A. B. EVANS.

MEANS FOR COMPLETING THE VAPORIZATION AND HOMOGENIZATION OF MIXTURE DELIVERED BY A CARBURETOR.

APPLICATION FILED APR. 29, 1921.

1,430,222. Patented Sept. 26, 1922.

Fig. 1.

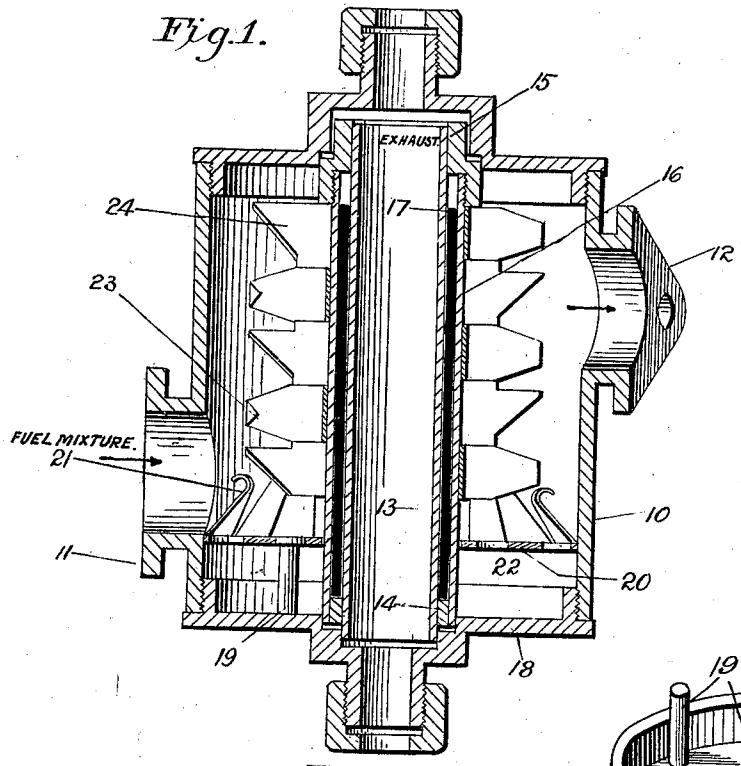


Fig. 4.

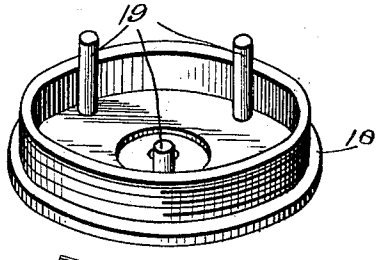


Fig 2

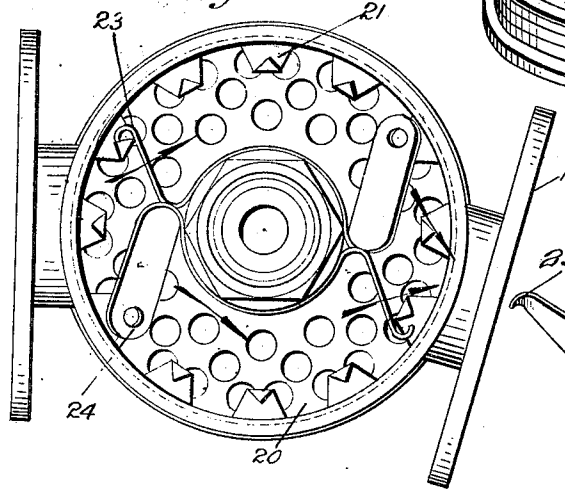
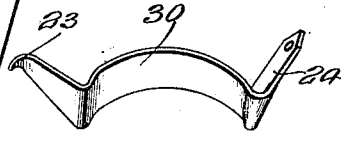


Fig. 3.



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UNITED STATES PATENT OFFICE.

ARTHUR B. EVANS, OF WEST PERTH, WESTERN AUSTRALIA, AUSTRALIA.

MEANS FOR COMPLETING THE VAPORIZATION AND HOMOGENIZATION OF MIXTURE DELIVERED BY A CARBURETOR.

Application filed April 29, 1921. Serial No. 465,412.

To all whom it may concern:

Be it known that I, ARTHUR BEILBY EVANS, subject of the King of Great Britain and Ireland, residing at West Perth, in the State of Western Australia, Commonwealth of Australia, have invented new and useful Improvements in Means for Completing the Vaporization and Homogenization of the Mixture Delivered by a Carburetor, of which the following is a specification.

This invention relates to means for completing the vaporization and homogenization of the mixture delivered by a carburetor.

It is well known that the mixture as normally delivered by a carburetor is not in a condition favourable to a highly efficient explosion principally on account of the hydrocarbon being largely present in the atomized condition rather than as a vapour. In consequence of this condition also a considerable amount of carbonization occurs in the cylinder with, of course, a further loss of efficiency.

It has been proposed to overcome the disadvantages previously alluded to in several ways. One method that has been used comprised means in combination with the carburetor for heating the mixture by the exhaust gases. Another arrangement consisted of means entirely separate from the carburetor characterized in that the mixture was heated by the exhaust before admittance to the induction pipe of the cylinder. Whilst the aforesaid arrangements were undoubtedly possessed of some utility they were useless when starting up with a cold engine.

Now the object of the present invention is to substantially overcome the disadvantage previously alluded to thereby obtaining an increased efficiency on explosion as well as largely if not entirely eliminating carbonization.

To enable the invention to be more readily understood it will now be described with the aid of the accompanying sheet of explanatory drawings, in which,

Figure 1 shows a sectional elevation of the apparatus and

Figure 2 is a plan thereof when the top of the mixing chamber has been removed.

Fig. 3 is a perspective view of one of the strips from which the baffles 23, 24 are formed.

Fig. 4 is an inside perspective view of the bottom 18 of the casing.

In the drawings 10 indicates a mixing chamber formed with a flanged neck 11 for connecting to the carburetor and with another flanged neck 12 for connecting to the induction pipe. These flanged necks will obviously be disposed relatively to each other at an angle readily permitting the aforesaid connections to the particular car being fitted therewith. Disposed centrally in the mixing chamber is a tube 13 through which the exhaust gases are passed. Two spaced ring like members 14 and 15 surround the said tube and a shorter tube 16 of larger diameter than the tube 13 encloses the latter but is spaced therefrom, the lower end of the tube 16 fitting over the ring 14 and the upper end of the tube fitting into the ring 15. An annular jacket is thus formed between the two tubes 13 and 16. This jacket is charged with mercury indicated by the reference numeral 17 sufficient space being left free from mercury to permit its expansion. The removable bottom 18 of the mixing chamber has cast integral therewith a number of posts 19 on which rests a metal disc 20 having a number of comparatively large holes formed therein. 21 indicates inclined baffles which are formed integral with the disc 20 and which incline upwardly from the periphery thereof, the upper end of each baffle 20 being curved over to form a pointed tip. The aforesaid construction results in the obtention of a sump 22 in the lower portion of the mixing chamber. In the mixing chamber are also placed a number of baffles some pointed such as those referenced 23 and others 24 having a comparatively large hole near their end. These baffles are conveniently all formed from one piece of sheet metal which is also formed so as to embrace the outer periphery of the tube 16. These baffles 23 and 24 are each formed by taking a strip of metal and bending it centrally to fit around the tube 16 as shown at 30, the ends of each strip being bent backwardly to form the baffles. The semi-circular portions 30 of each strip may be secured to the tube 16 in any suitable way.

The operation of the apparatus is as fol-

lows: When the engine commences suction the vaporized mixture contained in the mixing chamber 10 (in effect a reserve of mixture) is drawn through the flanged neck 12 and into the induction pipe of the engine. A corresponding volume of mixture is simultaneously drawn from the carburetor through the flanged neck 11 and into the mixing chamber. The mixture entering and passing through the mixing chamber is deflected and mixed by the alternate pointed and perforated baffles 23 and 24 taking the course indicated by the arrows shown in Figure 2. The hot exhaust gases from the engine pass through the conduit 13 which transmits heat to the mercury jacket 17 which in turn transmits it to the conduit 16 in direct contact with the mixture in the chamber 10. In the event of the carburetor flooding and delivering liquid hydrocarbon to the mixing vessel it is trapped in the sump 22 from whence it is only gradually vaporized on account of the obstacles afforded by the perforated disc 20 and pointed baffles 21.

When the engine is stopped the demand on the mixing chamber ceases and consequently a body of mixture remains and is available for restarting. The jacket surrounding the exhaust pipe remains warm for a considerable length of time and consequently heat will generally be available in the mixing chamber on restarting the engine.

I claim:—

1. In an apparatus of the class described, the combination with a mixing chamber having an inlet and an outlet, of a tube extending through said chamber and through which exhaust gases pass, a jacket surrounding the tube, mercury within said jacket, and baffle devices located within the chamber.

2. In an apparatus of the character described, the combination with a mixing chamber having an inlet and an outlet, of a perforated disc extending across said chamber below the inlet but spaced from the bottom of the chamber thereby forming a sump below said disk, a tube extending through the chamber and through which exhaust gases pass, and a plurality of baffles located within said chamber.

Dated this 8th day of March, 1921.

ARTHUR B. EVANS.