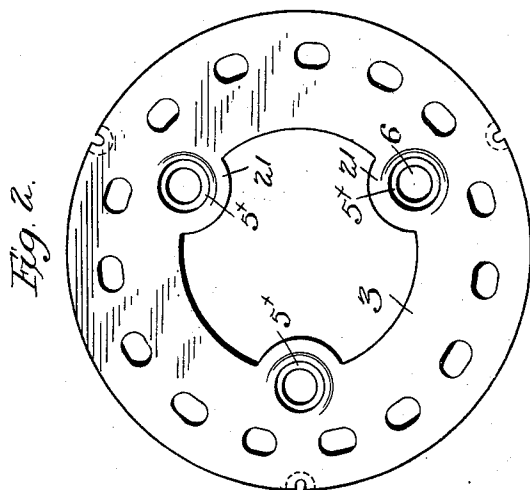
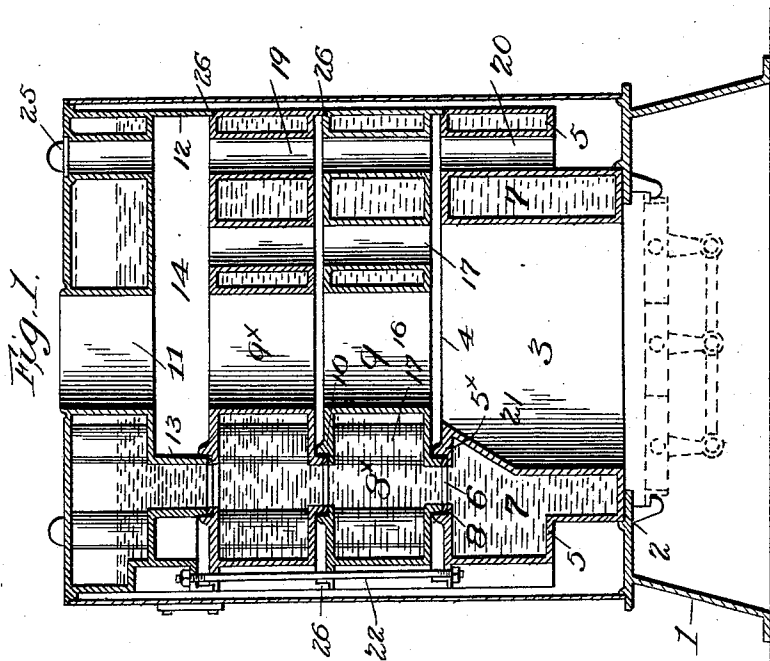


(No Model.)

G. P. STEEL.
SECTIONAL STEAM BOILER.

No. 478,208.

Patented July 5, 1892.



Attest
William Hall
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Inventor
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Attys

UNITED STATES PATENT OFFICE.

GEORGE P. STEEL, OF PHILADELPHIA, PENNSYLVANIA.

SECTIONAL STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 478,208, dated July 5, 1892.

Application filed March 2, 1892. Serial No. 423,462. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. STEEL, a citizen of the United States of America, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Sectional Steam-Boilers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

It is the object of my invention to provide a steam-generator of the simplest possible form consistent with the highest effectiveness.

It is a further object to so construct the boiler that it may be easily handled in setting it up or taking it down, all the parts being fitted to each other, so that the services of the skilled mechanic are rendered unnecessary.

I aim, also, to provide such a construction as will furnish a large combustion-chamber and at the same time a large water-space and flue-space without materially increasing the size of the boiler.

In the accompanying drawings, Figure 1 is the central vertical section through the boiler. Fig. 2 is a plan view of the combustion-chamber section.

The boiler is sectional in form, and consists of a lower section 1, forming the base and ash-pit of the boiler. This is formed with a seat 2, upon which rests the combustion-chamber section 3. This section extends upwardly to the line 4, and is provided with an overhanging portion 5, extending a little below its central line. On the upper side of this section three or more depressions 5* are formed, having openings 6, communicating with the interior of the combustion-section, which interior forms the water-space 7. This depression receives a gasket 8, and upon this rests a nipple projecting downwardly from the next section of the boiler above the combustion-chamber. An opening through this nipple furnishes communication between the water-space 7 of the combustion-chamber section and a like space 8* of the section 9, so that the water is free to circulate from one water-

space to the other, the joint at the nipple being water and steam tight. A third section, similar to the section 9, is placed above the said section 9, and a corresponding nipple and socket-joint 10 is provided between these sections. The upper section 11 has a long depending flange 12 and longer nipples 13, so that a space 14 is left between the sections 9* and 11, which forms a continuation of the combustion-space. This space (marked 14) communicates with the combustion-chamber through the central opening 16, comprising the magazine and extending centrally through all the sections. It will be noticed that the sections above the combustion-chamber sections extend inwardly or overlap said combustion-section, and in this overlapping portion the vertical flues 17 are formed in alignment with each other, the outer sides of said flues being in line with the inner sides of the wall of the combustion-chamber. The products of combustion are therefore free to rise through these flues into the upper combustion-chamber, and from thence they pass downwardly through return-flues 19, formed in the sections, and through the continuation 20 of said flues formed in the overhanging part of the combustion-chamber section. From this it will be seen that the combustion-chamber extends from the outer edge of the uptake-flues on one side to the outer edge of the uptake-flues on the other side, and thus a large combustion-space is afforded. This construction of the combustion-chamber and upper section renders a special formation necessary at the points where the nipples connect the water-space of the upper section with that of the combustion-chamber section, and this consists of the enlargements 21, extending inwardly from the inner line of the combustion-chamber wall, and in these enlargements the sockets are formed for the connecting-nipples. The sections are each cast in one piece, requiring no planing or fitting, and may be put up and taken down without the aid of skilled labor. Each of the upper sections has a small depending flange 26, which fits into the groove at the outer edge of the next section below. Each section also has a recess in its side extending vertically, and slotted flanges extending across these recesses receive tie-bolts 22, which hold the sec-

tions together. The outer shell of the boiler is supported upon the base-section. The upper section is cast with openings in line with the return-flue, and by removing the covers
5 25 of these openings the return-flues may be cleaned.

I claim as my invention—

In combination, the base-section formed with a seat, the combustion-chamber section
10 fitting therein having an overhanging portion provided with flues and water-spaces, the interchangeable sections above the combustion-chamber sections, each having a portion extending inwardly and overhanging the inner
15 wall of the lower section, said overhanging portion being formed with uptake-flues and having also a return-flue communicating with the flues through the overhanging part of the

combustion-section, the sockets and nipples with the interposed gaskets held by the said
20 sockets forming the connection between the sections, the said sockets in the combustion-chamber section being formed in enlargements thereon, the upper section having the
25 long depending flange-nipple to form an upper combustion-space, the means for securing the sections together, and the flanges and sockets around the outer edge of the sections, and the outer shell supported on the base-
30 section, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. P. STEEL.

Witnesses:

ELLWOOD BONSALE,
E. WARNER BONSALE.