

(No Model.)

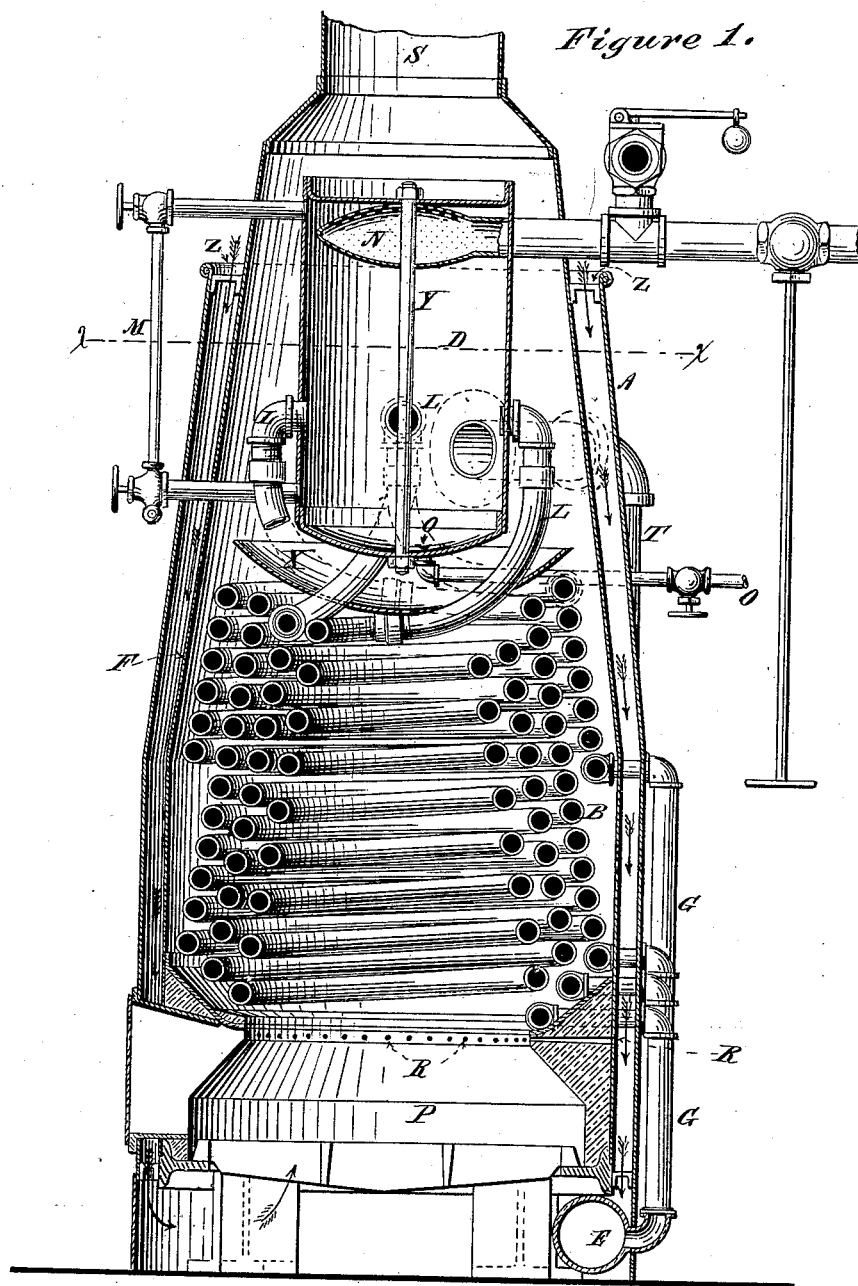
M. M. MONSANTO.

3 Sheets—Sheet 1.

STEAM GENERATOR.

No. 264,735.

Patented Sept. 19, 1882.



Witnesses:

Geo. W. Miall
Abner J. J.

Inventor:
Mauricio M. Monsanto,
By his attorney
E. N. Dickerson Jr

(No Model.)

3 Sheets—Sheet 2.

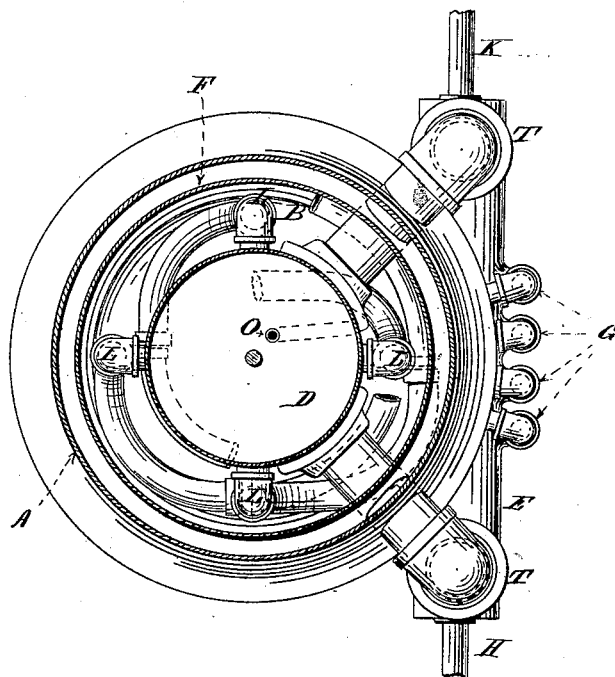
M. M. MONSANTO.

STEAM GENERATOR.

No. 264,735.

Patented Sept. 19, 1882.

Figure 2.



Witnesses

Leo. H. Mott
Alfred J. J.

Inventor:

Mauricio M. Monsanto
By his attorney,
E. N. Dickerson Jr.

(No Model.)

3 Sheets—Sheet 3.

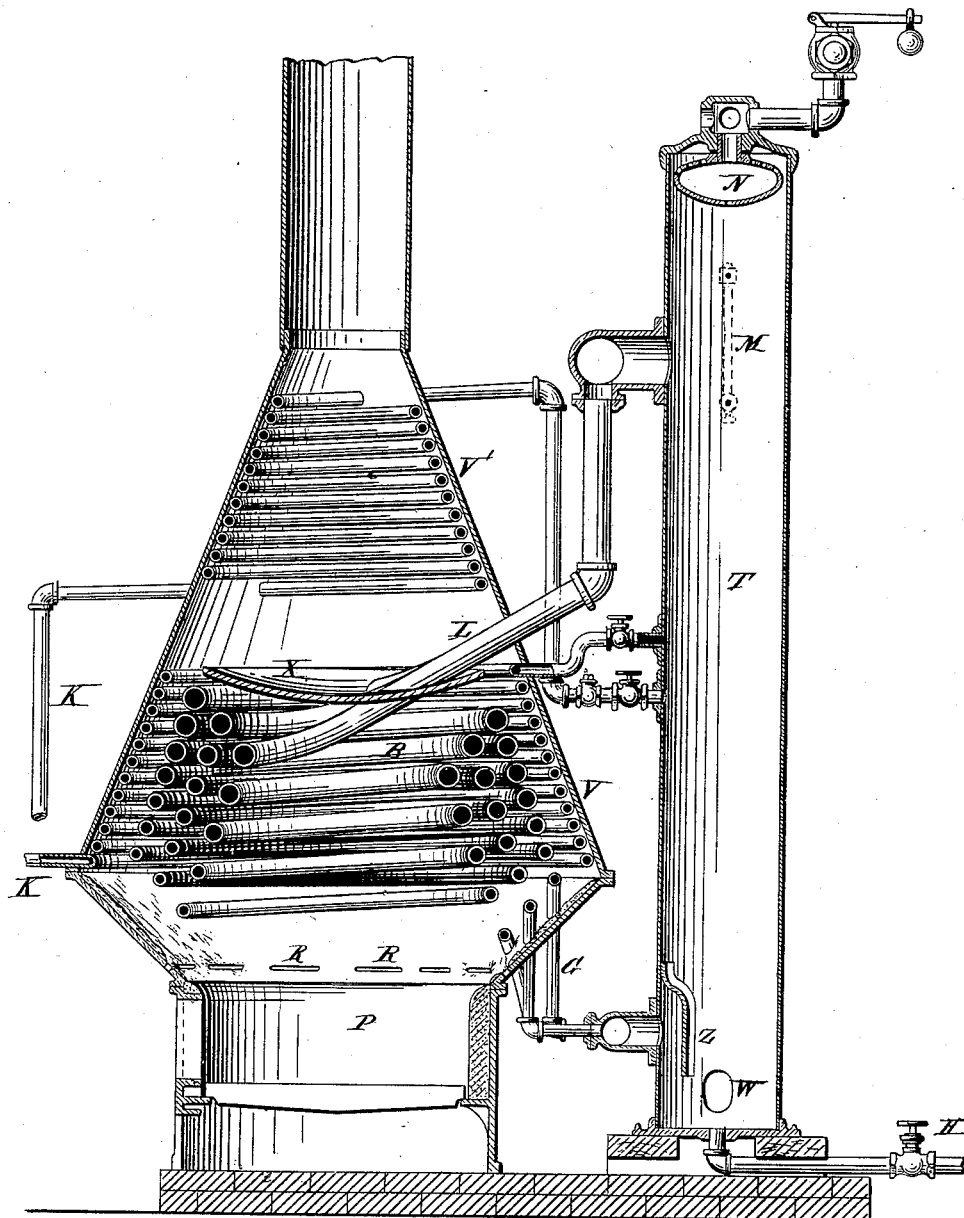
M. M. MONSANTO.

STEAM GENERATOR.

No. 264,735.

Patented Sept. 19, 1882.

Figure 3.



Witnesses:

Geo. H. Mott
Anthony Greff

Inventor:

Maurice M. Monsanto
By his attorney
E. N. Dickson Jr

UNITED STATES PATENT OFFICE.

MAURICIO M. MONSANTO, OF NEW YORK, N. Y., ASSIGNOR TO HENRY P. BOOTH, TRUSTEE, OF SAME PLACE.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 264,735, dated September 19, 1882.

Application filed April 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, MAURICIO M. MONSANTO, of New York city, State of New York, and a citizen of the United States of Colombia, South America, have invented a new and useful Improvement in Steam-Generators, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

My invention relates to an improvement upon the generator patented to me on the 7th day of December, 1880, No. 235,275.

The principle of the present generator is substantially the same as of the generator previously patented to me; but its mechanical construction is better and greater economy results from the increased absorption of the heat from the combustion.

That which I believe to be new in my invention will be specifically pointed out in the claims hereto annexed.

Figure 1 represents a vertical view, partly in section, of my improved generator; Fig. 2, a plan view, partly in section on the line *xx*; Fig. 3, a view of a modification of my invention.

Similar letters refer to similar parts.

A represents generally the exterior inclosing shell of my boiler. This shell is made double, as shown, the interior shell being marked F. The opening Z is provided at the upper end of my generator, through which air may enter into the hollow shell. A suitable regulating-valve may be there provided. The air passes downward and enters beneath the fire-box P of my generator. A certain amount of air may likewise enter through the holes or openings R at the side of the fire-box. The air in its downward course becomes heated by contact with the inner shell, F.

Within the generator-shell are the coils B, which are arranged in conical form. The inner coil preferably should have a greater distance between its contiguous coils than the outer ones, giving a greater "pitch" and insuring a quicker circulation. These series of coils communicate by pipes G with the horizontal mud drum or chamber E. Their upper extremities communicate by pipes L with the steam-drum D. Steam escapes from this drum through the perforated tube N. This steam-drum D is strengthened longitudinally by the

brace Y. Below this steam-drum is located the deflector or baffle-plate X.

M represents a water-gage communicating with the steam-drum D. The water should be constantly maintained above the level of the pipes L. The steam-drum is likewise provided with a drain-pipe, O.

K represents the feed-pipe, by which water can be forced into the chamber E.

H represents a blow-off pipe, by which said mud-drum may be emptied.

The operation of my apparatus is readily understood. A fire having been kindled in the fire-box, the products of combustion pass upward, impinging against the inner coil-pipes, and are thence deflected outward through and between the other coils, escaping upward past the deflector-plate, and thence escaping by the chimney S. The inner shell, F, will be heated somewhat by the products of combustion, and the air passing downward through the hollow shell will abstract the heat and enter the fire-box in a hot condition, thereby insuring a more perfect combustion. The water in the coils, becoming heated, ascends in different currents, and, soon becoming converted into steam, a rapid interior circulation occurs. The water in the lower part of the drum D descends through the exterior stand-pipes T, enters the chamber E, and so returns to the bottom of the coils, maintaining thus a constant circulation. As a result it will be found that this generator will produce a large amount of dry steam in proportion to the fuel consumed.

In Fig. 3 is shown a modification in which the operation is substantially similar. The steam-drum here is the upper part of the stand-pipe T. The coils V V' are also shown exterior to the generating-coils B, through which the feed-water may be introduced. A plate, Z, is likewise shown covering the junction of the pipes G with the stand-pipe, so as to cause the water to descend below the lower edge of said plate before entering the pipes G. By this means a more perfect deposit of sediment is obtained. W represents a hand-hole for removing such sediment.

The coils B (shown in Fig. 3) increase in diameter from the bottom upward, so that as the water is gradually converted into steam in its upward movement more space is allowed, thereby insuring a more perfect circulation.

I do not here claim the peculiar arrangement of parts shown in Fig. 3, as the same may form the subject of a separate application for Letters Patent; but

5 I claim—

1. The combination of a series of concentric spiral coils vertically arranged with a steam-drum located above them and within the inclosing-shell of the boiler, each coil being connected independently of the others with said
10 drum, substantially as described.

2. The series of steam-forming coils located within the shell of the boiler, the interior one having the greatest distance between its contiguous turns and a steeper pitch, in combination with a drum located above the water-coils and connected with all of said coils below the water-line, substantially as described.

MAURICIO M. MONSANTO.

Witnesses:

ANTHONY GREF, Jr.,

GEO. H. EVANS.