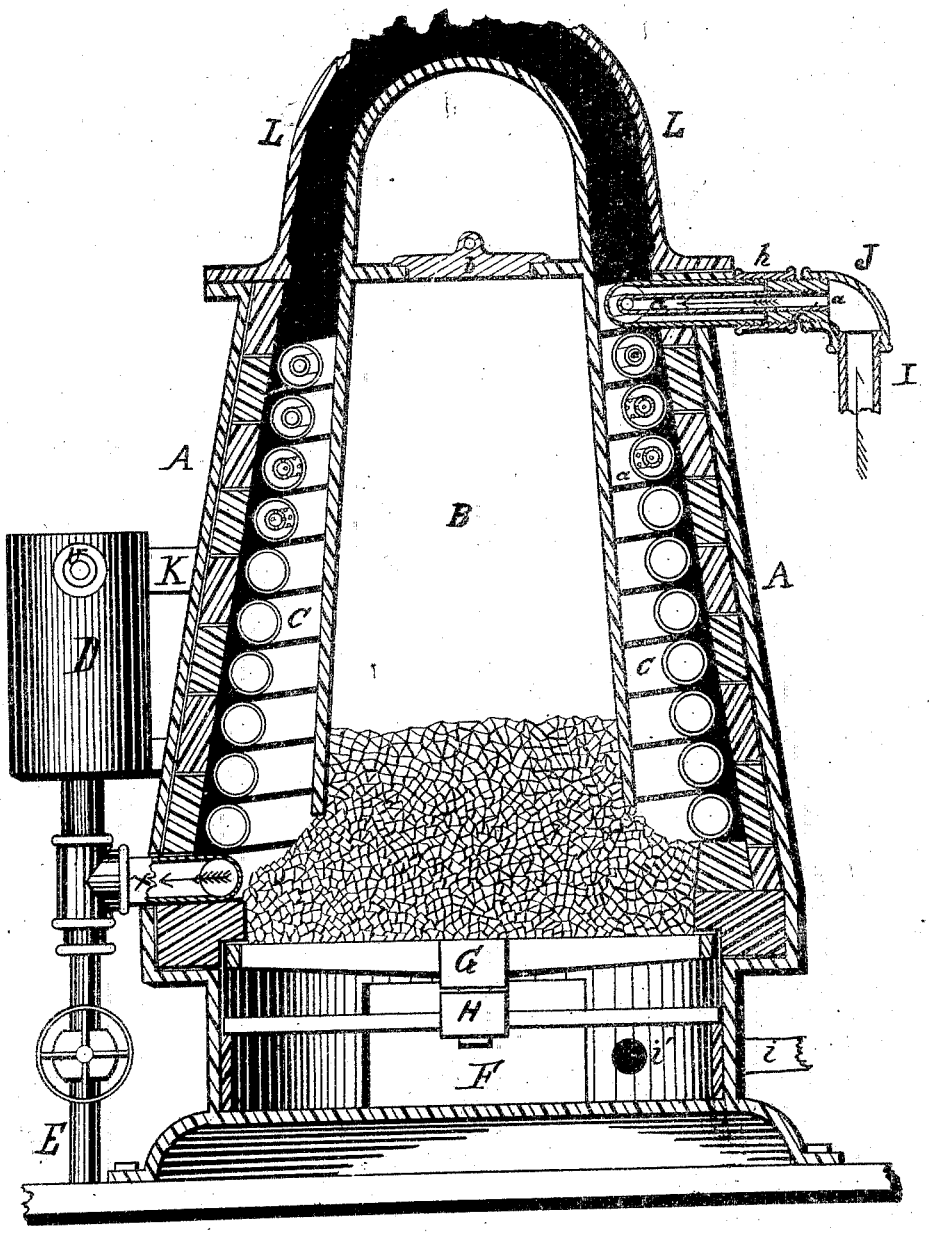
W. F. BROWNE.

Steam-Generator.

No. 208,711. Patented Oct. 8, 1878.



Witnesses

E. D. Pitchard.

S. Waddell

Inventor

Wm Frank Browne

UNITED STATES PATENT OFFICE.

WILLIAM FRANK BROWNE, OF NEW YORK, N. Y., ASSIGNOR TO HYDRO-CARBON STEAM GENERATING COMPANY.

IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. **208,711**, dated October 8, 1878; application filed May 12, 1877.

To all whom it may concern:

Be it known that I, WM. FRANK BROWNE, of the city, county, and State of New York, have invented some new and useful Improvements in Steam-Generators; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawings, which form a part of this specification.

The drawing represents a vertical view of my steam-generating apparatus.

Corresponding parts are designated by similar letters.

C represents a spiral-pipe boiler inclosed within the furnace A. The shell or casing of this furnace may be made of cast or plate iron, and so constructed that it can be lined with fire-clay or other refractory material. The furnace can also be constructed with a self-feeding cylinder, B, therein. The top of the cylinder is provided with a cover, *b*. Said cylinder can be lined with refractory material to protect it from the heat. The space between the cylinder and outer casing is for the spiral boiler and combustion-chamber, whereby the heat derived from the fuel is brought in direct contact with the boiler on its passage to the stack L.

A revolving grate is shown at G, resting upon the hub H. F is a door to ash-pit.

I introduce a perforated pipe, *a*, into several coils in the top of the spiral boiler C. This inner pipe, *a*, is for the purpose of conducting the fluids from the exterior into the interior of the spiral boiler, and spraying it out therein, whereby said fluids are more easily vaporized than would be the case were they to be injected into said boiler in a solid or undivided stream.

Proper connections are made with the pipe *a* and C and induction-pipe I by means of a nipple, *o*, union *h*, elbow J, as shown, or by other similar devices.

The vaporized products pass off at the bottom of the spiral boiler at *x* into the drum D, after which it can be drawn off through the eduction-pipe *r*. This drum may be so situated that it may be surrounded by heat derived from the furnace to prevent condensation.

The pipe E is for conducting the condensed fluids to a reservoir, from which they may be pumped from and injected into the pipe *a* and coil C.

What I claim, and desire to secure by Letters Patent, is—

1. The internal spray-pipe *a*, for inducting and spraying fluids out of and into the top coils of boiler C, in combination with the remaining coils of said boiler, which conduct said fluids and expanded products thereof downward through said coils, whence its exit is made.

2. In combination with the spiral boiler C, provided with a spray-pipe, *a*, within its top coils, an exit-pipe, *x*, and the steam-drum D, substantially as described.

3. In combination with the spiral boiler C, provided with an internal spray-pipe, *a*, as specified, exit-pipe *x*, and drum D, the drip-pipe E and reservoir, for the purpose specified.

WM. F. BROWNE.

Witnesses:
E. D. PRITCHARD,
S. WADDELL.