M. C. LOEFFELHOLZ.

MIXER.

APPLICATION FILED JULY 5, 1918.

1,333,856.

Patented Mar. 16, 1920.

Fig. 1.

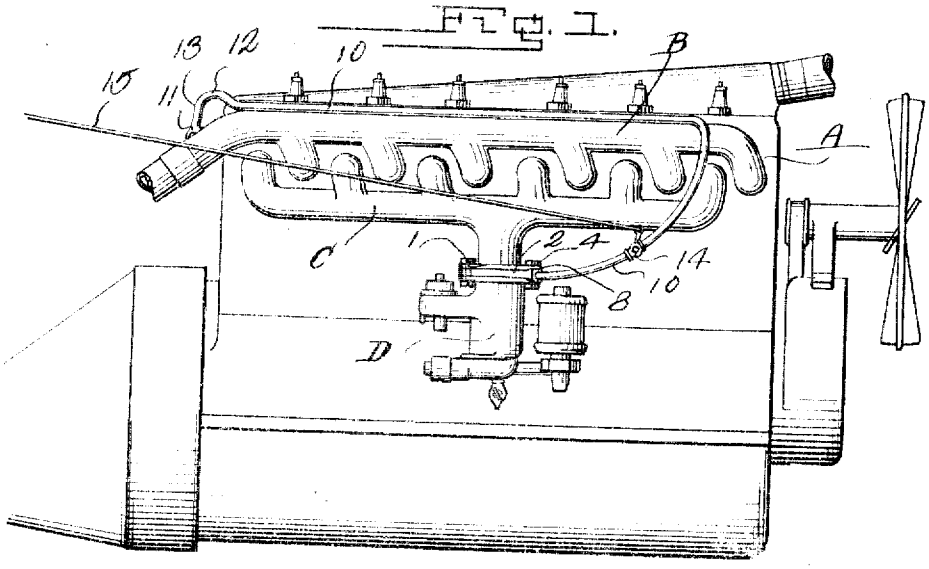


Fig. 2.

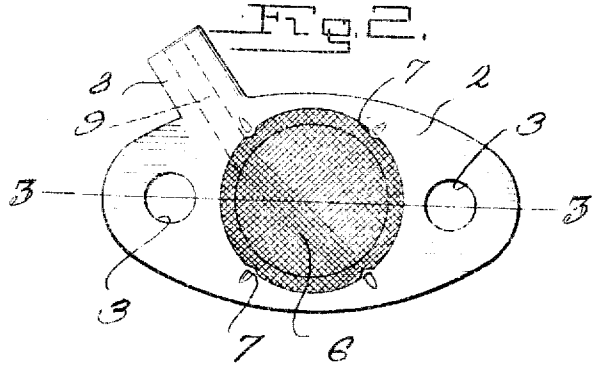
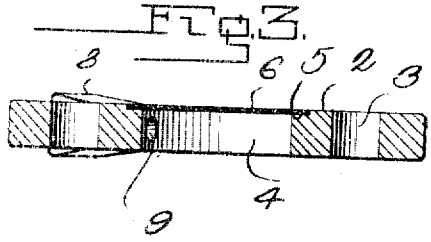


Fig. 3.



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MIXER.

1,333,856. Specification of Letters Patent. Patented Mar. 16, 1920.

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To all whom it may concern:

Be it known that I, MIKE C. LOEFFELHOLZ, a citizen of the United States, and a resident of Noble, in the county of Cleveland and State of Oklahoma, have invented certain new and useful Improvements in Mixers, of which the following is a specification.

This invention relates to a mixer or vaporizing device adapted for use in connection with internal combustion engines, and an object of the invention is to provide a mixer, which is placed between the carbureter and intake manifold of an ordinary internal combustion engine, for supplying and mixing heated air with the combustible gas prior to the entrance of the gas into the cylinder of the engine, to create a combustible gas of higher efficiency and consequently result in the creation of maximum power upon the utilization of a minimum quantity of gaseous fuel.

A further object of the invention is to provide a mixer, as specified, which has valved connection with the exhaust manifold of the engine for supplying heated air to the chamber of the mixer, at which point the heated air will be thoroughly mixed with the combustible gas or fuel from the carbureter, prior to the delivery of the fuel to the engine cylinder and further to provide an inverted U trap in the pipe at its receiving end to form an obstruction for fine particles of carbon or other foreign accumulations, and prevent the latter from being delivered to the mixer.

More specifically, the invention comprehends the provision of a mixer embodying a plate provided with a centrally disposed opening at the upper end of which is placed a screen, said screen being flush with the upper surface of the plate and which plate is also provided with a transverse opening to permit the entrance of the heated air into the opening beneath the screen, and the heated air entering the central opening of the plate, will engage the under surface of the screen, spreading thereover and providing a thin film of the heated air through which the combustible gas from the carbureter must pass, prior to its entrance into the cylinders of the engine, thereby insuring the thorough mixing of the fuel or gas with the heated air.

Other objects of the invention will appear in the following detailed description, taken in connection with the accompanying drawing, forming a part of this specification, and in which drawing:

Figure 1 is a side elevation of an internal combustion engine showing the improved mixer applied thereto.

Fig. 2 is a plan view of the mixer.

Fig. 3 is a longitudinal section on the line 3—3 of Fig. 2.

Referring more particularly to the drawing, A indicates an ordinary internal combustion engine having the usual exhaust manifold B, inlet manifold C with which a carbureter D of the ordinary construction is connected, for carbureting the fuel prior to its delivery to the cylinders of the engine A.

The improved mixer structure, generically indicated by the numeral 1, comprises a substantially oval-plate 2, having a pair of attaching openings 3 near its end, through which the bolts 4 extend that connect the carbureter D and the inlet manifold C for holding the plate 2 between the meeting ends of the intake manifold and the carbureter.

The plate 2, is provided with a relatively large central opening 4 which communicates with the bore of the intake manifold C, and has an enlarged or countersunk portion 5 at its upper base a screen 6, is seated in the countersink 5, and its upper surface lies flush with the upper surface of the plate 2, thereby causing it to come directly against the lower inlet end of the intake manifold C. The screen 6 is confined in the countersink 5, by the inward forging of portions of the metal of the plate 2, as shown at 7 in Fig. 2 of the drawing, forming instruck nibs which engage the screen and hold it against displacement.

A coupling 8 is formed upon the plate 2 and extends outwardly therefrom, being provided with a bore 9 which permits the passage of heated air into the opening 4 beneath the screen 6. A pipe 10 communicates with the coupling 8, and it extends upwardly and along the exhaust manifold B as clearly shown in Fig. 1 of the drawing. The pipe 10 is connected to the exhaust manifold B, as shown at 11 so as to permit heated air from the exhaust manifold to pass into and through the pipe 10 for entrance into the opening 4. The pipe 10 has an inverted U trap 12 formed therein, at its end which is connected to the exhaust manifold B, and the length 13 of

this trap rises, substantially perpendicularly from the exhaust manifold B, whereby the trap will form an obstruction for the passage of carbon, or other foreign material, from the exhaust manifold into the pipe 10, and consequently prevents the mixing of such foreign material with the combustible fuel entering the inlet manifold C. A valve 14, of any ordinary construction is interposed in the pipe 10, for controlling the passage of the heated air into the opening 4. A valve rod 15, for operating the valve 14 is connected thereto and may extend to any suitable location for convenient operation of the valve 14.

The heated air passing through the pipe 10, will enter the opening 4, and rising, will form a film over the under surface of the screen 6, through which film the carbureted fuel or combustible gas from the carbureter D will pass, upon its entrance into the intake manifold B, thereby causing a thorough mixing of the heated air with the gas. The screen 6, will also have a tendency to break up the air, causing a wavy formation and further increasing the thorough mixing of the gas and heated air, so as to provide a fuel of maximum efficiency resulting in the obtaining of maximum power upon the utilization of a minimum quantity of the fuel, such as gasolene, employed for operating the engine A.

Changes in details may be made without departing from the spirit of the invention, but:

I claim:

1. In a mixer, the combination with an internal combustion engine having an intake manifold, a carbureter for supplying fuel thereto, and an exhaust manifold, of a mixer positioned between and communicating with the carbureter and intake manifold and comprising a body plate having an opening therein, a screen across the upper ends of said opening, said body plate provided with a transverse opening communicating with said first named opening below said screen, a pipe communicating with said exhaust manifold and with said transverse opening for supplying heated air to the mixer below said screen, said pipe lying for a portion of its length in engagement with said exhaust manifold, and a substantially inverted U trap in said pipe at its receiving end for forming an obstruction to prevent the passage of foreign material from the exhaust pipe into the mixer.

2. In a mixer, a body plate provided with a centrally disposed opening, a countersink in the upper face of said plate and communicating with said opening, a screen seated in said countersink, and portions of the metal of the said plate about the outer surface of said countersink being forced inwardly to form nibs engaging said screen to hold the screen in place.

3. In a mixer, a body plate provided with a centrally disposed opening, a countersink in the upper face of said plate and communicating with said opening, a screen seated in said countersink, and portions of the metal of the said plate about the outer surface of said countersink being forced inwardly to form nibs engaging said screen to hold the screen in place, said plate provided with a transverse opening communicating with said first named opening below said screen.

4. In a mixer, the combination with an internal combustion engine having an intake manifold, a carbureter for supplying fuel thereto, and an exhaust manifold, of a mixer positioned between and communicating with the carbureter and intake manifold and comprising a body plate having an opening therein, said body provided with a countersink surrounding said opening at one side of the body, a screen across the upper ends of the opening and resting in said countersink, portions of the metal of said body plate about the outer surface of said countersink being forced inwardly to form nibs engaging said screen to hold it in place, said body plate provided with a transverse opening communicating with said first-named opening below said screen, a pipe communicating with said exhaust manifold and with said transverse openings for supplying heated air to the mixer below said screen, and a substantially inverted U-shaped trap in said pipe at its receiving end for forming an obstruction to prevent the passage of foreign material from the exhaust pipe into the mixer.

MIKE CHRIST LOEFFELHOLZ.