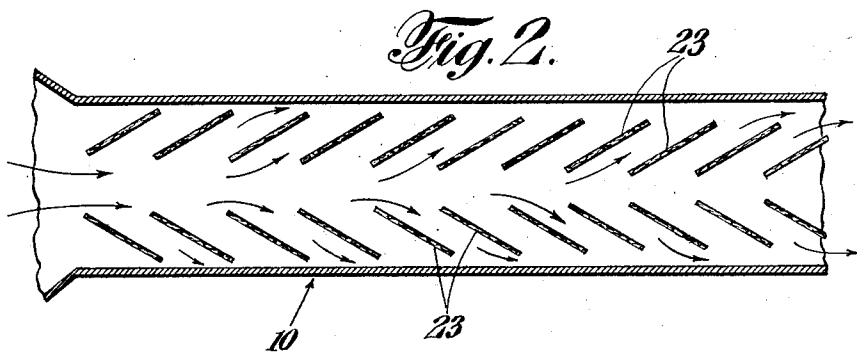
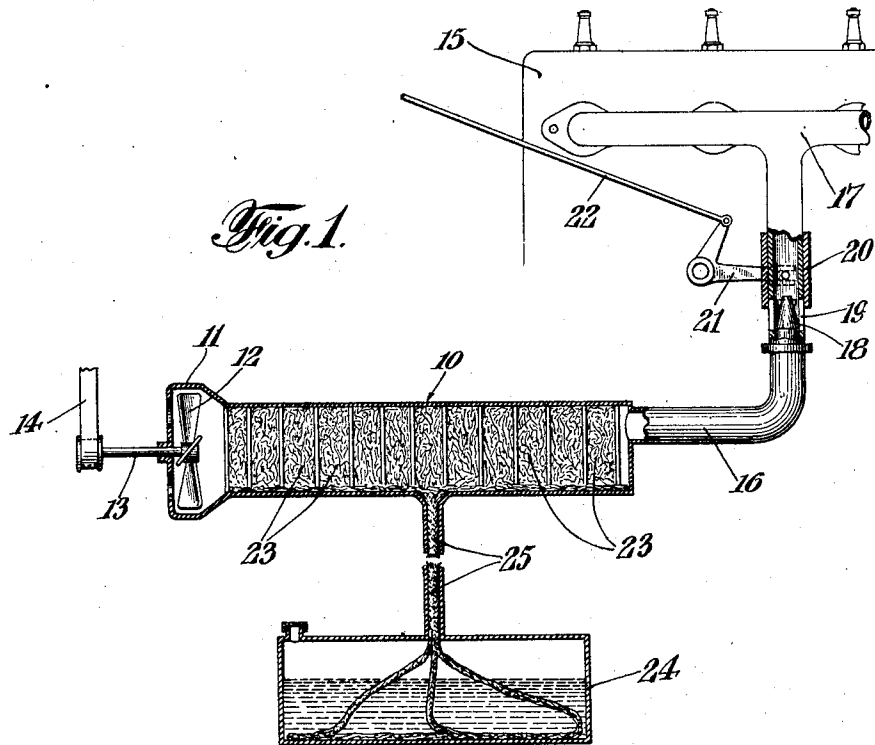


Sept. 27, 1932.

W. LILLY
GASOLINE VAPORIZER
Filed Nov. 24, 1928

1,879,358



INVENTOR
William Lilly
BY *Henry Henry*
ATTORNEY

UNITED STATES PATENT OFFICE

WILLIAM LILLY, OF NEW YORK, N. Y.

GASOLINE VAPORIZER

Application filed November 24, 1928. Serial No. 321,599.

This invention relates to gasoline vaporizers, and more particularly to such vaporizers for use with internal combustion engines.

This invention has for an object a new, inexpensive and improved means for and method of producing a combustible mixture of gasoline, vapor and air for use with fuel for an internal combustion engine.

According to this invention, the gasoline is vaporized and mixed with air in a chamber provided with a supply of fibrous absorbent material presenting a large surface area. The fibrous material is saturated with gasoline supplied to and held by such fibrous material through capillary attraction. The combustible mixture is obtained by directing a current of air through and around the fibrous material. Because of the large area of contact between the air and gasoline, due to the large surface of the absorbent material, the gasoline readily evaporates or volatilizes and forms an ignitable mixture with the air, the supply of an absorbent material and the current of air flowing through the chamber being so related that the mixture of air and gasoline produced within the chamber is combustible. This mixture may vary from one part of gasoline and nine parts of air to one part of gasoline and sixteen parts of air at 68° Baumé, which proportions as is well known form a combustible mixture. The vaporized mixture is led from the chamber to the intake manifold of an internal combustion engine where it is distributed to the various cylinders. Regulable air-admitting means is provided in the tube by means of which additional air may be admitted to the mixture, when desired.

Other objects, novel features and advantages of this invention will be apparent from the following specification and accompanying drawing, wherein

Fig. 1 is a vertical section of a vaporizer embodying the invention, and

Fig. 2 is a horizontal section through the mixing chamber.

The mixing chamber, which is designated by the reference character 10, has a flaring end 11 which constitutes a housing for a fan 12 carried by the shaft 13. The shaft 13

is driven through the medium of the belt 14 from a rotating part of the engine 15, for example, the crank shaft or cam shaft. A pipe 16 leads from the other end of the chamber 10 to the intake manifold 17 of the engine 15. Within the pipe 16 is provided a nozzle 18. Apertures 19 are provided in the pipe 16 and preferably are in the form of inverted triangles and are so arranged that the end of the nozzle 18 projects slightly beyond the upper edges of the apertures. This arrangement is comparable to the conventional Bunsen burner except that the mixture is discharged into the engine cylinders before being ignited. A sleeve 20 is slidably mounted on the pipe 16 and is adapted, when in one position completely to close the apertures 19. The sleeve 20 is operable from the dashboard of an automobile equipped with such vaporizer through the medium of the bell crank lever 21 and link 22. Within the chamber 10 are arranged two rows of sheets 23 of absorbent material, the sheets in each row being substantially parallel to each other and oblique to the sheets of the other row. These sheets are spaced slightly from each other to form passageways communicating with a central passageway and two lateral passageways. The central passageway converges toward the end of the chamber opposite the fan 12, while the lateral passageways diverge in the same direction. By this arrangement, the current of air flowing through the chamber 10 is diverted into the oblique passageways formed by the sheets of absorbent material so that the surfaces of all the sheets are continually contacted with fresh air, thereby improving the mixing efficiency of the chamber. Below the chamber 10 there is provided a gasoline tank 24 from which a wick 25 leads to the chamber 10. The lower end of the wick 25 is divided into strands, which are distributed over the bottom of the tank 24 to insure efficient absorption of gasoline by the wick. The upper end of the wick 25 is sub-divided into strands which are spread out over the floor of the chamber 10 and upon which the sheets 23 rest. The wick 25 conducts gasoline from the tank 24 and distributes it

to the sheets of absorbent material 23, thereby keeping them continually saturated with gasoline.

The material which has been found to be very satisfactory for use as the sheets 23 is known commercially as "southern fibre". This material, after having been thoroughly washed, very readily absorbs gasoline and is sufficiently fibrous to permit intermingling of gas and air. Sheets of such material readily absorb gasoline from the strands of the wick 25 and distribute such gasoline over a large surface. Because of the distribution of gasoline and the large area of contact provided by such material, the current of air blown through and around this material readily evaporates or volatilizes the gasoline.

The current of air flowing through the chamber 10 varies directly with different engine speeds and the proportions of air and gasoline may vary accordingly. However, the relationship of the air flow and the fibrous material is such that a combustible mixture is produced, that is a mixture in which the proportions are not more than one part of gasoline and nine parts of air not less than one part of gasoline and sixteen parts of air.

The mixture thus produced is carried by the pipe 16 to the intake manifold 17 of the engine where it is distributed to the various cylinders. The proportions of air and gasoline in the mixture as supplied to the cylinders may be varied from that discharged from the tank 10 by adjustment of the sleeve 20. In one position of the sleeve 20, the apertures 19 are closed, but in other positions, varying quantities of air are permitted to be drawn in through the apertures and added to the fuel mixture, thereby increasing the ratio of air to gasoline. This may be desirable under certain circumstances, as the mixture discharged from the chamber 10, although being combustible, may not be of the proper proportions to give the best results as a fuel mixture. The setting of the sleeve 20 depends upon varying conditions and is varied to meet the conditions presented.

Although the invention has been specifically disclosed as embodied in a vaporizer for producing a combustible mixture of gasoline and air for internal combustion engines, it is apparent that the principle of vaporizing gasoline or passing a draft of air over a fibrous absorbent body saturated with gasoline, may be utilized in many different ways and in connection with applicant's device, depend for their operation upon a fuel comprising a mixture of gasoline, vapor and air. The size of the fan and its rotational speed is such that the mixture is discharged from the chamber under sufficient pressure that it flows readily into the engine cylinders with-

out the aid of the suction created by the intake stroke of the engine.

It is understood that this invention is not limited to the specific embodiment disclosed but comprehends different embodiments of vaporizers lying within the scope of the appended claims.

I claim:

1. A gasoline vaporizer for internal combustion engines comprising a chamber, means for introducing a current of air into said chamber, two rows of parallel sheets of fibrous material supported in said chamber oblique to the direction of the air current, the ends of the sheets being arranged to define a tapering passageway whereby air is uniformly distributed between said sheets, and a tube leading from said chamber to the intake manifold of the engine.

2. A gasoline vaporizer for internal combustion engines comprising a chamber, means for introducing a current of air into said chamber, two rows of parallel sheets of fibrous material supported in said chamber oblique to the direction of the air current, the ends of the sheets being arranged to define a tapering passageway whereby air is uniformly distributed between said sheets, a tube leading from said chamber to the intake manifold of the engine, and regulable means for admitting air into said tube.

3. A gasoline vaporizer for internal combustion engines comprising a chamber, means for introducing a current of air into said chamber, two rows of parallel sheets of fibrous material supported in said chamber oblique to the direction of the air current, the ends of said sheets being arranged to define a tapering passageway whereby air is uniformly distributed between said sheets, a gasoline tank, means for conveying gasoline by capillary attraction from said tank to said sheets of fibrous material, a tube leading from said chamber to the intake manifold of the engine, a nozzle in said tube, said tube having apertures adjacent to said nozzle, and regulable means for controlling the effective size of said apertures.

4. A gasoline vaporizer for internal combustion engines comprising a chamber, means for introducing a current of air into said chamber, two rows of parallel sheets of fibrous material supported in said chamber oblique to the direction of the air current, the ends of said sheets being arranged to define a tapering passageway whereby air is uniformly distributed between said sheets, a tube leading from said chamber to the intake manifold of the engine, a gasoline tank, and means for conveying gasoline by capillary attraction from said tank to said sheets.

5. A gasoline vaporizer for internal combustion engines comprising a chamber, means for introducing a current of air into said chamber, two rows of parallel sheets of

fibrous material supported in said chamber oblique to the direction of the air current, the ends of said sheets being arranged to define a tapering passageway whereby air is uniformly distributed between said sheets, a tube leading from said chamber to the intake manifold of the engine, a gasoline tank, means for conveying gasoline by capillary attraction from said tank to said sheets, a nozzle in said tube coaxial therewith, and regulable means for admitting air to said tube adjacent the base of said nozzle.

In testimony whereof, I have signed my name to this specification.

WILLIAM LILLY.