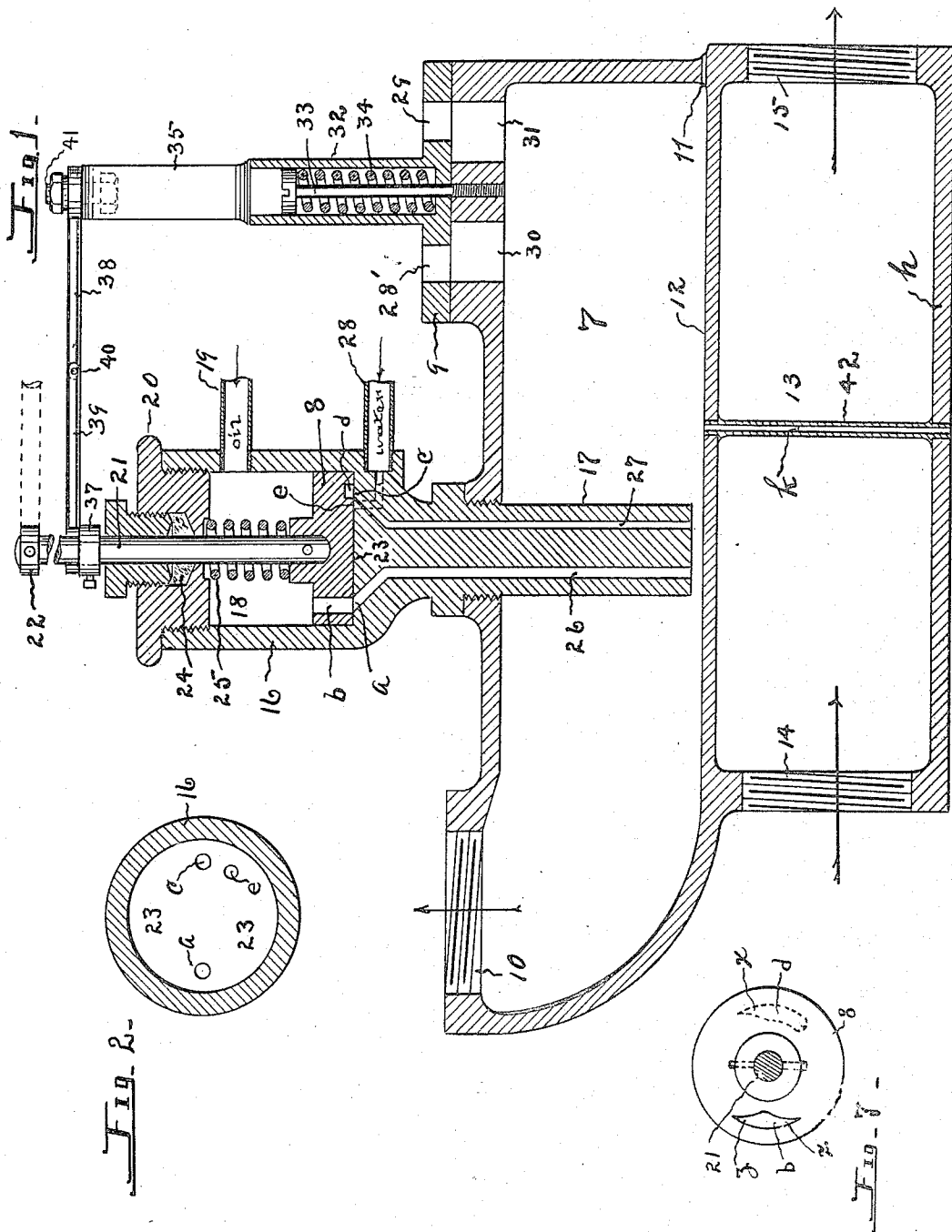


R. U. WOLFE.
VAPORIZER AND CARBURETER FOR GAS ENGINES.
APPLICATION FILED MAR. 20, 1914.

1,127,709.

Patented Feb. 9, 1915.

2 SHEETS—SHEET 1.



Witnesses

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By

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FIG. 3.

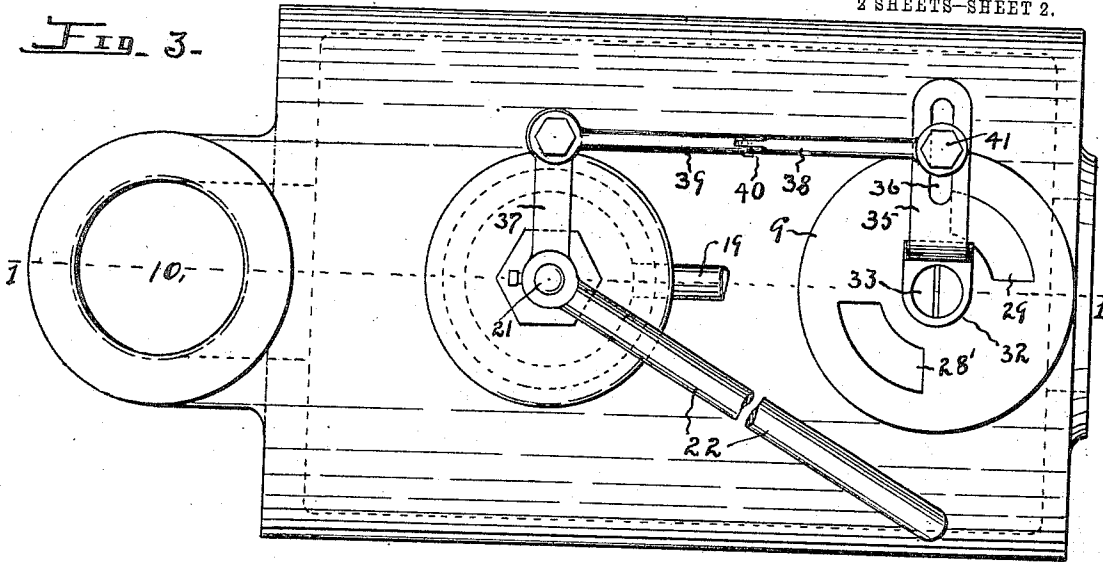


FIG. 4.

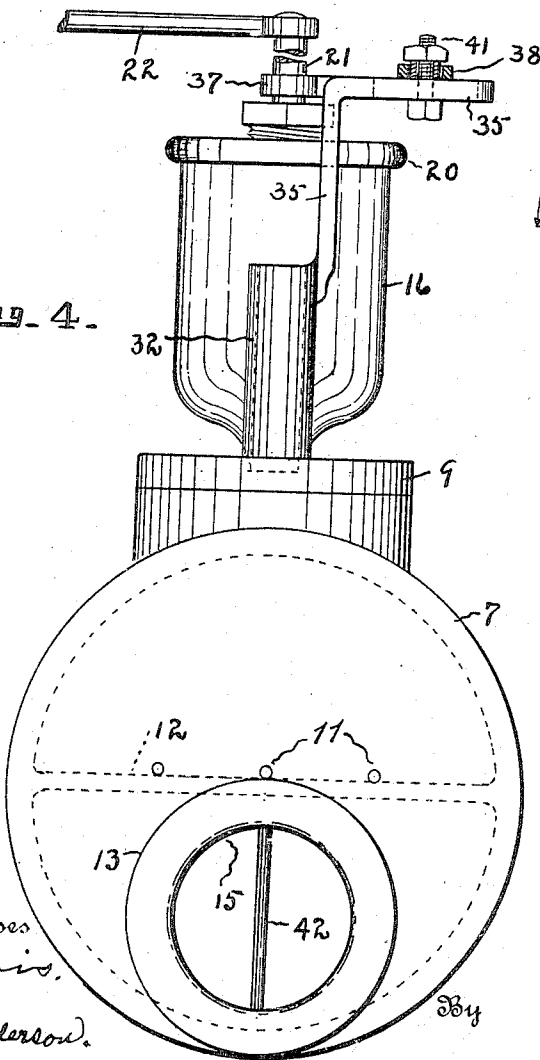


FIG. 5.

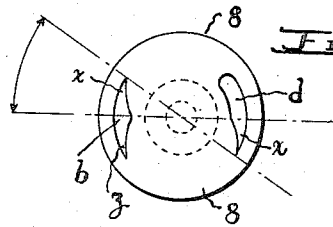
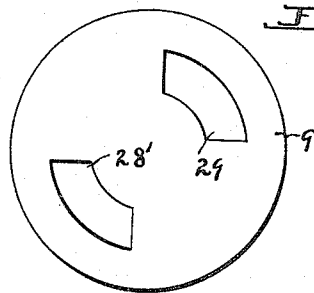


FIG. 6.



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VAPORIZER AND CARBURETER FOR GAS-ENGINES.

1,127,709.

Specification of Letters Patent.

Patented Feb. 9, 1915.

Application filed March 20, 1914. Serial No. 825,988.

To all whom it may concern:

Be it known that I, ROBERT U. WOLFE, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Vaporizers and Carbureters for Gas-Engines, of which the following is a specification.

This invention relates to a combined vaporizer and carbureter for gas engines, and has for its object, broadly, to provide a means for conducting liquid fuel and water to a diaphragm or vaporization plate together with means for regulating the proportions of these elements, and has reference to the employment of a relief valve arranged to supply air for the vaporizer and carbureter, all to be under control of a single hand-lever so that operation will be convenient.

With these objects in view and others to be mentioned hereinafter, the invention presents a novel and useful construction, combination and arrangement of parts as described herein and claimed and as illustrated in the drawing, it being understood that changes in form, size, proportion and minor details may be made within the scope of the claims without departing from the spirit of the invention or sacrificing any of its advantages.

In the accompanying drawings Figure 1 is a sectional view on line 1 1 of Fig. 3. Fig. 2 is a plan view of the seat of the liquid feed-valve. Fig. 3 is a plan view of the vaporizer and carbureter and parts mounted thereon. Fig. 4 is an end view of the same, one end of a link being in section. Fig. 5 is a plan view of the bottom of the valve for controlling the intake of liquid fuel. Fig. 6 is a plan view of the bottom of the relief valve. Fig. 7 is a top plan view of the valve shown in Fig. 5.

Referring now to the drawing for a more particular description, numeral 7 indicates a vaporizer and carbureter provided on its upper side with a liquid feed valve 8, and with a combined intake and relief valve 9, its exit port in its top and near one of its ends being indicated at 10, and it will be understood that port 10 may communicate with the manifold and engine (not shown).

At 11 are indicated small drain-apertures, these preferably being formed in the end of the vaporizer and carbureter opposite to its exit port, near its flat bottom or vaporizing plate 12.

Below and preferably integral with the carbureter is a heating compartment 13 having an intake port 14 and an exit port 15, and it will be understood that the exhaust from the engine may pass therethrough in the direction indicated by the large arrows for heating the vaporizer and carbureter, the horizontal partition or plate 12 providing a considerable area which may be adequately heated by the exhaust for vaporizing the fuel within the carbureter.

The housing 16 for the liquid feed valve is provided with a stem 17 which extends downwardly near to plate 12. This housing provides a chamber 18 for containing liquid fuel entering from any suitable source of supply through pipe 19. At 20 is indicated a closure-cap traversed by the valve-stem 21 which carries the hand-lever 22 for rotating this valve on its seat 23, any suitable packing 24 being employed, the spring for the valve being indicated at 25.

At 26 is indicated a conduit provided in stem 17, having an intake port *a* adapted to communicate with the port *b* of valve 8 for conducting oil or similar liquid fuel to be discharged within the vaporizer and carbureter, and stem 17 is provided with a conduit 27 having a bore of less diameter than the bore of conduit 26, and having an intake port *c* adapted to communicate with the port *d* of valve 8 for conducting water from supply pipe 28 to the vaporizer and carbureter, the intake port from pipe 28 being indicated at *e*.

By reference to Fig. 1, it will be seen that port *d* of valve 8 does not communicate with chamber 18, also that ports *b* and *d* of said valve are of elongated form, one of the ends *x* of each port being convergent. This is a desired construction for the reason that when valve 8 is rotated by an operator by use of lever 22, the convergent ends of ports *b* and *d* may be in communication with the respective conduits 26 and 27 to limit the supply of liquid which may pass there-through; however, by use of the hand lever

the valve may be rotated somewhat further to permit a greater supply of liquid to pass through the valve, and this construction provides one of the means for controlling the quantity of liquid fuel and water to be supplied to the vaporizer and carbureter.

Valve 9 is for the purpose of permitting or preventing the passage of air to the vaporizer and carbureter, except the limited amount of air which may pass through apertures 11 and *k*, and it is under control of the hand lever. It is provided with ports 28' and 29 adapted to register respectively with ports 30 and 31 of the vaporizer and carbureter. This valve is provided, centrally thereof, with a barrel 32 within which is mounted the detent or screw 33 to provide a bearing for one end of the spring 34, and since the screw is threaded in the top of the carbureter, it may be adjusted to cause valve 9' to be pressed upon its seat with a force sufficient for all practical purposes, and operates as a relief valve if the pressure of carbureted air in the carbureter at any time greatly exceeds the force of the spring. In order that valve 9 may be rotated coincidentally with valve 8, it is provided with the angular arm 35 provided with the slot 36. The valve stem 21 is provided with the transverse arm 37.

At 38 and 39 are indicated a pair of links connected at their inner ends by means of the knuckle joint 40, their respective outer ends being pivotally mounted upon arms 35 and 37.

In operation, by reason of the provision of the knuckle joint, the relief valve may move upwardly by force of the carbureted air within the vaporizer and carbureter, against the force of spring 34, and the rotatable movements of the valve stem 21 will effect corresponding movements of valve 9, to cause or prevent a registration of the ports of valve 9 with the ports of the vaporizer and carbureter.

At 41 is indicated a keeper disposed in slot 36 for a mounting on arm 35, and by means of this keeper the outer end of link 38 may be adjusted longitudinally of said arm with the result that one of the rotatable movements of the valve stem 21 may cause the valve 9 to rotate in a degree sufficient to cause a closure of the intake ports 30 and 31 of the vaporizer and carbureter, or this adjustment may be such that the intake ports will be partly closed by said rotatable movement of valve stem 21.

At 42 is indicated a vertical prop extending between the diaphragm or plate 12 and the bottom *h* of the heating compartment, its aperture *k* opening upon the vaporizer and carbureter substantially at the middle of plate 12, and providing an additional drain or waste pipe for the vaporizer and carbureter extending through the bottom of

the heating compartment 13, said prop also operating to sustain the stresses directed outwardly of plate 12, incident to the use of the vaporizer and carbureter. Port *b* of valve 8 is preferably formed with a convergent terminal *z*, and it will be understood that this valve may be disposed with its terminal *z* in communication with port *a*, the port or raceway *d* not being in communication with port *c*, this construction being for the purpose of supplying the vaporizer and carbureter with gasoline when the water supply is entirely cut off.

As thus described, oil and water or other ingredients, together with air may be supplied to the vaporizer and carbureter in any desired proportions. The ingredients which pass through conduits 26 and 27 are kept separated until they reach, substantially, the vaporizing plate; the exhaust from the engine will cause plate 12 to attain a great heat. The suction from the engine will cause air to be drawn through ports 30 and 31 and will cause the vaporized oil, water and air to pass outwardly of port 10 to the manifold, as first explained. Also by operation of the engine, foreign substances will be removed automatically from the diaphragm or flat plate 12, and will be forced outward through apertures 11 and *k*, thereby tending to maintain the vaporizer and carbureter in a clean condition.

I claim:

1. The combination of a vaporizer and carbureter provided with intake ports for air and an exit port for a carbureted mixture, a compartment adapted to be heated for applying heat to said vaporizer and carbureter, a housing provided with a plurality of intake ports and having a plurality of conduits communicating with the vaporizer and carbureter, a first valve provided with a plurality of ports adapted to have a rotatable movement while seated in said housing to dispose each of its ports in communication with one of the intake ports of said housing and with one of said conduits, and a second valve resiliently mounted on the vaporizer and carbureter and provided with a plurality of ports communicating with the atmosphere and rotatable by the movement of the first valve to dispose its ports in communication with the ports of said vaporizer and carbureter.

2. In combination with a vaporizer and carbureter provided with intake ports for air and an exit port for a carbureted mixture and having a flat bottom with drain apertures, a compartment adapted to be heated and disposed adjacent to the bottom of the vaporizer and carbureter for applying heat thereto, a housing on the vaporizer and carbureter and provided with intake ports and having conduits opening adjacent to said bottom, a first valve provided

with ports and mounted in said housing, a second valve provided with ports revolubly mounted on said vaporizer and carbureter, said first valve being rotatable to permit each of the intake ports of said housing to be in communication with one of said conduits and to dispose the ports of the second valve in communication with the ports of said vaporizer and carbureter.

3. The combination of a vaporizer and carbureter provided with intake ports for air and an exit port for a carbureted mixture, a compartment adapted to be heated for applying heat to said vaporizer and carbureter, a housing provided with a first intake port and having a conduit normally providing a communication between the first intake port and the vaporizer and carbureter and having a second conduit normally providing a communication between the second intake port and said vaporizer and carbureter, a first valve adapted to be rotated while seated in said housing for terminating the communication of said intake ports with said conduits, a second valve rotatable by the movement of the first valve for controlling the intake ports of said vaporizer and carbureter, means to cause a pressure of the second valve against the vaporizer and carbureter, and means to adjust the degree of said pressure.

4. The combination of a vaporizer and carbureter provided with intake ports for air and an exit port for a carbureted mixture, a compartment adapted to be heated for applying heat to said vaporizer and carbureter, a housing provided with a plurality of intake ports arranged to normally communicate with the vaporizer and carbureter, a first valve adapted to have a rotatable movement while seated in said housing for terminating the communication of one of the intake ports of said housing with said vaporizer and carbureter, and a second valve mounted on the vaporizer and carbureter provided with a plurality of ports communicating with the atmosphere and rotatable by the movement of the first valve for controlling the intake ports of said vaporizer and carbureter.

5. The combination of a vaporizer and carbureter provided with intake ports for air and an exit port for a carbureted mixture, and having a flat bottom, a compartment adapted to be heated and disposed adjacent to the bottom of said vaporizer and carbureter for applying heat thereto, a housing provided with intake ports and having conduits opening in the vaporizer and carbureter adjacent to said bottom, a first valve provided with ports and adapted to be rotated while mounted in said housing to permit each of the intake ports of the housing to be in communication with one of said conduits, a second valve provided with ports

communicating with the atmosphere and mounted on the vaporizer and carbureter, said second valve and first valve being connected by devices whereby a rotatable movement of the first valve may cause a rotatable movement of the second valve for disposing the ports of said second valve in communication with the ports of said vaporizer and carbureter.

6. The combination of a vaporizer and carbureter provided with intake ports for air and an exit port for a carbureted mixture, a compartment adapted to be heated for communicating heat to said vaporizer and carbureter, a housing provided with a first intake port and a second intake port and having a conduit normally providing a communication between the first intake of the housing and the vaporizer and carbureter and having a second conduit normally providing a communication between the second intake port of said housing and said vaporizer and carbureter, a first valve seated in said housing and provided with ports formed with convergent terminals adapted to be rotated for limiting the degree of communication of the intake ports of the housing with said conduits, and a second valve rotatable by the movement of the first valve for controlling the intake ports for air, of said vaporizer and carbureter.

7. The combination of a vaporizer and carbureter provided with intake ports for air and an exit port for a carbureted mixture, a compartment adapted to be heated for applying heat to said vaporizer and carbureter, a housing provided with a pair of intake ports arranged to normally communicate with the vaporizer and carbureter, a first valve adapted to have a rotatable movement while seated in said housing for limiting the degree of communication of one of the intake ports of the housing with said vaporizer and carbureter and terminating the communication of the other intake port of the housing with said vaporizer and carbureter, and a second valve mounted on the vaporizer and carbureter provided with a plurality of ports communicating with the atmosphere and rotatable by the movement of the first valve for controlling the intake for air, of said vaporizer and carbureter.

8. The combination of a vaporizer and carbureter provided with intake ports for air and an exit port for a carbureted mixture, and having a flat bottom, a compartment arranged to be heated and disposed adjacent to the bottom of said vaporizer and carbureter for applying heat thereto, a housing provided with a first intake port and a second intake port and having conduits opening in the vaporizer and carbureter adjacent to said bottom, a valve provided with ports formed with convergent terminals adapted to be rotated while mounted in said

housing to permit each of the intake ports
of the housing to be in communication with
one of said conduits, and adapted to have a
rotatable movement to limit the degree of
communication of each of the intake ports
of the housing with said conduits, and rota-
table to terminate the communication of one
of the intake ports of the housing with one
of said conduits and permit the other intake

port of said housing to be in communication 10
with the other conduit.

In testimony whereof, I have affixed my
signature in presence of two witnesses.

ROBERT U. WOLFE.

Witnesses:

HIRAM A. STURGES,
C. E. CLARK.