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HYDROCARBON LIGHTING SYSTEM.

APPLICATION FILED DEC. 21, 1909.

995,882. Patented June 20, 1911.

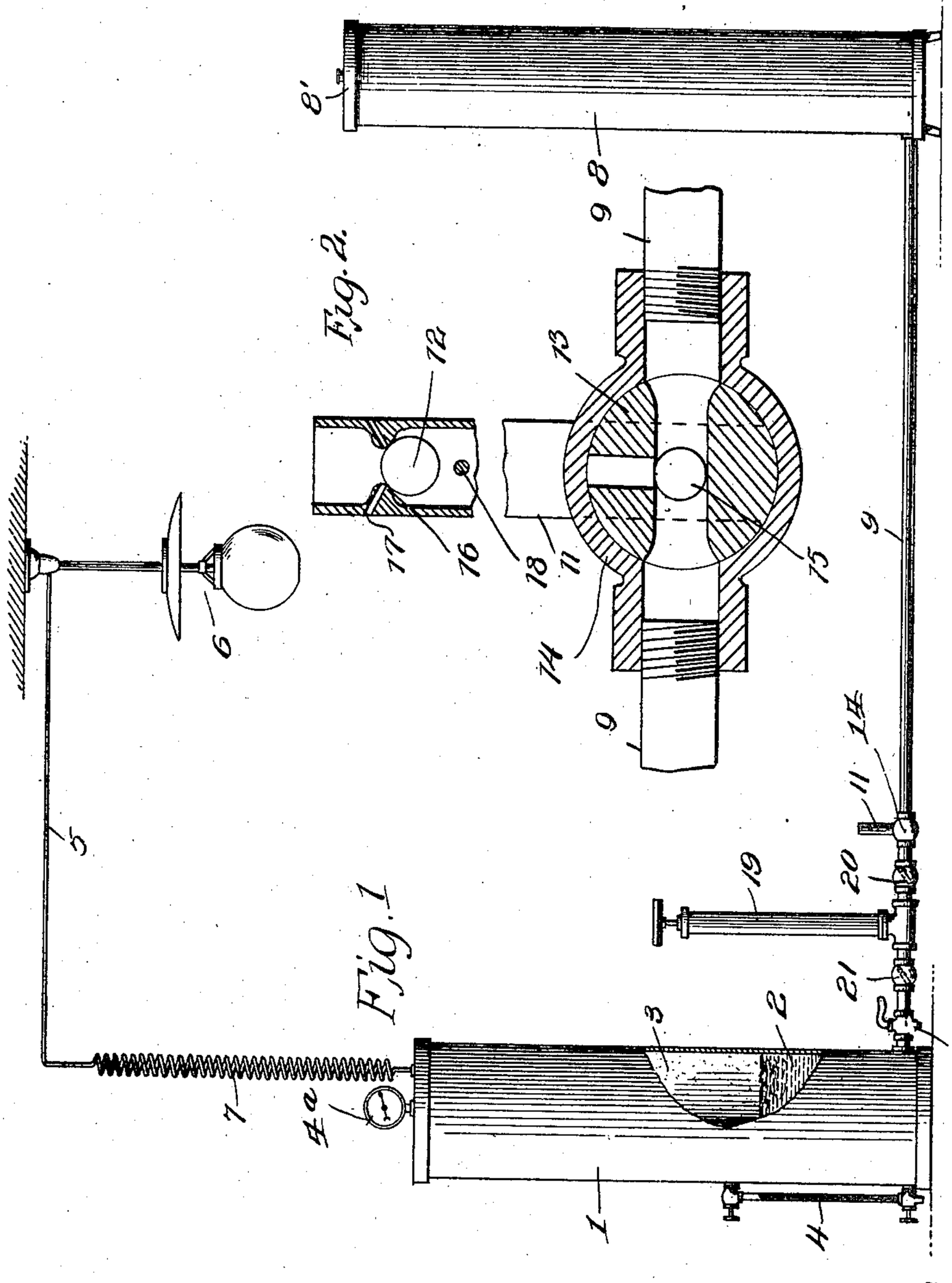

Fig. 1

Fig. 2.

Witnesses:
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HYDROCARBON-LIGHTING SYSTEM.

995,882. Specification of Letters Patent. Patented June 20, 1911.

Application filed December 21, 1909. Serial No. 534,356.

To all whom it may concern:

Be it known that I, ALAMANDER B. LOWRY, a citizen of the United States, residing at Fort Pierce, in the county of St. Lucie and State of Florida, have invented new and useful Improvements in Hydrocarbon-Lighting Systems, of which the following is a specification.

This invention relates to hydrocarbon lighting systems of that character in which the hydrocarbon is confined with a body of air under pressure in a tank and the carbureted air flows therefrom to the burner or burners.

The object of the invention is to provide a lighting system of this character in which an auxiliary tank in communication with the pressure tank is provided for holding a body of hydrocarbon to be supplied to said pressure tank, whereby the necessity of opening the pressure tank and allowing of the escape of carbureted air when it becomes necessary to replenish the same with hydrocarbon is avoided, and whereby a uniform pressure may be maintained within the tank, so that the apparatus will at all times be ready for use.

A further object of the invention is to provide means whereby the quantity of hydrocarbon and pressure of the carbureted air within the pressure tank may be determined at any time, and also to provide means by which hydrocarbon may be pumped from the storage tank to the pressure tank and air forced into said pressure tank through the use of a single pumping mechanism, thus simplifying and reducing the cost of construction and number of parts liable to get out of order.

The invention consists of the features of construction, combination and arrangement of parts hereinafter more fully described and claimed, reference being had to the accompanying drawing, in which:—

Figure 1 is a side elevation of a hydrocarbon lighting system embodying my invention, the pressure tank being shown partially in section. Fig. 2 is a detail section through the supply pipe and three-way valve.

Referring to the drawing, 1 designates a pressure tank adapted to contain a body of hydrocarbon 2, which may be supplied therein to a certain level, leaving a superposed space 3 for the reception of the carbureted air under pressure. The tank is provided with a gage 4 by which the level of the hydrocarbon may be determined at any time, and with a gage 4^a by which also the pressure of the carbureted mixture may be determined. Extending from the top of the tank is a feed pipe 5 for conducting the carbureted air to the burner or burners 6 in the system, in which any number may be employed. This pipe is provided with a coiled portion 7 which elongates the pipe to prevent the too rapid feed of the carbureted air to the burners in starting the system into operation, and to insure the thorough admixture of the air and hydrocarbon vapor on their passage, which ensues through the agitation of the mixture in flowing through the convolutions of the coil.

Arranged at any suitable distance from the tank 1 is a gasolene storage tank 8 having a removable top or cover 8′ which may be detached for supplying hydrocarbon to said tank whenever replenishment is necessary. Leading from the base of this tank 8 to the base of the tank 1 is a hydrocarbon supply pipe 9 which is provided adjacent its point of connection with the tank 1 with a cut off valve or cock 10 by which communication between the pipe and tank 1 may be closed at any time to maintain the pressure within the tank.

Arranged in the pipe 9 between the tank 8 and valve 10 is an air inlet tube 11 having a check valve 12 therein. This tube forms an operating handle for a three-way valve 13 arranged in a casing 14 disposed in the pipe 9, with which valve the tube is in communication through a lateral passage 15. The tube when turned to a vertical position will adjust the valve to open communication between the sections of the pipe 9 and when turned to a horizontal position will adjust the valve to cut off communication between the pipe section leading from the tank 8 to the valve casing and open communication between the atmosphere through the tube and the pipe section leading from the valve

casing to the tank 1. The valve 12 is of the ball-type and is movable outwardly to engage a seat 16 formed by internally contracting the tube, above which seat the tube is formed with air inlets 17. A stop 18 is provided in the tube to limit the inward or opening movement of the ball valve. When the tube is in vertical position, the valve is forced against its seat, by the pressure caused by the head of oil in the tank 8, thus closing the air inlets 17 and at the same time closing the tube against escape of oil. When the tube is turned to a horizontal position the valve is free to move inward to operate as a check valve for the pump, in which action it permits air to enter through the inlets 17, as will be readily understood.

A pump 19 is connected with the supply pipe between the cock 10 and valve casing 15 and is preferably of the type having a manually operated piston adapted on its up stroke to draw in fluid and on its down stroke to expel the same. Check valves 20 and 21 are arranged in the supply pipe respectively between the pump and air inlet valve and between the pump and cock 10, which check valves open in a direction toward the tank 1 and close in the reverse direction.

In the operation of priming the apparatus for use, the tank 8 is supplied through its open top with a definite amount of hydrocarbon and is then closed by its cover 8'. With the valve 14 in the position shown in Figs. 1 and 2 the cock 10 is open and the pump 19 operated to draw gasolene from the tank 8 and force it into the tank 1 until the latter is supplied up to the desired level, when the cock 10 is closed. In this operation it will be understood that on the suction stroke of the pump the valve 20 will open and allow the hydrocarbon from the tank 8 to pass into the pump cylinder, and that upon the discharge stroke of the pump piston the valve 21 will open to allow the hydrocarbon to pass into the tank 1 while the valve 20 will close to prevent return of the gasolene to the tank 8. After the tank 1 has been supplied with hydrocarbon, the tube 11 is turned to a horizontal position and the cock 10 again opened, thus cutting off communication between the two tanks and opening communication between the tank 1 and atmosphere through said tube, so that by operating the pump air will be drawn through the tube and forced into the tank 1 upward through the body of hydrocarbon 2 into the space 3. In this operation the check valves 20 and 21 open and close in the manner heretofore described to permit air to pass to the tank 1 and prevent its return. When the tank has been supplied with air to the desired pressure, the tube 11 is then again turned to a vertical position and the cock 10 closed to maintain the pressure within said tank.

In the manner above described, the tank 1 may be replenished with hydrocarbon and air at fixed intervals or whenever required, so that, with a minimum expenditure of time and labor, the apparatus may be kept constantly in condition for use. It will be understood, of course, that the air contained within the space 3 is carbureted through its passage upward through the body of hydrocarbon 2 and through the commingling therewith of the vapors formed by the evaporation of the hydrocarbon, gasolene being commonly employed as the fuel agent. Consequently by reference to the gages the condition of the apparatus may be at all times determined, and the escape of hydrocarbon and carbureted air from the tank will be prevented, thus obviating all liability of waste and the loss of time required in starting lamps to burn where waste of the hydrocarbon or carbureted air occurs.

A system constructed as above described may be manufactured and installed at a low cost and easily kept in operative condition. By the use of the auxiliary storage tank, the necessity of filling the tank 1 directly with hydrocarbon, and the loss of vapors occurring under such conditions, is entirely prevented, thus reducing liability of danger and increasing the efficiency of the apparatus.

I claim:—

1. A hydrocarbon lighting system embodying a storage tank adapted to contain gasolene and air under pressure, a gasolene storage tank, a conducting pipe between said tanks, an air inlet valve in said pipe movable in one direction to cut off the flow of air and admit of the passage of gasolene and in the reverse direction to admit air and cut off the flow of gasolene, a cut off valve in the pipe between said air inlet valve and the first-named tank, a pump connected with the pipe between said valves, and check valves in the pipe between the pump and said air inlet and cut off valves.

2. A hydrocarbon lighting system embodying a storage tank adapted to contain a body of hydrocarbon and air under pressure, a hydrocarbon storage tank, a pipe extending between said tanks, a valved air inlet in said pipe, a cut off valve in the pipe between said air inlet and the pressure tank, and a pumping device connected with the pipe between said air inlet and cut off valve.

3. A hydrocarbon system embodying a tank adapted to contain gasolene and air under pressure, a gasolene storage tank, a conducting pipe between said tanks, a three-way valve in said pipe, a hollow

handle for said valve forming an air inlet and having a check valve therein, a cut off valve in the pipe between said three-way valve and the pressure tank, a pump connected with the pipe between said valves, and check valves in the pipe between the pump and said three-way and cut off valves.

In testimony whereof I affix my signature in presence of two witnesses.

ALAMANDER B. LOWRY.

Witnesses:
R. E. BRAY,
LILLIAN A. BRAY.