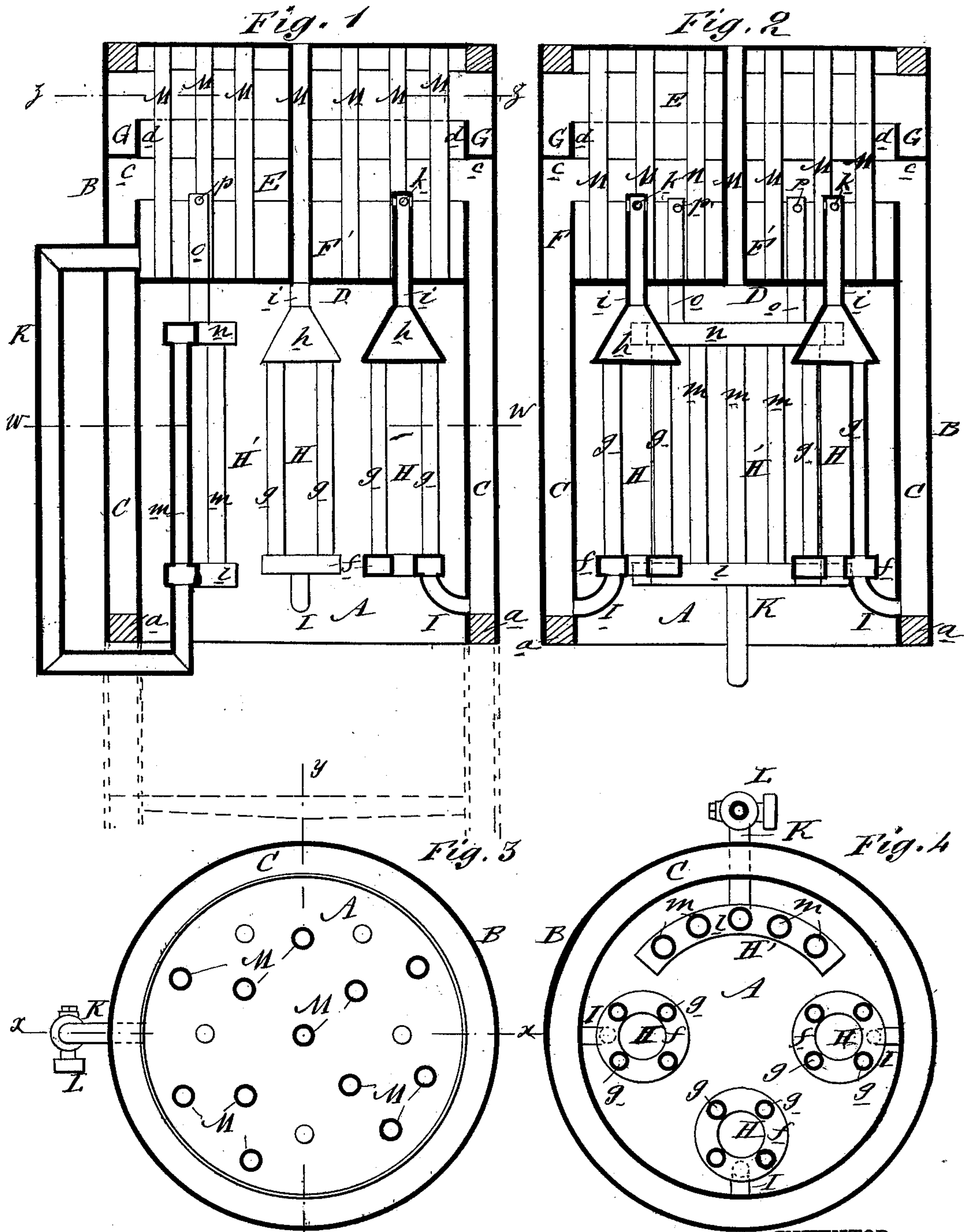


(Model.)

T. S. La FRANCE.
Fire Engine Boiler.

No. 231,336.

Patented Aug. 17, 1880.



WITNESSES:
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UNITED STATES PATENT OFFICE.

TRUCKSON S. LA FRANCE, OF ELMIRA, NEW YORK.

FIRE-ENGINE BOILER.

SPECIFICATION forming part of Letters Patent No. 231,336, dated August 17, 1880.

Application filed May 22, 1880. (Model.)

To all whom it may concern:

Be it known that I, TRUCKSON S. LA FRANCE, of Elmira, in the county of Chemung and State of New York, have invented a new and Improved Fire-Engine Boiler, of which the following is a specification.

The objects of this invention are to protect the crown-sheet of the boiler from the dangers of low water, to raise steam more quickly, and to prevent mud deposits in the boiler-tubes.

Figure 1 is a vertical sectional elevation of the device on line *x x*, Fig. 3. Fig. 2 is a vertical sectional elevation of the device on line *y y*, Fig. 3. Fig. 3 is a transverse section on line *z z*, Fig. 1. Fig. 4 is a transverse section on line *w w*, Fig. 1.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the cylindrical fire-box, set within the cylindrical boiler B, and extending upward for about two-thirds the height of said boiler B, the annular space between the circumference of the said fire-box A and the boiler-shell B forming the water-leg C of the boiler, the bottom of which water-leg is closed by the ring *a*. D is the circular crown-sheet of the boiler, and E is the steam and water space. Around the edge of the crown-sheet D, and reaching above it for a foot, more or less, is a ring, F, that is an upward continuation or extension of the walls or the fire-box A, said ring F forming a reservoir, F', designed to hold water on top of said crown-sheet D even when the water in the water-leg C is below the level of said crown-sheet.

The annular shelf *c*, fixed against the side of the boiler B, and the ring *d*, fastened to the inner edge of said shelf, form the mud-drum G, which is placed, it will be observed, where there will be the least agitation of the water when the engine is in operation, so that on or in this drum G the sediment and scale in the water will be most readily deposited, and thereby obviate the necessity of a surface blow-off. Said mud-drum G is designed to be provided with suitable means for the easy removal of the deposit therefrom.

Within the fire-box A are one or more rings, H, of tubes and a nest, H', of tubes arranged in a segment of a circle. Each ring H is formed of a lower annular tube, *f*, from which several straight tubes, *g*, (in this instance four,) pro-

ject upward and terminate in a conical hollow cap, *h*, from which cap *h* a tube, *i*, projects upward through the crown-sheet D, said tube *i* being closed at its extreme upper end, and having a lateral opening, *k*, near its top, on a level with the upper cap of the ring *d*, to permit the circulation of water and steam. Each ring H of tubes is connected with the bottom of the water-leg C of the boiler by a curved pipe, I.

The nest H' of tubes is formed of a lower curved or segmental horizontal tube, *l*, from which several tubes, *m*, extend upward into a similar segmental tube, *n*, while from said tube *n* two tubes, *o o*, closed at their upper extremities, and having lateral openings *p p*, project upward through the crown-sheet D.

A pipe, K, taps the reservoir F' above the crown-sheet D, through the ring F, and extending laterally through the boiler-sheet is turned at right angles down the side of the boiler A to the bottom thereof, and then is turned inward and up into the fire-box A and connected with the lower tube, *l*, of the nest H' of tubes. A cock, L, in said pipe K controls the flow of water through the said pipe A.

M M are flues passing up through the crown-sheet D and the boiler-head, and are designed for the escape of the smoke and other products of combustion from the fire-box A.

In ordinary steam fire-engine boilers, when the engine is at work and the force-pumps are not operating properly, the crown-sheet of the boiler quickly becomes uncovered of water and exposed to injury from the fire in the fire-box; but in this device the extension of the walls of the fire-box around and above the crown-sheet causes the retention of a large body of water on the crown-sheet—a quantity sufficient to protect the crown-sheet itself and also the walls of the fire-box by flowing down over them for a sufficient length of time to get the force-pump in order or to pull the fires, the connections between the water-leg of the boiler, the tubes in the fire-box, and the crown-sheet reservoir causing the water thus to circulate.

A further advantage possessed by this device is, that when a quick head of steam is required it can be obtained by closing the cock L in the pipe K, and thus holding the water on the crown-sheet D and preventing its circulation, and by opening a blow-off cock, and thereby drawing off water from the tube-rings

H and nests H' to reduce the amount to a suitable point for rapid generation of steam. Then, after the water in the said rings and nests has become heated to the desired degree and the
5 steam generated, the cock L is opened and the water from above the crown-sheet, the temperature of which water has in the meantime become raised, is gradually admitted into the said rings and nests in the fire-box to fill them
10 up again, the quick starting of the engine having been secured. Thus the quick-steaming effect is secured and at the same time perfect protection to the crown-sheet and the fire-box walls.

Having thus described my invention, I claim 15 as new and desire to secure by Letters Patent—

A fire-engine boiler constructed substantially as herein shown and described, consisting of boiler-shell B, containing fire-box A, 20 crown-sheet reservoir F', annular mud-drum G, tube rings and nests H H', respectively, and pipe K, provided with cock L, as set forth.

TRUCKSON S. LA FRANCE.

Witnesses:

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