

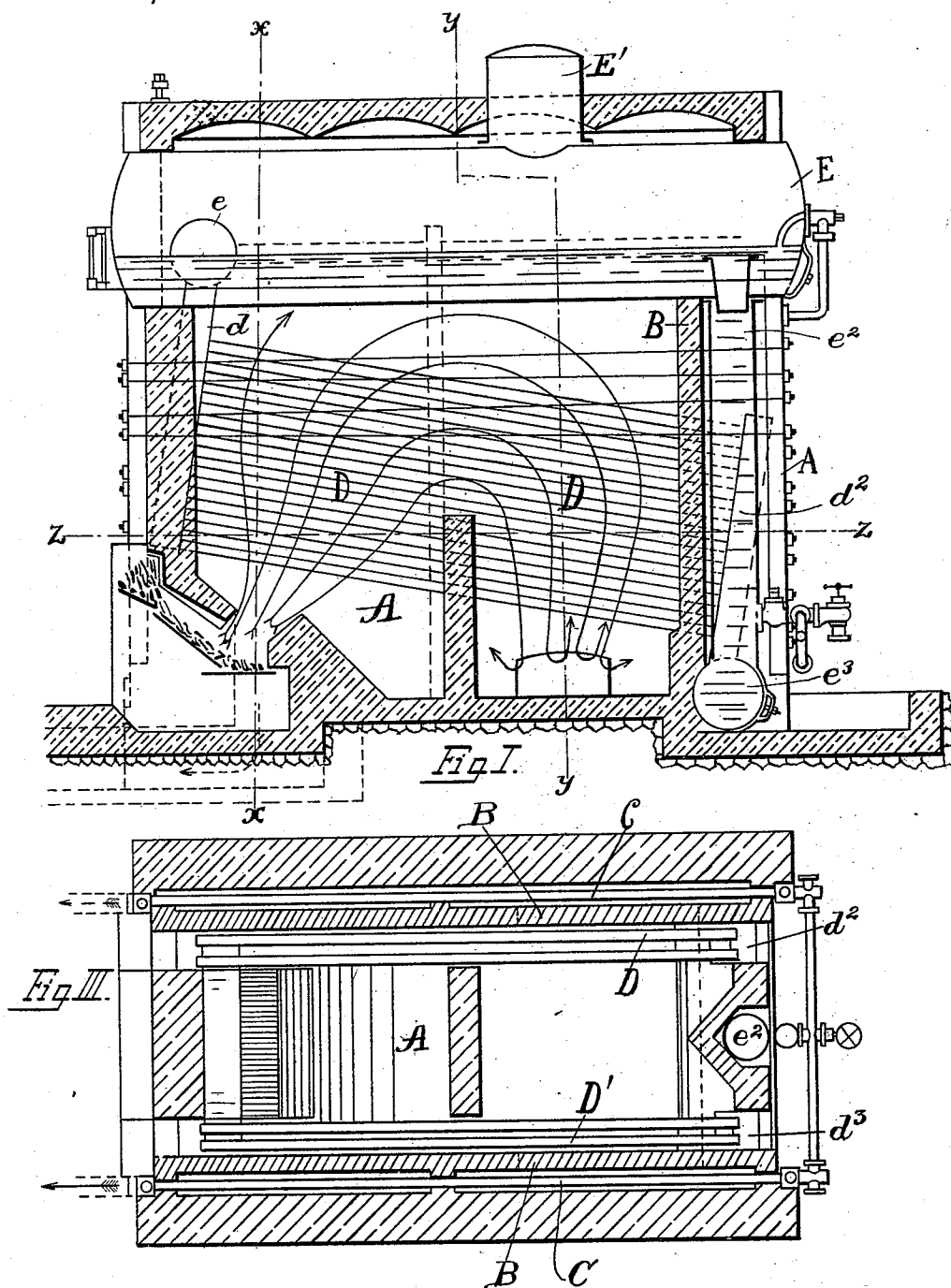
(No Model.)

3 Sheets—Sheet 1.

M. SEIPP.
MULTITUBULAR BOILER.

No. 485,507.

Patented Nov. 1, 1892.



Witnesses;
John C. Wilson
Rey C. Bowen

Inventor;
Max Seipp
By *Whitman & Wilkinson*
Attorneys.

(No Model.)

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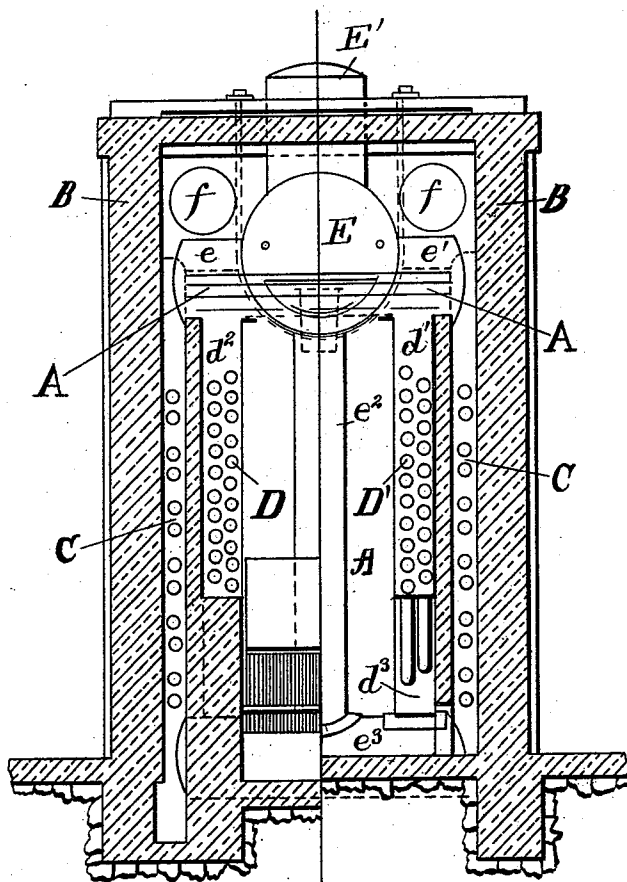


Fig. II.

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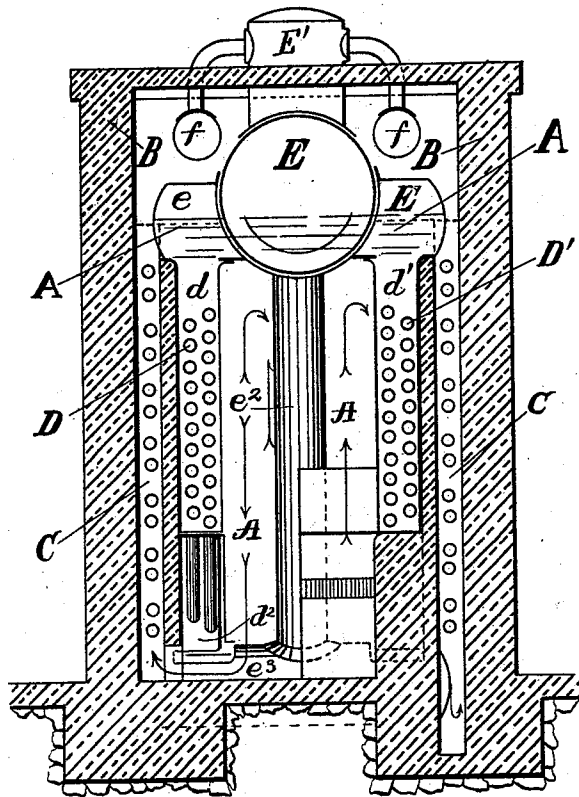
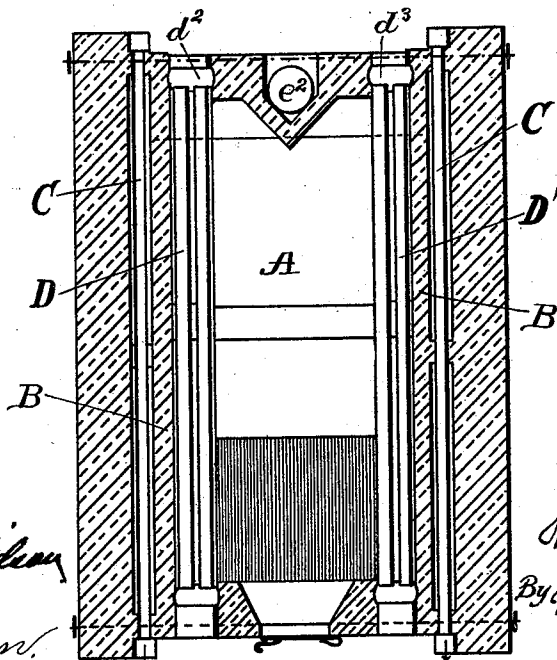


Fig. IV.

Fig. V.



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UNITED STATES PATENT OFFICE.

MAX SEIPP, OF BERLIN, GERMANY.

MULTITUBULAR BOILER.

SPECIFICATION forming part of Letters Patent No. 485,507, dated November 1, 1892.

Application filed June 1, 1892. Serial No. 435,151. (No model.)

To all whom it may concern:

Be it known that I, MAX SEIPP, civil engineer, of 12 Neue Schönhauserstrasse, Berlin, in the Kingdom of Prussia, and German Empire, have invented a new and useful Improvement in Multitubular Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to steam-generators of the type wherein the heating-surface is to a great extent arranged on the water-tube system. In steam-generators of this class as ordinarily constructed the incandescent gases proceeding from the powers press upward and downward between the heating-tubes, and in consequence of being too rapidly cooled more or less combustible matter passes away without being consumed, thick smoke and soot resulting. Consequently generators of this class can only be advantageously used with short-flamed coal—anthracite or coke—and yield (per unit of heating-surface) less steam than many boilers in which the flames have freer play.

A steam-generator constructed according to my improved method is illustrated in the accompanying drawings, wherein—

Figure I is a longitudinal vertical section; Fig. II, a transverse vertical section on the lines $xx'yy'$, Fig. I; and Fig. III, a horizontal section on the line zz' , Fig. I. Fig. IV is a transverse vertical section showing the superheating-pipes ff' . Fig. V is a horizontal sectional view of the device.

The present construction of generator is more particularly intended for use with fuel burning with a long flame, complete combustion of the gases taking place in the large combustion-chamber A, the heating-tubes D being so distributed along the walls of the same that the hot gases are not compelled to pass between them, the greater portion of the heat conveyed by the gases being imparted to the tubes by radiation before the gases escape from the combustion-chamber and pass among the feed-pipes C, arranged behind the walls and toward the roof of the said chamber. It further results from this system of working that the temperature of the feed-water is raised to that of the generator or nearly so, and the greater part of the impuri-

ties contained therein solidified and deposited before the water enters into circulation and reaches the steam-generating surfaces. The feed-pipes are arranged in two separate systems, so that either one or the other set can be removed and cleaned without stopping or interfering with the effective working of the generator.

The drum E has a large steam-space and communicates by means of lateral enlargements $e'e'$ and two water-chambers $d'd'$ with the front and upper extremities of the two sets of inclined heating-tubes D D'. The opposite end of the steam and water drum E is in communication, by means of a downpipe e^2 , with the water-drum e^3 , to which two water-chambers d^2d^3 are connected. To these water-chambers the rear or lower extremities of the two sets of inclined heating-tubes D D' are respectively attached and receive their supply therefrom.

Behind the fire-brick walls B of the combustion-chamber are two sets of feed-pipes C, each fitted with stop-valves and independently connected with the generative portion of the boiler, so that either set may be shut off at will. These pipes may be horizontal, vertical, or inclined.

The steam after leaving the steam-dome E' may be led through pipes ff' , arranged in the upper part of the brickwork-chamber, and thus be dried or superheated. If, owing to proximity of the generator to dwellings or for other reasons, it be deemed preferable, the steam and water drum E may consist of a group of tubes and may be placed above the roof of the combustion-chamber while the heating-tubes are arranged along the walls on either side, as before described, or along the side walls and beneath the roof, the incandescent gases not circulating among and between the tubes according to the usual practice but burning freely in the combustion-chamber and ultimately bathing the pipes containing the fresh feed-water.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a steam-generator, the combination, with the combustion-chamber and the groups of water-tubes arranged on either side thereof, of the inner and outer walls of the com-

bustion-chamber and the feed-water-heating pipes in the space between the inner and outer walls of the combustion-chamber, substantially as described.

- 5 2. In a steam-generator, the combination, with the combustion-chamber and the groups of water-tubes arranged on either side thereof, of the inner and outer walls of the combustion-chamber and the feed-water-heating
- 10 pipes in the space between the inner and outer walls of the combustion-chamber, through which space the heated gases ultimately pass, bathing the said heating-pipes, substantially as described.
- 15 3. In a steam-generator, the combination, with the combustion-chamber, double walls surrounding said combustion-chamber, the groups of water-heating tubes D and D', arranged on either side within said water-cham-
- 20 ber, the drum E, water-chambers *d d'*, extending downward from the drum and connecting with the front upper ends of the water-heating tubes, water-drum *e³*, connected with the drum E, and pipes *d²* and *d³* from the water-
- 25 drum *e³*, connecting with the rear lower ends of the water-heating tubes D D', of the feed-water-heating tubes in the space between the double walls of the combustion-chamber,

through which space the heated gases ultimately pass, substantially as described. 30

4. In a steam-generator, the combination, with the combustion-chamber, double walls surrounding said combustion-chamber, the groups of water-heating tubes D and D', arranged on either side within said water-cham- 35 ber, the drum E, water-chambers *d d'*, extending downward from the drum and connecting with the front upper ends of the water-heating tubes, water-drum *e³*, connected with the drum E, pipes *d²* and *d³* from the water-drum 40 *e³*, connecting with the rear lower ends of the water-heating tubes D D', the steam-dome E', and the superheating-pipes *f*, connected with the said steam-dome and arranged within the upper part of the combustion-chamber, of the 45 feed-water-heating tubes in the space between the double walls of the combustion-chamber, through which space the heated gases ultimately pass, substantially as described.

In witness whereof I have hereunto set my 50 hand in presence of two witnesses.

MAX SEIPP.

Witnesses:

PAUL FISCHER,
W. HAUPT.