J. J. MURPHY.

GASEOUS FUEL MIXER.

APPLICATION FILED MAY 12, 1914.

1,113,041. Patented Oct. 6, 1914.

Fig. 1.

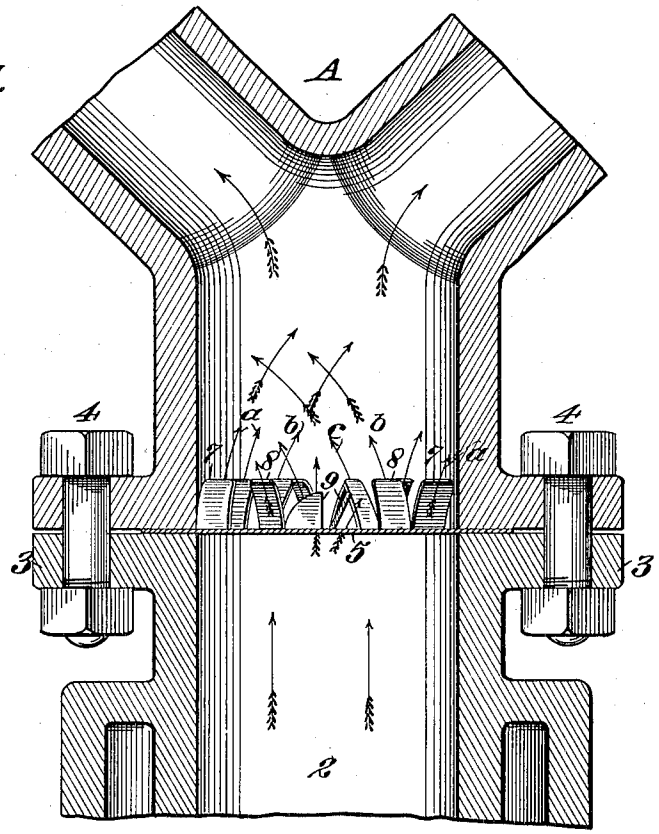
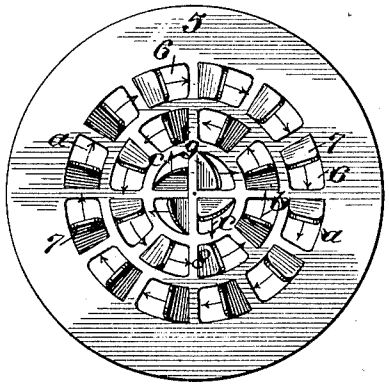


Fig. 2.



WITNESSES:

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GASEOUS-FUEL MIXER.

1,113,041. Specification of Letters Patent. Patented Oct. 6, 1914.

Application filed May 12, 1914. Serial No. 838,057.

To all whom it may concern:

Be it known that I, JOHN J. MURPHY, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Gaseous-Fuel Mixers, of which the following is a specification.

This invention relates to a gaseous fuel mixer.

It is one of the objects of the present invention to provide a simple, substantial, cheaply manufactured type of mixer which is adapted to be inserted in the intake pipe at the point where the carbureter is flanged to form a connection with the manifold.

Another object is to provide a mixer which is adapted to impart a swirling motion to the gas passing therethrough in such a manner that a portion of the gas will be swirled in one direction, while another portion will be swirled in the opposite direction, thereby producing a better and more uniform mixture which lessens carbonization and fouling in the cylinders, increases the power, and facilitates the starting of the motor.

Further objects will hereinafter appear.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a central vertical section through a portion of the manifold and carbureter showing the application of the invention. Fig. 2 is a plan view of the mixer.

Carburetion comprises the vaporization of fuel and the mixing of gasolene and air to produce the explosive gas which is drawn into the cylinders. Most carbureters produce a more or less perfect mixture which travels through the manifold in streams or strata to the combustion chambers, but the efficiency of the process depends upon the thorough mixing of the gas and the breaking up of the fuel particles to form a dry vapor. To accomplish this end the present form of mixture has been provided.

Referring to the drawings, A indicates the manifold of an engine and 2 the upper portion of a carbureter, which is provided with the usual flange 3 by which connection is made with the intake or manifold A. The mixer is in the present instance inserted between the flange of the carbureter and the flange of the manifold and is secured in position by bolts 4.

The mixer proper consists of a circular disk 5, in which are formed three or more concentric circles of openings 6, with connected deflecting blades 7. The deflecting blades 7 on the outer circle are all pitched in one direction, while the deflecting blades 8 in the second circle are pitched in the opposite direction and the blades 9 in the inner circle are in turn pitched opposite to those in the second circle. The openings 6, with the blades 7, 8 and 9, are formed by punching the disk and bending the punched portions of the metal to form the deflecting blades.

The operation will be as follows: The raw spray discharging from the carbureter is first broken up by the lower surface of the disk or mixer. The gas will then pass through the several circles of concentric openings and will here impinge against the face of the oppositely pitched deflectors 7, 8 and 9. The effect of the impingement of the gas on these blades will impart to the gas a constant swirling motion. The gas impinging against the blades 7 will swirl in the direction of arrow *a*, while the gas which impinges against the blades 8 will swirl in the opposite direction, or that indicated by arrow *b*, and the gas which impinges against the inner blades 9 will swirl in the direction of arrow *c*, or opposite to the gas which impinges against the blades 8. The swirling motion in opposite directions which is imparted to the gas will cause this to thoroughly mix. A uniform perfect mixture or dry gas vapor is thus formed.

A mixer applied in the manner here shown is free from complications and may be very cheaply manufactured. It reduces the waste of gasolene by delivering a more homogeneous mixture to the cylinders which consequently improves the combustibility of the gas and the power of the engine. Carbonization or fouling of the cylinders is furthermore practically eliminated and the motor can be more easily started as the gas mixture is better proportioned and mixed.

The materials and finish of the several parts of the device are such as the experience and judgment of the manufacturer may dictate. I also wish it understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended

claims, and that I do not wish to limit myself to the specific design and construction here shown.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In a vapor conduit, means for giving the vapor a rotary motion with a cylindrical body of the vapor rotating in one direction and an exterior cylindrical shell of vapor rotating in the opposite direction.

2. In a vapor conduit, means including a plurality of concentrically arranged deflecting members, for giving the vapor a swirling rifling motion with a cylindrical body of the vapor swirling in one direction, and a plurality of exterior cylindrical shells of vapor rotating in the opposite direction.

3. A gas mixer comprising a disk having a plurality of concentric circles of openings formed therein, and inclined deflecting blades formed on the disk at the ends of the openings.

4. A gas mixer comprising a disk having a plurality of circles with concentric openings formed therein, and inclined deflecting blades formed on the disk at the ends of the openings, the deflecting blades in one circle being pitched opposite to those in the adjoining circle.

5. A gas mixer comprising a plurality of concentric rings, and deflecting blades interposed between the adjacent rings, the blades in the adjacent rings being inclined in opposite directions.

6. A gas mixer comprising a disk having a plurality of openings formed therein arranged in circles concentrically positioned one within the other, and inclined deflecting blades formed on the disk extending partly over each opening.

7. A gas mixer comprising a disk having a plurality of openings formed therein arranged in circles concentrically positioned one within the other, and inclined deflecting blades formed on the disk extending partly over each opening, the blades in the adjacent circles being pitched opposite to each other.

8. In a vapor conduit, means including a plurality of concentrically arranged deflecting members for giving the vapor a swirling rifling motion, with a plurality of concentrically arranged cylindrical shells of vapor rotating in opposite directions.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN J. MURPHY.

Witnesses:
IRVINE SINNETT,
W. W. HEALEY.