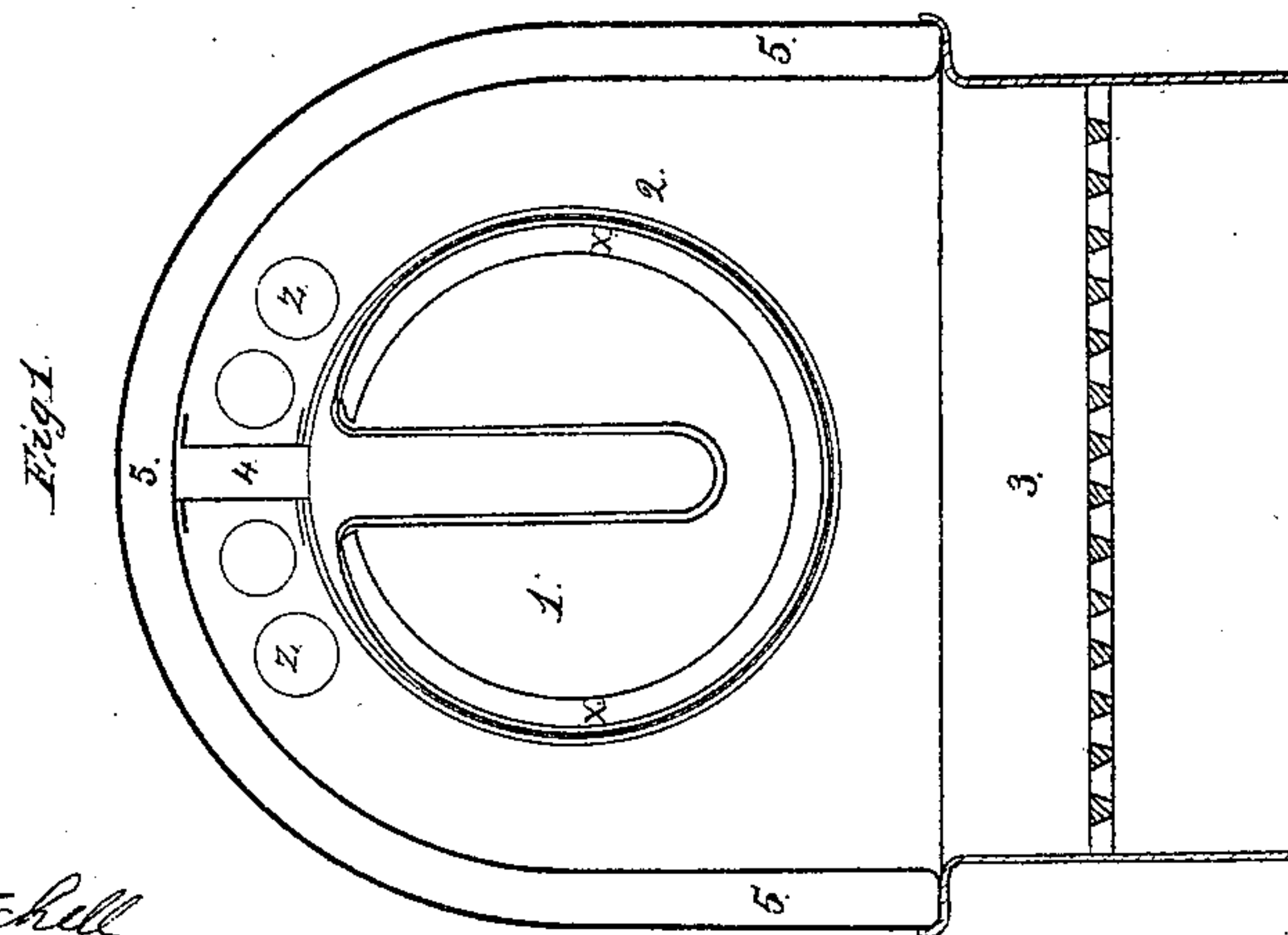
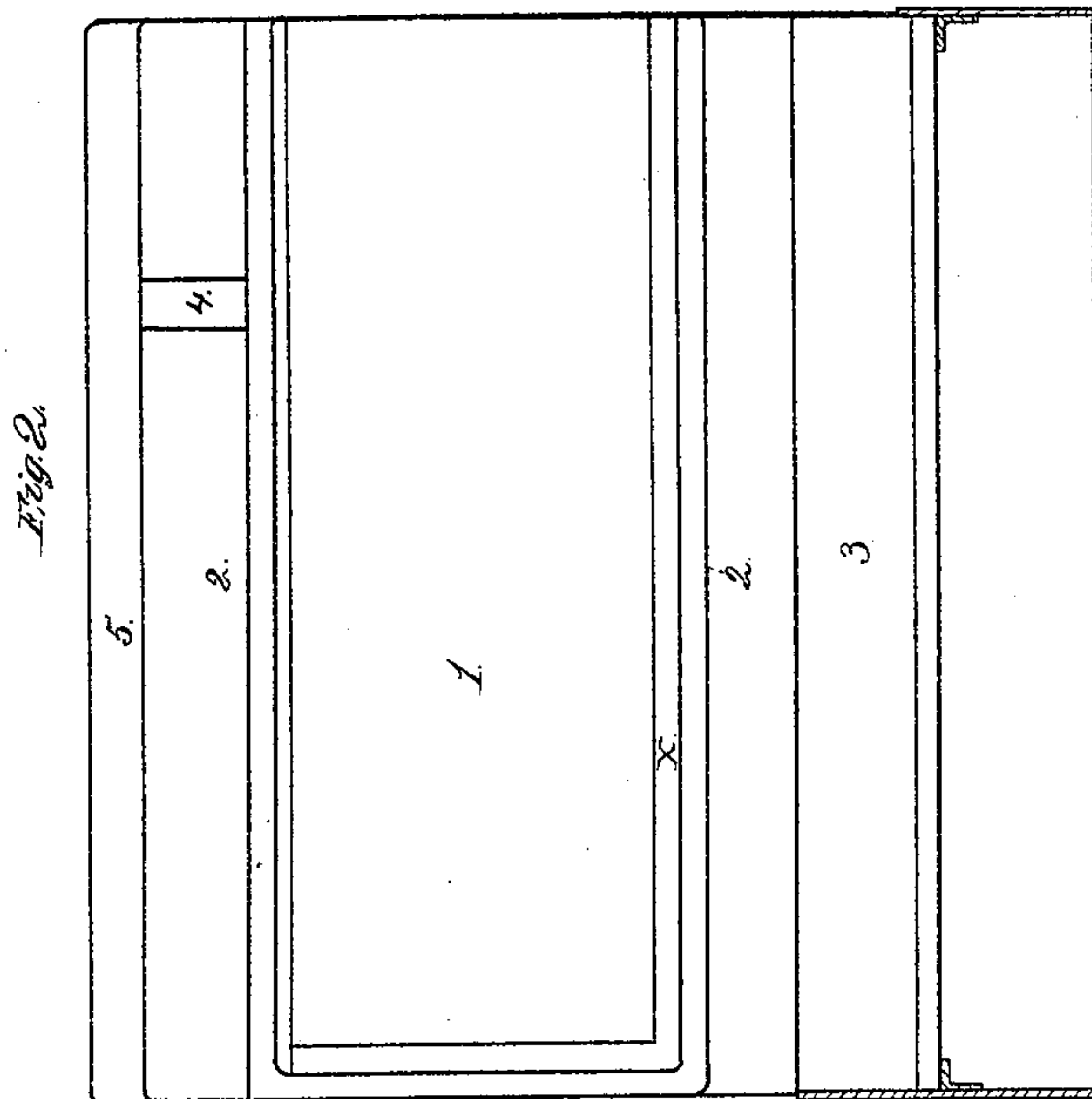


W. Mont Storm,
Steam-Boiler Water-Feeder,
No 25,147, Patented Aug. 16, 1859.



Witnesses:
Richardson Mitchell
S. F. Storm

Inventor.
Wm Mont Storm

UNITED STATES PATENT OFFICE.

WILLIAM MONT. STORM, OF NEW YORK, N. Y.

IMPROVED STEAM-GENERATOR.

Specification forming part of Letters Patent No. 25,147, dated August 16, 1859.

To all whom it may concern:

Be it known that I, WILLIAM MONT. STORM, of the city and State of New York, have invented a new and useful Method of Constructing Steam-Generators for Light Powers, &c., of which the following specification embraces a full and fair description.

The basis feature of my invention consists in conveying the water from a closed reservoir to the "heating-surfaces" by capillary attraction.

Figure 1 on the accompanying drawings represents one form of such a generator in cross-section; Fig. 2, the same in longitudinal section.

$z z$ are the smoke-outlets.

1 is a vessel to contain water. Its shell is of two thicknesses, so connected as to prevent the entrance of water or steam between them, and filled in space x with some material that is a poor conductor of heat. This vessel is open at the top, as shown, having a "slot" running its entire length. This vessel is wound on its exterior with lamp-wick, cotton cord, or other fibrous or absorbent material equivalent in effect, the wick passing down with a loop, as seen, to the bottom of the vessel and there held by a weight within the loop or other means. The course of the wick is shown by the red line. It will be perceived that as long as there is any water in the vessel 1 it will be absorbed up by capillary attraction and down around the entire vessel, and so held, thus presenting an extensive surface of water in a thin and divided sheet, and therefore susceptible of much more rapid vaporization by the action of heat than would take place from water acted on in mass, as in the ordinary manner.

2 is the heater-cylinder, of such size relative to 1 that when the latter, with its wicks upon it, is passed into 2 the wicks will almost or quite touch the inner surface of the latter.

3 is the furnace. It will be seen that, the fire being lighted, 2 is quickly heated through, and, the heat radiating inwardly from it upon the wicks, steam is instantly formed, which would not be the case were it first necessary to bring the mass of water in the tank 1 up to the boiling-point under the given pressure, and I may here state that, according to my experiments, at a pressure of twenty pounds per square inch above the atmosphere, the corresponding temperature of the steam being about 261° Fahrenheit, the water in 1 is

at the same time at a temperature of only about 180°, or far below the steam-generating or boiling point under the open air. Thus explosion cannot occur, and in case of mere rupture the water is powerless to flash into steam, (many hundred times its own volume, as in the case of ordinary boilers,) and thus there would be little or no destructive effect; and, again, if the fire be withdrawn for the same reasons, the formation of steam almost immediately ceases. The extreme quickness with which the formation of steam is effected and checked, as explained, is a feature of great value for all light and intermittent steam-powers. It will also be seen that I attain great heating-surface in this system without flues, and that the water cannot fall below the fire-surface owing to the action of the wicks. From 2 the steam (with considerable water in suspension, like mist) passes by the tube 4 into the saddle-shaped steam-chamber 5, which, containing no water except that in suspension in the steam, the latter is converted into dry steam or slightly-superheated steam. From this vessel 5 the steam passes to its place of consumption.

The vessels 1 and 2 should be made of copper, brass, or other non-corrosive metal, so that there may be no rust to damage the wicks. The latter it may be necessary to renew, say, once a year. Very fine wire may be employed in lieu of cotton for the wicking, as in all cases of capillary attraction the fluid does not pass through the material of the fibers, but between their contiguous surfaces. This capillary system may be equally applied to "vertical" forms of generators.

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

1. The plan or method of conveying water from a closed tank or reservoir to the heating-surfaces of a steam-generator by capillary attraction, for the objects described.

2. So constructing and locating the said supply-tank that the influence of the heat upon the water contained therein for "feed" while elevating its temperature shall in no case bring it up to the steam-generating or boiling point under the given pressure.

WM. MONT. STORM.

Witnesses:

R. CHARLTON MITCHELL,
S. F. STORM.