S. J. GOLD.

Boiler.

No. 213,411. Patented Mar. 18, 1879.

Fig. 1.

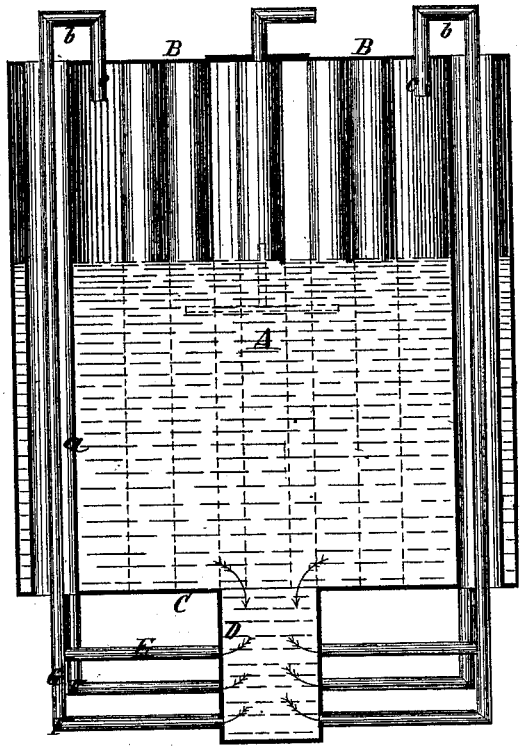
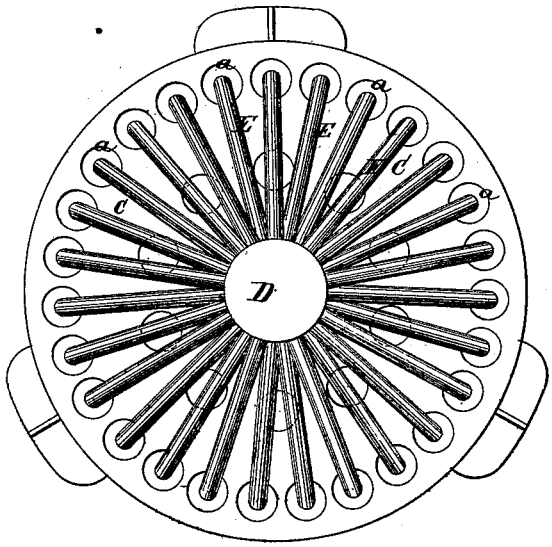


Fig. 2.



WITNESSES:

Achilles Sehehl.

C. Sedgwick

INVENTOR:

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UNITED STATES PATENT OFFICE.

STEPHEN J. GOLD, OF CORNWALL, CONNECTICUT.

IMPROVEMENT IN BOILERS.

Specification forming part of Letters Patent No. **213,411**, dated March 18, 1879; application filed June 26, 1878.

To all whom it may concern:

Be it known that I, STEPHEN JOHNSON GOLD, of Cornwall, in the county of Litchfield and State of Connecticut, have invented a new and Improved Steam-Generator, of which the following is a specification:

Figure 1 is a vertical section of my improved boiler. Fig. 2 is an inverted plan view.

Similar letters of reference indicate corresponding parts.

My invention is an improvement in the class of steam-generators having a series of water-receiving pipes which extend through a portion of the fire-chamber and connect with the steam-space.

The invention has for its object to secure the maximum area of heating-surface, which shall be fully exposed to the free action of the flame and heat, together with the greatest compactness of parts, taken as a whole, to the end that the generation of steam may be effected quickly and continued rapidly, with due regard to economy of fuel, by an apparatus occupying a comparatively small space.

In brief, my invention aims at the highest economy of space and fuel with the highest efficiency for the purpose for which it is used.

Referring to the drawings, A is the water holder or boiler proper, which, in the present case, consists of a plain vertical cylindrical shell having one or more concentric rows of tubes, *a*, which pass through the upper head, B, and lower head, C. A cylinder or reservoir, D, projects downward from the center of the head C, forming a well, the bottom of which is near the fire.

Radial pipes E are screwed into the cylinder D. For convenience in putting the boiler together, these pipes are arranged in spiral rows.

Upon the outer end of each pipe E is (in practice) screwed an elbow, F, that receives the vertical pipe G, which extends upward through the tube *a*, and is connected by a return bend, *b*, with a short tube, *c*, that projects into the steam-chamber of the boiler through the upper head, B.

There are in the example shown as many radial and vertical pipes connected with the well at the bottom of the boiler as there are tubes *a* in the outer row.

The drop-well or reservoir D is exposed on all sides to the action of flame and heat, and since the pipes E radiate from its convex portions each one of them is also fully exposed to the action of the same. This arrangement gives the advantage of great economy of space and great area of heating-surface with the fullest exposure of such surface, both as to its individual parts and as a whole. The consequence is that the water entering pipes E is rapidly converted into steam, so that the currents of water set downward (as shown by arrows) into the drop-well or reservoir D, where the water is heated to a considerable degree before it reaches the pipes E. Such is the rapidity of the generation of steam in the latter, that the water is drawn off from the bottom of reservoir A without any material portion of it being converted therein.

What I claim is—

1. The combination, with the boiler or water-holder A, of the centrally-arranged drop-well D and the pipes E radiating therefrom, and extending upward through the fire tubes or spaces and projecting into the steam-space, as shown and described.

2. The combination, with a water-reservoir, of a water-heater or drop-well exposed on its bottom and vertical sides to the action of flame or heat, the tubes radiating therefrom, and a steam-chamber with which said tubes connect, as shown and described.

STEPHEN J. GOLD.

Witnesses:

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