L. R. MABEE.

FUEL MIXER FOR GASOLINE ENGINES.

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1,418,877.

Patented June 6, 1922.

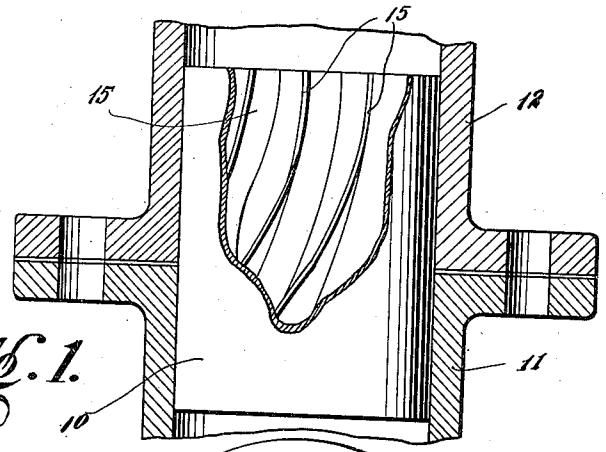


Fig. 1.

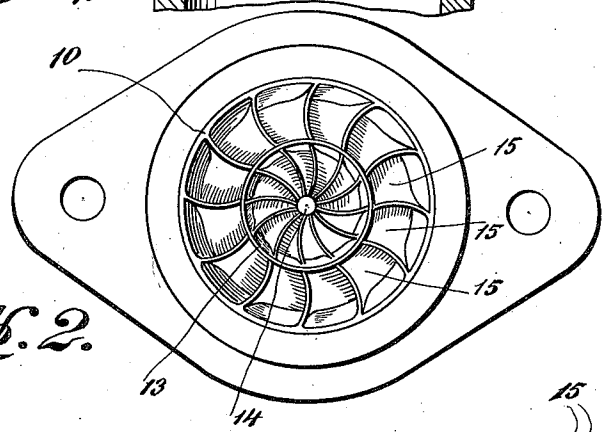


Fig. 2.

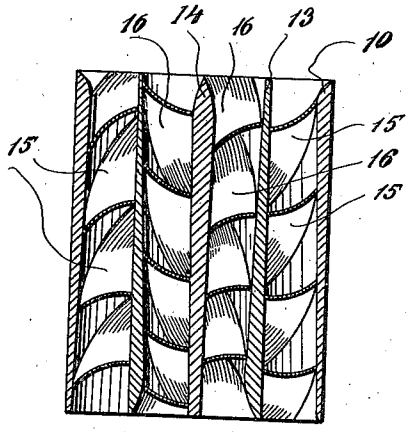


Fig. 3.

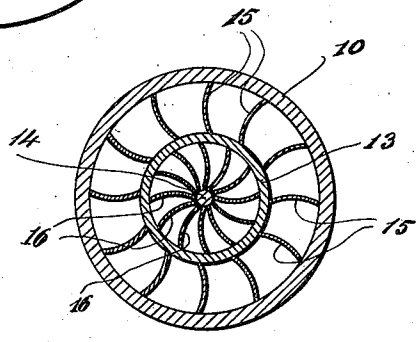


Fig. 4.

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To all whom it may concern:

Be it known that I, LEROY R. MABEE, a citizen of the United States, residing at Hailey, in the county of Blaine, State of Idaho, have invented certain new and useful Improvements in Fuel Mixers for Gasoline Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in mixing devices and particularly to devices for mixing air and gas in the explosive charges of gasoline engines.

One object of the invention is to construct a device of this character by means of which the air and gas which passes from the carburetor to the intake manifold of the engine will be given a whirling motion with the result that the air and gas will be more intimately mixed before entering the cylinder of the engine.

Another object is to provide a device by means of which the air and gas charge, as it leaves the carburetor, will be divided into two or more separate and whirling streams, each turning in a direction opposite to the other, and being across the path of the other, as the streams enter the intake manifold, with the result that a mixture will be produced which will increase the power of the engine, cause the thorough burning of the gas, with the elimination of carbon collections, and the smoother running of the engine.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawing.

In the drawing:

Figure 1 is an enlarged elevation of the mixing device attached between the carburetor and intake manifold of an automobile engine, the casing of the mixer being partly broken away to disclose the spiral fins or ribs.

Figure 2 is an end view of the device as seen from within the intake manifold.

Figure 3 is a longitudinal central sectional view through the device.

Figure 4 is a central transverse sectional view through the device.

Various devices have been produced for causing the mixture of the air and gas as they enter the intake manifold of gasoline engines, some using fans which turn in opposite directions, but the great difficulty in such devices has been that the air and gas has been delivered in streams which consist of strata of air and gas unmixed. It is the principal object of the present invention to produce a device whereby the air and gas, as well as the semi-mixed air and gas is divided into several streams which are set into a whirling motion in opposite directions and cross each other's path, with the result that a perfect and intimate mixture will be produced.

The above result is accomplished by the structure shown in the accompanying drawing, wherein 10 represents an outer tubular casing extending partly into the upper end of the carburetor 11, and partly into the intake manifold 12. Disposed concentrically within the casing 10 is a smaller tubular member 13, and centrally within the member 13 is a stem or post 14. Secured at their opposite edges to the inner face of the casing 10 and to the outer face of the member 13, and extending spirally therewithin, are the ribs or fins 15, said ribs being arranged to discharge the gas and air, at the inner end of the device, and within the intake manifold, in a whirl toward the center of the manifold. Arranged between the center post 14, and the inner tube 13, with their opposite edges secured to the said post and to the inner face of the wall of the tube 13, are the spirally extending ribs 16, said ribs extending in a direction opposite to that of the ribs 15, so as to discharge the gas, into the intake manifold, toward the outer wall thereof, and across the path of the stream discharged by the ribs 15, this stream being also given a whirling motion by the spiral trend of the ribs 16. There are thus two streams of air and gas discharged into the intake manifold, concentric to each other, and directed across each other's path, with the result that each stream will be thrown into and through the other stream, and the mixture, and breaking up of the air and gas particles made complete.

It will be noted that there are no moving parts, or rotating fans in the present device, the charge of air and gas being drawn into the manifold by the suction of the engine, and the whirling action produced automatically by the passage of the air and

gas between the spirally arranged ribs. The present device is thus clearly distinguished from devices heretofore, by the stationary ribs, which produce a result attempted by others, but which has not been accomplished by them.

While I have described the devices as disposed between the carburetor and the intake manifold, it will be understood that the same may be disposed at some point in the manifold, or may be built in the carburetor, or other place desired within the scope of the invention.

It will be further noted that each stream of gas passing through the device passes through a Venturi tube, each portion of the device being in effect such a Venturi. This also increases the speed of the streams of gas and the resultant mixed final stream, whereby a more perfect mingling of the air and gas particles is produced.

What is claimed is;

A charge mixing device for an explosive engine comprising a pair of concentric and spaced hollow tubular members, a stem arranged longitudinally and centrally within the inner tubular member, longitudinal ribs extending spirally in one direction between the tubular members, and longitudinal ribs extending spirally between the stem and the inner tubular member in the opposite direction to that of the first spiral ribs.

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

LEROY R. MABEE.

Witnesses:

J. G. HEDRICH,

C. M. PERKINS.