

No. 684,746.

Patented Oct. 15, 1901.

F. S. CHAPMAN.
GENERATOR OF STEAM.
(Application filed Oct. 10, 1900.)

(No Model.)

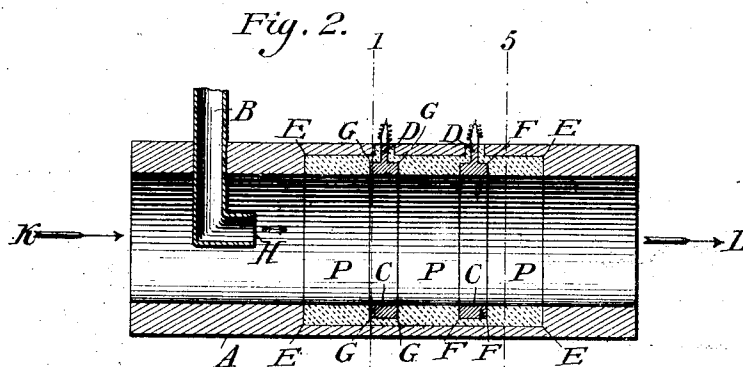
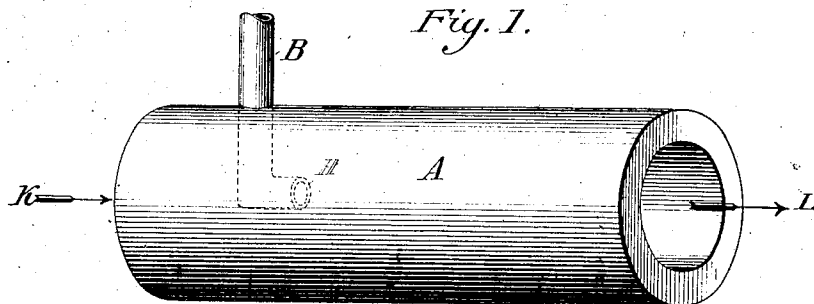


Fig. 3.

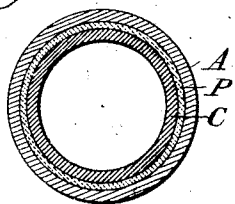
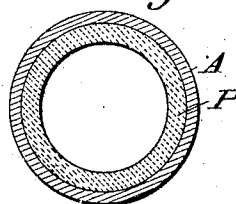


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANK S. CHAPMAN, OF KENTON, OHIO.

GENERATOR OF STEAM.

SPECIFICATION forming part of Letters Patent No. 684,746, dated October 15, 1901.

Application filed October 10, 1900. Serial No. 32,656. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. CHAPMAN, a citizen of the United States, residing at Kenton, in the county of Hardin and State of Ohio, have invented a Method of Generating Steam, of which the following is a specification.

My invention relates to improvements in the manner of producing steam through the action of heat produced by the combustion of fuel on water; and the object of my invention is to produce steam for power, heating, or other purposes. I attain this object by the use of the apparatus illustrated in the accompanying drawings, using in connection with the apparatus a sufficiently powerful electrical current, air under pressure, and water containing powdered coal or other fuel, as hereinafter described.

In the drawings, Figure 1 is an exterior view of the entire apparatus. Fig. 2 is a vertical section of the entire apparatus. Fig. 3 is a cross-section along the lines 1 2 or 3 4, Fig. 2. Fig. 4 is a cross-section along the lines 5 6, 7 8, or 9 10, Fig. 2.

Similar letters refer to similar parts throughout the several views.

The pipe A, with the inlet-pipe B, the electrical conductors D D, extending into the interior of the pipe A and insulated from the iron part of the latter, and the interior arrangement of the pipe A, as hereinafter described, constitute the entire apparatus.

The entire apparatus is composed of iron or other metal, except where otherwise specified. The parts marked P are composed of porcelain or quartz or other desirable non-conductor of electricity. The parts marked C are composed of carbon or platinum or other desirable conductor of electricity. Between the points marked E E E E the entire interior surface of the pipe A is replaced with a lining of porcelain or quartz or other desirable non-conductor of electricity, excepting where the interior surface of the aforesaid lining is replaced with carbon or platinum, &c., as hereinafter specified. Between the points F F F F is an interior ring of carbon or platinum C, replacing the interior surface of the above-specified porcelain, quartz, &c., lining P, the said ring having its circumference parallel to the circumference of

the pipe A. Between the points G G G G is a similar ring similarly placed, each being not in contact with the other or with the iron part of the pipe A. The inlet-pipe B has an opening at H.

In operation the positive pole of a sufficiently powerful source of electricity is connected to one of the electrical conductors D D and the opposite pole to the other. As the conductors D D terminate in the rings C C and the latter are insulated from each other and from the iron part of the pipe A, the electrical circuit remains open between the two rings C C until it is closed, as hereinafter specified. A stream of water containing powdered coal or other suitable fuel is continuously passed into the pipe A at H, and simultaneously a stream of air under pressure is continuously passed through the inlet-pipe B therefrom to the interior of the pipe A at H and becomes mixed more or less thoroughly with the above-mentioned stream of water and contents, continuously producing a more or less thorough mixture (hereinafter referred to as the "mixture") of air, powdered fuel, and water. The mixture is moved by any desirable means in the direction of L in such manner as to form a continuous body of the mixture between and in contact with the rings C C, thereby completing the electrical circuit, the mixture acting as a poor electrical conductor between the two rings C C. An effect of the closing of the electrical circuit through the mixture is to heat the mixture to a temperature at which coal or fuel is combustible, and an effect of the heat so produced is to burn the coal or fuel contained in the mixture by its chemical union with the oxygen, which latter is a constituent of the air contained in the mixture.

In the above-described action the heat manifest before the combustion is added to the heat produced by the combustion, and an effect of the heat so produced is to change the water contained in the mixture into steam, the said steam passing from the apparatus at L, being thence passed in pipes to any desirable apparatus.

I am aware that prior to my invention apparatus has been used wherein an electric spark produced by the sudden opening of an electrical circuit is used to ignite a gaseous

fuel, and I do not claim this for my invention.

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

1. The improved method of generating steam which consists in passing an electrical current through water containing solid combustible material and atmospheric air commingled, substantially as specified.
- to 2. The method described, consisting in in-

roducing atmospheric air and a solid combustible material into a stream or flowing body of water, and passing an electrical current through the water for causing combustion and evolving heat for production of steam, substantially as specified. 15

FRANK S. CHAPMAN.

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