

G. P. CAMPBELL.
STEAM BOILER.
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997,963.

Patented July 18, 1911.

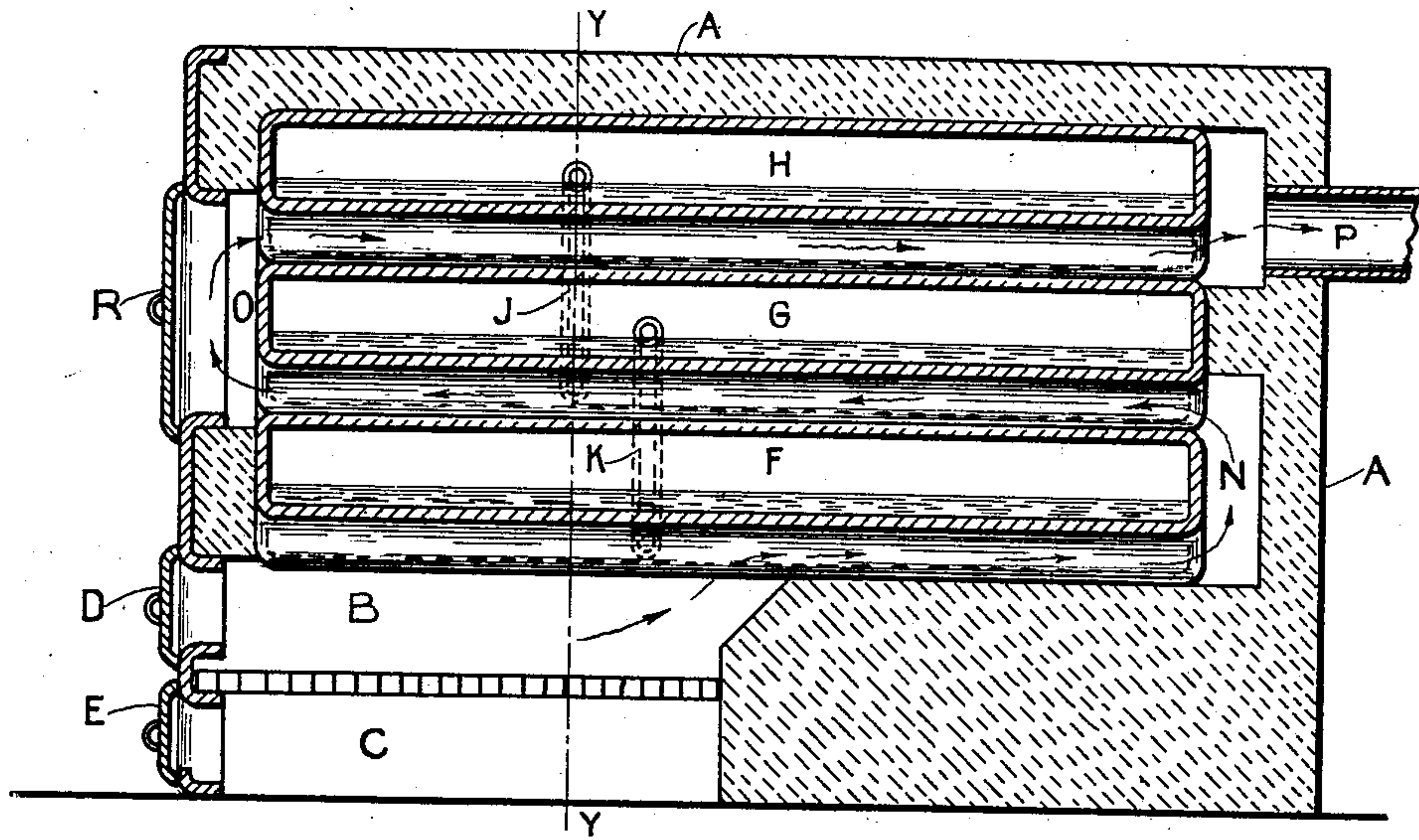


Fig. 1

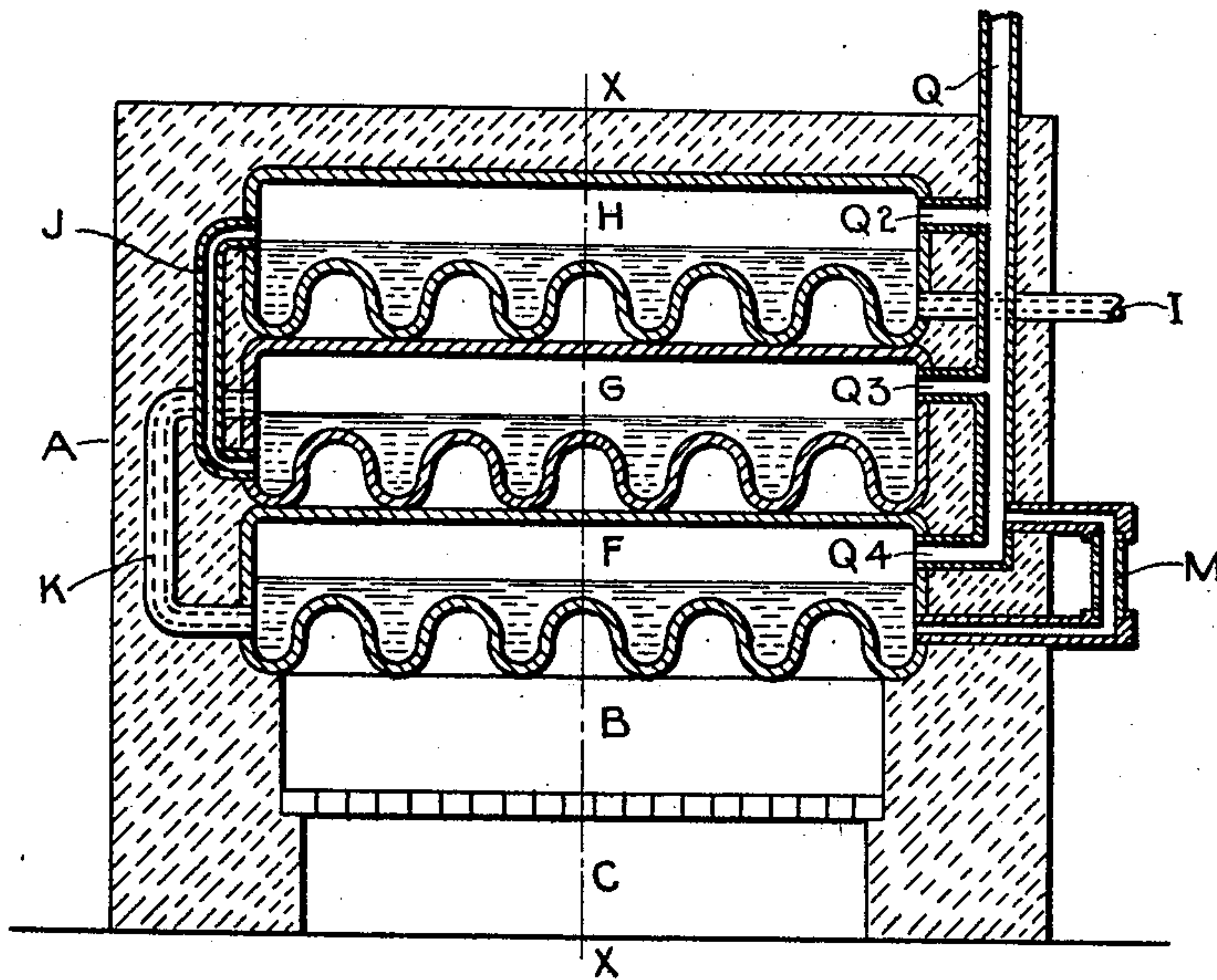


Fig. 2

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE P. CAMPBELL, OF SCHENECTADY, NEW YORK.

STEAM-BOILER.

997,963.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed January 28, 1911. Serial No. 605,144.

To all whom it may concern:

Be it known that I, GEORGE P. CAMPBELL, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a specification.

My invention relates to steam boilers and the object of my invention is to construct a boiler for generating steam that will have water at three separate levels and that will have the greatest amount of steaming surface for a given amount of heat.

Other objects of my invention will appear in the specification.

I accomplish these objects by means of a steam boiler constructed as shown in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of my boiler on the lines X—X, Fig. 2. Fig. 2 is a cross-section of my boiler on the lines Y—Y, Fig. 1.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings A represents the shell of the boiler, B is the firebox, C the ashpit, D the door into the firebox, E the door into the ashpit, R the door for cleaning out under the water reservoirs, F, G and H are three reservoirs for holding water. The bottoms of these reservoirs are corrugated iron or steel for the purpose of allowing greater surface for heating, as shown in Fig. 2.

I is an inlet pipe for the water in the upper reservoir H.

J is an overflow pipe which conducts the water when it has reached the proper level from the reservoir H to the next lower reservoir G, and K is the overflow pipe for conducting the water when it has reached the desired level in the second reservoir G to the lower reservoir F.

M is the location for the water glass which will show the depth of the water in the lower reservoir.

The fire is located in the firebox B and the heat passes under the corrugations of the bottom of the lower reservoir F to the back end thereof and up through the passageway N as indicated by the arrows, and under the corrugations of the second reservoir G and up through the passageway O

at the other end thereof and under the corrugations of the upper reservoir and out through the chimney P.

Q is a steam pipe for conducting the steam after it is generated to the desired location for use.

Q², Q³ and Q⁴ are pipes leading the steam from the different reservoirs to the steam pipe Q. Constructed in this manner the bottoms of the reservoirs may be thin and the corrugations large and the water in each reservoir comparatively low so as to present the greatest amount of heating surface for the heat from the fire to the amount of water used to generate the steam. In this way the heat passing under the successive reservoirs will be used to its full capacity.

In the lowest reservoir the steam will be generated to the greatest extent and as the heated gases pass under the upper reservoir they will continue to generate steam as long as they retain sufficient heat to boil the water. The heated gases passing under the different reservoirs utilize the heat to the greatest extent. Thus a mild fire will generate steam for the entire length of the lowest reservoir and from a portion of the reservoir next above it, while a large fire will generate steam from all of the reservoirs. By this arrangement the greatest amount of steaming surface is provided for any given amount of heat. With a mild fire the water in the top reservoir will be more or less thoroughly heated. In the second reservoir more or less steam will be produced in proportion to the fire, while in the lowest reservoir a very moderate fire will generate steam and by increasing the fire steam will be generated from all the reservoirs. By this arrangement the reservoirs will all be kept equally filled and the greatest amount of steam will be produced at the least expense.

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

1. In a boiler for generating steam means for holding the water upon two or more different levels and means for carrying the steam from each chamber into one equalizing pipe.

2. In a boiler for generating steam, a firebox, two or more separate reservoirs for water at different levels above said firebox, means for conducting the heat from said

firebox under each successive reservoir and means for carrying the steam from each chamber into an equalizing pipe.

3. In a boiler for generating steam, a fire-
5 box, a series of water reservoirs located in said boiler above said firebox and at different levels from each other, means for maintaining the water in each reservoir at the same uniform depth and means for carrying
10 the steam from each chamber into an equalizing pipe.

4. A boiler for generating steam consisting of a shell, a firebox in said shell, a series
15 of water reservoirs having corrugated bottoms in said shell above said firebox and located one above the other, overflow pipes

connecting each reservoir with the next lower reservoir whereby the water in each reservoir will be maintained at a uniform depth, means for conducting the steam from 20 the reservoirs and means for conducting the heat from said firebox under each reservoir successively and means for carrying the steam from each chamber into an equalizing pipe, substantially as described. 25

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE P. CAMPBELL.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
