

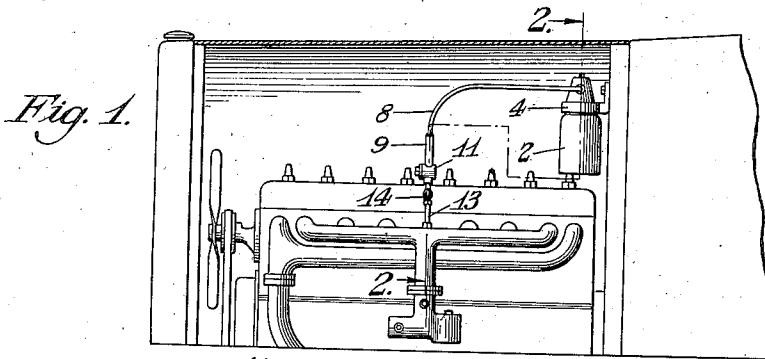
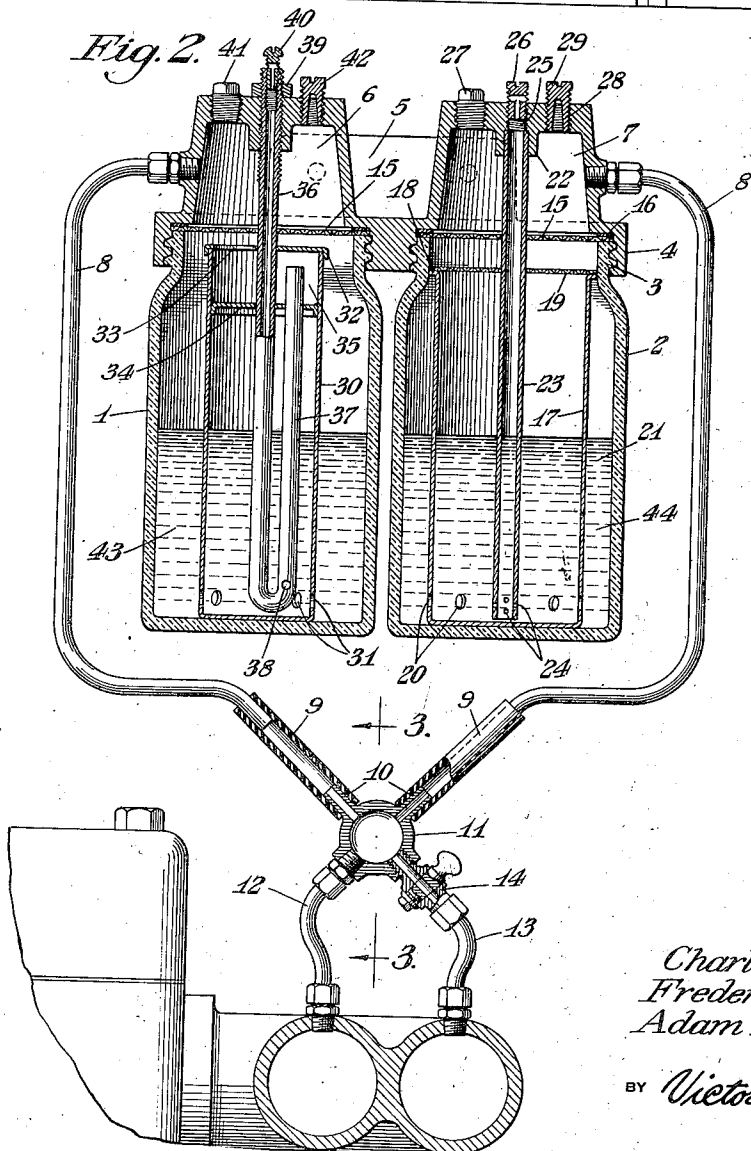
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C. F. MILLER ET AL

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FUEL MODIFYING DEVICE FOR INTERNAL COMBUSTION ENGINES

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Charles F. Miller,
Frederick C. Miller &
Adam David Booth

INVENTORS

BY Victor J. Evans & Co.

THEIR ATTORNEYS

UNITED STATES PATENT OFFICE

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FUEL MODIFYING DEVICE FOR INTERNAL COMBUSTION ENGINES

Charles F. Miller, Frederick C. Miller and Adam David Booth, Chicago, Ill.

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This invention relates to fuel modifying devices for internal combustion engines, and its general object is to provide a device for modifying the fuel mixture from the carbureting means of an engine before it enters the same, to entirely change its character, and whereby the changed mixture not only increases the efficiency of the engine, especially by proper lubrication of the parts included in or being associated with the upper part of the cylinders, but maintains the parts and fuel mixture in proper operating temperature due to humidifying the fuel mixture, as well as prevents, eliminates, cleans and dissolves carbon, with the result the engine is capable of maintaining its greatest efficiency and power for a prolonged period of time without damage and with a material decrease in fuel consumption.

A further object of the invention is to provide a fuel modifying and feeding device for an internal combustion engine that introduces into the fuel mixture of air and hydrocarbons from the carbureting means, for commingling therewith, a vapor mixture including lubricant, air, alcohol, and water, or like substances, in quantities that can be manually regulated or controlled to meet existing conditions, for maintaining greatest engine efficiency, but otherwise is entirely automatic in its operation.

Another object of the invention is to provide a fuel modifying device of the character set forth that can be applied to any type of engine regardless of the number of cylinders, is inexpensive to manufacture, compact, simple in construction, easy to apply, and is extremely efficient in operation and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing our invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Fig. 1 is a view illustrating our device associated with a motor vehicle and its engine;

Fig. 2 is a view partly in section of our device applied to the engine; and

Fig. 3 is a sectional view taken approximately on the line 3—3 of Fig. 2, looking in the direction of the arrows.

Referring to the drawing in detail, it will be noted that we have shown our device applied to an eight cylinder engine that includes dual mani-

folds, but we want it understood that it can be applied to any type engine having any number of cylinders.

In the form as shown, the device includes a pair of separate and distinct receptacles 1 and 2 in the form of glass jars. However, these receptacles may be integral or arranged in a single unit, but in any event they are provided with threaded necks 3 for the purpose of being threadedly received by a cap member which includes a base 4, the latter having formed therewith or suitably secured thereto a bracket 5 provided with openings to receive suitable means such as screw bolts or the like for securing the device to the vehicle in close proximity to the engine as suggested in Fig. 1.

The base 4 has formed therewith or otherwise secured thereto hollow, substantially conical upright portions which provide mixing chambers 6 and 7 for a purpose which will be later described. Each of the chambers is in communication with the intake manifold of the engine, and as shown, they have connected thereto one of the ends of pipe lines 8 which have secured to the opposite ends flexible sleeves or conductors 9, the latter being received by nipples 10 extending from a four-way connector 11 that likewise has in communication therewith a pair of pipe lines 12 and 13. The pipe line 12 extends to one branch of the dual manifold, while the pipe line 13 extends to the other branch thereof and between the pipe line 13 and the four-way connector 11 is a valve 14, so that the pipe line 13 can be dispensed with if desired, when applying the device to a single manifold. Of course, the valve 14 can be replaced by a plug, if found necessary and desired.

Disposed between the upper ends of the necks of each of the receptacles 1 and 2 is a screen member 15, and an air-tight connection is provided between the receptacles and the base 4 by gaskets 16. The screen members 15 separate the mixing chambers 6 and 7 from the receptacles, as shown, but arranged within the receptacle 2 is a cup member 17 that is supported upon the bottom thereof, while the upper end of said cup member is outwardly flared as at 18 to engage the neck of the receptacle 2, as shown. Supported upon the outwardly flared portion of the cup member 17 is a screen member 19 which co-operates with the screen member 15 of the receptacle 2 in a manner to be later described. The cup member 17 is provided with openings 20 adjacent its lower end, and it will be noted that the cup member 17 provides an annular chamber between the same and the vertical wall of the re-

ceptacle 2 in order to form what may be termed a reservoir 21 which has communication with the cup member through the medium of the openings 20.

5 Secured to and depending from a boss 22 formed on the inner surface of the upper wall of the chamber 7, is a tube 23 which extends through the screen members 15 and 19 and terminates in close proximity to the bottom of the cup member. Apertures 24 are provided in the tube 23
10 adjacent its lower end as shown.

The upper wall of the chamber 7 has arranged centrally therein a threaded bore 25 which is in communication with the tube for supplying air thereto, and threadedly received in the bore is a valve plug 26 for controlling the air supply to the tube as will be apparent. Arranged upon opposite sides of the bore 25 are similar bores and while one of these bores act as a filling means
15 and is closed by a stopper plug 27, the other bore, which for distinction is indicated by the reference numeral 28, has threadedly received therein a valve plug 29 for controlling the passage of the air to the chamber 7.

25 The valve plug 29 is provided with a tapered recess extending diametrically through the same with the small portion of the recess uppermost, so that when this plug is threaded up or down the portion of the recess that is open to the atmosphere is increased or decreased in order to
30 control the passage of air accordingly to the chamber 7.

The receptacle 1 has centrally arranged therein a casing 30 that rests upon the bottom thereof, and disposed adjacent the lower end of the casing 30 is a plurality of openings 31 providing communication between the casing 30 and the receptacle 1. A cover 32 is provided for the upper
35 end of the casing 30, but this cover has arranged therein a relatively large opening 33, and fixed within the casing adjacent to the cover is a partition 34 that co-operates with the cover to form what may be termed an oil basin or chamber 35.

Threadedly secured for adjustment through
45 the upper wall of the chamber 6 is the upper end portion of a tube 35 which extends through the cover 32 and partition 34 for disposal in close proximity to the bottom of the casing 30 and from its lower end the tube 36 is curved upon itself to provide an upright portion 37 that extends
50 through the partition 34 and terminates in the chamber 35. The upright portion 37 has an aperture 38 arranged therein adjacent its lower end, as shown.

55 The major portion of the tube 36 is movable through the cover and partition while the upright portion is movable through the partition so that the upper end of the latter portion can be adjusted with respect to the cover as will be apparent upon inspection of Fig. 2, and the tube 36
60 is held in adjusted position through the instrumentality of a nut 39 that is threaded to the upright end of the threaded portion and bears against the outer surface of the upper wall of the chamber 6.

Air to the tube 36 is controlled by a valve or screw plug 40, and the upper wall of the chamber 6 has arranged therein bores, one of which receives a stopper plug 41 while the other receives a valve plug 42 identical with the valve plug
70 29 so as to control air to the chamber 6. It will, of course, be understood that the bore that receives the stopper plug 41 acts in the capacity as a filling means for the receptacle 1.

75 In the use of our device, the receptacle 1 re-

ceives a predetermined quantity of oil, as indicated at 43, while the receptacle 2 receives a like quantity of a mixture which consists of alcohol and water indicated by the reference numeral 44. However, we want it understood that
5 any kind of liquid lubricant can be put into the receptacle 1 and any substance or liquid similar to water and alcohol can be put into the receptacle 2.

When our device is attached to an internal
10 combustion engine as shown, it will be apparent that a partial vacuum will be created in the chambers 6 and 7, as well as the remaining portions of the device, when the engine is running, with the result air will be drawn into these chambers through the medium of the valve plugs 29
15 and 42, and also into the tubes through the medium of the plugs 26 and 40. The air within the tube 23 will be expelled therefrom at its lower end and, therefore, commingle with the water and alcohol within the cup member 17. This air becomes saturated with the water and alcohol and passes through the screen members 15 and
20 19 which, of course, will break up the particles of the saturated air and reduce the same to vapor which mixes with the air from the valve plug 29, and this vapor is then drawn to the four-way connector, which likewise acts as a mixing chamber, to be mixed with the oil vapor from the
25 receptacle 1.

The oil vapor, of course, comes from the chamber 6, and is produced by air passing into the chamber 6 and tube 36. The air within the tube
30 36 collects oil from the casing 30 in that the oil passes from the casing 30 through the aperture 38, and the air forces the oil up through the upright portion 37 for disposal within the oil basin or chamber 35. By employing the oil basin or chamber 35 it will be apparent that a sufficient quantity of oil is always maintained adjacent to
35 the mixing chamber 6, and the oil saturated air will pass from the chamber 35, through the opening 33, and screen member 15, the latter breaking up the particles of oil saturated air and changing the same into vapor. This vapor mixes with the air from the plug valve 42 and is directed to the mixing chamber of the four-way connector to be mixed with the water and alcohol vapor. These mixed vapors are then introduced into the intake
40 manifold to commingle with the fuel mixture from the carbureting means of the engine, and, of course, entirely changes its character, in that the mixture then contains lubricant in sufficient quantities to properly lubricate the parts included in and associated with the upper part of
45 the engine cylinders, and the mixture likewise contains water and alcohol vapor which not only humidifies the same to decrease temperature, but provides therein a carbon solvent.

From the above description and disclosure of
50 the drawing it will be obvious that we have provided an auxiliary feeding device for an internal combustion engine for modifying the fuel mixture from the carbureting means to an extent to completely change its character, to bring about and maintain the greatest efficiency in an engine with
55 a material decrease in fuel consumption.

It is thought from the foregoing description that the advantages and novel features of our invention will be readily apparent.

70 We desire it to be understood that we may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

We claim:

1. In an internal combustion engine having an intake manifold, an oil containing receptacle having a mixing chamber provided with a conduit connection with the manifold, a constant level oil chamber mounted within the receptacle in operative relation with said mixing chamber, the latter being provided with an adjustable vent communicating with the atmosphere, said conduit connection communicating with the mixing chamber at a point above the constant level oil chamber, and an oil conveying tube communicating with said oil chamber and extending into the oil in the receptacle, said tube having an adjustable vent communicating with the atmosphere.
2. In an internal combustion engine having an intake manifold, an oil containing receptacle having a mixing chamber screened from the receptacle, a conduit between the manifold and the mixing chamber, a constant level oil chamber mounted within the receptacle in operative relation with said mixing chamber, the latter being provided with an adjustable air valve communicating with the atmosphere, said conduit connection communicating with the mixing chamber at a point above the constant level oil chamber, and an oil conveying tube communicating with said oil chamber and extending into the oil in the receptacle, to deposit oil in said constant level oil chamber, said tube having an adjustable vent communicating with the atmosphere.
3. In an internal combustion engine having an oil containing receptacle having a mixing chamber provided with a conduit connection with the manifold, a constant level oil chamber mounted within the receptacle in operative relation with said mixing chamber, the latter being provided with an adjustable air valve communicating with the atmosphere, said conduit connection communicating with the mixing chamber at a point above the constant level oil chamber, a U-shaped oil conveying tube, one leg of the tube communicating with said oil chamber and the other end having an adjustable vent communicating with the atmosphere, a portion of the tube being positioned close to the bottom of the receptacle and having an oil inlet opening.
4. In an internal combustion engine having an intake manifold, an oil containing receptacle having a mixing chamber screened from the receptacle, a conduit between the manifold and the mixing chamber, an oil chamber mounted within the receptacle in fixed and operative relation with said mixing chamber, the latter being provided with an adjustable air valve communicating with the atmosphere, said conduit connection communicating with the mixing chamber at a point above the constant level oil chamber, a U-shaped oil conveying tube having one end communicating with said oil chamber, the bight of the tube being positioned near the bottom of the receptacle and the leg communicating with the oil chamber having an inlet opening positioned near said bight, and an adjustable air valve connected with the other leg.
5. In an internal combustion engine having an intake manifold, an oil containing receptacle having a mixing chamber provided with a conduit connection with the manifold, a constant level oil chamber mounted within the receptacle in operative relation with said mixing chamber, the latter being provided with an adjustable vent communicating with the atmosphere, an oil conveying tube communicating with said oil cham-

ber and extending into the oil in the receptacle, said tube having an adjustable vent communicating with the atmosphere, a second receptacle for a liquid and having a mixing chamber, a conduit between said last named mixing chamber and the manifold, and a mixing device communicating with both conduits for mixing the materials flowing therethrough.

6. A device of the type described comprising a first receptacle having a screen therein to divide the receptacle into a liquid containing part and a mixing chamber, said mixing chamber being provided with means for connection with an intake manifold of an internal combustion engine, an open-ended tube carried by the receptacle and having one end arranged in close relation with the bottom of the liquid containing part, an adjustable air valve connected with the other end of the tube, a second receptacle, a screen positioned within the second receptacle for dividing the same into an oil compartment and a mixing compartment, a constant level cup positioned within the oil compartment and in operative relation with the mixing compartment, the mixing compartment having means for connection with the intake manifold, a U-shaped tube, one leg of said tube being positioned within the oil cup and the bight of the tube being arranged in close relation with the bottom of the oil compartment, said tube being provided with an oil inlet opening near its bight, an adjustable air valve connected with the other leg of the tube, adjustable air inlet valves associated with said mixing chamber and the mixing compartment, and means connected with the means between the mixing chamber and the mixing compartment and the intake manifold for mixing the materials passing to the manifold.

7. In a device of the type described, a receptacle having a screen dividing the same into an oil chamber and a mixing chamber, a tubular member placed inside the receptacle and having openings in one end communicating with the oil chamber, the other end of the tubular member being provided with a partition and a cover arranged in spaced relation to provide a constant level oil chamber, the cover having an outlet opening, a U-shaped tube arranged within the tubular member and the receptacle, one leg of the tube communicating with the constant level oil chamber and the bight of the tube being arranged in close relation with the bottom of the receptacle and having an opening, the other leg of the tube being provided with an air inlet valve communicating with the atmosphere, and a valve for establishing communication between the mixing chamber and the atmosphere, said mixing chamber being provided with an outlet for connection with a tube leading into an intake manifold of an internal combustion engine.

8. In a device of the type described, a receptacle having a screen dividing the same into an oil chamber and a mixing chamber, a tubular member placed inside the receptacle and having openings in one end communicating with the oil chamber, the other end of the tubular member being provided with a partition and a cover arranged in spaced relation to provide a constant level oil chamber, the cover having an outlet opening, a U-shaped tube arranged within the tubular member and the receptacle, one leg of the tube communicating with the constant level oil chamber and the bight of the tube being arranged in close relation with the bottom of the receptacle and having an opening, the other leg of the tube being provided with an air inlet valve

communicating with the atmosphere, a valve for establishing communication between the mixing chamber and the atmosphere, said mixing chamber being provided with an outlet for connection with a tube leading into an intake manifold of an internal combustion engine, a second receptacle, a tubular member positioned therein and having openings in one end, a screen arranged across the other end of the tubular member, a second screen for dividing the second receptacle into a liquid compartment and a mixing compartment, said last named tubular member being positioned within the liquid compartment, a tube

positioned within the tubular member and the receptacle and having one end terminating in close relation with the bottom of the receptacle and provided with inlet openings, the other end of the tube being provided with air inlet means, and an air inlet valve associated with said mixing compartment, the latter being provided with an outlet for connection with a tube leading to the intake manifold.

CHARLES F. MILLER.
FREDERICK C. MILLER.
ADAM DAVID BOOTH.