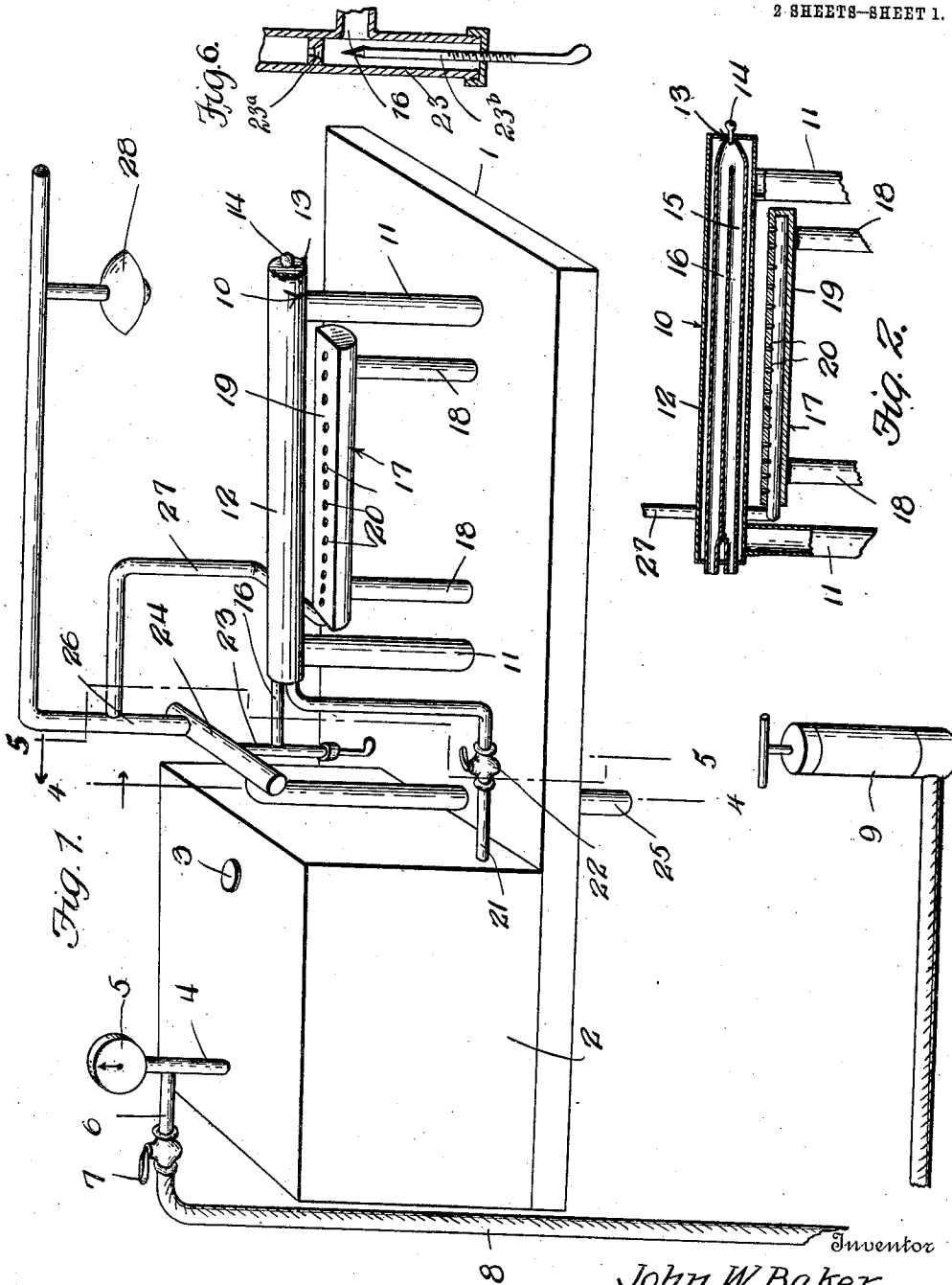


J. W. BAKER.
HYDROCARBON LIGHTING SYSTEM.
APPLICATION FILED APR. 23, 1910.

978,811.

Patented Dec. 13, 1910.

2 SHEETS-SHEET 1.



Witnesses

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Fig. 4.

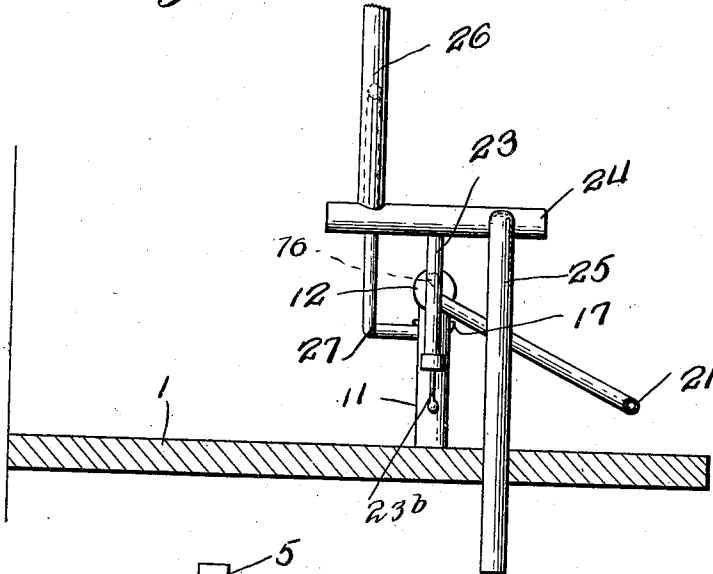


Fig. 5.

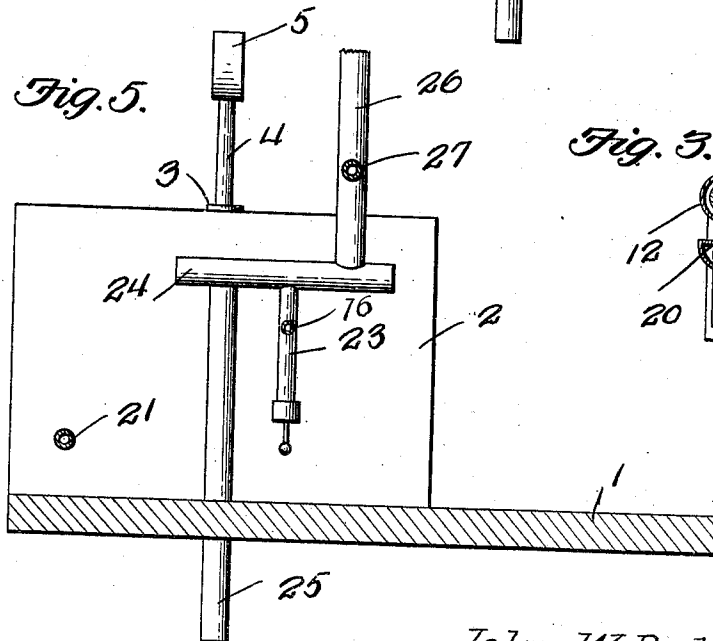
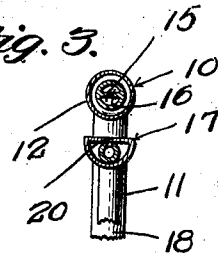


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN W. BAKER, OF ELLSWORTH, KANSAS.

HYDROCARBON LIGHTING SYSTEM.

978,811.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed April 23, 1910. Serial No. 557,257.

To all whom it may concern:

Be it known that I, JOHN W. BAKER, a citizen of the United States, residing at Ellsworth, in the county of Ellsworth and State of Kansas, have invented new and useful Improvements in Hydrocarbon Lighting Systems, of which the following is a specification.

This invention relates to hydrocarbon lighting systems, the object of the invention being to provide a simple, reliable and efficient system of this character applicable to domestic and other uses, and adapted to effect a thorough vaporization of the hydrocarbon and a proper admixture of air with the vapor to produce a thorough combustion of the gas and a light of high illuminating power.

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

Figure 1 is a perspective view of a hydrocarbon lighting apparatus embodying my invention. Fig. 2 is a longitudinal section through the vaporizer and vaporizing burner. Fig. 3 is a cross section through the same. Figs. 4 and 5 are detailed sections on the lines 4—4 and 5—5 of Fig. 1. Fig. 6 is a detail section through the vapor feed pipe, showing the needle valve.

Referring to the drawings, 1 designates a suitable supporting bracket or shelf adapted to be secured to a wall or other support. Mounted upon one end of this shelf is a hydrocarbon storage tank 2 having a suitably closed filling inlet 3 for the admission of the gasoline or other fluid hydrocarbon employed. Communicating with the tank is an air inlet pipe 4 having a gage 5 for indicating the pressure of the air within the tank. Extending laterally from said pipe below the gage is a branch 6 provided with a cut off valve 7 and adapted for connection with a hose or pipe 8 leading from a foot power or other pump 9 by which air may be supplied to the tank to feed the hydrocarbon under suitable pressure through the parts of the system.

A vaporizing device 10 extends horizontally above the shelf at any convenient distance from the storage tank, and is supported by suitable legs or uprights 11. This vaporizing device comprises an outer tube or shell 12 closed at each end and having at

its outer end an opening 13 closed by a removable plug or stopper 14. Arranged within said shell is a vaporizing tube proper preferably formed of copper or other high conducting material and composed of longitudinally extending upper and lower branches or limbs 15 and 16, the limb 15 serving as the hydrocarbon inlet branch and the limb 16 as the vapor outlet branch. The inner ends of the limbs are separated and free from connection, while their outer ends are in communication through a return portion, in which is formed an opening registering with the opening 13 and also closed by the plug 14 to normally prevent the escape of vapor. Upon removing the plug both limbs of the tube may be explored by a wire or other suitable implement to force any particles of carbon or other deposits out through the inner ends of the limbs, allowing the vaporizing tube to be readily cleaned when occasion requires. The shell 12 protects the vaporizing tube from the direct intense heat of the flame, while at the same time storing and transmitting a proper amount of the heat to the tube to effect the vaporization of the hydrocarbon.

Arranged below and in parallel relation to the vaporizer is a vaporizing burner or heater 17 composed of a tube or pipe having jet orifices in its upper side and supported from the bracket by legs or uprights 18. This burner extends longitudinally through a starting pan 19 having openings in its top wall registering with the jet orifices, for the discharge of the generated vapor, said pan having its end heads fixed to the burner or its supporting uprights in any suitable manner. In starting the burner into operation, a suitable amount of alcohol or other liquid fuel is put into the starting pan and ignited to heat the burner to the necessary temperature to establish subsequent automatic generation.

Leading from the tank 2 to the inner end of the limb 15 of the vaporizing tube is a hydrocarbon feed or supply pipe 21 having a controlling valve 22, by which the feed of the hydrocarbon to the vaporizer may be regulated as occasion requires. The gas generated by and within the vaporizing tube discharges from the inner end of the limb 16 of said tube into a vapor feed pipe 23 extending vertically above and below the vaporizer and connected at its upper end

with a horizontally disposed mixing chamber or tube 24, with the end of which connects a vertical air feed pipe 25 extending downward through an opening in the bracket. Leading upwardly from the tube 24 is a gas supply pipe 26. The pipe 23 has a restricted port 23^a controlled by a needle valve 23^b extending through said pipe 23, by which the feed of the vapor to the mixing chamber may be controlled. After the generation of gas is started, a continuous supply thereof is fed to the burner 17 through a pipe 27 leading thereto from the pipe 26, which latter conducts the gas to the burner or burners 28 in the system.

Through the construction of the vaporizing tube, which is arranged within the heating zone of the burner 17, a back and forth feed conduit of suitable length is provided to insure the thorough conversion of the hydrocarbon into vapor, and by the described construction and arrangement of the mixing chamber and associated parts an effective admixture of the vapor with a proper proportion of air to furnish a gas of high illuminating power is attained. It will be observed that the construction of the apparatus as a whole is simple and compact and may thus be manufactured, if desired, at a low cost, so that it may be employed for domestic as well as other illuminating purposes.

Having described the invention, I claim:—

1. In a hydrocarbon lighting system, the combination of a tank for storage of hydrocarbon and air under pressure, a vaporizing burner, a vaporizer comprising a shell and a vaporizing tube extending longitudinally

therein and having inlet and exit branches in communication at one end and opening at their opposite ends through one end of the shell, a valved hydrocarbon feed pipe leading from the tank to the inlet branch of the tube, a mixing chamber, an air supply pipe leading thereto, a gas conducting pipe leading from the mixing chamber, a valved vapor feed pipe connecting the mixing chamber with the exit branch of the vaporizing tube, and a gas feed connection leading from said gas conducting pipe to the vaporizing burner.

2. In a hydrocarbon lighting system, a vaporizing device, a vaporizing burner arranged below said vaporizing device and having jet nozzles in its upper wall, and a starting pan inclosing said burner and having a top wall provided with apertures registering with said jet nozzles.

3. In a hydrocarbon lighting system, a vaporizing device comprising a shell having an opening at one end thereof, a vaporizing tube having parallel inlet and exit portions disposed longitudinally within the shell, said portions extending at one end through one end of the shell and having their opposite ends connected by a return portion formed with an opening in line with the said opening in the shell, and a removable closure for said opening.

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

JOHN W. BAKER.

Witnesses:

J. B. HANDY,
A. H. BAROFSKY.