

E. Weston,

Steam Generator.

No. 113,955.

Patented Apr. 18. 1871.

Fig 2.

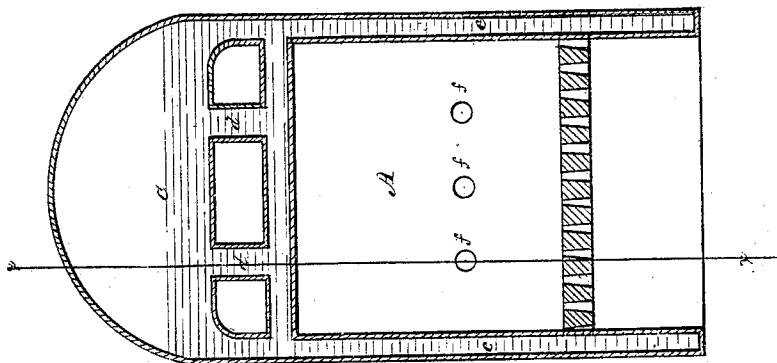
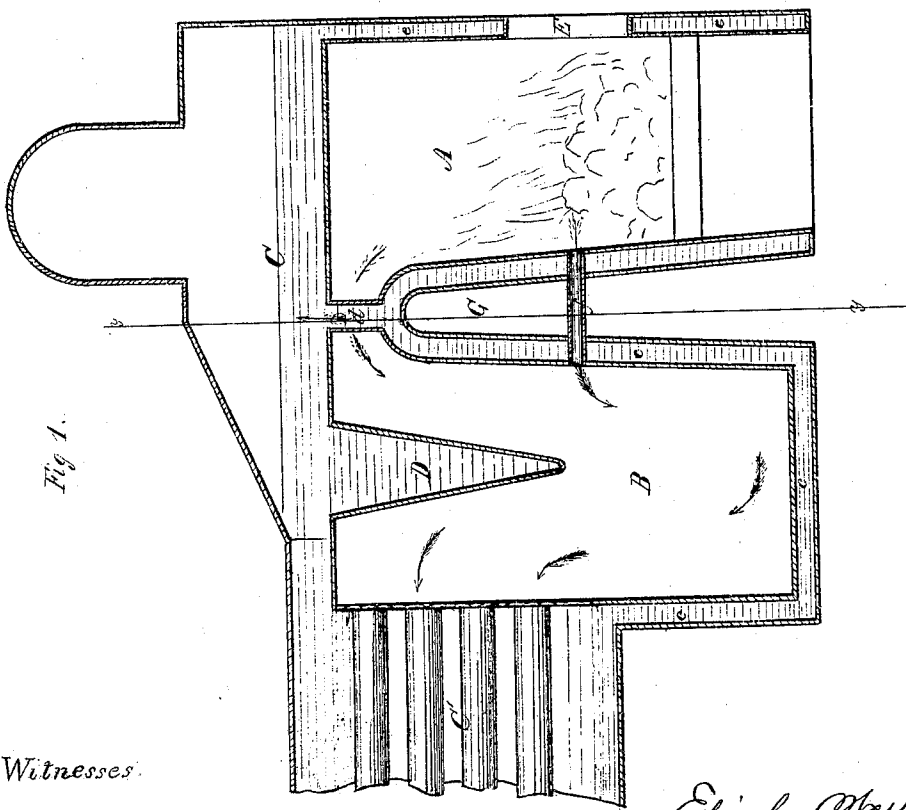


Fig 1.



Witnesses:

John M. Jones
S. C. Cleveland

Elijah Weston,
by J. Fraser & Co., atty

UNITED STATES PATENT OFFICE.

ELIJAH WESTON, OF BUFFALO, NEW YORK.

IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. **113,955**, dated April 18, 1871.

To all whom it may concern:

Be it known that I, ELIJAH WESTON, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Steam-Generators; and I hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1 is a longitudinal section on the line *xx* of Fig. 2; Fig. 2, a transverse section on the line *yy* of Fig. 1.

Like letters indicate corresponding parts in both figures.

My said invention consists of improvements on the steam-generator for which Letters Patent No. 89,258 were granted to me April 20, 1869, the essential features of which are, first, a smoke-combustion chamber, in connection with the fire-space, separated therefrom by an inverted V-shaped bridge, a narrow space being left for the passage of the flame and smoke between the apex of the same and the crown-sheet; second, in the construction of the fire-door for admitting air to aid in consuming the smoke, and also in partitioning the water-jacket to secure a better circulation.

My present improvement relates, essentially, to the use of tubes or flues extending from the interior of the fire-box across the bridge and entering the smoke-chamber, whereby either flame or heated air may be transmitted directly to aid in the combustion of the smoke and gaseous product of the fuel; also, to the combination of a V-shaped pendent water-space with a smoke-consuming chamber and bridge, provided with tubes or flues extending across the bridge, as hereinafter set forth.

The drawing represents these improvements as applied to a locomotive-engine boiler, in which—

A is the fire-box; B, the smoke-combustion chamber; C, the boiler-space; *ccc*, the water-jacket which surrounds the fire-box and smoke-chamber; C', the ordinary tubes of a locomotive-boiler, and G the bridge or V-shaped space between the fire and smoke chamber.

Rising vertically from the highest point of the V-shaped bridge back of the fire, I make

one, two, or more passages, *d d*, which connect said bridge with the crown-sheet, whereby the steam, which forms most rapidly at that point, owing to the intensity of heat to which it is subjected, ascends at once to the steam dome or space above. This promotes the circulation of water through this portion of the jacket and prevents overheating.

I increase the heating-surface by extending downward from the crown-sheet into the smoke-burning chamber the V-shaped partition D, which is exposed to a high temperature on all sides.

In my former patent air-tubes are shown, in which heated air may be introduced into the smoke-chamber from underneath the fire-grate.

I also employ one or more small tubes or passages, *f f*, from the fire-chamber, at any suitable point above the grate, leading directly across the V-shaped bridge or space into the smoke-chamber. This enables portions of the flame to enter the smoke-chamber from the hottest part of the fire, and promote the ignition and combustion of the smoke therein, or any portion thereof, which is not consumed by the air and flame which enter above the bridge. The same passages may be employed to admit a portion of the air which enters through the door E by keeping the fire raked sufficiently low to have them unobstructed.

What I claim as my invention and improvements on my aforesaid patent is—

1. The tubes *f f*, leading directly across the bridge from the furnace A into the smoke-consuming chamber B, substantially as described, and for the purpose set forth.

2. The V-shaped pendent water-space D, in combination with the smoke-combustion chamber B, furnace A, and bridge G, provided with the tubes *f f*, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ELIJAH WESTON.

Witnesses:

JONA. AUSTIN,
KATE N. JONES.