(No Model.)

W. A. PENTECOST.

STEAM GENERATOR.

No. 328,140. Patented Oct. 13, 1885.

Fig. 1.

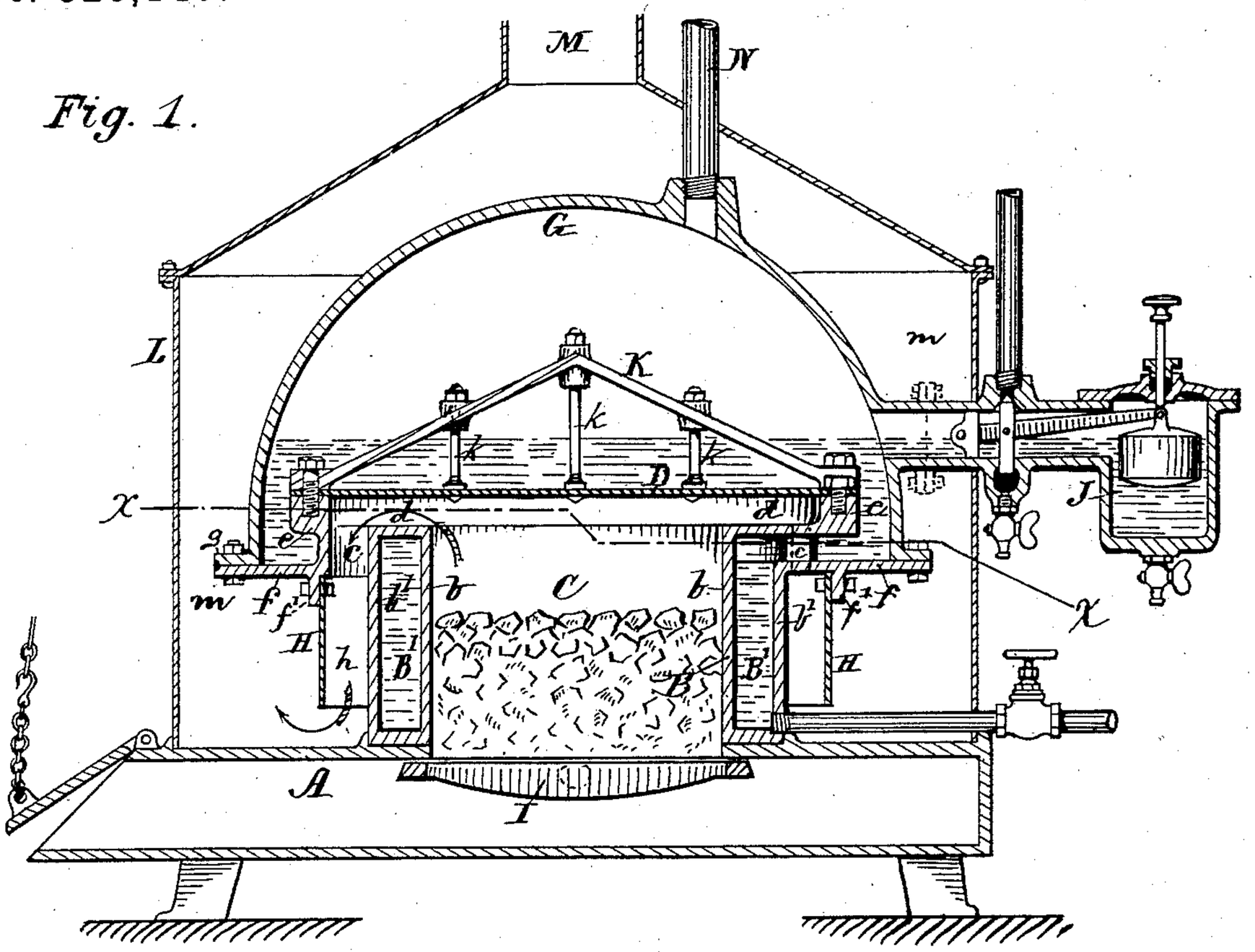
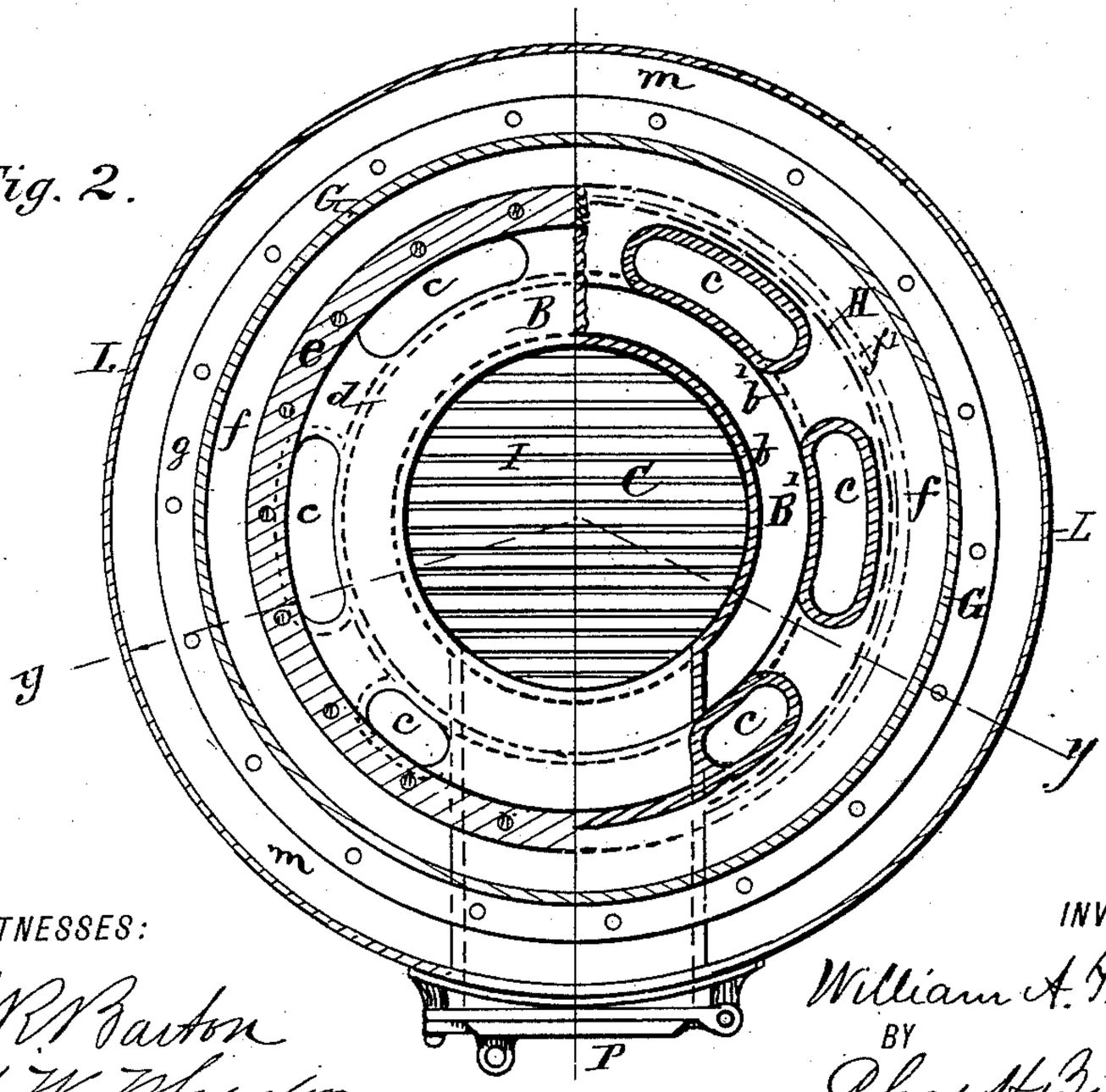


Fig. 2.



WITNESSES:

S. R. Barton

M. W. Wheeler

INVENTOR

William A. Pentecost

BY

Chas. A. Burleigh

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM A. PENTECOST, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE PENTECOST STEAM GENERATING COMPANY, OF SAME PLACE AND NASHUA, NEW HAMPSHIRE.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 328,140, dated October 13, 1885.

Application filed August 7, 1885. Serial No. 173,855. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. PENTECOST, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Steam-Generators; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to improvements in the steam-generator for which Letters Patent No. 315,160 were granted to me April 7, 1885; and it consists in the peculiar construction and arrangement of the parts of the boiler or generator, whereby the crown-sheet and dome are extended beyond the diameter of the furnace, and supported on laterally-extending flanges at the top of the furnace-walls, with downwardly-directed flues employed for conducting the gases to the space beneath said flanges, in the manner shown and described.

Figure 1 shows a vertical section of my improved generator, and Fig. 2 shows a horizontal sectional view at line *x x*, one half of said sectional view being taken above the top of the furnace, just below the crown-sheet, the other half being taken through the top of the furnace and the downward flues.

In reference to parts, A denotes the base. B indicates the furnace-section or lower part of the boiler, containing the fire-chamber C, which chamber is surrounded by the double wall *b b'*, between which is the annular water-space B'. The top of the inner wall, *b*, extends outward horizontally in a broad flange, *d*, having at its outer edge an upward-standing rim, *e*, to which the crown sheet or plate D is secured by bolts, or in other suitable manner, as shown. The outer wall, *b'*, is made of less height than the inner wall, *b*, and this outer wall is also provided with a broad horizontal flange or ledge, *f*, which supports the dome or top of the generator G. Said flange *f* is located at some distance below the flange *d*, and passages or flues *c* extend through the space from the upper to the lower flange, connecting them in the manner indicated, and leaving space between said flues for the free passage of water from the upper part of the generator to the annular space which surrounds the furnace. The flange *f* has upon its under side an annular vertical rim, *f'*, or a series of lugs, located outside the openings of the flues *c*, to which is secured the petticoat-sheet H, that depends from said flange to near the bottom of the generator, in the manner illustrated.

The walls *b b'* and flanges *d* and *f*, together with the flues *c*, are cast integral or in a single piece.

The rim *e* and outer portion of the ledge *f* can be conveniently dressed or turned off in a lathe to form the seats or joint-surfaces for the crown-sheet B and dome G.

The dome G, or top part of the generator, may be of cast-iron, and is preferably of hemispherical form, with a rim-flange, *g*, about its lower edge, which is bolted to the ledge or flange *f*. To the side of said dome may be attached the regulating-chamber J, containing the float and inlet valve apparatus for controlling the water-supply, which devices, being substantially the same as described in my former patent, need not be herein more fully explained.

The grate I may be arranged across the bottom of the furnace in any suitable manner.

The door P, for feeding the furnace, is located at the front of the apparatus, as indicated.

K indicates a truss or brace for supporting the crown-sheet by means of bolts *k*, which connect said crown-sheet with the truss or bar in the manner illustrated.

L indicates the external casing, M the smoke-flue, and N the steam-pipe.

The hot gases from the fire within the furnace C rise upward against the center of the crown-sheet, then flow onward in radial direction, and down through the flues *c* and space *h*, between the petticoat-sheet and outer wall, *b'*, thence upward in the space *m*, between the casing L and generator, to pass out through the chimney-flue M.

Among the advantages of this construction

may be mentioned the enlargement of the crown-sheet, and consequent increased heating-surfaces in excess of the size of the furnace; also, the facility and convenience of manufacture, as the parts can be conveniently cast and fitted, thus producing a very efficient generator at comparatively small expense.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. The lower or furnace section of the generator, formed, as described, with outer and inner walls, *b b'*, said inner wall having a horizontal flange, *d*, with rim *e*, and said outer wall having a horizontal flange, *f*, at lower level, with passages or flues *c*, leading through said flanges, and connecting the space above and below the same, in the manner set forth.

2. The combination of the lower part of the generator, formed with outer and inner walls, *b b'*, surrounding the furnace and inclosing the annular water-space B', and provided, respectively, with the horizontal flanges *d* and *f*, the downwardly-extending flues *c*, passing through said flanges, the extended crown-sheet D, secured to the rim *e*, flange *d*, and the dome G, secured to the flange *f*, substantially as and for the purpose set forth.

3. The combination of the lower or furnace section, formed with upper and lower outwardly-extending flanges, *d* and *f*, disposed as shown, with passages or flues *c*, extending through the same, the crown-sheet plate secured to an annular border rim, *e*, on said upper flange, *d*, the dome G, secured to the flange *f*, the petticoat-sheet secured to and depending from an annular rib or lugs on the lower side of flange *f*, outside the flue-openings, the base A, and the inclosing-casing L, substantially as and for the purpose set forth.

Witness my hand this 6th day of July, A. D. 1885.

WILLIAM A. PENTECOST.

Witnesses:

CHAS. H. BURLEIGH,

HARRY H. SIBLEY.