(No Model.)

W. C. BRONSON.

STEAM HEATER.

No. 345,879. Patented July 20, 1886.

Fig. 3.

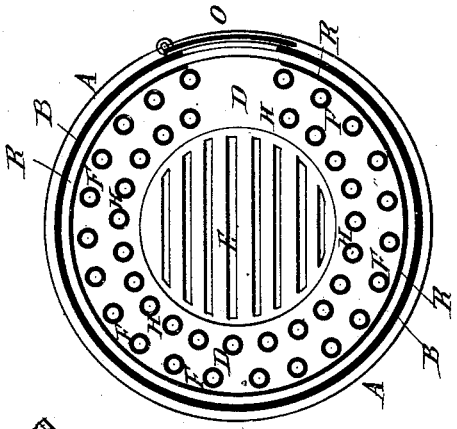


Fig. 1.

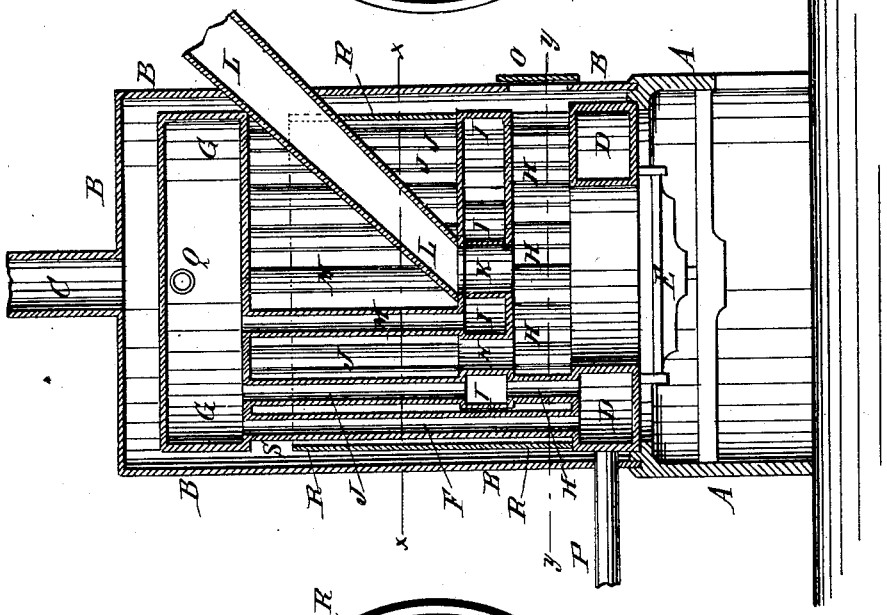
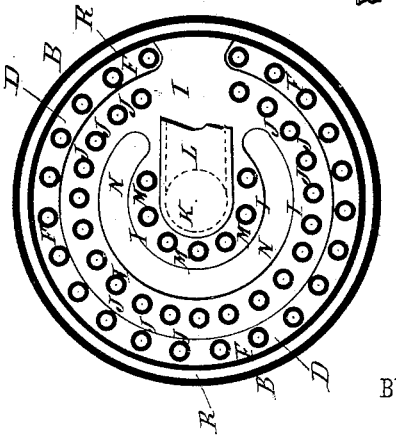


Fig. 2.



WITNESSES:

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WILLIAM C. BRONSON, OF SARATOGA SPRINGS, NEW YORK.

STEAM-HEATER.

SPECIFICATION forming part of Letters Patent No. 345,579, dated July 20, 1886.

Application filed May 3, 1886. Serial No. 201,023. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. BRONSON, of Saratoga Springs, in the county of Saratoga and State of New York, have invented a new and useful Improvement in Steam-Heaters, of which the following is a full, clear, and exact description.

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 sectional side elevation of my improved steam-heater. Fig. 2 is a sectional plan view of the same taken through the line *x x*, Fig. 1. Fig. 3 is a sectional plan view of the same taken through the line *y y*, Fig. 1.

The object of this invention is to improve the construction of the steam-heaters for which Letters Patent No. 300,207 were issued to me June 10, 1884, in such a manner as to make them more effective and durable in use.

The invention consists in the construction and combination of various parts of the steam-heater, as will be hereinafter fully described.

A represents the base of the heater, which is made of iron or other suitable material, and with the outer part of the top of which is connected the lower edge of the sheet-iron casing B.

In the center of the top of the casing B is formed an aperture, with which is connected the smoke-pipe C.

Upon the inner part of the top of the base A rests the annular water-chamber D, beneath the central aperture of which is supported the grate E, and which forms the side walls of the fire-chamber.

With the outer part of the top of the annular water-chamber D are connected the lower ends of a circle of tubes, F, the upper ends of which are connected with the outer part of the bottom of the circular water-chamber G, which is made of a little less diameter than the casing B, and is placed a little below the top of the said casing, as shown in Fig. 1, so that the products of combustion will have a free passage all around the sides and at the top of the said water-chamber G.

With the inner part of the top of the annular water-chamber D are connected the lower ends of a circle of short tubes, H, the upper ends of which are connected with the outer part of the lower side of the water-chamber I. With the outer part of the top of the water-chamber I are connected the lower ends of the circle of tubes J, the upper ends of which are connected with the water-chamber G.

Through the center of the water-chamber I is formed an aperture, K, with the upper end of which is connected the lower end of the inclined chute L, so that the lower end of the said chute will be out of direct contact with the fire, and will thus be prevented from being burned off. The chute L passes in through an opening in the upper part of the front of the casing B, and serves as a magazine for coal, making the heater a self-feeder.

With the upper side of the water-chamber I, around the feed-aperture K, are connected the lower ends of a circle of tubes, M, the upper ends of which are connected with the lower side of the water-chamber G.

Through the water-chamber I, in the space between the tubes J and M, is formed an aperture, N, curved in the arc of a circle, as shown in Fig. 2. The circles of the pipes F J M are interrupted for the passage of the chute L, and the circles of pipes F H below the water-chamber I, and in the vertical plane of the chute L, are interrupted to give convenient access to the fire-chamber to start the fire, a door, O, being formed in the casing B opposite the space formed by the interruption of the said pipes.

With the water-chamber D is connected the end of a feed-pipe, P, and with the water-chamber G is connected the end of one or more pipes, Q, through which the steam is conducted to the rooms to be heated.

Within the casing B, and close to the circle of tubes F, is placed a casing, R, the lower edge of which rests upon the outer edge of the top of the annular water chamber D. The upper edge of the casing R does not extend quite to the water-chamber G, a space, S, being left for the passage of the products of combustion. With this construction the products of combustion pass up through the curved aperture N in the water-chamber I, and around the outer edge of the said chamber, through the

spaces between the tubes F, circulate around all the tubes, and pass through the space S and around the water-chamber G to the smoke-pipe C, heating the water in the water chambers and tubes very quickly and generating steam very rapidly.

The water chambers and tubes are all connected, so that the water has a free circulation. The casing R keeps the products of combustion close to the pipes F and prevents the waste of heat by radiation.

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

In a steam-heater, the combination, with the tubes F J M H and the chute L, of the water-chamber I, having curved aperture N, for the passage of the products of combustion, and central aperture, K, for the passage of the coal, substantially as herein shown and described, whereby the products of combustion have a free upward passage and the lower end of the chute is protected from the fire, as set forth.

WILLIAM C. BRONSON.

Witnesses:
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