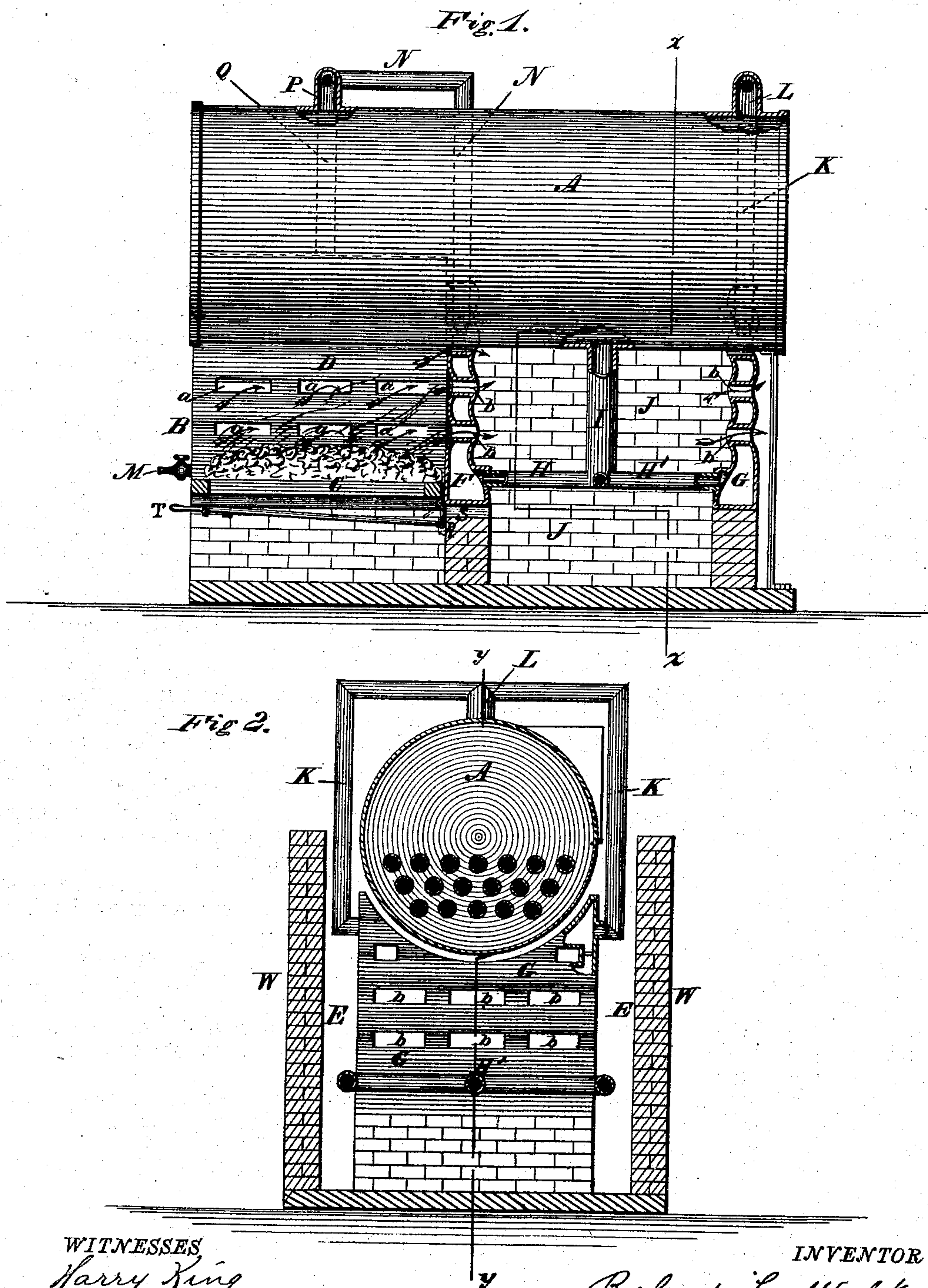


**R. L. WALKER.**  
**Steam-Boiler Furnaces.**

No. 156,654.

Patented Nov. 10, 1874.



WITNESSES  
*Harry King*  
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By

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# UNITED STATES PATENT OFFICE.

ROBERT L. WALKER, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN STEAM-BOILER FURNACES.

Specification forming part of Letters Patent No. **156,654**, dated November 10, 1874; application filed July 22, 1874.

*To all whom it may concern:*

Be it known that I, ROBERT L. WALKER, of Boston, in the State of Massachusetts, have invented certain Improvements in Steam-Boiler Furnaces; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improvement, part of the figure being in section on line *y y* of Fig. 2. Fig. 2 is a transverse vertical section of the same on line *x x* of Fig. 1.

The same part is marked by the same letter of reference in both figures.

My invention relates to improvements in the steam-generator for which Letters Patent No. 75,817 were granted to me March 24, 1868; and it consists in making the bridge-walls hollow and corrugated, and connecting them at top and bottom with the top and bottom of the steam-boiler, in a manner similar to the construction of the side generators described in my said former patent.

In the drawings, A marks the steam-boiler, set in the furnace B, whose grate is shown at C. The grate I prefer to have is what is termed a water-grate, made according to my patent No. 71,251, and connected by pipes with the side steam-generators, so that water shall flow through both. On each side of the grate is placed a narrow auxiliary steam-generator, D, constructed and connected by pipes with the top and bottom of the boiler A, in the manner described and shown in my patent of March 24, 1864. Immediately back of the furnace B is the bridge-wall F, which I make hollow, of corrugated plates attached together, as shown, and provided with openings *b* for the passage of the heated gases and

smoke to the combustion-chamber J. This hollow bridge-wall is connected at bottom with the water-space of the boiler by means of the horizontal pipe H, which unites with the pipe I, which descends from the middle of the bottom of the boiler. The top of the hollow bridge-wall F is connected by pipes N and P with the steam-space of the boiler near its front end. The rear wall G is made in a similar manner to wall F, and is connected at bottom with the water-space of the boiler through pipes H' and I, and at top with the steam-space of the boiler through pipes K and L. Directly under the bridge-wall F I place a damper, R, controlling an opening, S, leading to the combustion-chamber J. This damper is operated by means of the handle T. By this device I admit air to the chamber J to effect the perfect combustion of the gases and smoke. M indicates a blow-off cock, which may be connected with any of the series of lower pipes, for the purpose of drawing off sediment from the boiler.

Having thus described my improvements, what I claim, and desire to secure by Letters Patent, is—

The combination, with a furnace and steam-boiler, of the hollow walls F G, with the pipes K N and H H' I, for connecting said walls with the water-space and steam-space of the steam-boiler, in the manner and for the purpose specified.

The above specification of my said invention signed and witnessed at Washington this 7th day of March A. D. 1874.

ROBERT L. WALKER.

Witnesses:

W. P. BELL,

CHAS. F. STANSBURY.