

(No Model.)

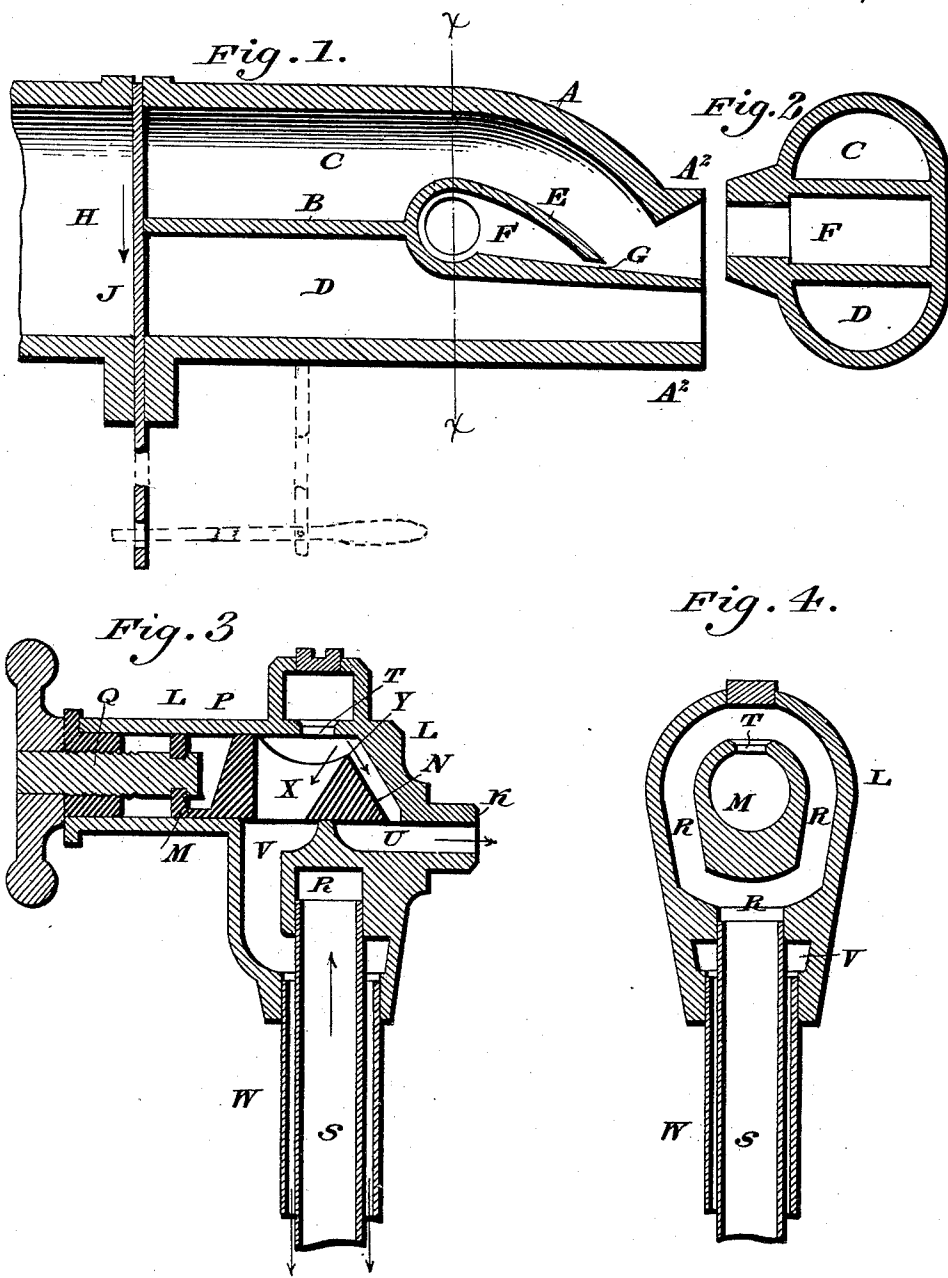
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W. J. KENDERDINE.

VAPORIZER FOR HYDROCARBON OR SIMILAR FLUIDS.

No. 465,668.

Patented Dec. 22, 1891.



WITNESSES:

P. M. Cagle.

L. Douville

INVENTOR

William J. Kenderdine

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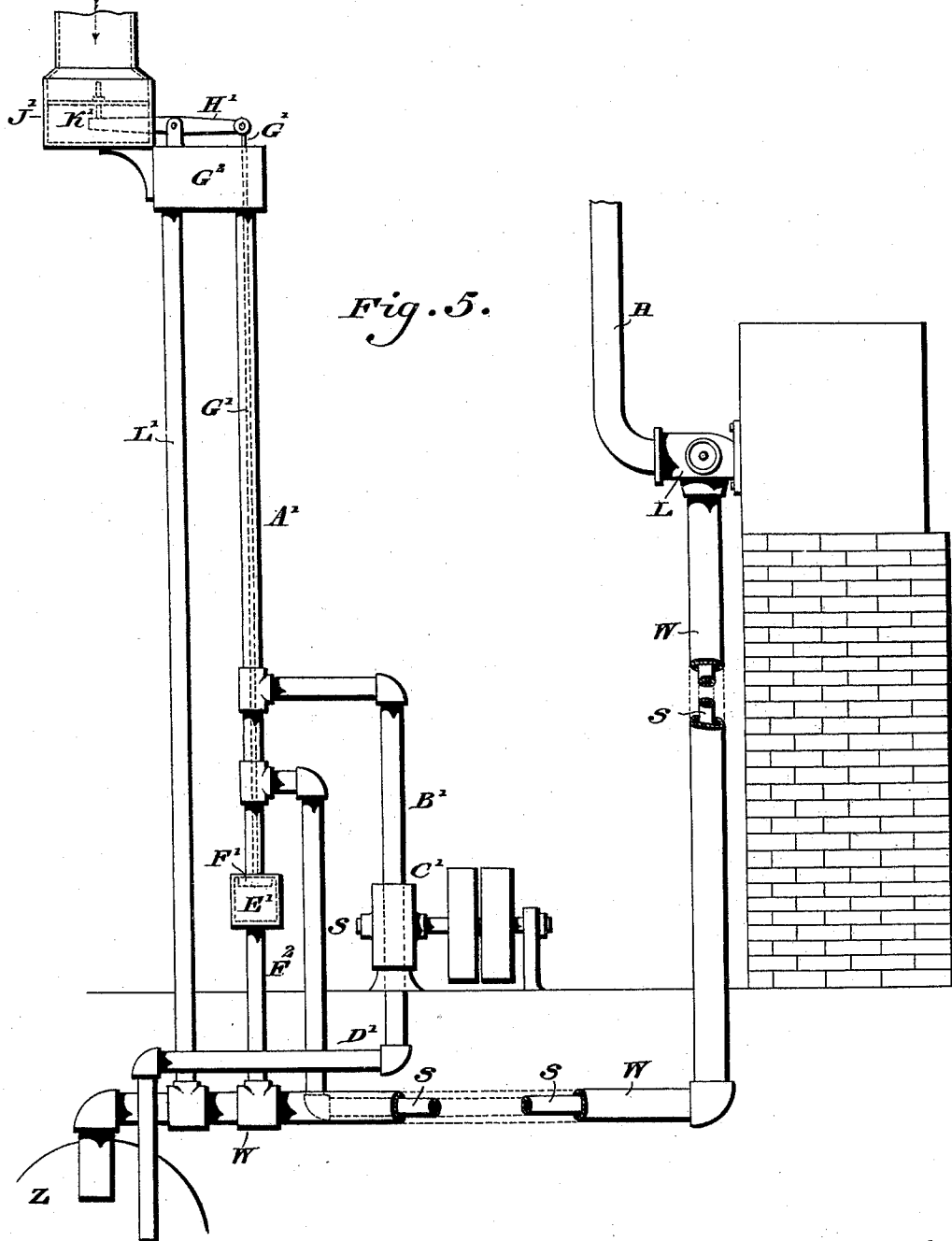
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UNITED STATES PATENT OFFICE.

WILLIAM J. KENDERDINE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
OF ONE-HALF TO JOHN A. WIEDERSHEIM, OF SAME PLACE.

VAPORIZER FOR HYDROCARBON OR SIMILAR FLUIDS.

SPECIFICATION forming part of Letters Patent No. 465,668, dated December 22, 1891.

Application filed April 11, 1891. Serial No. 388,461. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. KENDERDINE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Vaporizers for Hydrocarbon or Similar Fluids, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of a vaporizer or burner for hydrocarbon fluid of novel construction, as will be hereinafter set forth.

It also consists of a valve for said vaporizer or burner, whereby a circulation of fluid admitted to said valve may be effected, thus preventing carbonization or clogging of the same.

It also consists of a governor for the supply device of the vaporizing apparatus.

Figure 1 represents a longitudinal vertical section of a vaporizer embodying my invention. Fig. 2 represents a transverse section thereof on line $x\ x$, Fig. 1. Fig. 3 represents a vertical section of a valve connected with the vaporizer. Fig. 4 represents a section at a right angle to Fig. 3, a plug or slide-valve in said Fig. 3 being omitted in Fig. 4. Fig. 5 represents a side elevation, partly broken away, of apparatus embodying my invention.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a burner or vaporizer consisting of a shell within which is a horizontal diaphragm B, which divides said shell into the chambers C and D. A portion of the diaphragm is partly covered by a hood E, forming a chamber F.

Between the forward end of the hood and the diaphragm below the same is a throat or outlet G, it being noticed that said portion of the diaphragm constitutes an inclined floor or wall by which oil or fluid entering the chamber F is directed to and through the throat G toward the forward end of the burner.

The chambers C and D are connected with a pipe H leading from a fan, blower, or other supply of air under pressure, said chambers being also provided with a valve J, which is

shown in the present case as a sliding plate guided in the walls of the burner, whereby the supply of air may be regulated to said chambers, it being noticed that when the air enters the chamber C it passes over the hood E, and thus does not exert pressure on the chamber F.

Leading into the chamber F is a pipe K, with which is connected a valve L, the latter having within it the tubular wall M, within which is a portion of a sliding or movable head N, the latter being also supported on the branch P of the shell of the valve and connected with a screw Q, whereby said head may be moved in opposite directions.

Between the wall M and the shell of the valve is a chamber R, communicating with which is the supply-pipe S. The top of the wall M is provided with a passage T, and the valve has on opposite sides of said wall the discharge-chamber U and overflow-chamber V, the chamber U leading to the pipe K, and the chamber V leading to the overflow-pipe W, which in the present case incloses the pipe S. The head N has a vertical port X in the same, and the wall of said opening on the side toward the burner is doubly inclined or tapering, forming the peak Y, it being noticed that the port X and the peak Y are beneath the passage T at the top of the wall M. The pipe W is in communication with the supply-tank Z, which is located in any suitable place. The pipe S is connected with the reservoir-pipe A', of what I term the "governor," said pipe A' having connected with it the feed-pipe B', extending from the pump or pumping apparatus C', the latter having connected with it the supply-pipe D', which leads from the tank Z.

E' designates a chamber, which is connected with the pipe A' and containing a valve F', whose seat is on the upper part of said chamber, said valve being connected with a stem G', which passes through the pipe A' and also through a chamber G² at the top of the pipe A', where it is connected with a suitably-mounted lever H', adjacent to the opposite end of which is a chamber J', within which

is a piston K', to which said lever is attached, said piston when in use being forced normally downward by pressure of air from a suitable apparatus, so that the valve F' is held in closed condition.

The chamber G² has attached to it a pipe L', which is connected with the pipe W, leading to the tank Z.

The operation is as follows: Hydrocarbon fluid, petroleum, or other suitable oil is pumped or directed into the pipe A' and fills the same, so that it flows therefrom in a constant stream into the pipe S. When the fluid rises in the pipe A', it enters the chamber G², and so may overflow into the pipe L', whereby it is returned to the tank Z. Should the pressure apparatus of the piston K' fail to work, said piston will be relieved, whereby it may rise, thus opening the valve F', said valve also opening should there be excessive pressure thereon, so that the fluid escapes from the pipe A' into the chamber E', from which latter it is returned to the tank by means of a pipe F², which is connected with said chamber E' and the pipe W. The fluid entering the pipe S is directed by the same into the valve L, it flowing through the chamber R into the passage T and falling upon the head N, where the stream is divided, some passing to the right of the peak Y, and thus entering the chamber U. Another volume of the fluid flows through the port X, and so reaches the overflow-chamber V, and from thence the pipe W, whereby it is reconveyed to the tank. It will be here observed that by the division of the stream of the fluid the latter is kept in circulation, which in cold weather will prevent thickening or carbonization of the fluid after it has left the pipe A', which may be heated by any suitable means. Should there be water in the hydrocarbon fluid, it is prevented from accumulating in any part of the system. It will be noticed that by the provision named I obviate the liability of the valve to choke—a feature of great importance in apparatus of the class. After the fluid leaves the chamber U it is directed by the branch pipe K into the chamber F and escapes therefrom through the throat G, where it is subjected to the blast of air entering the chamber C, so that it is atomized or vaporized or converted into spray or vapor, which is directed from the nozzle A² of the burner into a furnace or other place of service. The air that is admitted into the chamber D is directed from the same to the place of burning of the vapor in order to produce a more perfect combustion thereof and to regulate the flame. When desired, steam or steam and air may be directed into the chamber C for converting the hydrocarbon fluid into vapor. When the head N is moved, in the present case to the right, so that the peak is beyond the passage T, the fluid may

be cut off from the burner, and said fluid enters only the port X, whereby it is turned to the tank.

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

1. A vaporizer for hydrocarbon fluid, consisting of a shell containing a chamber formed by a wall and a hood above the same, and a discharge-throat between said shell and wall on the side opposite to the entrance of the air or medium by which the vaporization is effected, substantially as described.

2. A vaporizer for hydrocarbon fluid, consisting of a shell with a wall therein, and a hood over said wall, forming a chamber which is provided with a supply-opening and a discharge-throat, said chamber having an inclined floor or wall from the supply-opening to the discharge-throat, substantially as described.

3. A valve for the vaporizer of hydrocarbon fluid, provided with a valve-head having two inclined faces and a vertical port, whereby the fluid may be divided therein, so that circulation of said fluid is effected, substantially as described.

4. A valve for the vaporizer of hydrocarbon fluid, consisting of a shell with discharge and overflow chambers therein, and a head constructed to direct fluid into both of said chambers, thus effecting a circulation of said fluid, substantially as described.

5. A valve for the vaporizer of hydrocarbon fluid, provided with a valve-head having a port therein with a side wall, and a surrounding shell with discharge and overflow chambers therein, substantially as described, whereby the fluid admitted into the valve may be divided, for the purpose set forth.

6. In apparatus for vaporizing hydrocarbon fluid, a reservoir-pipe, a valve-chamber, a valve-head with a port therein, having a side wall, supply and discharge pipes for said chamber, and an overflow-chamber with an overflow-pipe, said parts being combined substantially as described.

7. A vaporizer for hydrocarbon fluids, consisting of a shell with a diaphragm therein, and of a chamber F, provided with a supply-inlet and a discharge-throat, said diaphragm dividing the shell into chambers C D, the chamber C serving to direct air to said discharge-throat for vaporizing the fluid therefrom and the other chamber serving to direct air to the nozzle of the burner, said chamber F having a covering-hood, substantially as described.

8. In a hydrocarbon-vaporizer, the combination of a tank, the pipe D', leading to a pump, a pipe B', leading from said pump, the chamber G², the pipe A', leading to said chamber and connected with said pipe B', the chamber E', communicating with said pipe

5 A', a pipe leading from said chamber E' to the tank, a valve controlling the entrance into said chamber E', and a pipe leading from said pipe A' to the vaporizer, substantially as described.

9. In a hydrocarbon-vaporizer, the combination of a main supply-pipe, a chamber at the upper end of the supply-pipe, having an overflow-pipe, a chamber at the lower end of

the main supply-pipe, with a discharge-pipe, 10 a pneumatically-operated valve in said chamber adapted to close the entrance thereto, and a pipe leading from said main supply-pipe to the vaporizer, substantially as described.

WILLIAM J. KENDERDINE.

Witnesses:

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A. P. JENNINGS.