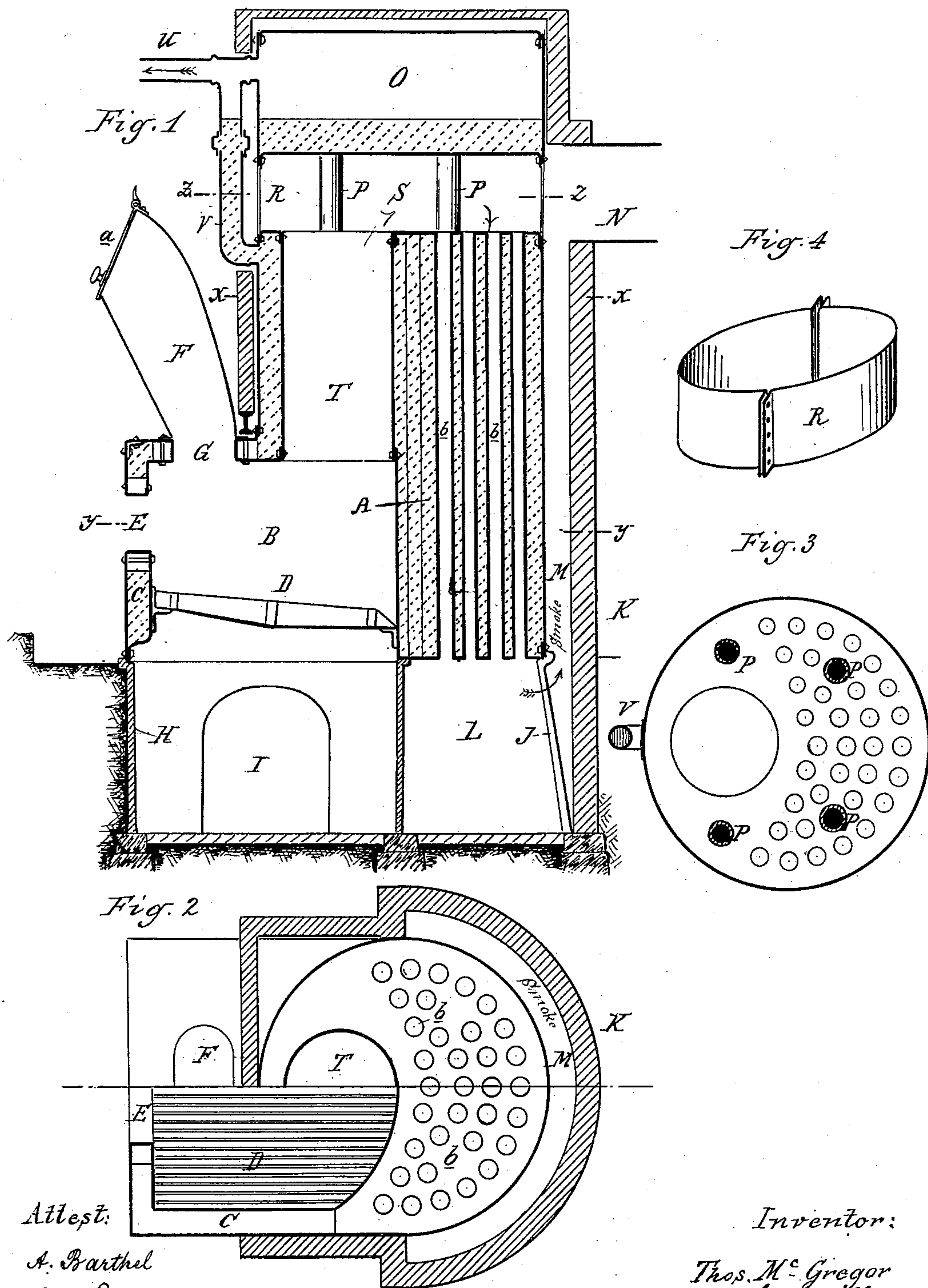


(No Model.)

T. MCGREGOR.  
STEAM GENERATOR.

No. 253,738.

Patented Feb. 14, 1882.



Attest:

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per Thos. S. Sprague  
Att'y.



# UNITED STATES PATENT OFFICE

THOMAS MCGREGOR, OF DETROIT, MICHIGAN.

## STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 253,738, dated February 14, 1882.

Application filed October 12, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS MCGREGOR, of the city of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Steam-Generators, of which the following is a specification.

The nature of this invention relates to certain new and novel improvements in the construction of steam-generators.

The invention consists in the peculiar construction, arrangement, and various combinations of parts, all as more fully hereinafter set forth.

Figure 1 is a vertical section. Fig. 2 is a cross-section on lines X X and Y Y of Fig. 1. Fig. 3 is a similar view on line Z Z. Fig. 4 is a perspective of the ring which forms the upper smoke-chamber.

In the accompanying drawings, which form a part of this specification, A represents an upright tubular boiler, the furnace B of which projects beyond the face of the same, and is surrounded by water-space C, as shown. This furnace is provided with any suitable grate, D, a furnace-door, E, and with a feed-hopper, F, said hopper discharging fuel through an opening, G, in the top of the furnace, the outer end of said hopper being designed to be closed by a lid, a. The boiler is designed to be supported upon an iron ring base, H, properly set in the desired position, said base coming directly under the furnace, and forms an ash-pit, I, to which access is had through any suitable doors or openings. The flue portion of the boiler is supported at the rear by a support, J, as shown, the boiler being set in masonry K, forming a smoke-chamber, L, at the base or beneath the flue-section of the boiler, and also a rear ascending smoke flue or jacket, M, at the rear of the boiler, through which the products of combustion pass to the discharge or chimney flue N. Upon the top of the boiler and of corresponding cross-section is secured a steam-drum, O, which is connected with the water-space of the boiler by the flues P, while the space between the top of the boiler and the bottom of the steam-drum is closed by means of a ring, R, thus forming an upper smoke-chamber, S, into which the products of combustion pass from the furnace through the large ascending flue

T, and from whence they pass down through the tubes b into the smoke-chamber L, and thence up to the exit through the ascending flue-jacket M. A pipe, V, outside the boiler affords communication between the same and the steam-drum, and also serves the purpose of a steam-pipe, U, through which steam can be carried from the steam-drum to any desired engine, or for the purposes of steam-heating.

A boiler constructed substantially on the plan herein described will be found very economical in use, as so much surface is provided through which the heat is communicated to the boiler that it must necessarily follow, steam can be quickly generated, and water-communication being provided for between the steam-drum and the boiler, the water has or may have a free circulation through both, and hence it may be employed as an ordinary boiler for supplying steam for running an engine or for heating purposes.

What I claim as my invention is—

1. A vertical flue and tubular steam-generator provided with a low-down partially-projecting furnace, B, surrounded by a water-space, C, and provided with a feed-hopper, F, substantially as and for the purposes set forth.

2. In a vertical flue and tubular steam-generator, and in combination with the furnace and fire-tubes thereof, the base H, supporting the furnace and forming an ash-pit beneath the same, and also forming a division between the ash-pit and the lower smoke-chamber, substantially as described.

3. In a steam-generator provided with a vertical flue and vertical tubes opening into a smoke-chamber, as described, and in combination therewith, the steam-dome O, forming the top of said smoke-chamber, and the pipes P, connecting said steam-dome with the generator, as and for the purpose specified.

4. In a vertical flue and tubular boiler, the steam-dome O and ring R, forming a smoke-chamber above the tube and flues, in combination with the pipes P and pipe V, connecting said dome with the generator, as and for the purpose specified.

5. In a vertical flue and tubular boiler, the combination of the base H, the partially-projecting furnace B, resting on said base, the

flue T, the steam-dome O, and ring R, forming a smoke-chamber, S, the pipes P V, tubes b, smoke-chamber L, and smoke-flue M, substantially as and for the purpose described.

- 5 6. An upright steam-generator provided with a partially-projecting furnace, an eccentric ascending flue, and a series of descending

flues in rear thereof, all of which are inclosed within the water-space of the boiler-shell, substantially as described.

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Witnesses:

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