

No. 710,313.

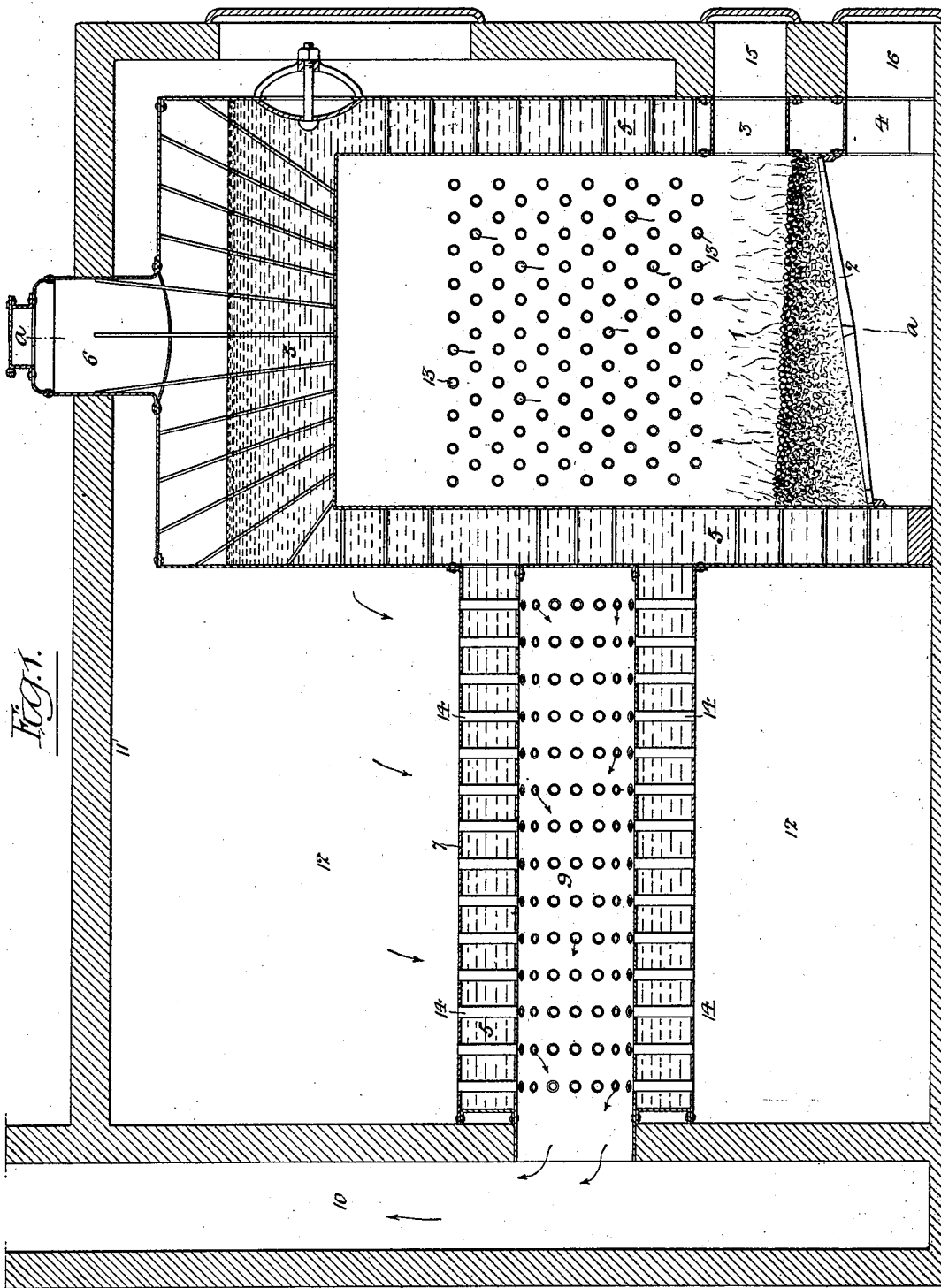
Patented Sept. 30, 1902.

R. J. BARTON.
STEAM GENERATOR.

(Application filed Jan. 10, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:-
 Charles Wilson.
 Hamilton D. Turner

Inventor:-
 Robert J. Barton
 by his Attorneys Howson & Howson

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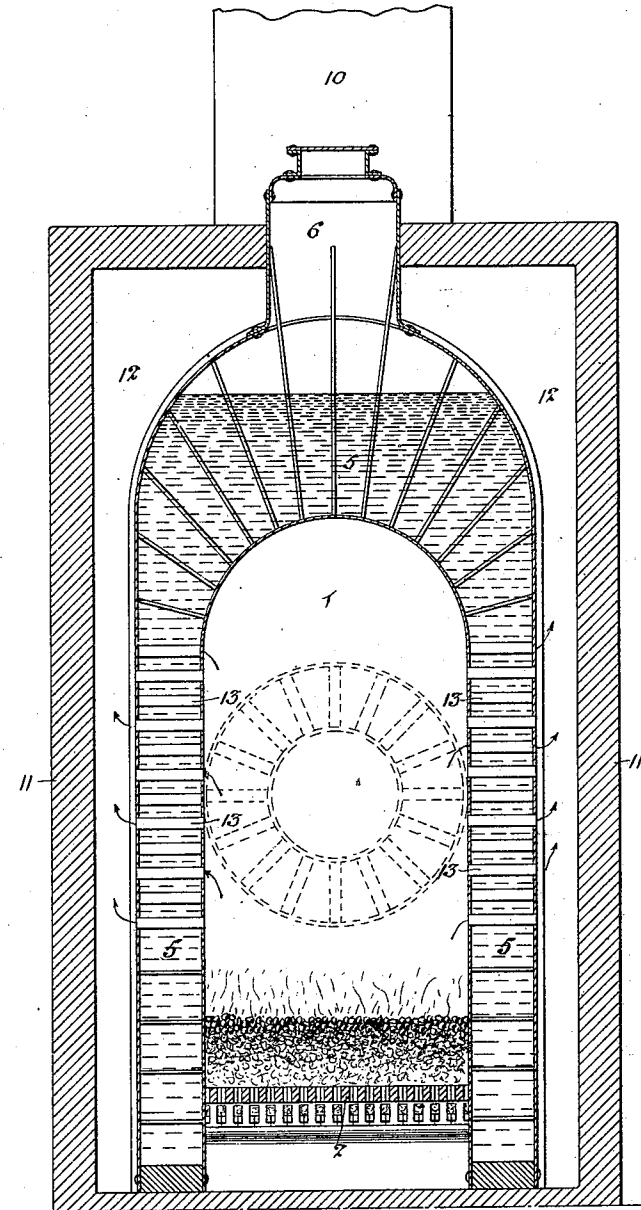
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(Application filed Jan. 10, 1902.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.



Witnesses:-

Chas. Delon
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Inventor:-

Robert J. Barton,
by his Attorneys;
Howson & Howson

UNITED STATES PATENT OFFICE.

ROBERT J. BARTON, OF PHILADELPHIA, PENNSYLVANIA.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 710,313, dated September 30, 1902.

Application filed January 10, 1902. Serial No. 89,131. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. BARTON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Steam-Generators, of which the following is a specification.

The object of my invention is to so construct a steam-generator as to insure a large area of heating-surface, and thereby provide for the
10 rapid generation of steam, this result being attained without any such departure from recognized principles of construction as will increase the expense of the generator or detract from its strength.

15 In the accompanying drawings, Figure 1 is a longitudinal section of a steam-generator constructed in accordance with my invention; and Fig. 2 is a transverse section of the same on the line *a a*, Fig. 1.

20 The generator is of the locomotive type—that is to say, it has a fire-box 1 with bottom grate 2, fire-door 3, and ash-pit opening 4, this fire-box being surrounded by a water-chamber 5, the upper portion of which terminates in a steam-dome 6, the crown-sheet
25 of the fire-box and the side walls of the same being stayed to the shell of the generator in the usual manner.

30 From the casing of the water-chamber which surrounds the fire-box projects a cylindrical barrel 7; but instead of said barrel being provided with longitudinal tubes leading from the fire-box to the smoke-chamber at the base
35 of the stack in the ordinary manner said cylindrical barrel has a central longitudinal flue 9, which does not communicate with the fire-box, but is in free communication with the stack 10.

40 Surrounding the generator structure is a casing 11, inclosing a combustion-chamber 12, which combustion-chamber is in communication with the fire-box through short transverse tubes 13, extending from the side walls of said fire-box to the side walls of the water-chamber surrounding the same, and in like
45 manner the center flue 9 of the cylindrical barrel 7 of the generator is in communication with the combustion-chamber 12 through short radial tubes 14, extending from the flue-casing to the casing of the barrel. As a result of this construction the products of combustion are first caused to pass through the

transverse tubes 13 from the fire-box to the combustion-chamber 12 and thence from the latter through the tubes 14 to the central flue
55 9 of the cylindrical barrel 7, from which they escape to the stack 10. Hence a very large area of heating-surface is exposed to said products of combustion—namely, the entire shell of the fire-box, the entire outer shell of
60 the generator, the entire shell of the internal flue 9, and the internal surfaces of all of the tubes 13 and 14. Consequently rapid generation of steam in large volume is insured, and the practically complete utilization of the
65 heating properties of the products of combustion is attained.

The tubes 13 and 14 serve as stays for the shells which they connect, and thereby materially strengthen those portions of the generator in connection with which they are used
70 and render unnecessary the use of any special stays for this purpose.

The outer casing 11 of the generator has at the front a feed-opening 15 and ash-pit opening 16 supplemental to the feed and ash-pit
75 openings of the generator-shell and provided with suitable doors.

In stationary generators the outer casing may be composed of brickwork; but in generators for locomotive or marine use a metallic casing will usually be employed.

Having thus described my invention, I claim and desire to secure by Letters Patent—
85

A steam-generator comprising a fire-box and a longitudinal flue, a casing inclosing said fire-box and having a cylindrical barrel inclosing the flue so as to provide a water-chamber containing said fire-box and flue, and
90 transverse tubes extending between the fire-box and its inclosing casing and between the cylindrical barrel and flue, in combination with an outer casing containing a combustion-chamber which communicates through said
95 tubes with the fire-box and flue, substantially as specified.

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

ROBERT J. BARTON.

Witnesses:

F. E. BECHTOLD,
JOS. H. KLEIN.