

A. CATCHPOLE.

Improvement in Base-burning Steam Generators.

No. 122,360.

Patented Jan. 2, 1872.

Fig 1.

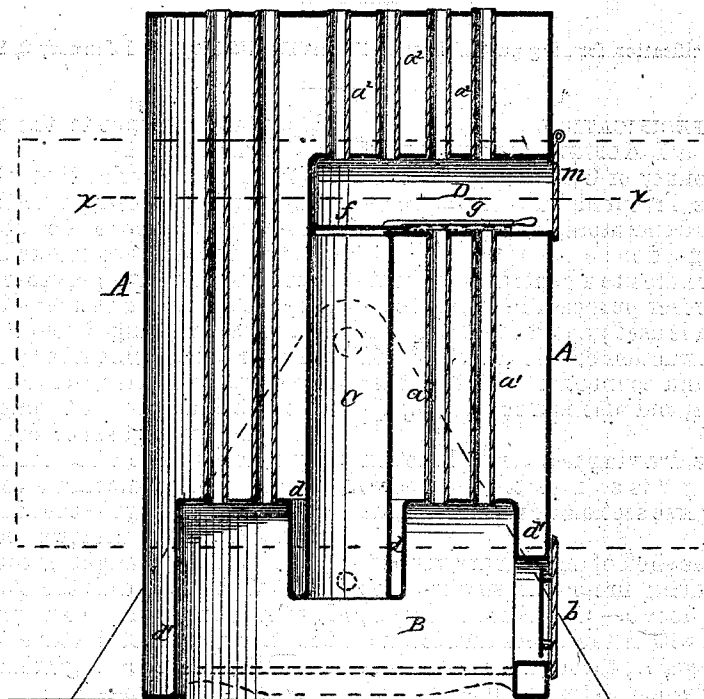
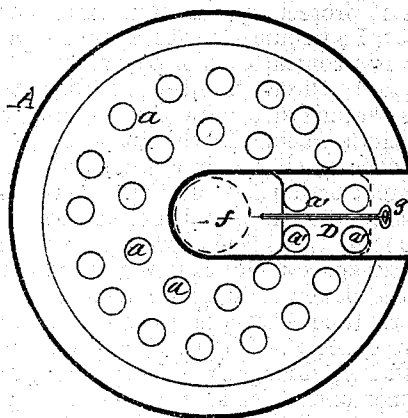
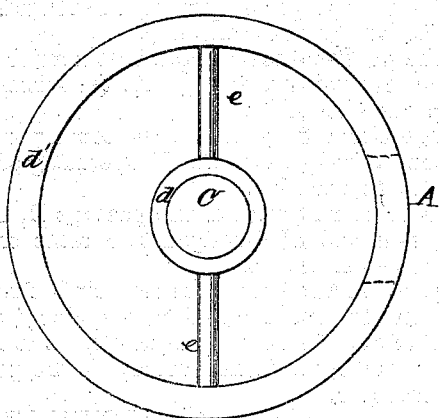


Fig 3.

Fig 2.



Witnesses:

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By J. M. Goughborough atty

UNITED STATES PATENT OFFICE.

ALFRED CATCHPOLE, OF GENEVA, NEW YORK.

IMPROVEMENT IN BASE-BURNING STEAM-GENERATORS.

Specification forming part of Letters Patent No. 122,360, dated January 2, 1872.

SPECIFICATION.

Be it known that I, ALFRED CATCHPOLE, of Geneva, in the county of Ontario and State of New York, have invented certain Improvements in "Steam-Generators," of which the following is a specification:

My invention relates to a generator for heating buildings or other purposes in which a central coal-reservoir is used; and it consists mainly in a novel construction of this reservoir and its arrangement and connection with the other parts of the boiler, and also in a circulating apparatus.

Figure 1 in the drawing is a vertical section of my boiler. Fig. 2 is an inverted plan view. Fig. 3 is a transverse section at the dotted line *x*, Fig. 1.

A represents the shell of an ordinary vertical tubular boiler, having fire-box B, smoke-tubes *a a'*, and furnace door *b*. C is a coal-reservoir, centrally located within the boiler and terminating in a passage, D, through which coal is introduced and which extends outward and connects with the shell A to complete the water and steam space of the boiler. The lower extremity of the reservoir C extends downward into the fire-box B, as indicated in Fig. 1, and for the purpose of protecting it from destruction by the heat, I surround it with a water-space, *d*, which is a continuance of the water-space of the boiler. Circulating-tubes *e*, Fig. 2, connect this water-space with the water-space *d* around the fire-box. By this construction the coal-reservoir, being entirely surrounded by water, cannot be burned out, and a constant circulation of water is established in the boiler on account of the speedy formation of steam in the water-space *d*, which, rising to the upper part of the boiler, induces a current of water through the tubes *e* from the body of the boiler and water-space *d'*. The coal-reservoir is covered by a slide, *f*, which prevents a draught through the former, and which is provided with a handle, *g*, accessible through the passage D. The fire-tubes *a'*, Figs. 1 and 3, instead of extending to the upper sheet of the boiler communicate with the passage D, and other tubes

a'', pass from thence to the upper tube-sheet, as shown in Fig. 1.

It will be observed that when the slide *f* is withdrawn, as shown in dotted lines in Fig. 3, the reservoir is opened for the reception of coal, but the tubes *a'* are covered. By this means gases and flame are prevented from rising into the passage D and escaping into the room, and coal from dropping through said tubes when the reservoir is being filled; but when the slide is pushed over the reservoir the tubes *a'* and *a''* establish a draught through the passage D, conveying away gases or smoke therefrom and any that may rise from the reservoir C to the chimney. By attaching a regulating-damper, *m*, over the passage D cold air may be admitted when desired and the formation of steam in the boiler and the draught of the fire checked.

It will be seen that the chamber or passage D affords additional heating surface, which, by the arrangement of the tubes *a'* and *a''*, becomes available in generating steam.

What I claim is—

1. The arrangement, within a vertical tubular boiler, of a coal-reservoir, C, communicating with the fire-box at the base and with the passage D at the upper end for the introduction of coal, said passage being provided with tubes *a'*, substantially as described.
2. The water-space *d* around that portion of the coal-reservoir projecting into the furnace, for the purposes set forth.
3. The circulating-tubes *e*, in combination with the water-spaces *d* and *d'*, operating substantially as described.
4. In combination with the passage D, the fire-tubes *a'* and *a''*, arranged to operate substantially as herein set forth.
5. In combination with the reservoir C, chamber D, and fire-tubes *a'* and *a''*, the slide *f*, arranged to cover either the reservoir or tubes *a'* when the other is uncovered, for the purposes set forth.

A. CATCHPOLE.

Witnesses:

JOHN E. BEAN,
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