

No. 626,454.

Patented June 6, 1899.

G. P. BRINTNALL.
WATER HEATER.

(Application filed June 22, 1898.)

(No Model.)

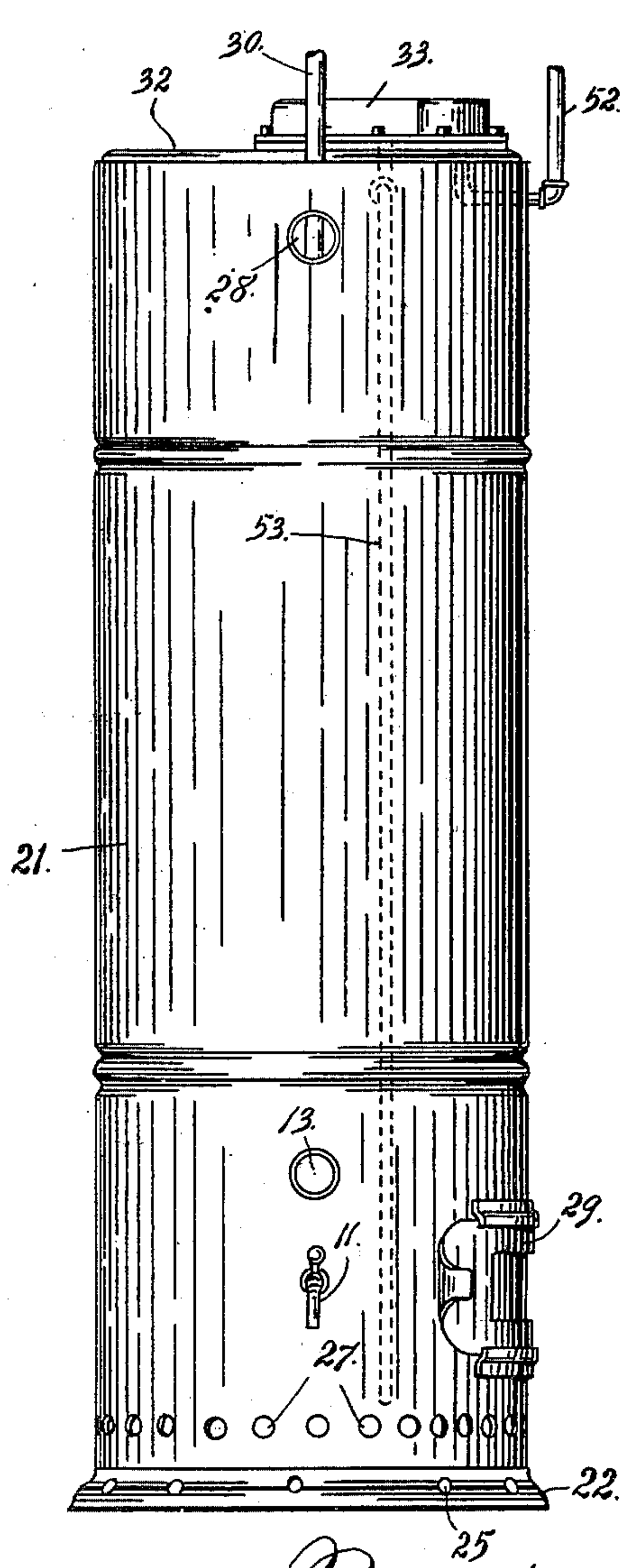


Fig. 1.

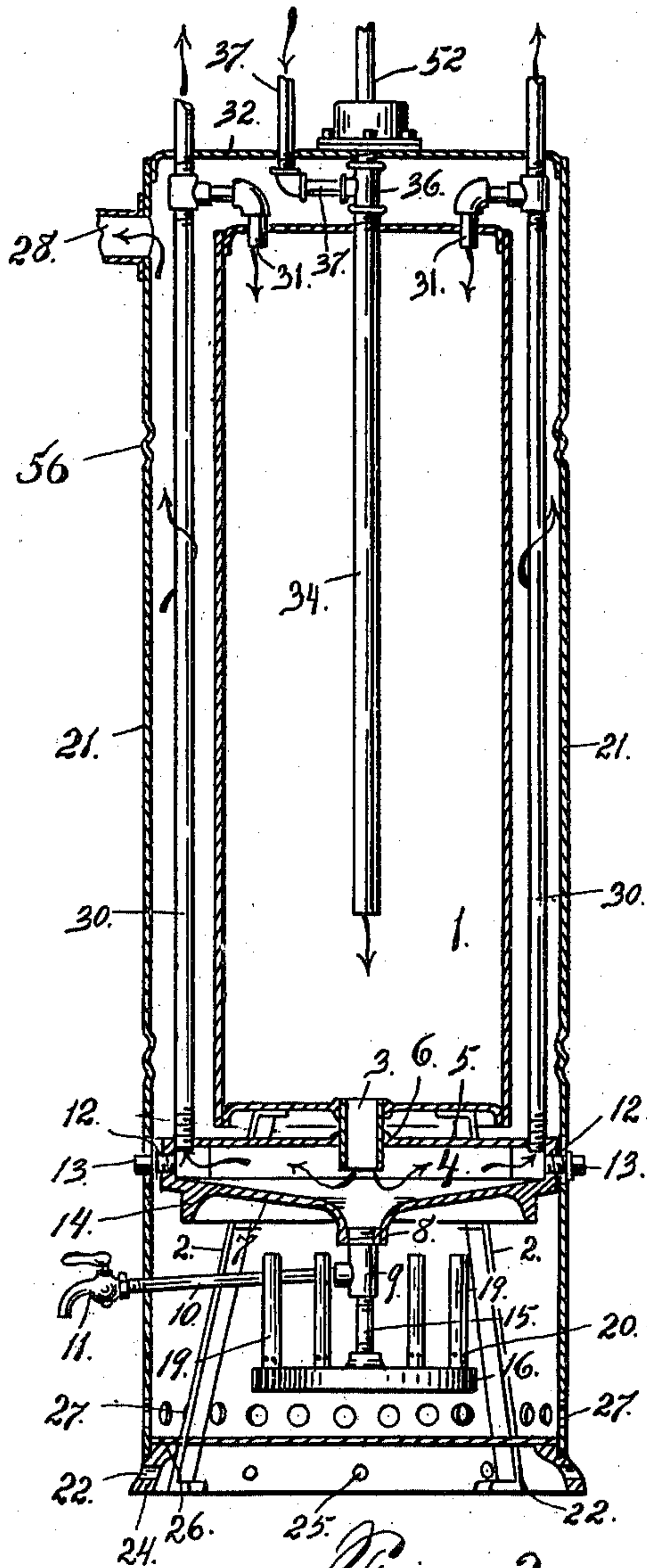


Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE P. BRINTNALL, OF BUFFALO, NEW YORK, ASSIGNOR OF TWO-THIRDS TO JACOB L. MENSCH AND CHARLES F. MENSCH, OF SAME PLACE.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 626,454, dated June 6, 1899.

Application filed June 22, 1898. Serial No. 684,117. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. BRINTNALL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Water-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My invention relates to water-heaters employed for domestic purposes; and its object is to improve the construction of the same.

To this end the invention consists in certain details, as will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is an elevation of my improved water-heater complete. Fig. 2 is a central vertical section of the same.

Referring to the drawings, 1 is the boiler, of usual cylindrical configuration, resting on the supports 2 and provided with the central outlet-orifice 3 in its bottom, preferably formed of a short piece of pipe depending therefrom, as shown.

A short distance below the boiler 1 is the circular cast-metal heater 4, of larger diameter than the boiler 1, but of shallow configuration.

In its upper flat wall 5 is the central orifice 6, into and through which projects the outlet-pipe 3 of the boiler.

The bottom 7 of heater 4 tapers downwardly to the central outlet-orifice 8, in which is fitted the tube 9. A pipe 10, having the faucet 11 at its outer end, communicates with an orifice in the tube 9, which leads up into the heater 4, thereby permitting the contents of the heater to be drawn off when desired. On diametrically opposite sides of the heater 4 are the clean-out holes 12, provided with the screw-plugs 13. Around the bottom 7 of the heater and cast integral therewith is the annular downwardly-extending wall or heat-arrester 14. Secured in the lower end of the tube 9 is the rod 15, carrying at its lower end

the disk-shaped gas-reservoir 16, in the upper wall of which is arranged a series of burners 17, each provided with an annular shoulder, (not shown,) upon which rests a mixer composed of the open tube 19, provided with a series of apertures 20 in proximity with the burner for the admission of air for mixture of the gas from the burner.

Surrounding the boiler, heater, and burners is the cylindrical sheet-iron jacket 21, of considerably larger diameter than the boiler 1. This jacket rests upon an annular shoulder on the cast-metal base or support 22, and within the jacket and also resting upon the base 22 is the sheet-metal diaphragm 23, (see Fig. 2,) which forms a chamber 24 between it and the floor upon which it rests. Ventilating-holes 25 are provided in the side wall of the base to permit a free circulation of air to offset the effect of the heat within the jacket 21. A series of apertures 27 in the wall of the jacket 21 just above the diaphragm 23 admit air to create a circulation up between the jacket and the boiler, an exit-passage 28 being provided at the upper end of the jacket to carry off the products of combustion from the burners below. The screw-plugs 13 in the clean-out holes 12 of the heater extend out through the jacket 21 to permit of access to the interior of the heater 4 without the necessity of removing the jacket. The faucet 11 is also outside of the jacket 21, as shown, and a sliding door 29 is also provided in the side wall of the jacket 21 to permit access to the burners.

30 30 are two pipes seated in the upper wall 5 of the heater 4, near its outer edge and diametrically opposite each other. They extend up midway between the jacket and boiler and communicate with the upper part of the boiler through the branch pipes 31 31, which extend down through the top of the boiler, near its outer edge. Only one of these pipes may be employed or more than two, if deemed desirable.

Located upon the top 32 of the jacket 21 is the elongated casing 33, within which I arrange a valve for regulating the supply of gas to the burners, such valve being automatically controlled by a thermostat.

34 is a pipe passing through the top of the boiler 1 and extending down into the boiler about three-fourths of its depth. The pipe 34 is secured in the lower orifice of the coupling 36, and 37 is the supply-pipe, secured in the side orifice and through which the water is fed into the boiler. Within this tube 34 is a brass tube or expansible rod which connects in any desirable manner with the valve within the casing 33 for opening and closing the same.

The operation of my improved heater just described is as follows: The water is fed from the supply-pipe 37 into the connecting-pipe 34, extending down into the boiler, and is discharged therein through its open lower end. The water passes from the boiler into the heater 4 through outlet-orifice 3. The ignited gas from the burners strikes the inclined bottom 7 of the heater and is arrested or held back by the annular wall 14, which greatly increases its heating efficiency. The heat after escaping from the bottom 7 passes up the annular chamber between the jacket and heater and out the exit-passage 28. The water thus heated passes up the side pipes 30 30, and if no water is being drawn off it passes through the branch pipes 31 31 into the top of the boiler and assists in forcing the entering cold water into the heater, thus producing a circulating current on both sides of the boiler and in a downward direction. The effect of this action produces a rapid raising of the temperature of the water in the boiler. Then, too, the surplus heat passing up and around the pipes 30 30 greatly assists in the rapid action of my improved arrangement. The gas which is passing down the supply-pipe to the burners is also being superheated, as the pipe is inclosed between the boiler and jacket, and is therefore subjected to the ascending heat in its passage to the outlet 28. This is an additional advantage, as it necessarily increases the heating efficiency of the burners. As the cold water passes down the interior pipe 34 and in contact with the inclosed brass tube it causes such tube to contract, which results in a raising of the valve, which is located within the casing 33 and which controls the supply of gas for the burners. A pilot-light (not shown) ignites the escaping gas at the burners and the heating operation commences. If water is being drawn off, the valve remains open by reason of the incoming cold water, as just described; but if no water is being used the supply of cold water is checked, and when the water in the boiler is all heated to a high temperature it causes the brass tube to close the valve and shut off the supply of gas to the burners. In this manner the supply of gas is automatically regulated and a safe temperature of the water in the boiler is all times maintained. The vertical arrangement of the pipes 30 30 is intended for use with natural gas; but if illu-

minating or manufactured gas is used I prefer that these pipes instead of running vertically to the top of the jacket 21 shall be coiled helically around the boiler in any desirable manner. This arrangement greatly increases the heating action, and consequently requires less gas for equal temperatures in the two boilers.

With my improved form of heater it is possible to remove all sediment deposited therein without removing the jacket or disturbing any of the parts. This can be done by removing the screw-plugs from the clean-out holes for the insertion of a brush or other instrument to loosen up and separate the foreign matter, which can afterward be washed out through the pipe 10 and faucet 11. My improved arrangement of providing a cast-metal heater separate from the boiler, but communicating therewith, prevents the burning of the boiler, as the flame of the burners has no direct contact with its surface at any point.

I have found by actual test that my boiler will heat the water so rapidly and effectively that I am enabled to obtain a constant supply of heated water, as the heat action is so rapid that the water drawn off comes directly from the heater, so that it is not necessary to wait until the water in the boiler above is heated, thereby giving a constant supply of hot water in a few minutes after the burners are lighted.

I claim—

1. The herein-described water-heater consisting of a jacket, a boiler within the jacket provided with a central outlet-pipe at its bottom, a heater having an orifice through which this pipe projects, said heater being constructed with a bottom tapering toward the center, a depending flange on the bottom of the heater near its periphery, a ring burner, and a rod connecting the center of the heater with the center of the burner for supporting the latter, substantially as and for the purpose set forth.

2. The herein-described water-heater consisting of a jacket, a boiler within the jacket, a heater communicating with the boiler, said heater being constructed with a bottom tapering to a central outlet, a guard-ring depending from the bottom near the periphery, a tube in the outlet, a faucet leading from the side of the tube, a burner beneath the heater, and a rod one end of which is secured to the burner and the other in the tube, for supporting the burner and closing the tube, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE P. BRINTNALL.

Witnesses:

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