

J. J. ROEPER.

Sectional Steam-Generators.

No. 146,476.

Patented Jan. 13, 1874.

Fig. 2.

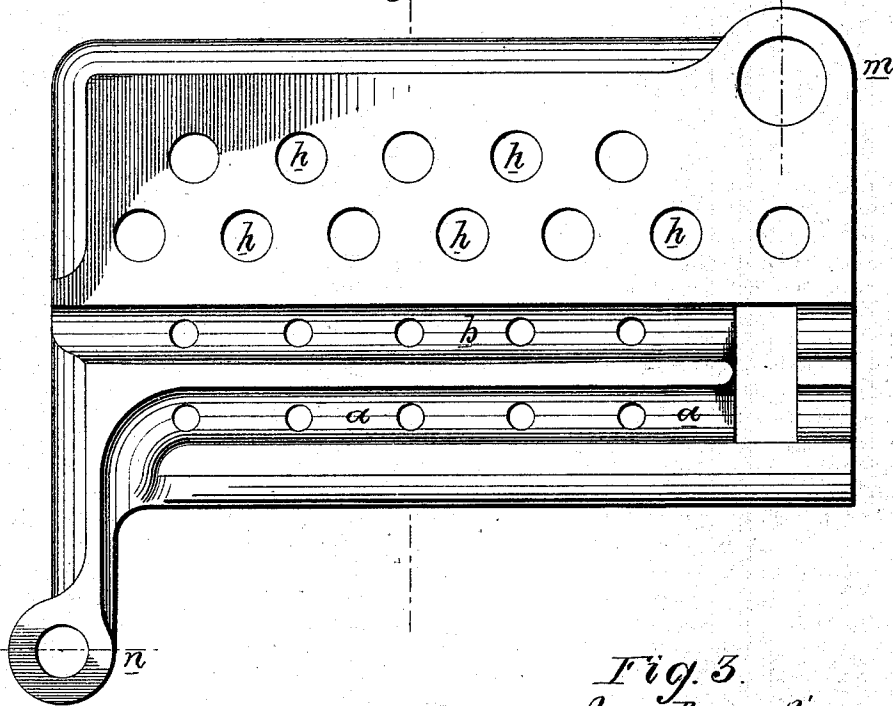


Fig. 3.

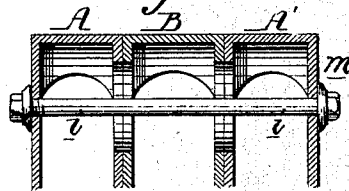


Fig. 1.

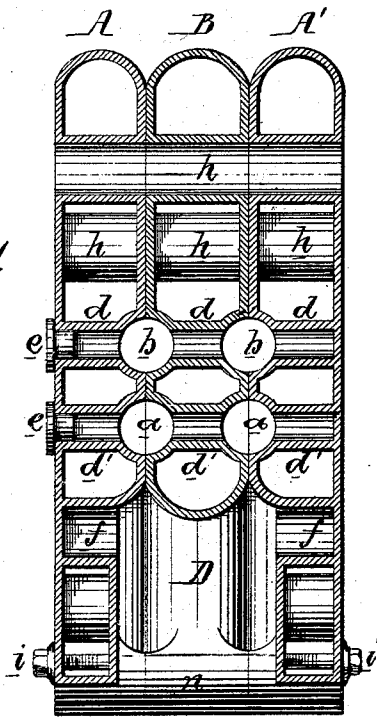
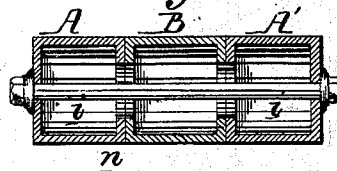


Fig. 4.



Witnesses, Hubert Howson  
Harry Smith

John J. Roeper  
By his Atty.  
Howson and Son.

# UNITED STATES PATENT OFFICE.

JOHN J. ROEPER, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN SECTIONAL STEAM-GENERATORS.

Specification forming part of Letters Patent No. 146,476, dated January 13, 1874; application filed December 13, 1873.

*To all whom it may concern:*

Be it known that I, JOHN J. ROEPER, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improved Steam-Generator, of which the following is a specification:

The object of my invention is a cast-iron steam-generator which presents an extended heating-surface, and which can be readily increased in capacity, the said generator consisting of two exterior cast-iron sections, A and A', and any desired number of intermediate sections, B, constructed, and adapted, and secured to each other, as shown in the vertical section, Figure 1, and side view, Fig. 2, of the accompanying drawing.

The exterior sections A and A' are, with the exception of being made right and left, precisely alike, each of these sections inclosing a space devoted to water and steam in the usual proportions. These exterior sections are carried lower down than the intermediate sections, in the present instance, so as to leave a space, D, which is open to the fire-place below, the products of combustion passing along this space, then returning through passages *a a*, formed by recessing adjoining sections, and then turning and traversing similar passages *b b*, communicating with the chimney. There may, if desired, be one or more additional return-passages for the products of combustion situated above and communicating with the passages *b* and *a*. An upper row of transverse tubes, *d*, and lower row of similar tubes, *d'*, arranged at appropriate distances apart, are cast in each section, the interior of the lower tubes *d'* communicating with the lower flues *a*, and the upper tubes *d* with the upper flues *b*. These transverse tubes serve as stays to prevent the distension of the opposite sides of each section through internal pressure, and also add to the heating-surface of the generator. When the boiler is in use, the entrances to these transverse tubes may be fitted with plugs *e e*, which can be withdrawn for the introduction of a suitable instrument for cleansing purposes. The lower portion or leg of each of the outer sections A and A' has re-

cesses *f* at suitable intervals for the purpose of adding to the strength of these legs, and also for increasing the heating-surface. I propose in some instances, however, to dispense with these legs altogether, and to make all of the sections of the boiler of the same length. Rows of larger tubes *h* are cast across the upper portion of each slab or section for the same purpose, the tubes of one section communicating with those of the other, as shown in Fig. 1. These latter tubes may remain open for the passage of air, which, becoming heated, may be used for warming buildings in the neighborhood of the boiler. The interior of the several sections communicate with each other at two points only—that is, at the upper point *m*, a transverse section of which is shown in Fig. 3, and at the lower point *n*, a transverse section of which is shown in Fig. 4, the sections being secured together at these two points by bolts *i i*. At the point *m*, where the steam-spaces of all the sections communicate, may be situated the safety-valve and the shut-off valve-chest, with which the steam-pipe communicates, and at the lower point *n* the feed-pipes should communicate with all the sections simultaneously.

It will be seen that the capacity of the generator can be readily increased by increasing the number of intermediate sections, and that this addition can be readily accomplished.

I claim as my invention—

1. A steam-generator, consisting of exterior sections A A' and intermediate sections B, each section having flues formed by recessing adjoining sections, as set forth.

2. The combination of the flues *a a* and *b b*, formed by recessing intermediate sections, with the transverse tubes *d* and *d'* cast in each section, all as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN J. ROEPER,

Witnesses:

WM. A. STEEL,

J. SHERBORNE SINGER.