

J. W. WARREN.

MIXER.

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1,260,609.

Patented Mar. 26, 1918.

Fig. 1

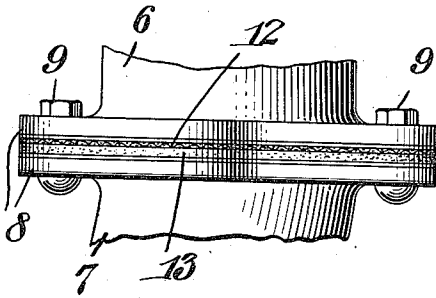


Fig. 2.

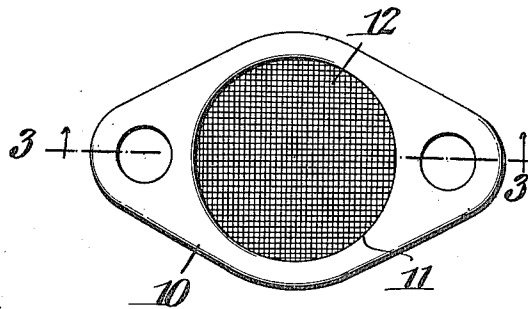


Fig. 3.

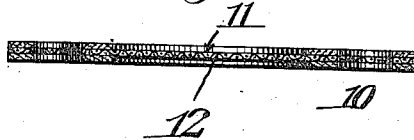


Fig. 4.

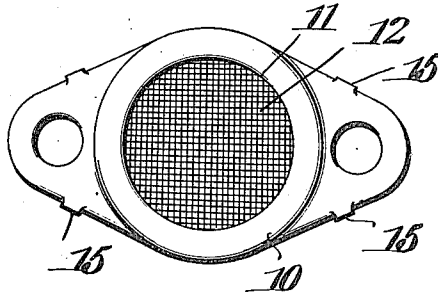
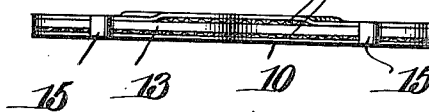


Fig. 5.



WITNESSES

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Fig. 6.



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MIXER.

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To all whom it may concern:

Be it known that I, JOHN W. WARREN, citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented certain new and useful Improvements in Mixers, of which the following is a specification.

This invention relates to vaporizing devices, and is adapted particularly for use in connection with internal combustion engines.

The primary object of the invention is to provide a means of simple and improved construction capable of being readily applied to various types of combustion engines, which will thoroughly homogenize the fluid fuel passing into the cylinders of the engine, whereby the efficiency of the engine is materially increased.

A still further object of the invention is to provide a device of this character which is adapted particularly to be installed in the engine intake between the carbureter and the engine cylinders, whereby the explosive gases delivered to the various cylinders will be thoroughly homogenized and mixed prior to their introduction to the cylinders, the arrangement greatly facilitating the explosive properties of the fuel, and by thus thoroughly disintegrating the fluid fuel particles, the accumulation of carbon within the cylinders is obviated.

A still further and particular object of the invention is to provide a mixing device for the above described purposes which is of extremely simple and inexpensive construction, which is composed of but few simple and easily assembled parts, all so constructed and arranged as to preclude the possibility of wear, breakage, and corrosion or derangement of the same, which is capable of being readily applied to engines of various types and constructions, which, when one attached, can not become disordered, which will prove practically everlasting in use, and which will efficiently perform the functions for which it is designed.

With these objects in view, together with others which will appear as the description proceeds, the invention resides in the novel formation, combination and arrangement of parts, all as will be described more fully hereinafter, illustrated in the drawings and particularly pointed out in the claims.

The invention will be best understood by

referring to the accompanying drawings 55 wherein:—

Figure 1 is a fragmental side elevation of a portion of an intake for internal combustion engines, and illustrating the application of a mixing device embodying my invention; 60

Fig. 2 is a plan view of the mixer removed from the manifold;

Fig. 3 is a longitudinal sectional view taken through the improved mixing device upon the line 3—3 of Fig. 2; 65

Fig. 4 is a view similar to Fig. 2 and illustrating a slightly modified form of the invention;

Fig. 5 is an edge of that form of the device illustrated in Fig. 4; 70

Fig. 6 is an edge view of a further modified form of the invention.

The invention consists generally, in the arrangement of a screen or diaphragm in the fuel intake duct for the engine cylinders, whereby all fluid fuel drawn into the cylinders will be forced through a screen or diaphragm and thus thoroughly disintegrated and atomized before entering the cylinders. 80

Referring now more particularly to the drawings, 6 and 7 indicate respective portions of the intake pipe for the engine cylinders. As is known to those familiar with engines of this character, these pipes at their adjacent ends are flanged as at 8 and are adapted to be secured together to communicate with each other, by bolts 9 passing through the flanges. 85

The mixing device comprises a washer or gasket indicated generally at 10, and is preferably of a shape to conform to that of the flanged ends of the pipes 6 and 7, and is adapted for insertion between the said flanges. This gasket is provided with a central orifice 11 corresponding preferably to the interior dimensions of the pipes 6 and 7 and the said orifice is provided with a fine mesh screen, webbing or diaphragm 12. This screen or diaphragm, as well as the material of which the gasket proper is constructed may be of any preferred and suitable material, and the screen may be secured to the washer in any desired manner. In Figs. 2 and 3 of the drawing, I have illustrated a practical embodiment of the invention, wherein the screen 12 is arranged between two thin ordinary asbestos or composition 105

gaskets, and the said gaskets and screen may be cemented together, or held in proper assembled relation in any preferred manner. The closeness or fineness of the meshes of the diaphragm 12 is such as, while not materially affecting the flow of gaseous fuel therethrough, to thoroughly atomize or disintegrate drops of liquid fuel, such as gasoline, passing from the carbureter or mixing device to the combustion chambers.

In Figs. 4 and 5 of the drawings, there is illustrated a slightly modified form of gasket, wherein the plates constituting the gasket 10 are each provided upon their inner faces with the webbing or porous diaphragms 12. The washer 13, which may be formed of asbestos or other suitable packing material, maintains the diaphragms in place in spaced relation, and retaining fingers 15 formed upon one of the plates are bent over and engaged with the edge of the opposing plate. In this form of the device, the fuel passing to the combustion chambers is assured of a more thorough disintegration of the larger particles carried thereby. If desired, the wire mesh diaphragms may vary in fineness.

In Fig. 6 of the drawings, there is illustrated an atomizing gasket to be used in connection with carbureters of that type wherein the butterfly or throttle valve is located at the top thereof. In such instances, the screen diaphragm is bowed outwardly, so as not to interfere with the movements of the butterfly or throttle valve during its opening and closing operations.

From this description, it is apparent that I have provided a device which is of simple and inexpensive construction to thoroughly homogenize the fluid fuel drawn into the cylinders. When the gasket is inserted between the same by the bolts 9, it will be obvious that leakage at the joint will be prevented. The washer or packing element 13 corresponds to the shape of the plates constituting the gasket 10, and is capable, when the bolts 9 are tightened, of being firmly pressed into the screen edges to form an air tight joint between the same and the gasket plates. The point of insertion of gaskets of this character in the fluid fuel duct is immaterial, and it is understood that

the same may, with equal facility, be applied at the juncture of the intake manifold with the engine cylinders, or at the point of attachment of the carbureter or other mixer with the manifold. When the gasket is once applied, it is obvious that derangement or accidental displacement of the same cannot occur, and the fluid fuel passing through the intake pipe will be completely atomized, regardless of the amount passing there-through, the quantity, of course, being dependent upon the speed of the engine. It will also be observed that by thus completely disintegrating the liquid particles carried by the explosive charge, the gasoline consumption of the engine will be reduced, and the accumulation of carbon within the explosion chambers will be obviated.

While the present is a disclosure of the preferred embodiment of the invention, it is to be understood that the invention is not limited thereto, but that various changes may be made in the construction, arrangement and proportion of parts, without departing from the scope of the invention, as defined in the appended claims.

I claim:—

1. In a device of the class described, a pair of plates identical in shape and construction, the said plates being provided with alined central and end orifices, a screen carried by each plate upon the interior face thereof and extending across said central orifices, a packing element separating said plates, and fingers connecting said plate edges, substantially as described.

2. In a device of the character described, the combination with an internal combustion engine, of a gasket comprising a pair of plates adapted to be arranged between the carbureter and the cylinders of said engine, a mesh diaphragm arranged between said plates, and fingers at the edge of one of said plates engaged with the edges of the other plate for holding said plates and diaphragm together, substantially as described.

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

JOHN W. WARREN.

Witnesses:

J. Coffy,
H. Groom.