

L.C. Field,

Sectional Steam Boiler.

No. 111,527.

Patented Feb. 7. 1871.

Fig. 4.

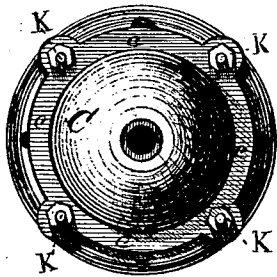
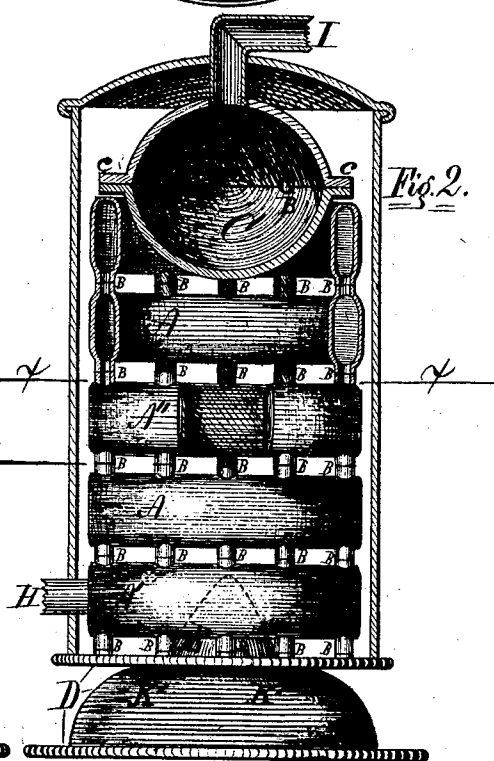
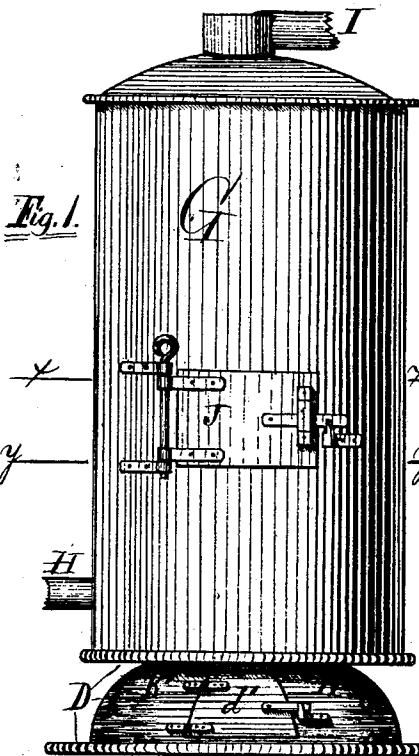
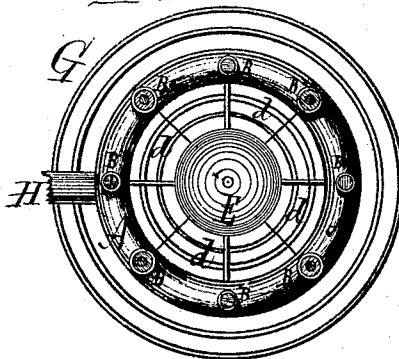


Fig. 5.



Witnesses:—  
Platt R. Richards }  
W. H. Hale }

Inventor,  
Loyal C. Field,  
By W. T. B. Richards,  
his Atty.

# United States Patent Office.

LOYAL C. FIELD, OF GALESBURG, ILLINOIS.

Letters Patent No. 111,527, dated February 7, 1871.

## IMPROVEMENT IN STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

I, LOYAL C. FIELD, of Galesburg, in the county of Knox and State of Illinois, have invented certain Improvements in Steam-Generators, of which the following is a specification.

### *Nature and Objects of the Invention.*

The nature of my invention relates to improvements in cast-iron boilers, more especially intended for generating and delivering steam for culinary purposes; and

The invention consists in providing the grate-bottom within the base with a central cone, and in combining the grate so constructed with a series of rings or circular tubes, connected by tubes or flanged projections, for the purpose to be hereinafter set forth; and also in arranging the various parts of the generator with relation to each other as that the full effect of the calorific arising from the combustion of the fuel will be utilized; and whereby the furnace may be more conveniently and effectively replenished with fuel when necessary.

### *Description of the Accompanying Drawing.*

Figure 1 is an elevation.

Figure 2 is a vertical central sectional view of fig. 1, from the top down to the plane of the line  $x x$ , and and elevation of the interior rings and continued vertical section of the outside jacket from the line  $x x$  to the base.

Figure 3 is a horizontal view of fig. 1, on the line  $y y$ .

Figure 4 is a top view of the steam-dome and rings shown at fig. 2.

### *General Description.*

$A A A A$  represent hollow cast-iron rings, which may be circular or elliptical in their cross-sections.

$B B B B$  are circular flanges surrounding and projecting from holes pierced in the rings  $A$ .

$C C$  are hemispheres with annular flanges,  $c c$ , which, when brought together, form a sphere.

$D$  is a base, on which the whole device rests.

The upper surface of the base  $D$  carries the fire-grate  $d$ , and the lower part is made hollow and serves as an ash-pit, with a door,  $d'$ , communicating therewith from the outside.

$E$  is a conical-shaped projection upward from the surface of the fire-grate, and being in the center thereof serves to occupy the place of fuel, which, without it, would be consumed without its heat reaching the rings  $A$ ; and further, it may be pierced with holes above the combustible matter, for the purpose of admitting air to aid in consuming the smoke.

$G$  is a jacket or casing, a little larger in its interior diameter than the outside diameter of the rings  $A$ , and has its lower edge or end resting on a flange from the top of the base  $D$ , and completely encircles and envelops the rings  $A A A A$ .

$H$  is a pipe, communicating from the outside of the jacket  $G$  and with the lower ring  $A'$ , through which water may be pumped into said ring  $A'$  from any suitable reservoir.

$I$  is a pipe, communicating with the interior of the sphere  $C$ , through which steam may be taken to any desired place.

$J$  is a door in the jacket  $G$ .

$K K K K$  are the heads of bolts which pass through the flanges  $c c$ , the rings  $A A A A$ , and flanges  $B B B B$ , and the flange on the top of the base  $D$ , where they are provided with taps or nuts, which may be tightened up as desired, for the purpose of holding the sphere  $C$  and rings  $A$  all securely in place.

The construction and operation of my invention are as follows:

Any desired number of the rings  $A$  may be placed on top of each other, one of them  $A'$  being cast with a section left out and the ends closed, as shown at fig. 2, through which fuel may be inserted, or communication be had with the interior for any other purpose.

Any desired number of the circular flanges  $B$  may be cast on each ring, (eight are shown in the drawing plainly at fig. 3,) and by the openings in these flanges each ring communicates with the one adjacent.

The flanges  $B$  are milled off to form the joints, the rings are then brought together and secured by means of the bolts which pass through a portion of the openings inside of flanges  $c c c c$ , upon which is placed heads or caps  $K K K K$ , and nuts  $K' K'$ .

The sphere  $C$  is set with the flanges  $c$  resting on the upper one of the rings  $A$ , and of course one-half of the sphere extends downward into the interior.

The bolts which pass through the rings  $A$ , for the purpose of binding them together, also pass through the flanges  $c c$ , and where they pass through the lower flange  $c$  the opening is enlarged and communicates with the flanges  $B B B B$  on the upper side of the upper ring  $A$ , admitting the steam thereby from the upper ring  $A$  to the sphere  $C$ .

It will be plainly seen from the drawing that the fire being made in the interior the heat therefrom may communicate freely with all parts of the surface of each and every ring, and the water being kept up to about the second ring from the top, nearly the entire

heat generated may be utilized in heating the water in the lower rings, and in superheating the steam in the upper rings and in the sphere or dome C, and a stop-cock in pipe I will enable the operator to deliver steam superheated and dry in quantities as required, and for any purpose desired.

*Claims.*

I claim as my invention—

1. The conical-shaped elevation E on the grate *d*, when arranged to operate with said grate and rings

A, substantially as described and for the purpose specified.

2. The arrangement of base D, rings A A', and partial ring A", constructed as described, with flanges B, and united by bolts K, dome C, and casing G, all as and for the purpose substantially as set forth.

LOYAL C. FIELD.

Witnesses:

P. R. RICHARDS,  
SAMUEL C. KERR.