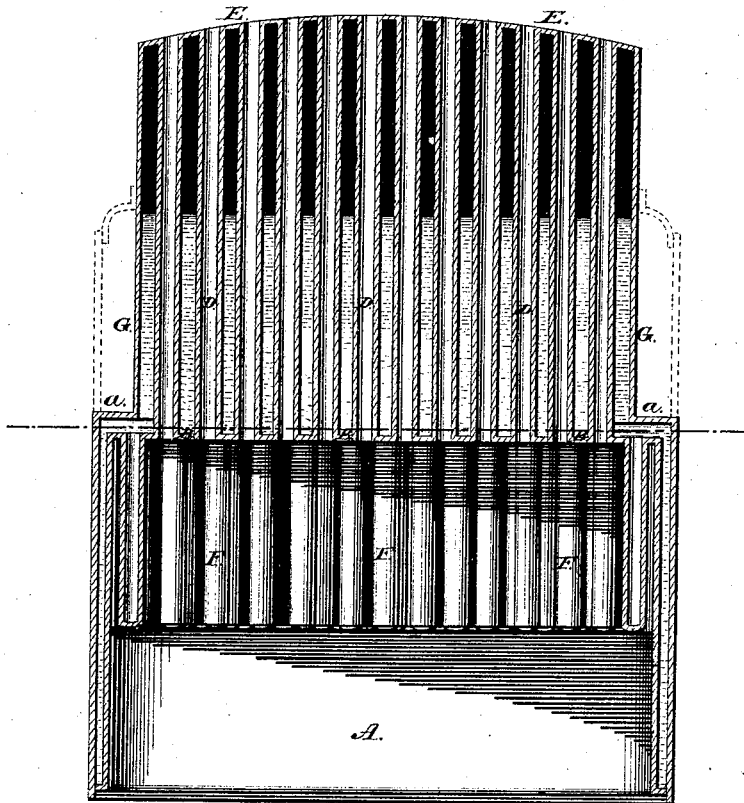
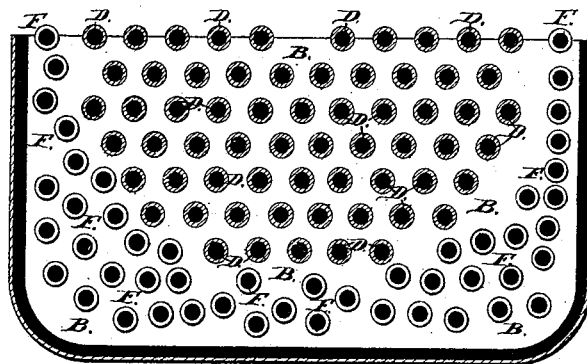


Fig. 2.



Attest:

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# UNITED STATES PATENT OFFICE.

JOHN N. DENNISSON, OF NEWARK, NEW JERSEY.

## IMPROVEMENT IN BOILERS FOR STEAM FIRE-ENGINES.

Specification forming part of Letters Patent No. **168,973**, dated October 19, 1875; application filed December 10, 1874.

*To all whom it may concern :*

Be it known that I, JOHN N. DENNISSON, of the city of Newark, State of New Jersey, have invented certain Improvements in the Construction of Boilers for Steam Fire-Engines, of which the following is a specification:

The object of the improvement is expediting the generation of steam, by variation in the form of construction, at the first lighting of the fire under boilers of steam fire-engines, the alteration decreasing the disproportion of water to heating-surface that occurs in boilers as heretofore constructed.

In the accompanying drawings, Figure 1 is a vertical section of a boiler as improved, dotted lines indicating the form of an ordinary boiler as now constructed. Fig. 2 is a horizontal section of a boiler at the crown-sheet of the fire-box.

A is the fire-box; B, the crown-sheet. D indicates smoke-tubes; E, the upper tube-sheet of the smoke-tubes. F shows technically-termed drop-tubes, they being suspended from the crown-sheet of the fire-box, their lower ends closed and having water admitted from the upper part of the boiler, at their upper ends, which open through the crown-sheet from which they are suspended. The inner row of drop-tubes is outside the outer circle of smoke-tubes. The lower part of the boiler is ordinarily circular. A square form would admit of an increased number of drop-tubes, which, as there is a greater proportion of heating-surface to the water than is the case with smoke-tubes, can but be an advantage; but as the same effect would follow an increased size of a circular lower part of the boiler is

left to discretion. The dotted lines show a body of water, G, around the outer circle of smoke-tubes, without the same proportion of heating-surface as between the smoke-tubes. In the present construction of steam fire-engine boilers the diameter of the lower part is larger than the upper half, so as to have one or more rows of drop-tubes, with the inner row just outside the inner circumference of the upper part of the boiler, with the two diameters joined at or near the water-line in the boiler, leaving room for a large body of water at the circumference of the upper part of the boiler, between the open tops of the drop-tubes and the water-line in the upper part.

The improvement is shown to contract the space in which the body of water G is lodged by bringing the offset down very near to the top of the drop-tubes. Heating-surface and water being more equalized, the result is a saving of time in getting up steam when the speedy doing so is an object of much importance.

I do not claim a boiler having an offset, nor do I claim a boiler having drop-tubes, as I am aware that such, when used separately, are not new.

What I claim is—

The combination, in an upright boiler, having tubes D, of the offset *a* and the drop-tubes F, whereby the water is displaced above the drop-tubes, thereby increasing the fire-surface in relation to the quantity of water in the boiler, as set forth.

J. N. DENNISSON.

Attest:

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