(No Model.)

M. E. CAMPANY

VAPOR BURNER.

No. 525,331. Patented Sept. 4, 1894.

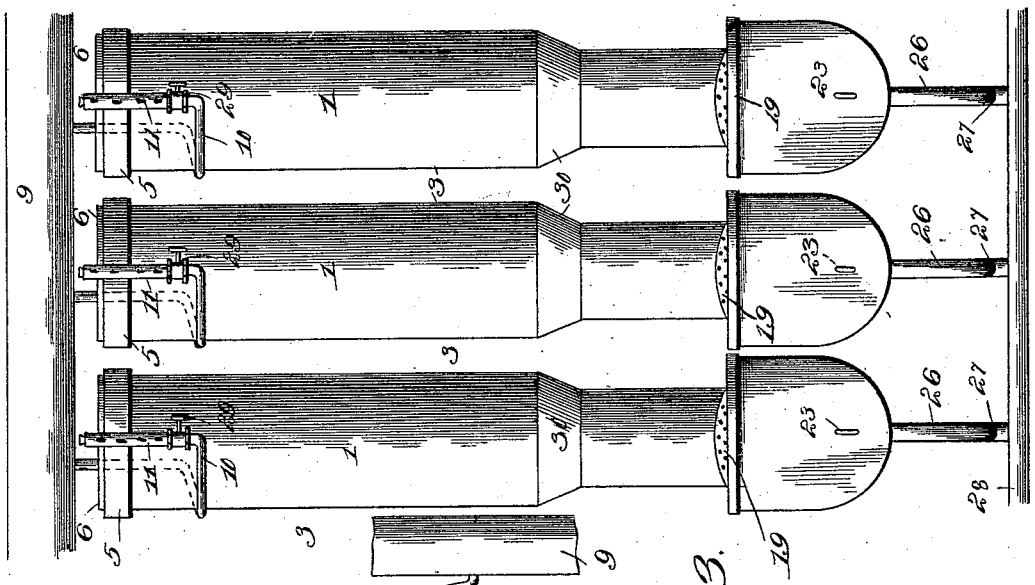

Fig. 3.

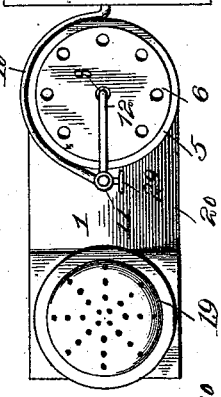

Fig 2.

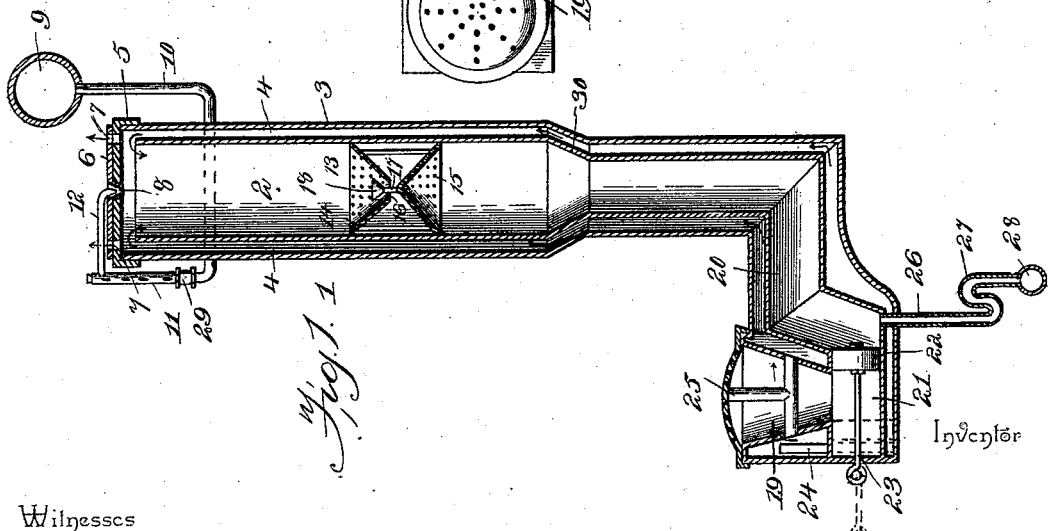

Fig. 1.

Inventor

Witnesses

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UNITED STATES PATENT OFFICE.

MILTON E. CAMPANY, OF HAMILTON, MICHIGAN.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 525,331, dated September 4, 1894.

Application filed July 24, 1893. Serial No. 481,303. (No model.)

To all whom it may concern:

Be it known that I, MILTON E. CAMPANY, a citizen of the United States, residing at Hamilton, in the county of Allegan and State of Michigan, have invented a new and useful Vapor-Burner, of which the following is a specification.

My invention relates to a vapor burner for stoves, &c., and it has for its object to provide means for accomplishing a complete evaporation or vaporization of the oil; and furthermore, to provide means for checking the combustion without exhausting the vapor in the conductor of the burner, whereby subsequent ignition may not be delayed during the vaporization of a fresh supply of fuel.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings: Figure 1 is a vertical central section of a burner embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a front view of a battery of burners.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the evaporator tube, comprising the conductor 2, which is inclosed within an exterior shell 3, between which and the walls of the conductor is an annular flue 4, which communicates at its upper end with the interior of the conductor. The upper end of the evaporator tube is provided with a cap 5, provided with a register 6, the openings 7 of such register being aligned with the annular flue 4. This cap supports the centrally-disposed drip-nozzle 8.

9 represents a tank or reservoir, and 10 the supply-pipe leading therefrom, extending around the evaporator tube at its upper end, and communicating with the lower end of a transparent indicator or gage 11, containing a column of water. The upper end of this indicator or gage is connected, by a pipe 12, to the drip-nozzle.

Located in the conductor 2 is an evaporator 13, which comprises upper and lower oppositely-positioned conical reticulated surfaces 14 and 15, the base edges of which are secured to the inner surface of the conductor. The upper cone 14 is truncated to form a central opening 16, through which extends the supporting stem 17 of the drip-pan 18, said drip-pan being arranged within the upper cone and out of contact with its walls.

19 represents the burner proper, consisting of an inverted trunco-conical shell which is located within the exterior shell 3 of the evaporator tube, which is provided at its lower end with a horizontal extension 20. This burner tube is provided with a sawed or other suitable cap and communicates, at its lower end, with the conductor 2. Beneath the burner tube is arranged a valve-seat 21, in which fits the slidable valve 22, having a stem 23 which projects through the closed end of the conductor.

An inlet tube 24 is arranged vertically in the evaporator tube adjacent to the burner tube and communicates with the annular air tube 4.

A branched conveyer 25 is located within the burner tube, communicates at the extremities of its branches with the annular space around the burner tube, and terminates at the center of the burner cap.

26 represents a relief tube which communicates with the conductor 2 at the lowest point of the latter adjacent to the valve 22, is provided with a goose-neck trap 27, and communicates with a main relief pipe 28, which is shown clearly in Fig. 3 and is designed to convey the overflow or drip to a point of safety at which it may be removed and replaced in the tank or reservoir.

This being the construction of my improved apparatus the operation thereof is as follows: Oil or other fluid fuel being in the tank or reservoir and the controlling valve 29 having been opened, the oil flows through the supply-pipe 10, passes upwardly through the vertical column of water in the indicator or gage 11, passes through the pipe 12 to the drip-nozzle, and thence drips into the drip-pan 18. This drip-pan being shallow and located at a considerable distance below the drip-nozzle, it will be understood that as the fuel falls thereinto it will splash and come in contact with the reticulated walls of the evaporating cones where it will be exposed to the air and evaporation will ensue. The transparent indicator or gage enables the operator to ascer-

tain the rapidity of the supply of fuel, but even if the supply is so rapid that complete evaporation is not produced upon the walls of the upper cone, the fuel will drip from the lower edge of said cone to the surface of the lower cone, thus providing an additional evaporating surface. If the evaporating surface is still insufficient for the purpose the fuel will be conducted to the walls of the conductor, and as the evaporator tube is provided at 30 with an offset or shoulder an additional inclined evaporating surface is arranged in the path of the fuel. Any overflow or surplus fuel after reaching the horizontal extension of the conductor will be carried by the relief tube to the main relief pipe, the interposed goose-neck trap being continually filled with the fuel as a guard against back pressure. The vapor or gas passes from the conductor into the lower end of the burner tube when the valve 22 is arranged in the position shown in dotted lines in Fig. 1, and is ignited at the cap or tip in the ordinary way, the conveyer 25 supplying oxygen from the annular air space to the burner at the point of ignition. The heat of the burner produces a current of hot air through the tube 24 and the annular air tube 4, and thus maintains the walls of the conductor at a high temperature during the operation of the burner. When it is desired to secure the maximum heat the register at the top of the evaporator tube is opened, thus producing an increased draft, and hence causing a more rapid downward current of air through the conductor tube and producing a more rapid evaporation of the fuel.

When it is desired to check combustion it is accomplished by pushing the valve 22 to the position shown in Fig. 1 in full lines, and cutting off the supply. Hence, the conductor is filled with the vapor or gas, which is rendered more dense by the subsequent evaporation of that fuel which is retained in the drip-pan and upon the walls of the evaporating cones when the supply is cut off, and therefore, when it is required to light the burner, the valve 22 is drawn to the position shown in dotted lines in Fig. 1, a lighted match having been previously applied to the cap or tip of the burner, and a supply of vapor is immediately admitted to the burner tube. Thus, it is not necessary with the construction shown in the drawings to wait for the evaporation of a quantity of fuel before lighting, inasmuch as a supply of vapor is always retained in the conductor. The current of heated air which passes continuously through the annular air tube aids and insures the effective evaporation of the oil.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. The combination with an evaporator, a burner located below the plane of the evaporator, and a conductor communicating with the evaporator, extending horizontally beneath and communicating with the burner, of a cut-off valve arranged in the portion of the conductor beneath the burner and adapted to be arranged on either side of the communicating opening between the burner and the conductor to open or close said opening, whereby when closed, the vapor within the conductor is confined and stored for subsequent ignition, substantially as specified.

2. The combination of an evaporator tube having a burner connected thereto, and an evaporator located in said tube and having an inverted reticulated cone, and a drip-pan arranged within and below the plane of the upper edge of the inverted cone, substantially as specified.

3. The combination with an evaporator tube and a connected burner, of an evaporator having a lower reticulated cone, a superjacent inverted truncated cone, and a drip-pan supported within said inverted cone, substantially as specified.

4. The combination with an evaporator and a burner, of an evaporator tube connecting the evaporator and burner, and a surrounding concentric air tube inclosing the evaporator tube throughout its length and extending beyond the inlet end of the same, a drip-nozzle arranged at the center of the end of the air tube above the evaporator, and a draft-controlling register arranged concentrically with the drip-nozzle and closing the end of the air tube, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MILTON E. CAMPANY.

Witnesses:
J. H. SIGGERS,
H. G. PIERSON.