

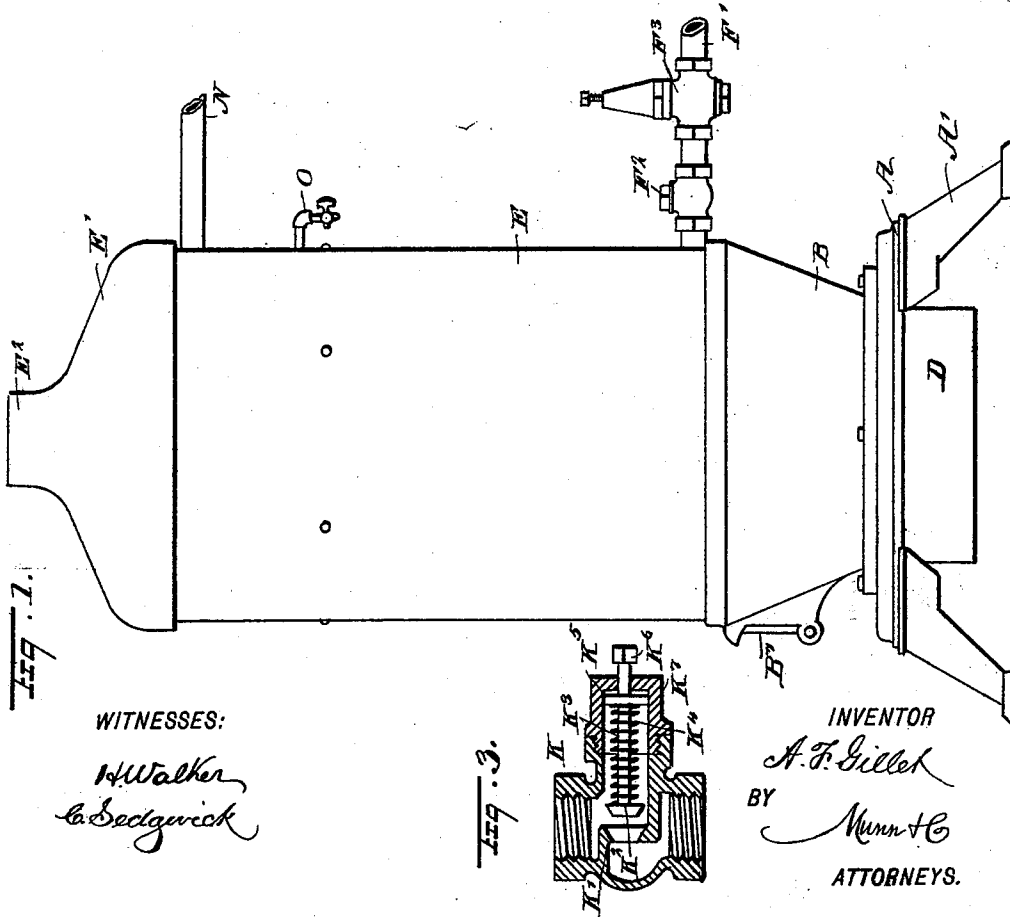
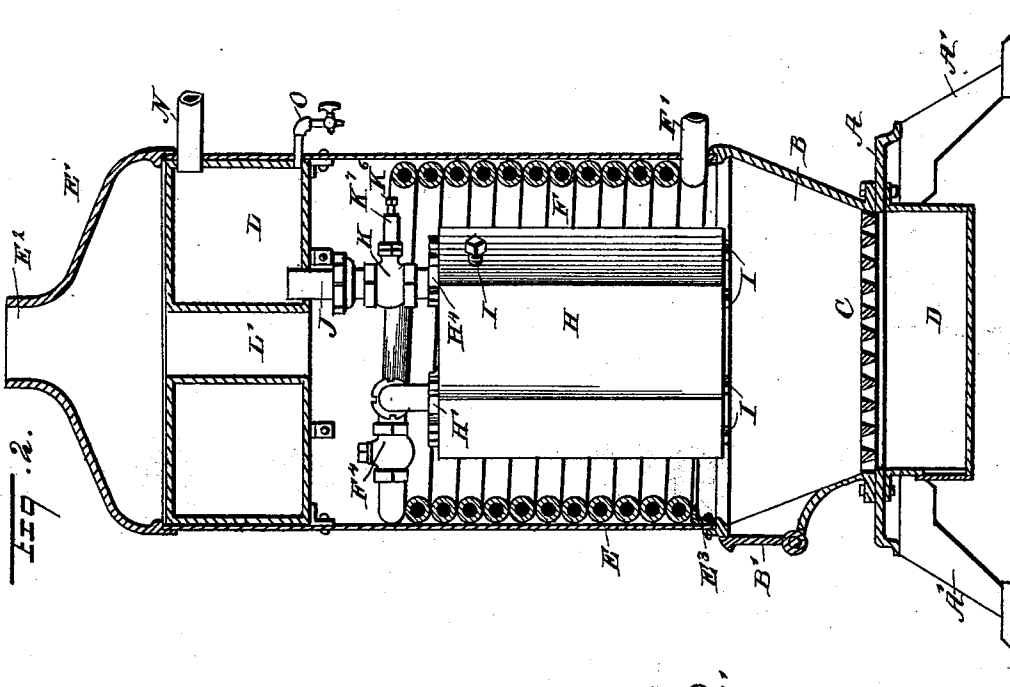
(No Model.)

2 Sheets—Sheet 1.

A. F. GILLET.
STEAM GENERATOR.

No. 518,101.

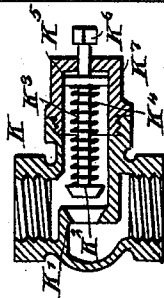
Patented Apr. 10, 1894.



WITNESSES:

W. Walker
C. Sedgwick

Fig. 3.



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A. F. Gillet
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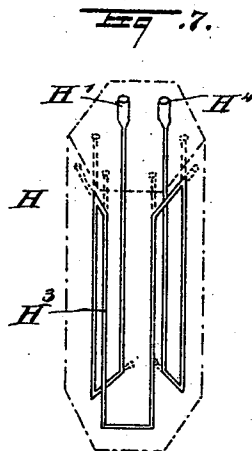
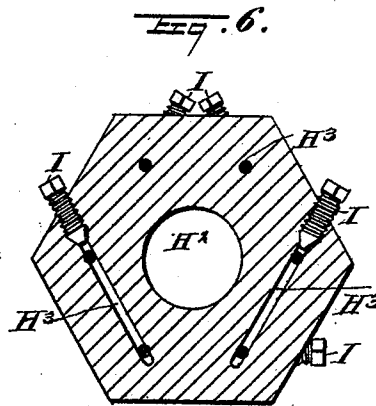
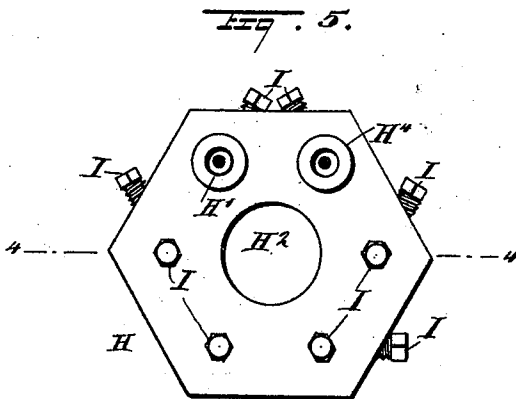
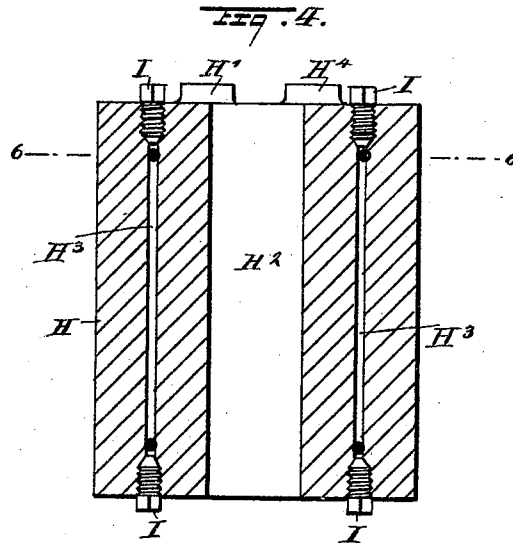
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2 Sheets—Sheet 2.

A. F. GILLET.
STEAM GENERATOR.

No. 518,101.

Patented Apr. 10, 1894.



WITNESSES:

H. Walker
C. Sedgwick

INVENTOR

A. F. Gillet

BY

Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALEXIS F. GILLET, OF KEARNEY, NEBRASKA, ASSIGNOR TO HIMSELF, GEORGE W. WHITEAKER, AND JAMES D. WHITEAKER, OF SAME PLACE.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 518,101, dated April 10, 1894.

Application filed April 24, 1893. Serial No. 471,633. (No model.)

To all whom it may concern:

Be it known that I, ALEXIS F. GILLET, of Kearney, in the county of Buffalo and State of Nebraska, have invented a new and Improved Steam-Generator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved generator which is simple and durable in construction, and arranged to generate steam in a very economical manner and without danger of explosion.

The invention consists of a steam generating block formed with a small interior channel for the passage of the water, the said block being arranged in the fireplace.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is a sectional side elevation of the same. Fig. 3 is an enlarged sectional side elevation of one of the valves. Fig. 4 is a sectional side elevation of the steam generating block on the line 4—4 of Fig. 5. Fig. 5 is a plan view of the same. Fig. 6 is a sectional plan view of the same on the line 6—6 of Fig. 4; and Fig. 7 is a diagrammatic view of the channel in the steam generating block.

The improved generator is provided with a suitably constructed base A, mounted on suitable legs A' to hold the said base a suitable distance above the floor on which the generator is located. The base A supports a fire box B, provided with the usual fuel door B', and also provided in its bottom with a suitable grate C for supporting the fuel and discharging the ashes into an ash pit D secured to the under side of the base A, as is plainly shown in Fig. 2.

On the top of the fire box B is supported a sheet metal cylindrical shell E, provided at its upper end with a dome-like hood E' having a contracted outlet end E² for the escape of the products of combustion arising from the burning fuel on the grate C.

In the shell E is arranged a coil of pipe F,

supported at its lower end on a suitable annular flange E³, riveted or otherwise secured to the lower end of the shell E at the inside thereof, as indicated in Fig. 2. The lower end of the coil of pipe F extends through the shell E and is connected with a suitable source of water supply, and on this end F', outside of the shell E, is arranged a check valve F² and a water pressure regulating valve F³ of any approved construction.

The upper end of the coil of pipe F is provided with a check valve F⁴ and connects with a projection H' arranged on the top of a steam generating block H, preferably made of copper or other suitable metal and held centrally within the shell E directly above the fire box B. In the center of this block H is formed a vertical opening H² for the passage of part of the products of combustion arising from the fuel burning on the grate C.

In the block H is arranged a channel H³ connecting at one end with the projection or offset H', so that the water passing through the coil of pipe F finally passes into the channel H³ to circulate through the block H, and thereby be subjected to heat so as to generate steam. This channel H³ is preferably made by a series of vertical apertures drilled through the block, and by transverse apertures which connect the ends of the vertical apertures with each other, as is plainly shown in Fig. 7, to form a continuous channel the beginning of which is at the upper end of the coil of pipe F at the offset H'. The ends of the apertures forming the channel are closed by suitable screw plugs I which can be removed to permit of cleaning the said vertical and transverse apertures to free the channel H³ from sediment and other impurities whenever necessary. The other end of the channel H³ terminates in an offset H⁴ also arranged on the top of the block H and connected by a pipe J containing a pressure regulating valve K with a steam chamber L supported in the upper part of the shell E and provided with a central aperture L' registering with the aperture H² and leading to the dome-shaped hood E' to permit the products of combustion to pass into the latter to finally discharge through a smoke flue and chimney connected with the contracted outlet E².

From this chamber L leads a steam pipe N, to conduct the steam to the machine or place where it is to be used. In the bottom of the chamber L is arranged a drip cock O for discharging any water of condensation which may accumulate in the said chamber.

The valve K in the pipe J is preferably of the construction illustrated in detail in Fig. 3, and is provided in its valve body with a valvseat K', on which is adapted to be seated a valve K² held on the valve stem K³, around which is coiled a spring K⁴, pressing with one end against the valve K² and with its other end on a disk K⁵ adapted to be set by a set screw K⁶ screwing in the cap K⁷ attached to the body of the valve. By adjusting the set screw K⁶ the tension of the spring K⁴ can be regulated so as to seat the valve K² with more or less force on its seat K', it being understood that the pressure of the spring is to be overcome by the steam generated in the block H to unseat the valve K² to permit the steam to pass through the pipe J into the chamber L, from which the steam is drawn.

The operation is as follows: The water to be generated into steam is fed by means of a force pump or other suitable device through the inlet end F' of the coil F, to pass through the latter and be heated by the heat rising from the fuel burning on the grate C, the water finally passing in a somewhat heated state into the channel H³ of the block H, through which it circulates so that every particle of water is vaporized into steam, which latter passes up through the pipe J past the valve K, into the steam chamber L, which forms a sort of steam reservoir, from which the steam is led through pipes in the ordinary way to propel engines or for other purposes for which the steam may be needed.

It will be seen from the foregoing explanation, that as the water circulates through the coil of pipe F it is partially heated from the heat absorbed by the coil, the check valve F² preventing the water thus heated from backing out of the coil.

As the channel H³ in the block H is very small compared with the size of the block, the water which passes through the coil of pipe F is forced under pressure through the channel H³ arranged in the heated block H, so that every particle of water is instantly converted into steam of a very dry degree and of very great expansive force. The steam generated in the block H is prevented from forcing its way back into the coil by the check valve F⁴, and consequently the steam is forced through the pipe J into the steam chamber L. As the latter is located within the shell E and is surrounded by heat, no condensation of the steam is likely to take place in the said chamber.

The object of the valve K is to prevent the steam from escaping from the block H until it has attained a certain pressure, sufficient to overcome the resistance of the coil spring K⁴, as above explained; and by this means, the steam is obtained soon after starting the gen-

erator, and consequently no water is conveyed with the steam through the pipe J to the chamber L.

It is evident from the foregoing explanation that steam is generated precisely in the proportion that water is forced or supplied to the block H, so that the volume and pressure of steam is governed by regulating the water supply controlled by the valve F³.

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

1. A steam generator comprising a coil of pipe connected with a water supply, and a steam generating block connected with the discharge end of the said coil of pipe, and provided with a continuous interior channel for the passage of the water, the said coil of pipe and block being adapted to be heated, substantially as shown and described.

2. A steam generator comprising a fire box, a shell supported thereon, a coil of pipe arranged in the said shell and connected with a water supply, and a steam generating block connected with the discharge end of the said coil of pipe, and provided with a continuous channel for the passage of the water discharged by the said coil of pipe, and a steam chamber connected with the discharge end of the said channel in the block, substantially as shown and described.

3. A steam generator comprising a fire box, a shell supported thereon, a coil of pipe arranged in the said shell and connected with a water supply, a steam generating block connected with the discharge end of the said coil of pipe, and provided with a continuous channel for the passage of the water discharged by the said coil of pipe, a steam chamber connected with the discharge end of the said channel in the block, and a check valve in the discharge end of the said coil of pipe, substantially as shown and described.

4. A steam generator comprising a fire box, a shell supported thereon, a coil of pipe arranged in the said shell and connected with a water supply, a steam generating block connected with the discharge end of the said coil of pipe, and provided with a continuous channel for the passage of the water discharged by the said coil of pipe, a steam chamber connected with the discharge end of the said channel in the block, and a steam pressure regulating valve, arranged in the connection between the block and the said steam chamber, substantially as shown and described.

5. A steam generator comprising a fire box, a shell supported thereon, a coil of pipe arranged in the said shell and connected with a water supply, a steam generating block connected with the discharge end of the said coil of pipe, and provided with a continuous channel for the passage of the water discharged by the said coil of pipe, a steam chamber connected with the discharge end of the said channel in the block, a check valve in the discharge end of the said coil of pipe, and a sec-

ond check valve in the inlet end of the said coil of pipe, substantially as shown and described.

5 6. A steam generator comprising a fire box, a shell supported thereon, a coil of pipe arranged in the said shell and connected with a water supply, a steam generating block connected with the discharge end of the said coil of pipe, and provided with a continuous channel for the passage of the water discharged by the said coil of pipe, a steam chamber connected with the discharge end of the said channel in the block, a check valve in the discharge end of the said coil of pipe, a second
10 15 check valve in the inlet end of the said coil of pipe, and a water pressure regulating valve arranged in the inlet end of the said coil of pipe, in front of the second check valve, substantially as shown and described.

7. A steam generator provided with a generating block formed with an interior circuitous channel having connected longitudinal and cross channels whereby the water may be fed into and the steam discharged from the same end of the block substantially as set forth. 25

8. A steam generator provided with a generating block formed with longitudinal and cross channels intersecting each other within the block and extended from the outer sides of said block and devices for closing the outer ends of said channels substantially as set forth. 30

ALEXIS F. GILLET.

Witnesses:

A. J. SMITH,
H. J. BOWEN.