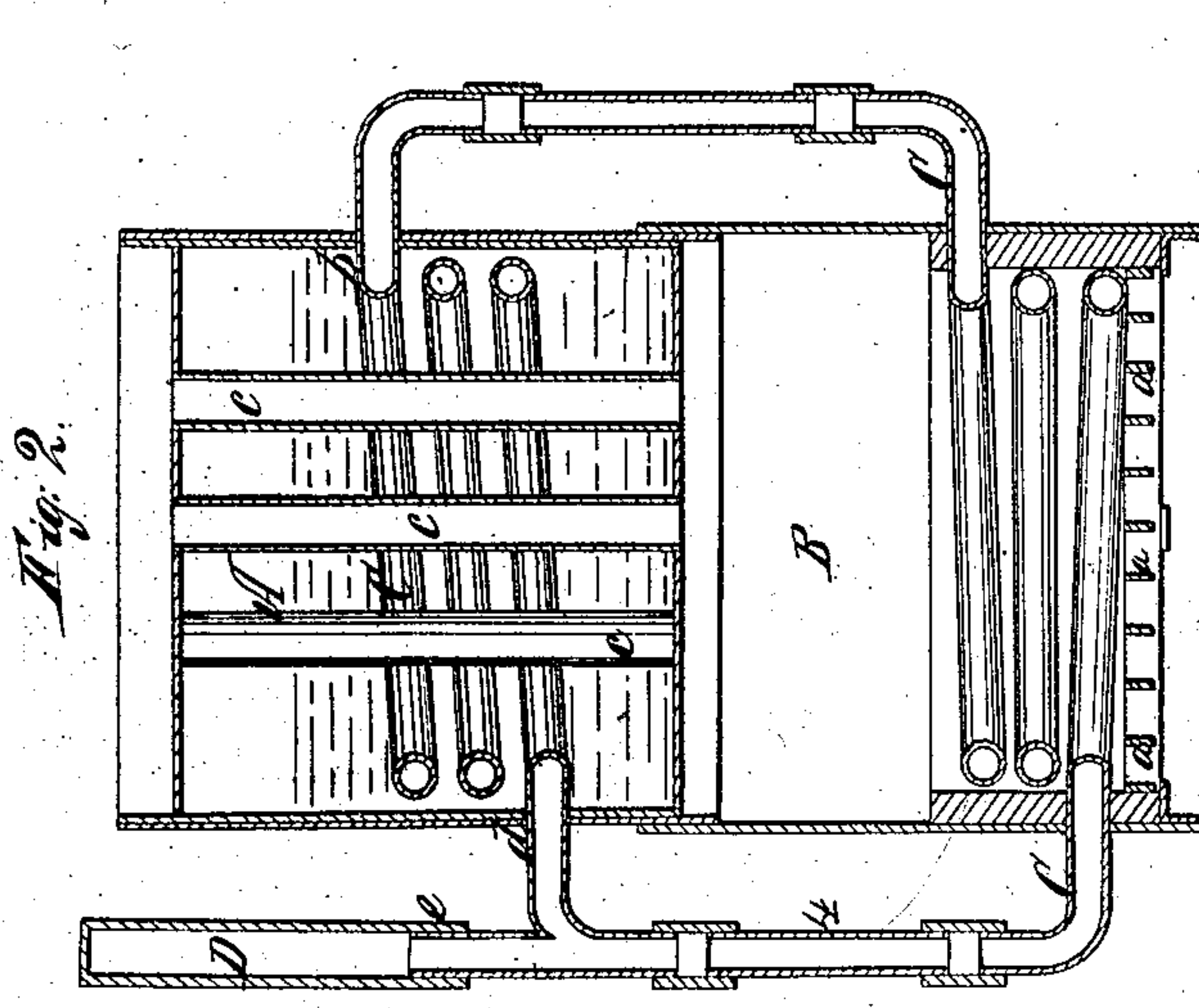
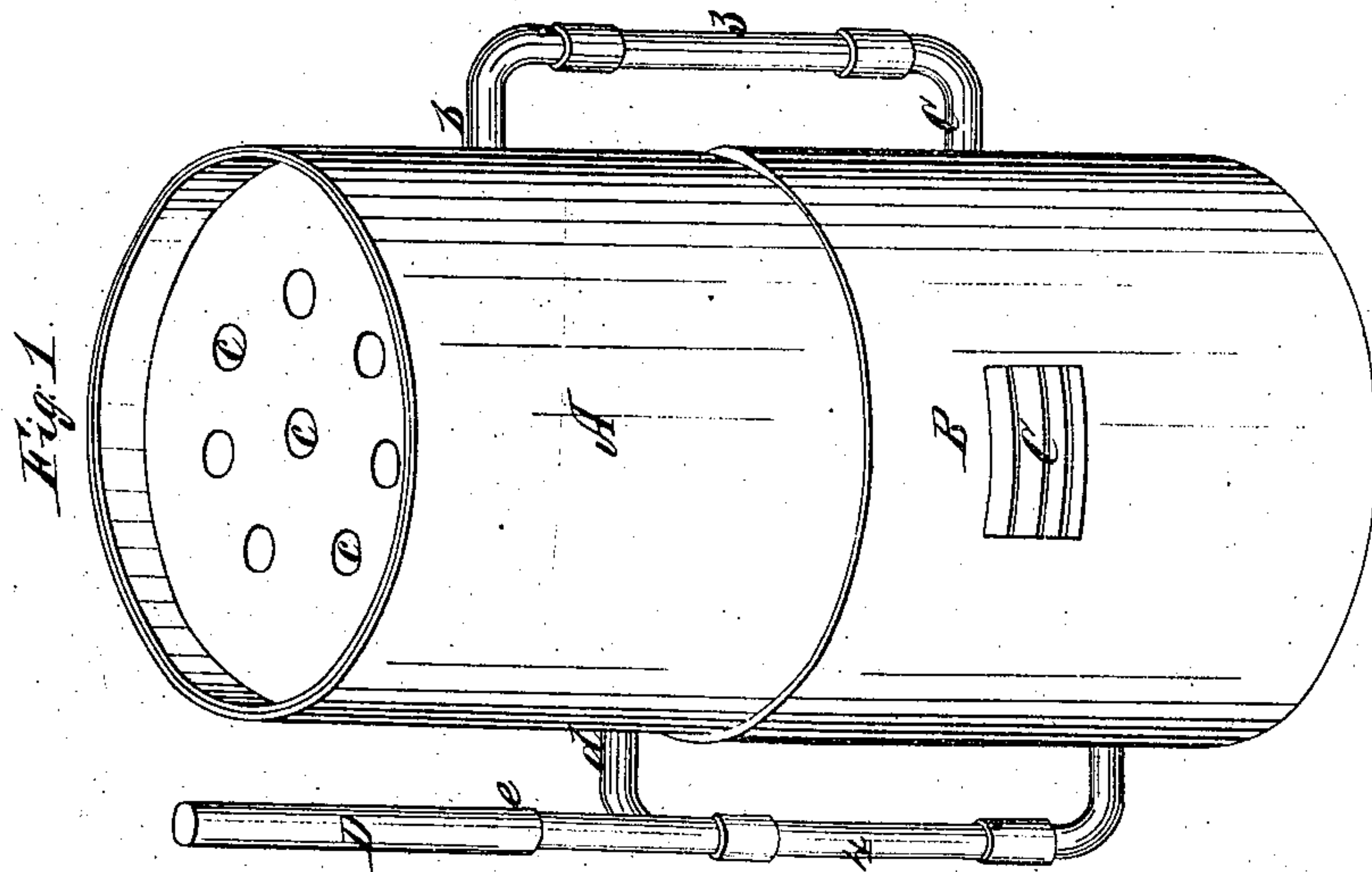


O. W. BAYLEY.  
STEAM GENERATOR.

No. 44,153.

Patented Sept. 13, 1864.



Witnesses:

*N. M. Stearns*  
*Thos. R. Roach*

Inventor:

*O. W. Bayley*

# UNITED STATES PATENT OFFICE.

OLIVER W. BAYLEY, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. 44,153, dated September 13, 1864.

*To all whom it may concern:*

Be it known that I, OLIVER W. BAYLEY, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Steam-Generator; of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved steam generator. Fig. 2 is a central vertical section through the same.

My invention, which is particularly applicable to upright tubular boilers, consists in passing a column of heated mercury through a continuous pipe which encircles the interior of the furnace and passes up outside the boiler, which it enters below the level of the water, and passes down around the flues in contact with the water, and again outside down into the furnace, the mercury as it is heated in the furnace rising up into that portion of the pipe in contact with the water and imparting its heat thereto, and as it is cooled descending by another portion of the pipe outside the boiler again into the furnace to be reheated, by which a rapid circulation of the mercury is effected and the steam-generating powers of the boiler greatly increased.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the boiler; B, the furnace, and *a* the grate-bars. C is a continuous pipe, which is coiled around the interior of the furnace, and thence passes up outside the boiler, which it enters at *b*, below the water-level, and is coiled around the interior of the boiler outside the flues *c*, passing out at *d* and descending to the bottom of the coil in the furnace B. D is an expansion-tube, which is closed at the top and is connected with the tube C at *e*. The tube D being removed, a

sufficient quantity of mercury is poured in at *e*, so that when the mercury is heated to 670° Fahrenheit, or thereabout, it will entirely fill the tube C. The tube D is then screwed on, closing the tube C, and making it perfectly airtight. The fire being now started in the furnace, the mercury as it is heated rises rapidly through the standing part 3 into that portion of the tube C which is surrounded by water, to which it imparts its heat, and, as the mercury is cooled, it descends by the portion 4 again into the furnace, where it is reheated and passed up as before. A perfect and rapid circulation of the mercury through the pipe C is thus effected, and the rapidity with which the steam is generated greatly increased. In the event of the mercury being heated to such a degree as to more than fill the tube C, it will rise into the expansion-tube D, and thus prevent any liability of straining the tube C.

I do not confine myself to the method of arranging the pipe C in coils as above described, as it is evident that it may be arranged in various ways without departing from the spirit of my invention, care being had to so place the pipe that the column of mercury may have the required circulation, and it is obvious that, instead of using one pipe C only, two or more similar pipes filled with mercury may be arranged within the furnace and boiler.

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

Passing one or more columns of heated mercury through a tube or tubes suitably arranged to establish the required circulation, and led through the furnace and the water in the boiler, substantially as set forth, for the purpose specified.

O. W. BAYLEY.

Witnesses:

N. W. STEARNS,  
THOS. R. ROACH.