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W. A. DEAN ET AL
GASEOUS FUEL MIXING DEVICE

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Fig. 1

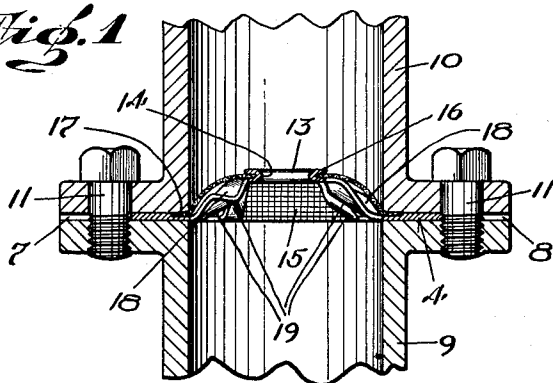


Fig. 2

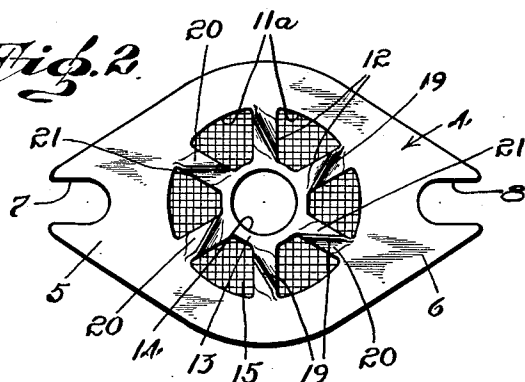
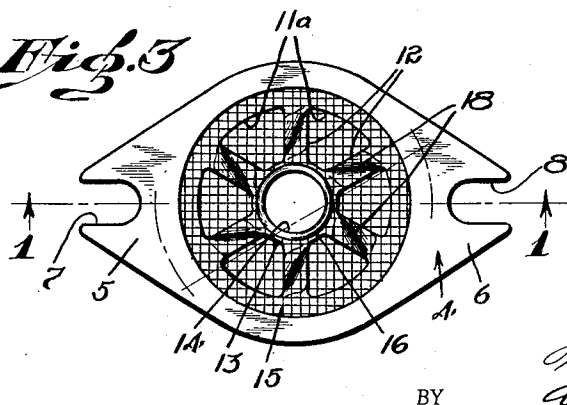


Fig. 3



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GASEOUS FUEL MIXING DEVICE

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1 Claim. (Cl. 48—180)

This invention relates to mixing devices and more particularly to a gaseous fuel mixing device adapted to be assembled into the intake manifold of an internal combustion motor between the carburetor and the motor.

An object of this invention is to provide a device to intercept the flow of the fuel column and thereby agitate the fuel column to cause the particles of moisture carried therein from the carburetor to more thoroughly break up into their component parts and more readily mix with the air forming a part of the fuel column.

An object of this invention is to provide a simple and efficient device which may be readily assembled into the intake manifold of any internal combustion motor and which when assembled therein will intercept the fuel column and break up the directional flow thereof and cause the fuel column to rotate in reverse directions within itself, thus providing by the simplest form of structure the maximum amount of agitation of the fuel column for the better intermixing of the fuel and air contained in said column and for the breaking up of any particles of moisture which may have been carried from the carburetor in that form.

Another object of this invention is the provision of a device adapted to be disposed within the intake manifold of an internal combustion engine, between the carburetor and the motor. Said member including a plurality of radially disposed fins defining a corresponding series of openings, a further opening centrally disposed in said device and a screen positioned over the various openings defined by said radially disposed fins.

Our invention possesses other advantages and has other objects which may be made more easily apparent from a consideration of one embodiment of the invention. For this purpose we have shown one form in the accompanying drawing and forming a part of the present specification. We shall now proceed to describe this form in detail, which illustrates the general principles of our invention, but it is to be understood, that this description is not to be taken in a limiting sense, since the scope of our invention is best defined by the appended claim.

The accompanying drawing illustrates the invention in a form we at present deem preferable.

Figure 1 is the vertical sectional view showing our device within an intake manifold, the device proper being taken on a staggered sectional line as indicated by line 1—1 of Fig. 3.

Figure 2 is a plan view of the under side of the device.

Figure 3 is a top plan view of said device.

Referring to the accompanying drawing and particularly to Fig. 1 thereof, we show our device positioned in the intake manifold of an internal combustion engine, between the carburetor and the engine.

Said device comprises a flat body portion 4 having two oppositely disposed extensions 5 and 6 which are provided with slots 7 and 8. The device is held between the carburetor outlet 9 and the intake manifold 10 as by the aid of bolts 11, 11 passing through the slots 7 and 8 and the flanges on said carburetor outlet and intake manifold.

The central portion of the body 4 has several sections cut out, as at 11a, leaving a plurality of radially disposed fins 12, 12. Said fins connect said body member and a raised central ring portion 13 which has a central opening 14 there-through. A screen member 15 is secured to the body member and covers the radially disposed fins and their adjacent openings. Said screen is secured to the centrally disposed ring portion 13 as by the aid of a crimp 16 and thus has a central opening. We prefer to press the screen into the body member as shown clearest at 17 of Fig. 1.

As has heretofore been stated a central ring portion 13 is somewhat higher than the body portion of the device, and the fins connecting said ring and body are angularly disposed as shown in Fig. 1. In other words, the device projects upwardly within the intake manifold in the form of a frustro-conical spider-like member.

The fins 12, 12 are depressed as at 18 Figures 1 and 3, forming a biased ridge 19 and two adjacent angular faces 20 and 21.

In operation the gaseous mixture from the carburetor is diverted at an angle through the screen member 15 and thereby more perfectly atomized, and also the velocity of the gaseous fuel is increased by the aid of the central opening 14. The biased ridges 19 and the angular faces 20 impart a spiral movement to the column of gaseous mixture, which still further increased the thorough mixing of fuel gas and air.

In view of the fact that the character of fuels now being used for internal combustion motors is rapidly changing to contain more of the unsaturated hydrocarbons, and also in certain forms of motor fuel there is combined with the refined gasoline such elements as the conventional forms

of lead now being used in anti-knock gasolines, it becomes more essential that the liquid fuel be fully vaporized and thoroughly mixed with the air before it reaches the combustion chamber of the motor, therefore we have provided this mixing device to be used for the purposes recited.

It being common to the art to intercept and agitate the fuel column, before the column reaches the air controls, which in this device are the fins 12, 12 it has been found, upon reducing this device to practice, that a more efficient mixture of the fuel column can be obtained from the arrangement in this device, than from the arrangement heretofore common in the art, and for simplicity of construction and to eliminate wear and tear on moving parts and the consequent upkeep of such moving parts, we have provided the propeller structure comprising the recited fins 12, 12 wherein the air directing elements are stationary, and by utilizing the passage of the fuel column thereby, the momentum of the column having sufficient force to cause the fins 12, 12 to exert the necessary directional force against the column passing therethrough, it was found unnecessary to have moving parts in this device, therefore the construction as disclosed.

With our device, the objections to the conventional mixer having moving parts is avoided, and also the character of the construction of this device wherein the materials used are a non-corrosive and non-rusting character, deterioration of the device by use is avoided, and we therefore

claim novelty in the construction and character of this device as disclosed. It will be readily observed that the form of the structure of the device as disclosed in the drawing will be subject to modification for commercial use to adapt it to be fitted to the various sizes and shapes of intake manifold connections wherein it is designed to be used. Therefore, such modifications as may be necessary to reduce the invention to practice will suggest themselves to those skilled in the art, and to this end we make reservation to make such changes in form and construction as may come within the spirit of the accompanying claim.

We claim:

In a gaseous fuel and air mixing device, the combination of a flat body portion, radial fins integral with said flat body portion and with a raised central portion thereof, said raised portion having a central opening, a screen superimposed on and having flanges pressed into said flat body portion, said screen covering said raised portion of said flat portions, and said screen having a central opening corresponding to the central opening in the said raised portion, and biased ridges on said fins adapted to impart a spiral movement to the gaseous fuel and air mixture passing through the openings between the said fins and through the said screen for the purpose of producing a more perfect mixture of the said fuel.

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