

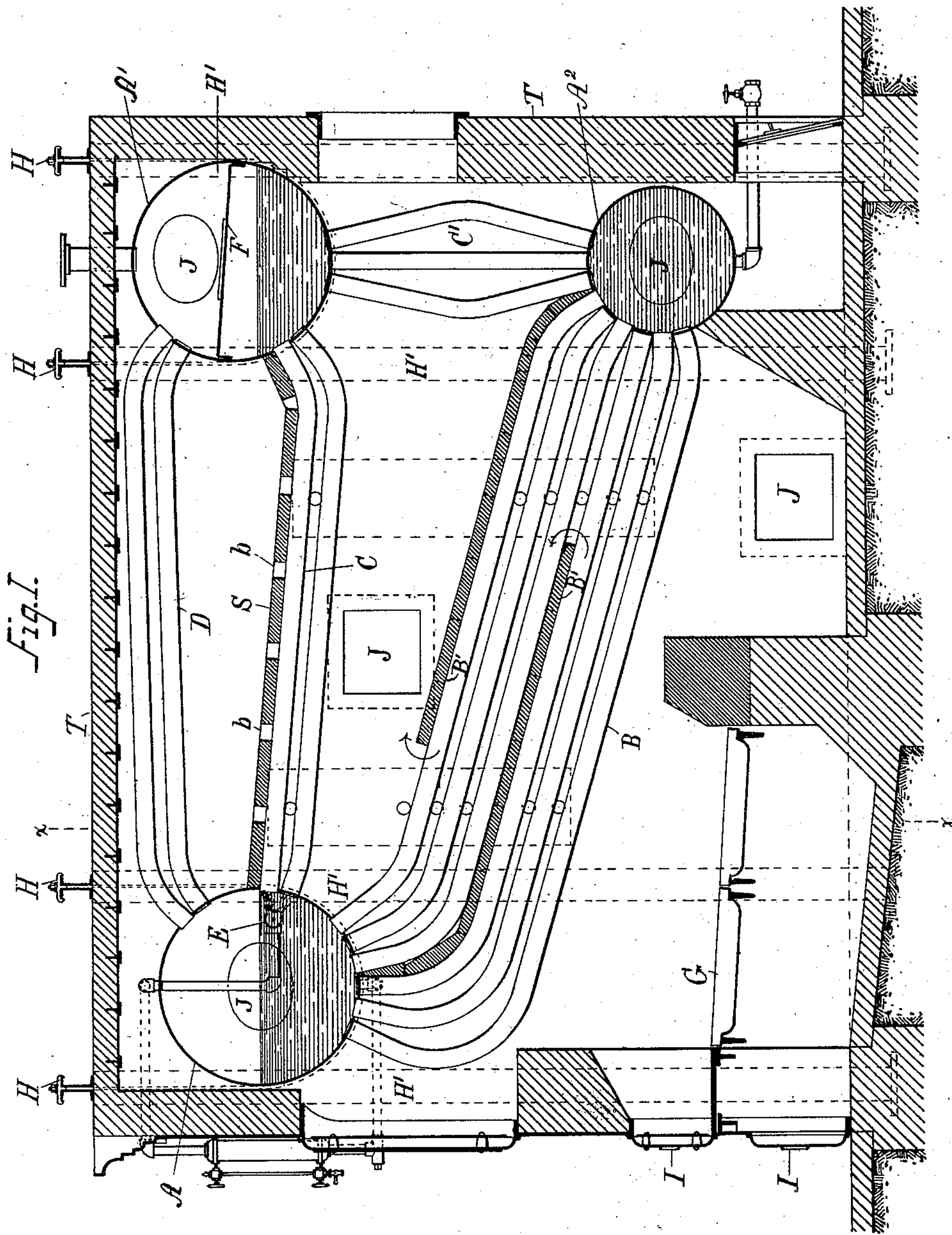
(No Model.)

2 Sheets—Sheet 1.

J. MILNE.
STEAM BOILER OR GENERATOR.

No. 577,142.

Patented Feb. 16, 1897.



WITNESSES:

Joe S. Eubank
Albert Johnson

INVENTOR

John Milne
BY
Francis C. Bowen
ATTORNEY

(No Model.)

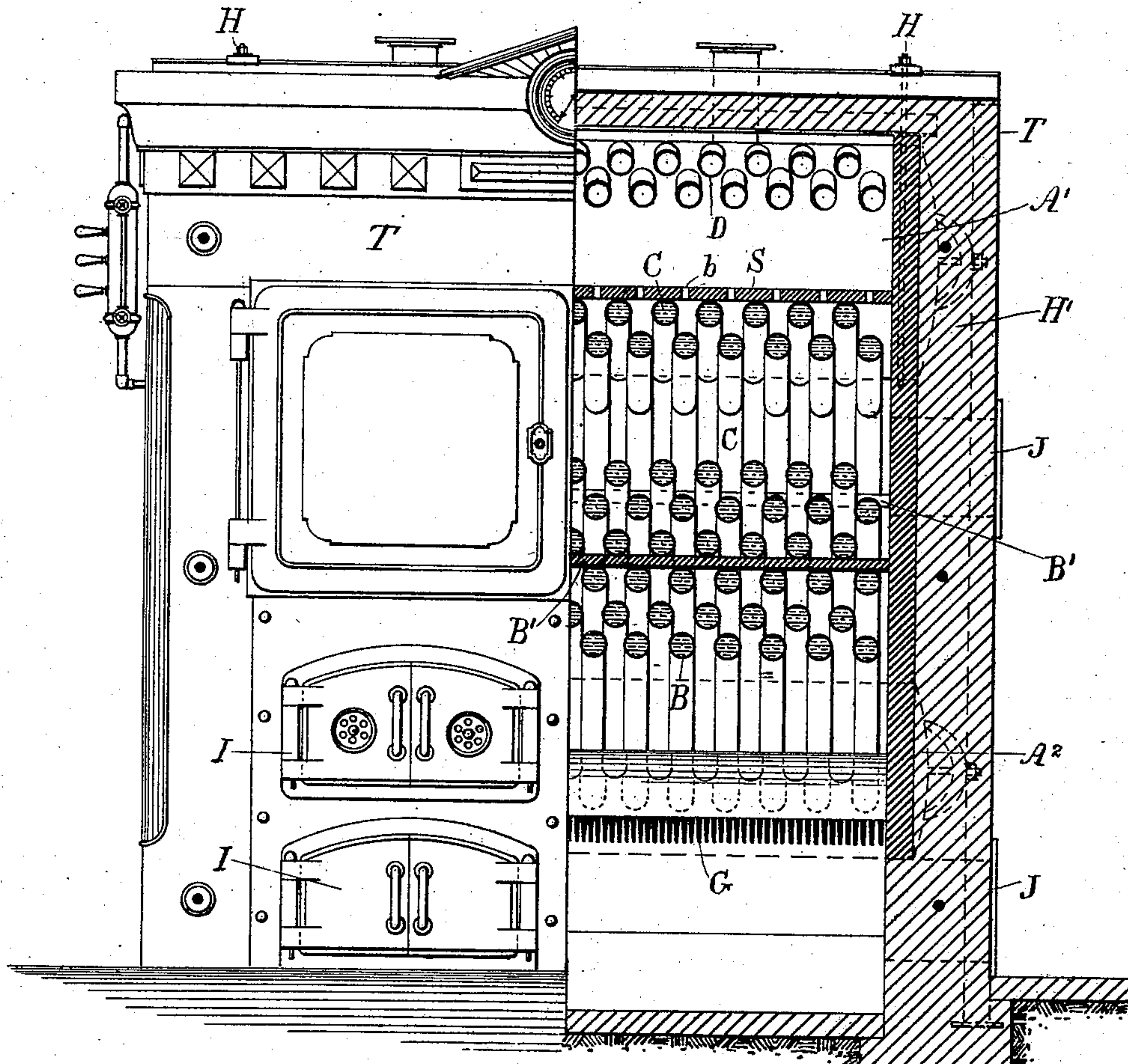
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Fig. II.



WITNESSES:

Geo. S. Evobank
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UNITED STATES PATENT OFFICE.

JOHN MILNE, OF BROOKLYN, NEW YORK.

STEAM BOILER OR GENERATOR.

SPECIFICATION forming part of Letters Patent No. 577,142, dated February 16, 1897.

Application filed June 12, 1896. Serial No. 595,250. (No model.)

To all whom it may concern:

Be it known that I, JOHN MILNE, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Steam Boilers or Generators, of which the following is a specification.

My invention relates to certain improvements in steam boilers or generators; and it consists of certain novel features of construction, as hereinafter set forth, and illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical longitudinal section of a boiler embodying my invention. Fig. 2 represents a front view and cross-section on the line $x x$, Fig. 1.

Similar letters of reference indicate similar parts.

The letters $A A' A^2$ are steel cylinders or drums having heads at each end and man-holes J therein. The letter B designates the nest of steam pipes or tubes, which are inclined downwardly from the drum A to the mud-drum A^2 , and the letters $C D$ designate the downwardly and upwardly inclined tubes, respectively, from the drum A to the drum A' , and C' designates the nest of pipes that connect the drum A' with the mud-drum A^2 .

The adjuncts of the boiler are substantially of ordinary form and are composed, essentially, of the framework T , grate G at a point under the higher portion of the tubes B , fire-doors I , hangers H for supporting the drums $A A'$, and manholes J , disposed at divers points, as may be found expedient.

From the description it will be apparent that a continuous flow of water is maintained through the medium of the tubes $B C C'$, so as to subject the water to the action of the fire in the boiler continuously until the same is converted into steam with a manifest economy of heat.

In order to increase the effect of the heat upon the generating-tube B , I have arranged partition B' parallel to the plane thereof in such a manner to cause the heat to take a circuitous course, as indicated by arrows in the drawings, and with a view of superheating the steam I have arranged above the pipes C a partition S , with perforations b for the passage of the hot-air gases therethrough.

In the operation of the boiler the water en-

ters through the feed-pipe E , and thence flows through the nest of pipes C to the drum or cylinder A' , thence through the nest of pipes C' to the drum A^2 , thence through the nest of pipes B to the drum A , which latter practically forms the steam-generating chamber. From this drum or chamber A the steam passes through the nest of pipes D to the drum A at a point above the diaphragm F in said last-named drum, whence the steam may be conducted by any usual or suitable means to the place where it is to be used.

The nest of pipes B are inclined downwardly from the drum A to the drum A^2 , and the nest-pipes $C D$ are inclined downwardly and upwardly, respectively, from the drum A to the drum A' , and the effect of this arrangement is, as to the pipes B , that the water has a tendency to return to the drum A^2 , and, as to the pipes C , that the water obtains a certain pressure by gravity from the feed-pipe E to the drum A' , while, as to the pipes D , the water of condensation, if any in said pipes, is returned to the drum A .

In order to facilitate the entrance of the water into the pipe C , I arrange the pipe E opposite to the mouth of the pipe C and perforate the pipe E in the direction of the pipe C , which causes the water to be ejected into the pipe C and thereby manifestly increase the circulation of the water.

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

In a steam-boiler the combination with the drums A, A', A^2 of the downwardly-inclined tubes B connecting the drum A to the drum A^2 and the two nests of tubes C, D , inclined respectively downwardly and upwardly and both connecting the drum A to the drum A' , the injection-pipe E arranged at the entrance of the pipes C in the drum A , the pipes C' connecting the drum A' to the drum A^2 and the diaphragm F in the drum A' intermediate of the points of connection of the pipes C, D , thereto, partitions B' and perforated partition S parallel to the plane of the pipes B, C , substantially as shown and described.

JOHN MILNE.

Witnesses:

PHILIP BOETTIGER,
FRANCIS C. BOWEN.