June 19, 1923. 1,459,507

S. G. HOUSE

LIQUID FUEL VAPORIZER

Filed Aug. 7, 1922

Fig. 1.

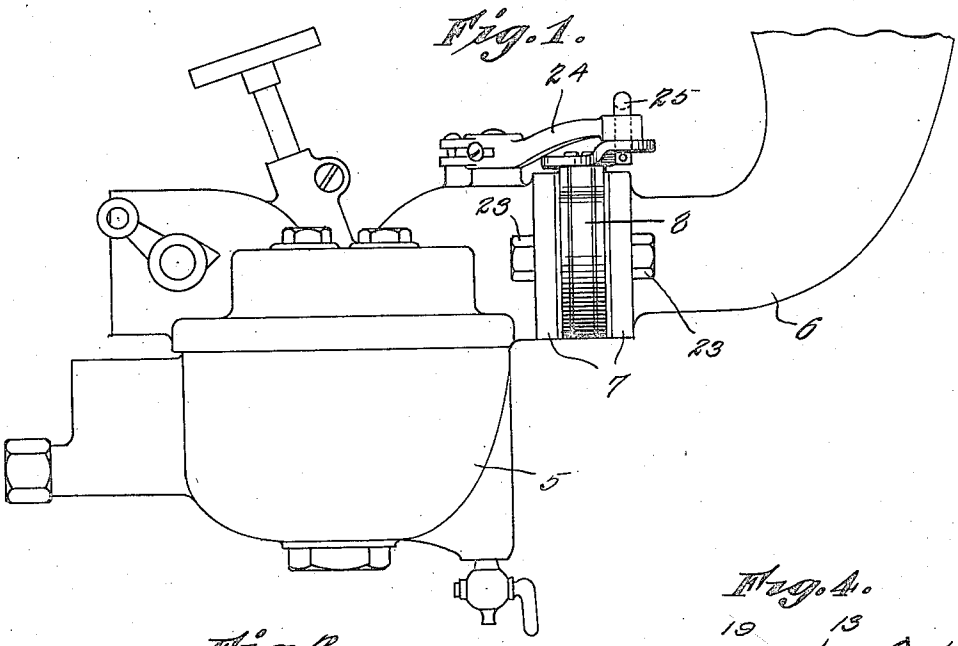


Fig. 2.

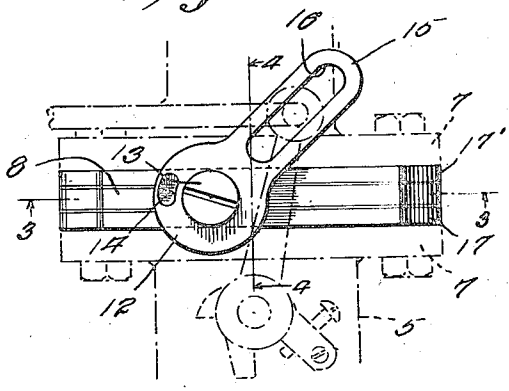


Fig. 4.

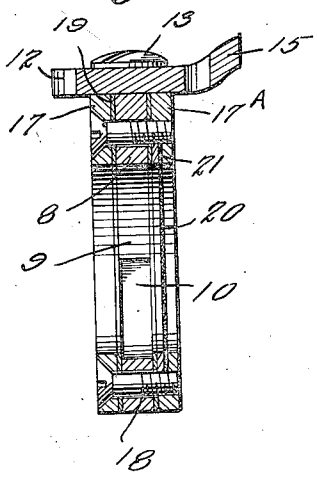
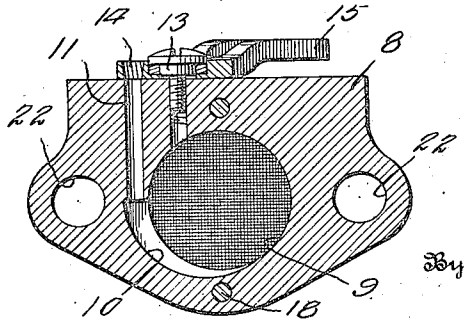


Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL G. HOUSE, OF MIAMI, FLORIDA.

LIQUID-FUEL VAPORIZER.

Application filed August 7, 1922. Serial No. 580,354.

To all whom it may concern:

Be it known that I, SAMUEL G. HOUSE, a citizen of the United States, and a resident of Miami, in the county of Dade and State of Florida, have invented a new and useful Liquid-Fuel Vaporizer, and of which the following is a specification.

My invention relates to automatic liquid fuel or gas vaporizer for internal combustion engines and its principal object is to provide an automatic device for breaking up or atomizing the liquid or gaseous fuel, thus creating a proper combustion element before it enters the engine cylinders.

A further object of the invention is to provide an automatic vaporizer creating a vortex for use on internal combustion engines, which will automatically conduct unvaporized liquid fuel to a point where it will intermingle with air and again carried through the vaporizer to insure thorough vaporization or atomizing of the mixture.

My invention also contemplates a device of this character having an additional air inlet automatically controlled by a valve operatively connected with the carburetor control valve.

With the preceding and other objects and advantages in mind, the invention consists in the novel combination of elements, construction and arrangement of parts and operations to be hereinafter more fully described, claimed and illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of the device arranged between the intake manifold and the carburetor of an internal combustion engine;

Fig. 2 is a fragmentary plan view of the same;

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 2; and

Fig. 4 is a vertical sectional view taken on line 4—4 of Fig. 2.

Referring in detail to the drawings wherein similar characters of reference designate similar parts throughout the several views, the numeral 5 designates a conventional carburetor and 6 the intake manifold of an internal combustion engine. These elements do not enter in the invention per se, but are shown to illustrate the application of the device.

My invention consists of an elongated plate or casting 8 fashioned from any heat resisting metal and of the same configuration as the flanges 7 upon the ends of the intake manifold 6 and the outlet of the carburetor 5 and is provided with a central opening 9. This opening 9 is formed with a groove or channel 10 upon one of its side walls, which is disposed eccentrically with respect to the opening 9 and communicates with a bore or air inlet 11 extending transversely through this plate or casting and opens upon one side thereof, as shown in Fig. 3.

A circular valve 12 is provided for controlling this inlet 11 and is pivoted to the plate or casting 8 by a set screw 13, the valve being provided with an elongated opening 14 for registration with the bore or air inlet 11. An arm 15 extends rearwardly from the valve 12 and is provided with a longitudinal slot 16. Plates or castings 17 and 17A, the latter nearest the manifold, are disposed upon the opposite faces of the plate or casting 8 and secured thereto by screws or other fastenings 18. Shims or washers 19 are interposed between the opposed faces or plates or casting 8 and the plates or castings 17 and 17A; the opening in 17A being somewhat smaller than the opening in 17. This affords a rim for the entire center chamber, causing the vortex to complete continuous circuit for the entire center chamber before emitting the thoroughly mixed contents into the motor.

An atomizing element or reticulated sheet 20 of extremely fine mesh is stretched across the plate 17A and extends entirely across the opening 9 in the plate or casting 8, the edges of this sheet 20 being held in a circumferential groove 21 in the inner face of the plate 17A. Bolt receiving openings 22 are provided in the plates or castings 8, 17 and 17A, which receive bolts 23 to retain the device between the flanges 7.

The operating arm of the carburetor is designated at 24 and carries a pin 25, which is operatively engaged in the slot 16 of the arm 15, whereby upon actuation of this arm the valve will be automatically moved to a position where the port 14 will register with the bore 11 to permit the ingress of air into the device, entering in such manner as to create a circular whirl gathering the gas element with the air into a vortex motion, having its outlet at all times from the center of the vortex through the gauze into the in-

take manifold. This emphasized vortex aside from thoroughly mixing the air and gas element, serves to wear the gas globules completely out in the course of their contact with the gauze when repeatedly whirled against same by the herein described vortex motion.

From the disclosure it will be obvious that the gas and air passing through the element 20 will be broken up or atomized before it enters the intake manifold of the engine. I wish to emphasize the fact that some of the liquid fuel will, without this device, retain its liquid state and in order to atomize the same, the groove or channel 10 is provided to catch this liquefied fuel and prevent its entrance into the intake manifold until properly atomized.

The incoming air through the bore 11 will give the liquid fuel retained in the groove or channel a swirl or twiriing motion and cause it to create a vortex and strike the atomizing element with sufficient velocity to thoroughly vaporize it.

It is to be understood that the form of my invention, herein shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, what I claim as new and desire to secure and protect by Letters Patent of the United States, is:—

A liquid fuel vaporizer comprising a body, a central bore therein, a reticulated element covering said bore, a liquid receiving chamber positioned adjacent to said bore, said chamber and bore communicating with each other, an air passage disposed tangentially to the bore connecting the chamber with the exterior of the body, the shape of the air passage and chamber forcing air which enters said chamber to cause liquid fuel in said chamber to readily vaporize by the whorling vortex motion imparted, a valve pivotally mounted on one face of said vaporizer and an arcuate port in the valve adapted to register with said air passage.

SAMUEL G. HOUSE.