March 3, 1936. J. E. MILLER 2,032,548

GAS AND AIR MIXER

Filed Sept. 13, 1934

Fig. 1.

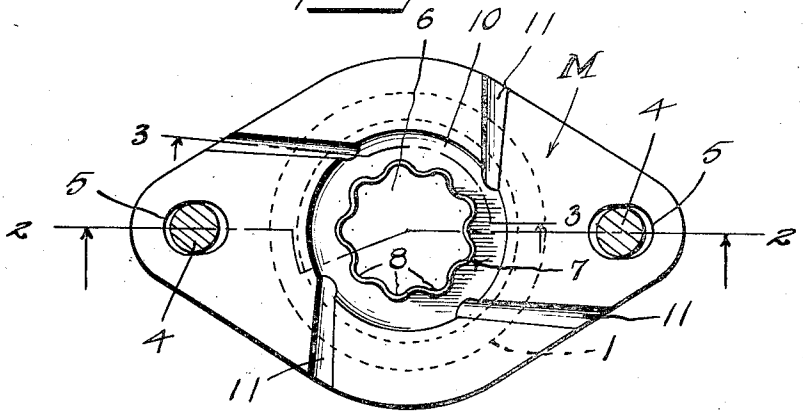


Fig. 2.

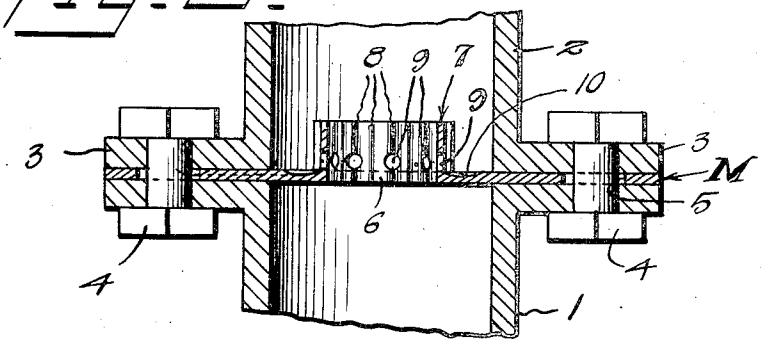
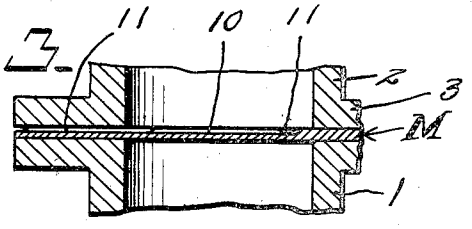


Fig. 3.



Inventor

J. E. Miller

By Watson E. Coleman

Attorney

Patented Mar. 3, 1936 2,032,548

UNITED STATES PATENT OFFICE

2,032,548

GAS AND AIR MIXER

John Edward Miller, Huntington, W. Va.

Application September 13, 1934, Serial No. 743,852

1 Claim. (Cl. 48—180)

This invention relates to a gas and air mixer, and it is primarly an object of the invention to provide a device of this kind adapted to be interposed in an intake manifold to allow an admission of auxiliary air to the charge drawn from the carburetor and in a manner whereby said auxiliary air is discharged within the manifold in even distribution.

Another object of the invention is to provide a device of this kind constructed in a manner whereby when in working position the auxiliary air is drawn within the intake at different points to effect what might be termed a compound mixing.

A more particular object of the invention is to provide a device of this kind comprising a member in the form of a gasket to be interposed within the joint of the intake manifold and wherein said member extends across or intersects the intake manifold and is provided with a relatively large opening through which passes the charge from the carburetor, said opening being substantially defined by a flange disposed in a direction away from the carburetor, said flange being provided therearound with spaced openings and a face of the member being provided with grooves or channels for communication with the atmosphere yet permitting auxiliary air to be drawn into the intake manifold for mixture with the initial charge, certain of the air mixing with the charge over the outer edge of the flange and portions of the air mixing with the charge through the openings of the flange.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved gas and air mixer whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the the same with reference to the accompanying drawing, wherein:—

Figure 1 is a view in top plan of a gas and air mixer constructed in accordance with an embodiment of my invention, associated retaining bolts being shown in section;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1 looking in the direction of the arrows;

Figure 3 is a detailed sectional view taken substantially on the line 3—3 of Figure 1 looking in the direction of the arrows.

As illustrated in the accompanying drawing 1 and 2 denote aligning sections of an intake manifold for an internal combustion engine (not shown), the section 1 being adapted for communication with the carburetor and the section 2 delivering to the cylinders. The adjacent ends of the sections 1 and 2 are defined by the outstanding flanges 3 with which are associated in a well known manner the holding bolts 4 whereby the sections 1 and 2 are effectively coupled.

Interposed between the adjacent ends of the sections 1 and 2 is my improved gas and air mixer which comprises a member M which is of a configuration to conform to the design of the joint or connection and which member is provided in its extremities with openings 5 through which the holding and clamping bolts 4 are directed as is clearly illustrated in Figure 1 of the accompanying drawing. The member M extends across or intersects the bore of the intake manifold at the joint between the sections 1 and 2 and is provided in its central portion with a relatively large opening 6 defined by a flange 7 extending within the manifold section 2. This flange 7 is of material length and is preferably corrugated with the corrugations 8 thereof extending substantially in parallelism with the axis of the opening 6. The flange 7 is provided therearound and preferably within the concave portions of the corrugations with an annular series of small openings 9 positioned immediately adjacent to the juncture of the flange 7 with the member M.

The face of the member M at the same side as the flange 7 is provided with an annular groove or channel 10 surrounding the flange 7 and preferably contiguous to the flange. The same face of the member M is also provided with a series of substantially straight grooves or channels 11, adjacent grooves or channels 11 being in angular relation and with each of said grooves or channels 11 in tangential relation with respect to the flange 7. The inner ends of the grooves or channels 11 are in communication with the annular groove or channel 10 while the outer ends of said grooves or channels 11 have communication with the atmosphere through the edge faces of the member M as is believed to be clearly illustrated in Figures 1 and 3 of the accompanying drawing.

With the engine in operation the pulsations of the pistons will draw the charge of mixed gas and air from the carburetor through the intake

manifold, said charge passing of course through the opening 6. The engine pulsations will also draw auxiliary air within the manifold through the grooves or channels 11 and a portion of such air will pass through the openings 8 to mix with the charge as drawn from the carburetor while another portion of the air will pass up and over the outer edge of the flange 7 for desired mixture with the charge. This provision of means for a plurality of deliveries of the auxiliary air to the charge as initially drawn from the carburetor results in what may be termed a "compound mixing" which in practice demonstrates an increased efficiency of the charge as delivered to the engine cylinders.

It is also to be stated that the angular relation of the grooves or channels 11 together with the fact that they are substantially tangential to the flange 7 results in a whirling action of the auxiliary air as drawn into the carburetor to further facilitate the mixing.

It has also been found in practice that the corrugations 8 facilitate the desired even distribution of the auxiliary air so that the charge as delivered to the cylinders is in a state of highest efficiency.

From the foregoing description it is thought to be obvious that a gas and air mixer constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

A gas and air mixer comprising a member to intersect an intake manifold, said member having an opening for the passage of the charge of air and gas, a flange integral with the member and surrounding the opening at one side of the member, said flange being spaced from the wall of the manifold and being provided therearound with a series of small openings closely adjacent the member, the face of the member at the same side thereof as the flange having channels with their outer ends open, said flange being corrugated with the corrugations disposed substantially in parallelism with the axis of the opening.

JOHN EDWARD MILLER.