

D. WILSON & W. B. HARTLEY.

Steam-Generator.

No. 215,421.

Patented May 13, 1879.

Fig. 1.

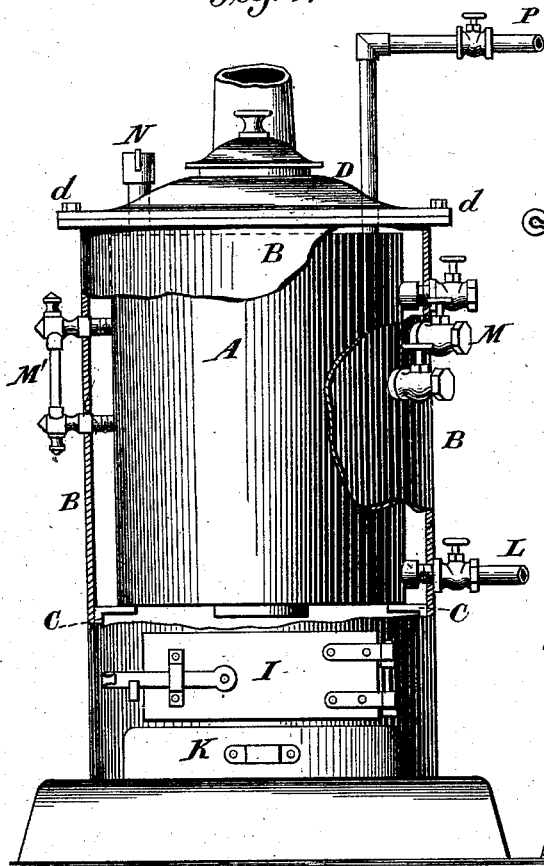


Fig. 2.

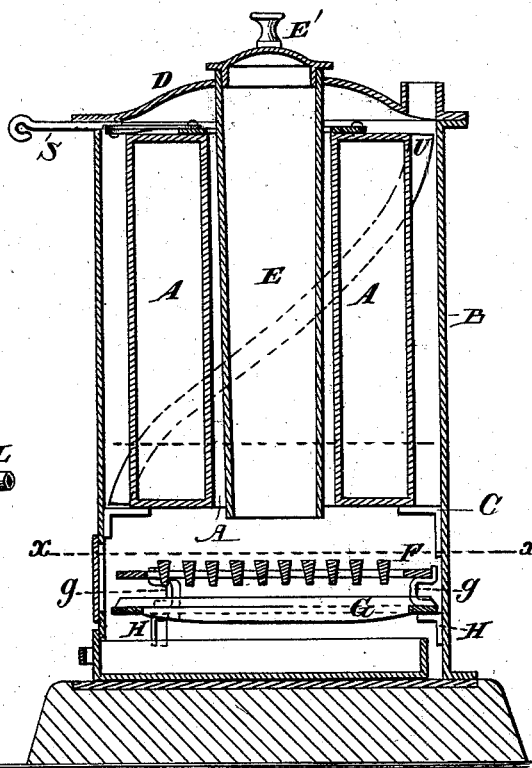


Fig. 3.

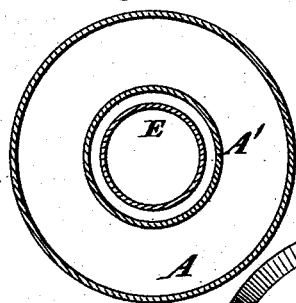


Fig. 4.

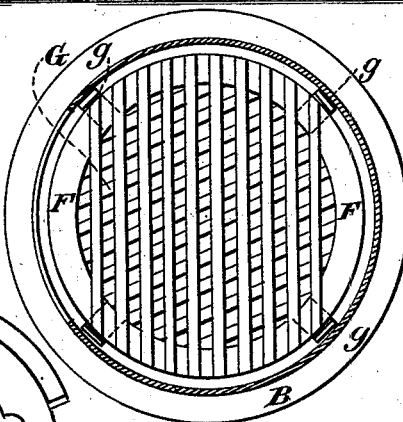
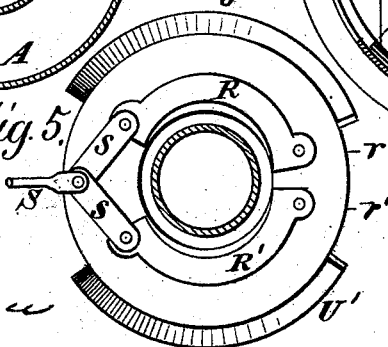


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

DAVID WILSON AND WILLIAM B. HARTLEY, OF WASHINGTON, D. C.

IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. **215,421**, dated May 13, 1879; application filed February 25, 1879.

To all whom it may concern:

Be it known that we, DAVID WILSON and WILLIAM B. HARTLEY, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Steam-Generators; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is an elevation, partly in section, representing in part my invention. Fig. 2 is a vertical section of the same. Fig. 3 is a horizontal section of the same. Fig. 4 is a section on line *xx* of Fig. 2. Fig. 5 is a plan view of the boiler, representing the check-drafts.

Identical parts in the drawings are designated and referred to by the same letters.

Our invention relates to steam-generators; and it consists in the manner of removably locating a tubular boiler inside of a furnace, and supporting it in its position there, and a fuel-reservoir attached to a removable cover of the furnace, and extending downward through the tube of the boiler, and so constructed and arranged as to expose the whole exterior surface of the boiler to the heat of the furnace, as will hereinafter more fully appear; and it also consists in the construction of a check-draft located upon the top of the generator.

A represents a boiler located inside of a shell, B, and over the furnace. This boiler rests upon angle-irons C C, which are securely attached to the inner surfaces of the shell. The boiler is provided with a cover, D, which is attached to the shell by bolts *d* in such a manner as to be readily removed. To this cover D is attached a fuel-reservoir, E, which extends downward in a vertical direction, passing through the tube A' of the boiler, and extending somewhat beneath the same. E' is a cover to this fuel-reservoir.

F is a rotating fuel-grate, supported by the curved arms *g*, which are attached to the fire-grate G, which is supported by the angle-irons H, attached to the inner sides of the shell. I

is the furnace-door. K is the ash-pan. L is the water-supply pipe. M are gage-cocks. M' is a water-gage. N represents the safety-valve, and P the steam-pipe. These pipes, together with the stems of the water-gages, &c., pass through the walls of the shell to form connection with the boiler. The walls and cover of the shell are preferably of iron; but they may be made of any suitable non-combustible material.

R and R' are check-drafts or dampers pivoted to the top of the boiler at *r r'*, and so constructed as to conform to the fuel-reservoir E and cover the space between it and the boiler A. The rod S is connected with the jointed bars *s s*, which, upon their opposite ends, are connected with the dampers R R', by which one or both of the dampers may be wholly or partially opened or closed by operating the rod S, which extends outside of the furnace.

U U' are flanges attached to the boiler, for directing and controlling the heat of the furnace.

By means of our invention we are enabled to suspend a steam-generating boiler in the interior of a furnace in such a manner that the whole exterior portion of the boiler will be exposed to the heat, including the tubular portion of the boiler. Check-drafts may be located in the tubular portion, or between the exterior portion of the boiler and the walls of the shell, for regulating the heat of the furnace. By means of the rotating grate F we are enabled to distribute the fuel by centripetal force evenly over the fire-surface.

We are aware that heretofore steam-generators have been constructed with a fuel-reservoir centrally located in them, and that steam-boilers have been located inside of furnaces; but we are not aware that heretofore there has been any steam-generator removably located in the interior of a furnace in such a manner, and so constructed and arranged as to expose the whole exterior surface of the boiler, and provided with a tubular reservoir for fuel, extending through it, removably attached by the cover of the boiler, and so constructed as to provide uniform expansion of metal, durability, and generation of steam.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a steam-generator, a boiler constructed with a central flue, and suspended within the shell B in such a manner upon supports C that there is a free circulation of the draft between the shell and the boiler, and cover D, in combination with a fuel-reservoir, E, which extends down through the boiler-flue, and having a freedraft-space between it and the boiler, substantially as set forth.

2. In a steam-generator, the shell B, provided with a cover, D, which is attached to the fuel-reservoir E, said reservoir extending downward through the flue A' of the boiler, which rests on angle-irons C, and the compound rotary grates F and G, supported by

the angle-irons H and curved standards *g*, all combined and arranged so as to withdraw all the parts from the shell, substantially as set forth.

3. In combination with the shell B, boiler A, and internal fuel-reservoir, E, having a draft-space between it and the boiler, compound damper R R', jointed bars *s s*, and rod S, substantially as set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

DAVID WILSON.
WILLIAM B. HARTLEY.

Witnesses:

GEO. F. GRAHAM,
W. N. SEVERANCE.