(No Model.)

R. HENRY & H. B. TAYLOR.

UPRIGHT TUBULAR BOILER.

No. 294,875. Patented Mar. 11, 1884.

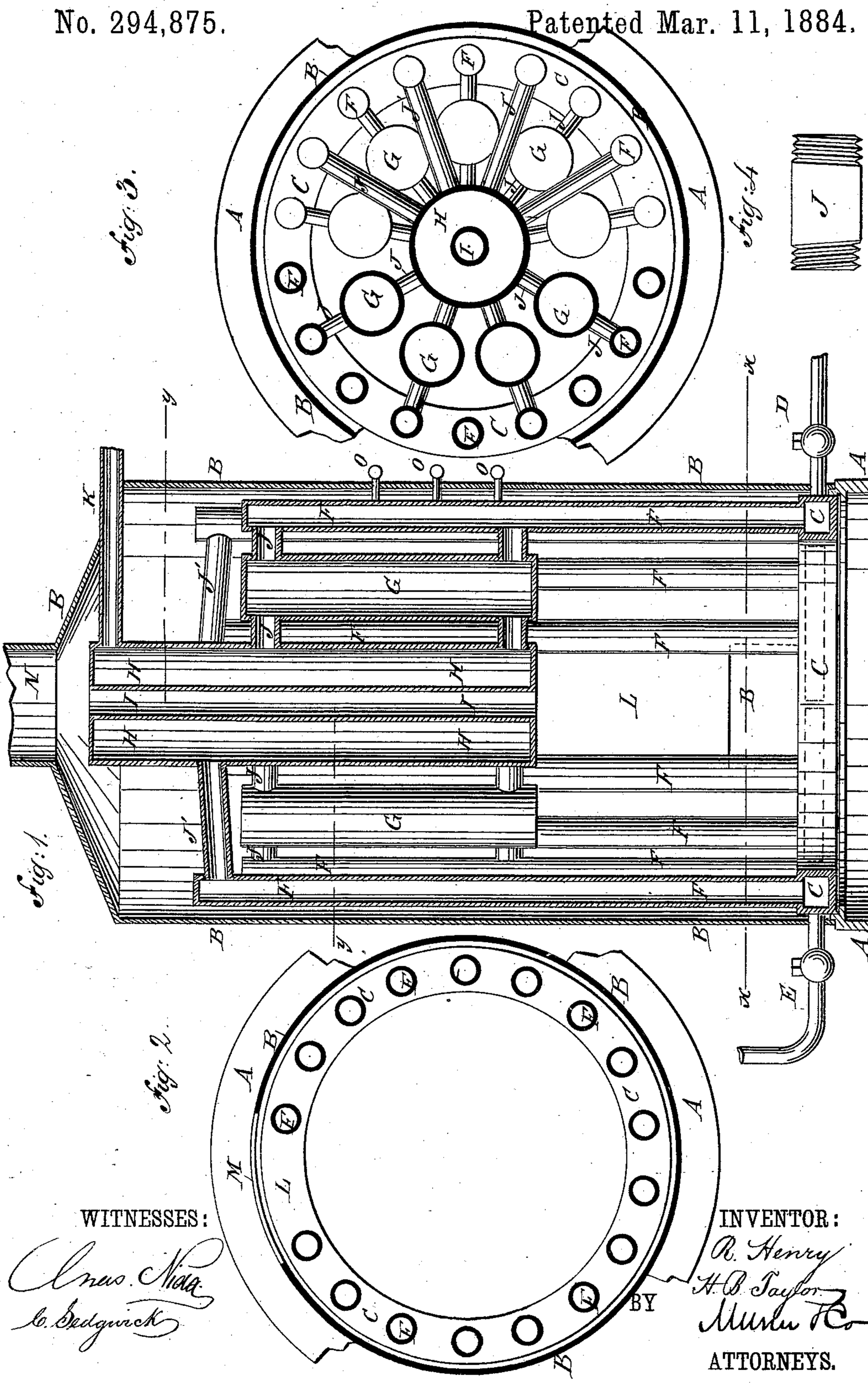

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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UPRIGHT TUBULAR BOILER.

SPECIFICATION forming part of Letters Patent No. 294,875, dated March 11, 1884.

Application filed January 3, 1884. (No model.)

To all whom it may concern:

Be it known that we, REMI HENRY and HIRAM B. TAYLOR, of New Rochelle, in the county of Westchester and State of New York, have invented a new and useful Improvement in Upright Tubular Boilers, 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 rear elevation of our improved boiler. 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 broken line *y y*, Fig. 1. Fig. 4 is a side elevation of a connecting-tube.

The object of this invention is to facilitate the generating of steam and economize fuel in using steam-boilers.

The invention consists in an upright tubular boiler constructed with an annular base-tube connected with the lower ends of a circle of upright tubes, which are connected with a circle of shorter intermediate tubes and a central annular tube by connecting-tubes having right and left screw-threads upon their ends. The circular base-tube is provided with a blow-off cock and an inlet water-pipe, and the central annular tube is provided with a steam-pipe, as will be hereinafter fully described.

A represents the base or foundation, and B the casing or shell, of our improved boiler.

Upon the base A rests an annular tube, C, which may be rectangular or circular in cross-section, and which is provided with a blow-off cock, D, and a feed-pipe, E, as shown in Fig. 1.

Into the annular tube C are screwed the lower ends of a number of upright tubes, F.

Within the circle of the upper parts of the tubes F is arranged a circle of shorter upright tubes, G, which can be made larger than the tubes F, or of the same size, as may be desired.

At the center of the upper part of the boiler is placed a large tube, H, having a flue, I, through its center. The annular central tube, H, and the intermediate tubes, G, are closed at both ends, and the outer tubes, F, are closed at the upper end. Each intermediate tube, G, is connected at its upper and lower ends with the annular tube H and with the tube F upon the same radial line with it by connecting-tubes J, which have a right screw-thread upon one end and a left screw-thread upon the other end, so that the said connecting-tubes can be readily inserted and removed. The upper ends of the other tubes F are connected by tubes J′, having right and left screw-threads upon their ends, with the annular tube H. The upper parts of the tubes F G H and the upper connecting-tubes, J′, from the steam-chamber and the steam-pipe K are connected with the upper end of the annular tube H. With this construction the water can pass freely from the annular tube C through the tubes F to the tubes G H, and will stand at the same level in all the tubes F G H. The space beneath the tubes G H forms the fire-chamber, and access is had to the said chamber through an opening, L, formed by cutting away the lower part of one or more of the tubes F, and through a corresponding opening, M, in the shell B. The products of combustion pass up through the flue I and through the spaces around and between the tubes F G H, and escape at the upper part of the shell B through the pipe N. One of the tubes F is provided with gage-cocks O, which pass through the shell or casing B.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. An upright tubular boiler constructed substantially as herein shown and described, and consisting of the annular tube C, the long upright tubes F, the shorter intermediate tubes, G, and central tube, H, having center flue, I, and the connecting-tubes J J′, having right and left screw-threads on their ends, as set forth.

2. In an upright tubular boiler, the combination, with the outer upright tubes, of the inner upright tubes, communicating with the outer tubes at top and bottom, and the central tube, communicating with the inner tubes and with certain of the outer tubes by separate tubular connections, substantially as and for the purpose set forth.

3. In an upright tubular boiler, the combination, with the annular water-tube, of the outer upright tubes, the inner upright tubes,

communicating with the inner tubes at top and bottom, and the central tube, communicating with the inner tubes and with certain of the outer tubes by separate tubular connections, substantially as and for the purpose set forth.

4. In an upright tubular boiler, the combination of the annular tube, the outer upright tubes, the inner upright tubes, communicating with the inner tubes and with certain of the outer tubes by separate tubular connections, and having the steam-outlet, and the central flue extending through the central tube, substantially as and for the purpose set forth.

5. In an upright tubular boiler, the combination, with the upright tubes F, the inner pipes, G, communicating at top and bottom with the pipes F, and the central tube, H, communicating with the tubes G and certain of the tubes F by separate tubular connections J J', of the annular tube C, provided with an inlet-pipe, E, and a blow-off cock, D, substantially as herein shown and described, whereby the feed-water will be distributed to all the said tubes, as set forth.

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