

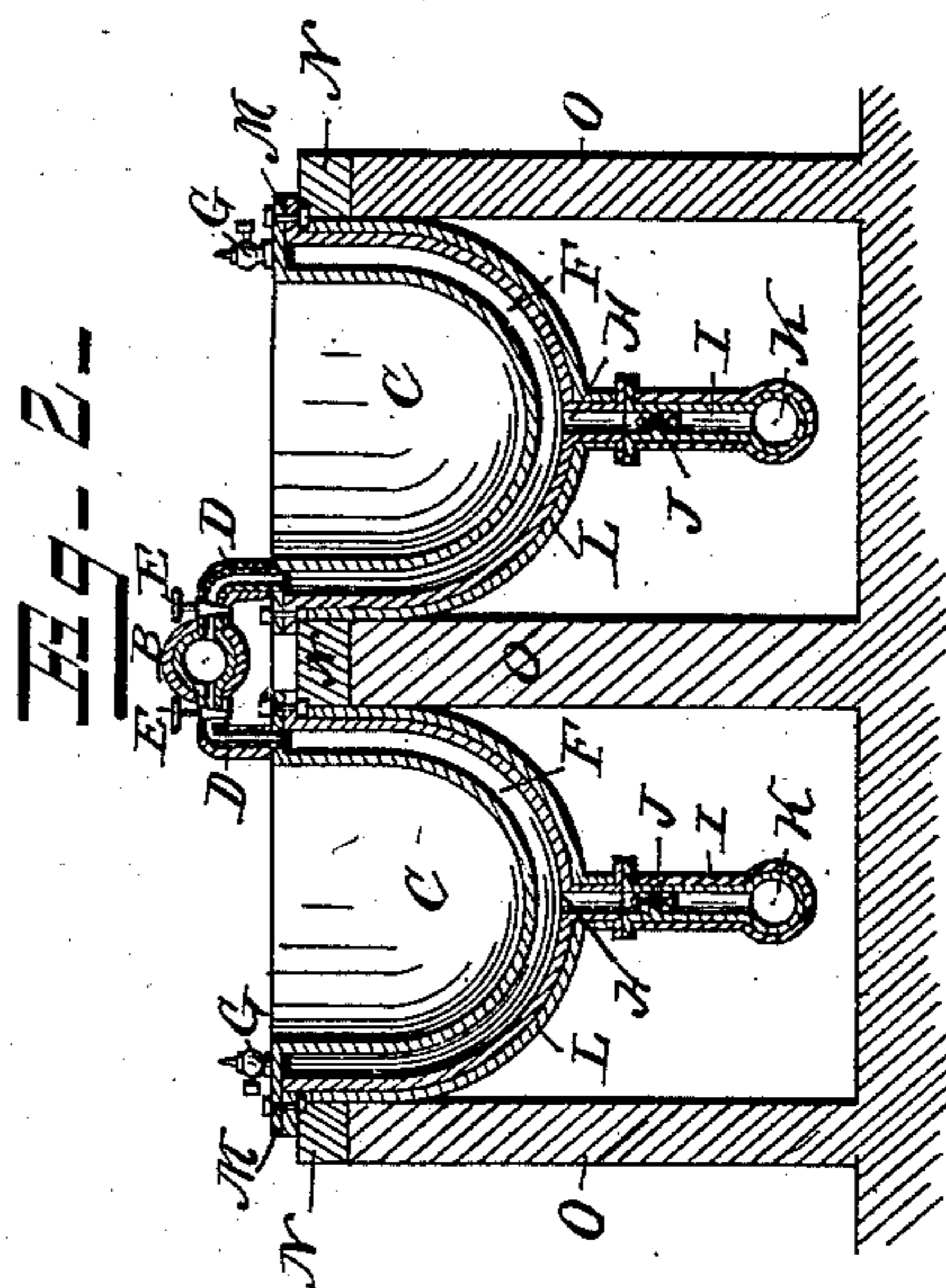
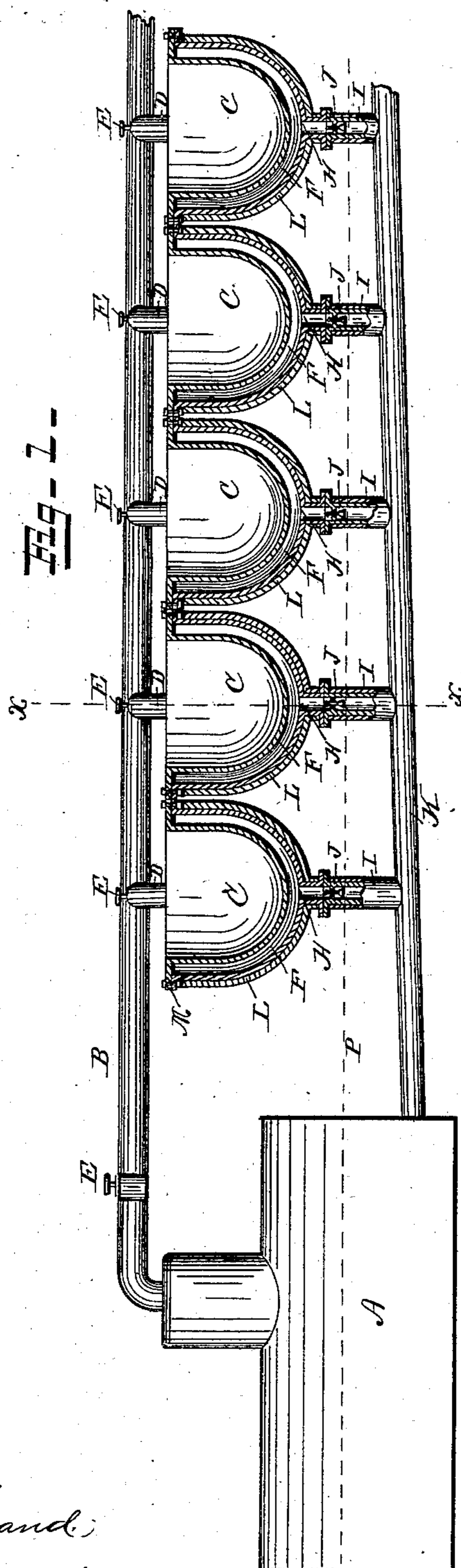
(No Model.)

F. P. TABER.

APPARATUS FOR THE MANUFACTURE OF SUGAR, SALT, &c.

No. 268,056.

Patented Nov. 28, 1882.



Witnesses.
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UNITED STATES PATENT OFFICE.

FRANKLIN P. TABER, OF AUBURN, NEW YORK.

APPARATUS FOR THE MANUFACTURE OF SUGAR, SALT, &c.

SPECIFICATION forming part of Letters Patent No. 268,056, dated November 28, 1882.

Application filed October 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN P. TABER, of Auburn, in the county of Cayuga and State of New York, have invented new and useful
5 Improvements in Apparatus for the Manufacture of Sugar, Salt, Soap, Varnish, and for the boiling and evaporation of any liquid or solution, of which the following, taken in connection with the accompanying drawings and the
10 letters of reference marked thereon, is a full, clear, and exact description.

My invention relates to certain improvements in apparatus for the manufacture of sugar, salt, soap, varnish, and for the boiling or evaporation of any liquid or solution by means of steam; and it consists of one or
15 more steam-jacketed kettles, and of a certain method or means of supplying them with steam from a steam boiler or generator, whereby any salt-water, cane-juice, soap, varnish, fatty matter, or solution placed in such
20 kettles is, first, subjected to a uniform heat applied to the entire kettle; second, boiled; third, evaporated, and the water of condensation derived from the steam so applied to the
25 kettles returned to the boiler or generator, at or near boiling-point, through or by means of a pipe or pipes connected with the lower extremity of the kettle or kettles in such a manner
30 that the steam introduced to the jacketed kettle or kettles is not in any way obstructed, nor its heat neutralized by reason of being brought in contact with the water of condensation, thereby working a great saving in the fuel, labor, and time required for the boiling and
35 evaporation of such brine, cane-juice, or solution, and by reason of the uniform boiling of the same admits of the result of the evaporation being brought to a much greater degree of purity, and prevents the collection of any
40 impurities or incrustation on the sides of the interior jacketed kettle, together with a non-conducting substance applied to the outer surface of the exterior jacket of said kettle or
45 kettles, and all pipes, laterals, and connections leading from and to the said boiler or generator and the said kettle or kettles, thereby preventing radiation from the surfaces so exposed, all of which said apparatus is hereinafter more fully described, and will be better understood by referring to the before-mentioned
50 drawings.

Figure 1 is a longitudinal drawing of the apparatus, and is there shown, so that any number of kettles in addition to those illustrated may be connected in like manner in the
55 same series. Fig. 2 represents a cross-section of the apparatus on line *xx* in Fig. 1.

The same letters on different figures indicate like parts.

The letter A indicates an ordinary steam-boiler in common use as a steam-generator; B, the main supply-pipe leading from and connected with the dome of such boiler on a line above and between the series of kettles C C,
60 in the manner shown in Figs. 1 and 2, by means of which and its laterals D D, each of which is supplied with a steam-compression or throttle valve, E E, and connected with the steam-space F F between the jackets of the
65 several kettles by means of a screw-threaded hole made through the flange or rim of the inner kettles, the steam-space in each of which said kettles is provided with an air-valve, G, inserted in a screw-threaded hole made through
70 the rim or flange of the inner kettles at a point in such flange on the opposite side of the kettle to the point where steam is introduced to said steam-space, as shown in the drawings, and has for its office to permit the escape of air
75 from the steam-space and allow the same to be filled with steam; also, an opening, H, in the bottom of the outer kettle, and connected by means thereof and through the pipes I, each of which
80 is supplied with the sliding check-valve J, with the return-pipe K, and through that with the boiler or generator A, each of which said kettles and the pipes and laterals running to and from the said boiler and kettles is covered with
85 a non-conducting substance, L L, and the whole apparatus so constructed that if the water-line of said boiler or generator P were extended to a point under the said kettles the bottom of each of said kettles shall be above the level
90 of such water-line, by means of which elevation the water of condensation is caused to return to the boiler without the aid of a steam-trap or other device, and is there held by means of the sliding check-valve J, so that, if
95 desired, any one or more of the combination of kettles so constructed may be cut out, by means of the throttle-valves E E in the laterals D D, without flooding the steam-space F F between the outer and inner kettles, by reason of a back-
100

pressure from the boiler or generator, thereby rendering the kettle more safe and always ready for use; the supply-pipes are so run and laid that all water of condensation forming in the supply-pipes B D D, the steam-space F F, and the return-pipes I I, and K will of itself flow from the throttle E in the main supply-pipe B, through B to D D, to F F, to I I, to K, to the boiler and the several kettles placed in position, as shown in Fig. 2, so that the flange M shall rest upon and be above the level of the floor N, which is in turn supported by the piers, walls, or posts O.

The operation of the apparatus is shown by placing in any one or more of the kettles any solution or liquid, as salt-water or brine. The boiler A being supplied with steam, the throttle E in the main supply-pipe B is opened, permitting steam to pass throughout the whole extent of said pipe. The air-valve G G is then opened to permit the escape of air from the steam-space F when the throttles E E in the laterals D D are opened, permitting the escape of steam from B to F, forcing the air from F through G, which is closed on the appearance of the escape of steam therefrom. The apparatus is then in full operation. The heat from the steam thus introduced heats the inner kettle, and the heat is transmitted through the side of the kettle to the solution within, causing the same to boil and the liquid in the solution to evaporate, leaving the salt of the brine in the bottom of the kettle. The water of condensation resulting from the steam thus introduced is in the meantime passing out of the steam-space F, through the opening H, through I, J, and K, to the boiler at or near boiling-point.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the boiler or generator, of the supply-pipe B, with its laterals D D, and throttle-valves E E E, placed above and between the sets of kettles and communicating through the flange or rim of the inner kettle with the steam-space between the jackets of the kettles, substantially as described, and the manner of extending and continuing such supply-pipe and laterals and connections for any number or sets of kettles.

2. In combination with the boiler or generator, the supply B, with its laterals D D, and cocks or throttles E E, the jacketed kettles C C, provided with the air-valve G, placed in the rim or flange of the inner kettles, substantially as described.

3. In combination with the boiler, supply-pipe B, with its laterals D D, throttles E E,

and the jacketed kettles C C, with the air-valve G, the return-pipe K, connected with the boiler A, for the water of condensation, placed at or near the bottom of the kettles and connected with the steam-space between the outer and inner kettles by means of the laterals I I, substantially as set forth.

4. In combination with the boiler, supply-pipe B, with its laterals D D, and throttles E E, the jacketed kettles C C, with the air-valve G, and the return-pipe K, with its laterals I I, the sliding check-valve J J in the laterals I I, for allowing the water of condensation to pass out of the steam-space F F and hold in check any back-pressure from the boiler, and thereby prevent the flooding of the steam-space between the kettles with water from the boiler.

5. In combination with the boiler, supply-pipe B, with its connections, laterals D D, and throttles or cocks E E, the jacketed kettles C C, with the air-valve G, the return-pipe K, with its laterals I I, each supplied with the sliding check-valve J J, the non-conducting covering L L, for the respective pipes, kettles, and exposed heated surfaces of the apparatus.

6. In combination with the boiler, supply-pipe B, with its laterals D D, and throttles or cocks E E, the jacketed kettles C C, with the air-valve G, the return-pipe K, with its laterals I I, each supplied with the sliding check-valve J J, and the non-conducting substance L L, to be placed upon the respective pipes and kettles, the manner and mode of running and laying the supply and return pipes to and from the said kettles and boiler, substantially as shown, so that the water of condensation shall not impede or neutralize the steam to be introduced to the kettles.

7. In combination with the boiler, supply-pipe B, with the laterals D D, and throttles E E, the jacketed kettles C C, with the air-valve G G, the return-pipe K, with its laterals I I, the sliding check-valve J J in the laterals I I, the non-conducting substance L L, and the manner of running and laying the supply and return pipes, the manner and mode of placing the bottom of the kettles above the level of the water-line of the boiler, by means of which the water of condensation is caused to return to the boiler without the use of a steam-trap or other appliance.

In testimony whereof I have hereunto signed my name, in presence of two attesting witnesses, at Washington, in the District of Columbia, this 6th day of October, 1882.

FRANKLIN P. TABER.

Witnesses:

E. L. STEVENS,
H. W. ANDREWS.