No. 755,093. PATENTED MAR. 22, 1904.

N. A. WRIGHT.

VAPORIZER FOR HYDROCARBON ENGINES.

APPLICATION FILED JULY 1, 1903.

NO MODEL.

Fig. 1.

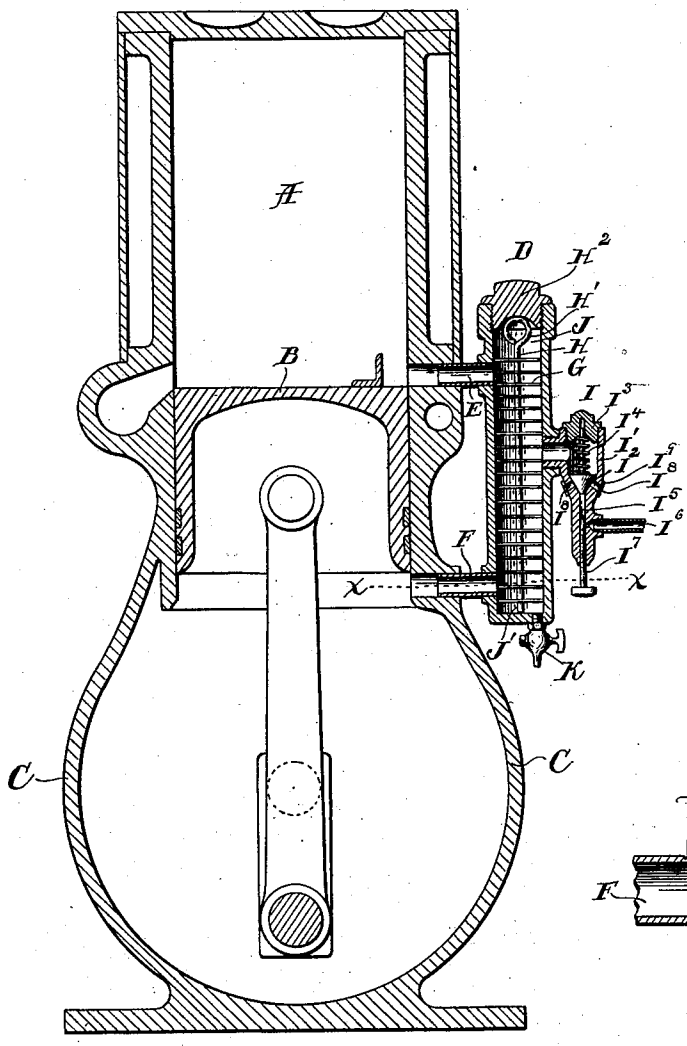
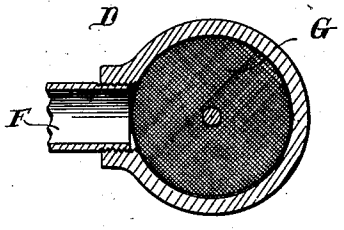


Fig. 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

NORMAN A. WRIGHT, OF PONTIAC, MICHIGAN.

VAPORIZER FOR HYDROCARBON-ENGINES.

SPECIFICATION forming part of Letters Patent No. 755,093, dated March 22, 1904.

Application filed July 1, 1903. Serial No. 163,843. (No model.)

To all whom it may concern:

Be it known that I, NORMAN A. WRIGHT, a citizen of the United States of America, residing at Pontiac, in the county of Oakland and State of Michigan, have invented certain new and useful Improvements in Vaporizers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improved means for vaporizing hydrocarbon and other oils for explosive-engines, and is especially adapted to operate in conjunction with a two-cycle engine of the base-compression type.

The object of the invention is to provide a very simple, cheap, and compact device which may be readily attached to the engine and which will effectually vaporize the gasolene or other oil and supply a highly-efficient explosive mixture to the cylinder.

It is also an object of the invention to provide a device which may be readily taken apart for cleaning or repair and to provide certain other new and useful features, all as hereinafter more fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of a device embodying the invention, showing the same attached to an engine; and Fig. 2, a section of the same on the line *x x* of Fig. 1, drawn to a larger scale.

A represents the cylinder, B the piston, and C the air-tight crank-case, of a base-compression engine of the ordinary construction.

D is the vaporizer, consisting of a cylindrical casing provided with ports near its upper and lower end connected by the pipes E and F to communicate with the cylinder and crank-case, respectively, and fitting within the cylindrical chamber of this casing is a series of disks G, of perforated sheet metal or wire-gauze, spaced apart and secured to a rod H, extending in the axis of the casing, said rod being formed with a loop H′ at its upper end to engage the cupped inner end of the screw-plug H^2, which is screwed into the upper end of said casing.

Connected to the casing intermediate its ends and communicating therewith is a mixing-valve I of any suitable construction, the one shown consisting of a body I′, interiorly formed with a seat for the valve 12, the stem of which extends upward and is guided in an opening in the screw-plug 13, which is screwed into the upper end of the body, and a spring 14 is sleeved on the stem to hold the valve to its seat. The body is extended downward and provided with an axial passage 15, leading to the valve-seat, with which passage the supply-pipe 16 communicates and which is controlled by a needle-valve 17. Openings 18 in the valve-seat extend through the body to admit air, and on the outside of the body is a movable ring 19, provided with openings to register with the openings 18, so that by turning said ring the openings 18 may be partially or wholly closed to regulate the amount of air which will be admitted when the valve is raised from its seat.

Upon the upstroke of the piston a vacuum is formed in the crank-case, and the suction caused thereby will lift the valve 12 from its seat and admit air through the openings 18 and also gasolene from the supply-pipe, which air and gasolene will be drawn into the vaporizer D from the mixing-valve, thence downward through the disks, and out through the pipe F into the crank-case, where it is compressed by the down or compression stroke of the piston, this pressure at the same time tending to force the charge back through the vaporizer D and mixing-valve and closing the valve of said mixer. Near the lower end of the compression-stroke the intake-port begins to open and the charge which has just been compressed in the crank-case and mixer passes up through the disks in the vaporizer and through the intake-port into the cylinder. The air and gasolene is thus passed through the same disks twice and in opposite directions, so that the gasolene is thoroughly disintegrated and commingled with the air, any drops which may have adhered to the disks on the intake being taken up by the charge passing into the cylinder. The casing of the vaporizer extends above the pipe E and below the pipe F, thus forming a chamber J at the upper end of the casing and a chamber J′ at the lower end of the same. If too much gasolene is drawn into the vaporizer, that not taken up by the air on

the intake will settle into the chamber J', where it may be drawn off through the cock K, and if the air is overcharged with gasolene as it passes to the cylinder the gasolene not vaporized will be thrown by its inertia into the upper chamber J, and thus only the mixed vapor and air will pass into the cylinder. The disks G not only serve to disintegrate the gasolene and cause it to vaporize, but they also prevent the fire from passing through the vaporizer into the crank-case and causing a base or back explosion, which is so common in this class of engines.

For the purpose of cleaning or repair the disks may be readily removed by removing the screw-plug from the upper end of the vaporizer-casing and, by means of the eye or loop on the upper end of the rod H, lifting the rod and attached disks out. Access may also be had to the interior of the mixer by simply removing the screw-plug 13, and thus all of the parts may be kept clean and in repair with little trouble.

Having thus fully described my invention, what I claim is—

1. In a vaporizer, the combination with a casing provided with an intake-port and ports communicating with the cylinder and crank-case of the engine, of a series of perforated plates in the casing between the intake-port and the port communicating with the crank-case of the engine, whereby upon the upstroke of the piston, liquid fuel will be drawn through the intake-port of the casing and through the plates into the crank-case, and upon the downstroke of the piston will be forced through the casing into the cylinder.

2. In a vaporizer, the combination with a casing communicating through a port near its upper end with the cylinder of the engine and through a port near its lower end with the crank-case, of means for introducing gasolene through an inlet-port in the casing, and a series of perforated plates extending across the casing between the inlet for the gasolene and the outlet to the crank-case.

3. In a vaporizer, the combination with a casing communicating with the engine-cylinder through a port near its upper end and with the crank-case through a port near its lower end, a valve communicating with said casing through an intake-port therein for the admission of liquid fuel, and a series of perforated plates in the casing between the intake-port and the other ports therein.

4. In a vaporizer, the combination with a casing communicating with the engine-cylinder through a port near its upper end and with the crank-case through a port near its lower end, a mixing-valve communicating with said casing intermediate its ends through an intake-port therein, a rod extending in the axis of the casing, a series of perforated disks secured to said rod and extending across the casing between the intake-port and the other ports thereof, and a screw-plug to close the upper end of the casing.

5. In a vaporizer, the combination with a casing having a port near its upper end communicating with the cylinder of the engine and a port at a distance from its lower end, communicating with the crank-case, a mixing-valve communicating with the casing intermediate its ends through an intake-port therein, a cock in the lower end of the casing, and a series of perforated disks in said casing between the intake-port and the ports communicating with the cylinder and crank-case.

6. In a vaporizer, the combination with a casing having a cylindrical chamber opening through one end and provided with ports at distances from its ends communicating with the cylinder and crank-case, and with an intake-port intermediate its ends, a valve-casing communicating with the intake-port, a valve in said casing to control the admission of air and oil thereto, a rod having an eye in its upper end and extending in the axis of the casing, a screw-plug to close the upper end of the chamber and engage the eye in the rod, and wire-gauze disks fitting within said chamber and secured to said rod between the intake-port and the other ports in the casing.

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

NORMAN A. WRIGHT.

Witnesses:
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