LYDIE F. RENSHAW.

SECTIONAL STEAM GENERATOR.

No. 182,773. Patented Oct. 3, 1876.

Fig. 2.

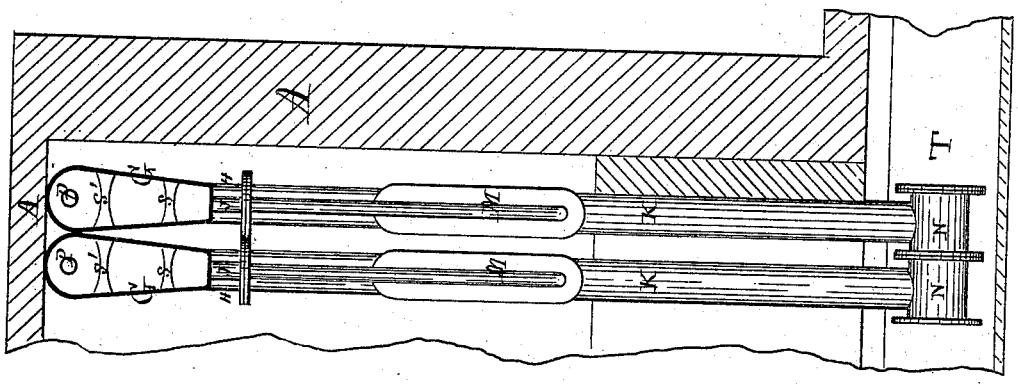
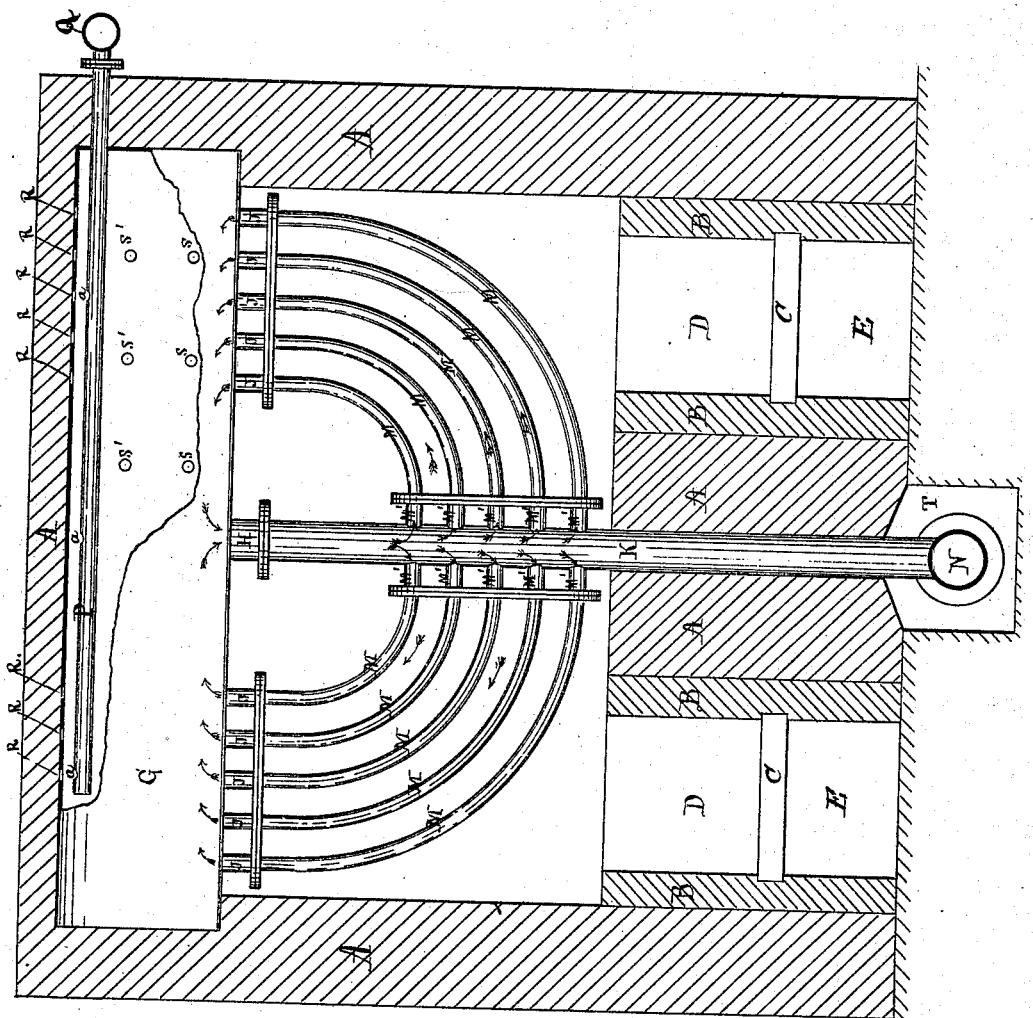


Fig. 1.



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LYDIE F. RENSHAW, OF COHASSET, MASSACHUSETTS.

IMPROVEMENT IN SECTIONAL STEAM-GENERATORS.

Specification forming part of Letters Patent No. **182,773**, dated October 3, 1876; application filed February 21, 1876.

To all whom it may concern:

Be it known that I, LYDIE F. RENSHAW, of the town of Cohasset, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 shows a front view, and Fig. 2 a side view, of my generator, both being partly in section.

My invention has for its object the production of a boiler which will unite the well-known advantages of a sectional boiler with those of a cylinder-boiler, giving the rapid generation of steam found in a sectional boiler, the water capacity found in a cylinder-boiler, and the best possible circulation of the water to admit of its being converted into steam.

In the drawings, A represents the brick-work of my furnace; B, the fire-brick; C C, the grate-bars; D D, the fire-boxes, and E E the ash-pits. G is a pipe resting upon the walls A of the furnace, having branches H and J to receive the upright pipe K and the connecting-pipes M, the latter being connected with the pipe K by branches M′. N is the feed-pipe and mud-drum, arranged in a flue beneath the furnace; but it may be placed at any point below the pipes M. P is a pipe placed within, and in the upper part of, the pipe G, with perforations *a*, to admit the steam, so that it may be carried to the pipe Q, and thence to its work. R R are openings, fitted with plugs, in the top of the pipe G, through which, when the brick covering and the plugs are removed, the pipes M can be cleaned.

In this boiler the water-line would generally be kept between the stays *s* and *s′*, making the upper part of the pipe G a steam-drum, in which the steam is superheated to a greater or less degree, according to the height of the water.

No other steam-drum is needed, as the steam can be conducted through the pipe P directly to the place where it is wanted, and as this pipe is located near the top of the pipe G it will always carry the driest steam.

The pipes M receive the direct action of the fire, and convey their contents to the heated water in the pipe G, causing a rapid ebullition of the water, and creating a draft upon the water in the pipe K, giving a complete circulation to the water in the boiler in the direction shown by the arrows.

I prefer to place my fire-box at the side of the furnace, as thereby the direct heat is imparted more quickly to the pipes M; and I also prefer to carry off the smoke and gases through openings between the pipes K to a flue, T, beneath the furnace, and surrounding the mud-drum or feed-pipe N.

In this construction each section is independent of the others, their only connection being by the feed-pipe N and the pipes P and Q; but they may be connected together at the top by risers to a steam-drum or pipe, and the connections of the pipes M with the pipes G and K are so arranged as to afford the best possible facilities for removing and replacing any of the pipes M, if required. This construction also allows for the cleaning of the pipes M, if they should ever require it.

The portion of this boiler G G containing the upper water-body may be made in one piece, with the smaller pipes M and K entering it; but, for convenience of construction and cheapness, I prefer to make it in sections G, as shown by the drawings.

The mud-drum N is not essential, as the series of pipes K and M, in connection with the water-body G G, will give the same circulation, which is the characteristic feature of my invention, without this drum; but such a drum is desirable in all cases, and particularly when the upper water-body consists of a series of pipes, G G, as in the drawings, on account of the increased facility it affords for feeding and cleaning.

The pipe G I have shown as one large flattened pipe; but it may be found advisable, for convenience in casting, to substitute a number of pipes arranged horizontally, with perpendicular branches between them, to effect the same purpose.

This boiler may be made in whole or in part of cast-iron; but I prefer to make the pipes M of wrought-iron, and to cast the balance.

I claim as my invention—

The improved boiler herein described, consisting of an upper water-body, G G, in combination with the series of pipes K and M, arranged together substantially as described.

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