Sept. 25, 1928. 1,685,598

W. DAVIS

AUXILIARY FUEL AND CLEANING DEVICE FOR INTERNAL COMBUSTION ENGINES

Filed Aug. 14, 1925 3 Sheets-Sheet 1

Fig 1.

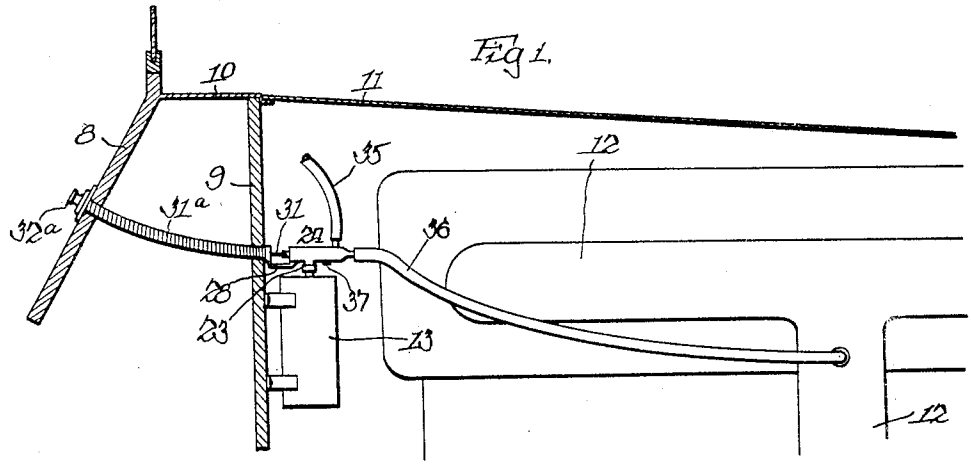
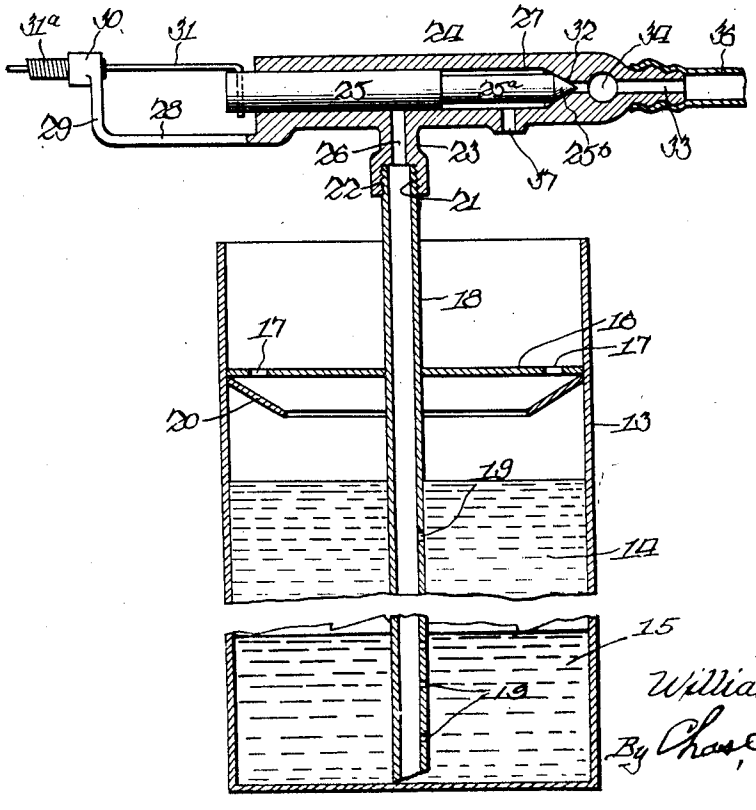


Fig. 2.



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Fig. 3.

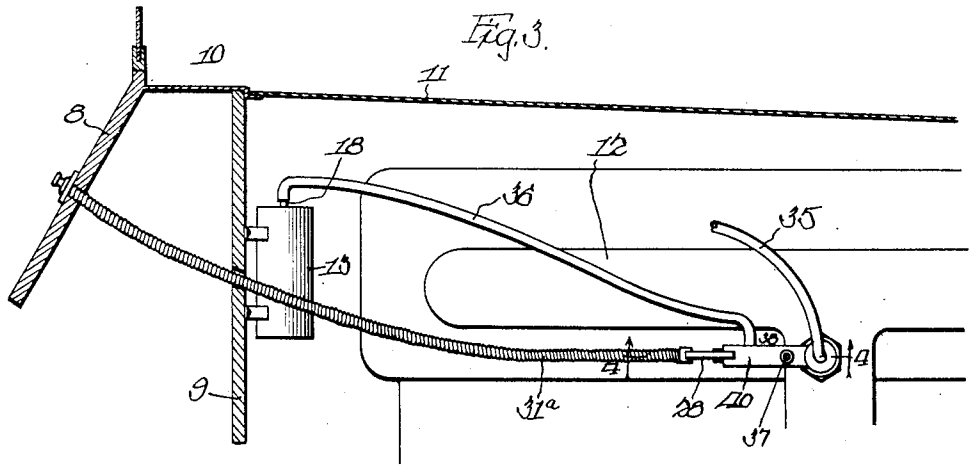


Fig. 5.

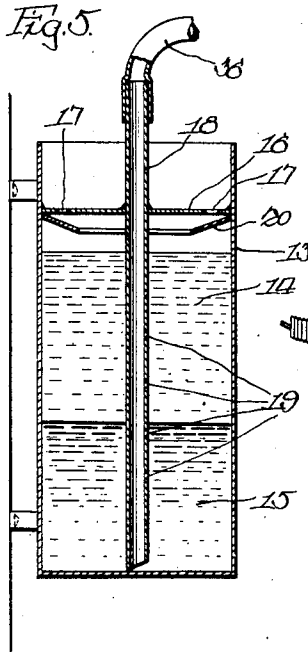
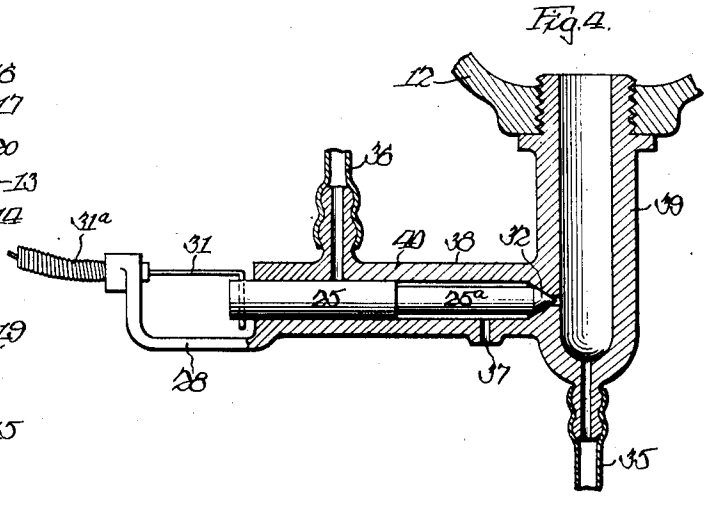


Fig. 4.



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Fig. 6.

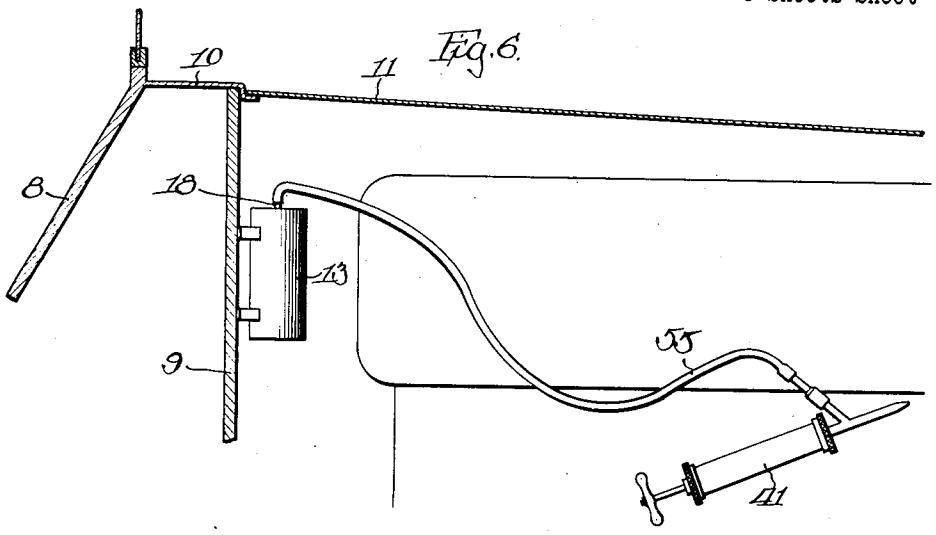
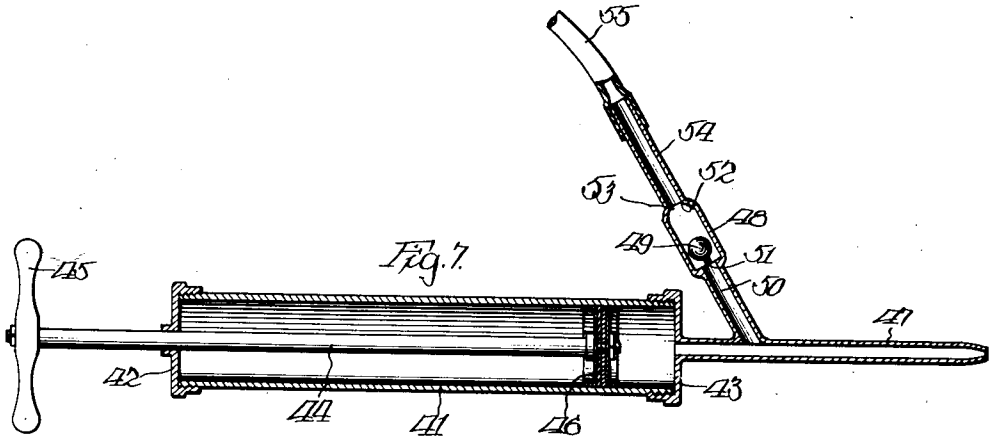


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM DAVIS, OF CHICAGO, ILLINOIS.

AUXILIARY FUEL AND CLEANING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

Application filed August 14, 1925. Serial No. 50,256.

This invention relates to improvements in an attachment or device to be used in connection with an engine or motor of the explosive type, but more particularly with such type of engines employed for driving automobiles, trucks, boats, and the like, for the purpose of increasing the efficiency and for affording a substantially, ever ready, and convenient means for thoroughly cleaning parts of the engine to which it is attached, thereby preventing the formation of carbon, and the accumulation of dust, dirt, and the like on certain parts of the engine, thus enabling it to run more smoothly and at a higher degree of efficiency on a smaller amount of fuel than if supplied in the ordinary way.

The invention consists in certain peculiarities of the construction, novel arrangement and combination of the various parts thereof as will be hereinafter more fully set forth and specifically claimed.

In the accompanying drawings, which serve to illustrate several forms of which the invention is susceptible:—

Fig. 1 is a sectional view of the front of an automobile with my attachment shown in elevation and in place thereon ready for use.

Fig. 2 is an enlarged view in section of the auxiliary fuel or cleaning compound container and one form of the valve or means for utilizing the contents thereof.

Fig. 3 is a view similar to Fig. 1, showing a modified form of arranging another form of the valve with respect to the engine.

Fig. 4 is an enlarged view of the relief valve and its casing and a part of the intake manifold of the engine.

Fig. 5 is an enlarged vertical sectional view of the container for the auxiliary fuel or cleaning compound showing a portion of the tube which connects it with the valve casing and illustrating details of construction.

Fig. 6 is a view of like parts of an automobile as those shown in Fig. 1, but showing the said container equipped with an instrument for cleaning certain parts of an engine, and

Fig. 7 is a longitudinal sectional view of the cleaning instrument and a check valve carried thereby.

Like numerals of reference designate similar parts throughout the different views of the drawings.

Referring now more particularly to Figs. 1, 3, and 6, of the drawings, the numeral 8 designates the instrument board of an automobile, 9, its dash-board, 10, the cowl, 11, the hood, and 12, the intake manifold of the engine. All of these parts may be of the ordinary or any well known construction and kind, as my device is applicable to vehicles of various structure.

Mounted on the dash-board 9, by preference on the front thereof and near its top is a tank or container 13 of any suitable size and material, which may ordinarily be supplied with about equal quantities of kerosene 14 and water 15, which will of course not mix to any desired extent, but the quantity of kerosene 14 will float on the quantity of water 15 as is well known. This tank or container is provided in its upper end near its top rim, but at a sufficient distance below the same, with a horizontally disposed partition 16 having a plurality of openings 17 located near the walls of the container, and the central opening for the reception of a vertical tube or pipe 18 which is provided with numerous small openings 19 throughout its length below said partition. The lower end of this pipe is open and slightly beveled, as shown in Fig. 5, so as to permit of access of water and gasoline or the contents of the container to the said pipe and from thence through its upper end and my improved valve, which is used in connection with said pipe and the intake manifold 12 in various ways, as will be hereinafter more fully explained.

Just below the partition 16 of the container, the same is provided with an inwardly and downwardly deflected annular baffle-plate 20, which extends below and inwardly of the perforations 16, and thus prevents to a great extent the splashing of the contents of the container through the perforations 16. However, if any of the contents should pass therethrough to the upper surface of the partition 16, it will readily find its way back into the container 13 as is obvious. By locating the partition 16 at a considerable distance below the top rim of the container 13, it is apparent that liquid or ingredients of a suitable kind can be supplied to the container, and the same will be safely held

therein, without the necessity of using a screw-plugged opening as is usually required. As shown in Figs. 1 to 3 and 5 of the drawings, the upper end of the pipe 18 extends above the top of the container 13 and in the form illustrated in Figs. 1 and 2, is provided with external screw-threads 21, and which is for the purpose of direct engagement with the screw-threads 22 of the nozzle 23 or extension with which the valve casing, which is designated as a whole by the numeral 24, is provided on its lower surface near the front end of its needle valve 25 located in said casing. The extension 23 of the valve casing is provided with a channel or port 26 which communicates with the upper end of the pipe 18 and the chamber 27 of the valve casing. At its rear end, or that end of the casing adjacent the rear end of the needle valve 25, said casing is provided with a horizontally disposed and rearwardly extended bracket 28, which has an upwardly extended arm 29 equipped with a transversely orificed collar 30, through which a connection such as a wire 31 is extended and operates near its front end, which rear end is connected in any suitable manner to the rear end of the needle valve 25, which has its front portion 25^a reduced and its front end 25^b tapered to fit or become seated in a suitable tapered valve seat 32 at the front portion of the valve chamber of said casing. Extended forwardly from this valve seat 32 is a port or channel 33 which communicates through an opening 34 and the flexible tube 35 with the mechanism of the wind shield wiper or squeegee (not shown) of the automobile. This squeegee or wiper is of the well know vacuum type and is operated by the constant suction of the intake manifold and has a shut off valve (not shown) in its communicating element between it and the manifold, of the ordinary kind, to be used when the wiper is not operated. The front end of the said valve casing has connected thereto one end of a connection 36, such as a rubber or flexible tube, the other end of which is connected to, and communicates with, the intake manifold 12 of the engine at a suitable point, usually above the connection therewith of the carbureter (not shown).

The wire or connection 31, as well as a flexible coil 31^a therearound, extends through suitable openings in the dashboard 9 and instrument board 8 as clearly shown in Fig. 1, and said connection 31 is provided at its near end with a button 32^a by means of which the needle valve 25 can be operated.

The valve casing 24 is provided with an opening 37, which communicates with the atmosphere and with the taper 27 forwardly of the enlarged portion of the needle valve, so that when the taper end 25^b thereof is unseated, fresh air may be supplied to the intake manifold 12 through the channel or port 33, thus augmenting the efficiency of the engine by furnishing auxiliary air to that furnished by the carbureter. By drawing the enlarged portion of the needle valve 25 so that its front end will be rearwardly of the port 26, it is manifest that a supply of the liquids, such as kerosene and water will be drawn from the container 13 and caused to be supplied to the intake manifold in a more or less mixed condition as the peculiar construction of the valve casing and its valve will, to a certain extent, act as a mixing device.

In Figs. 3 and 4 of the drawings, I have shown a modification in the arrangement and construction of the device, which consists in employing a valve casing 38 of an almost T-shaped construction, which is directly connected to the manifold 12 by screwing one end of the hollow piece 39 thereinto, as shown in Fig. 4 of the drawings. In this construction, the rearwardly extended part 40 of the casing 38 is equipped as in the other construction with an opening 37 to the atmosphere, a pipe 35, leading to the wind shield wiper mechanism (not shown), a tapered valve seat 32, a bracket 28, and the needle valve 25, having a reduced portion 25^a as in the construction above described and explained.

This modified form provides means for directly connecting the valve casing to the intake manifold and loosely to the pipe 18 of the container 13 through a tube or pipe 36 in a manner somewhat similar to that of the other construction. The connection or wire 31 and the coil 31^a around the same is for operating the needle valve and is substantially the same as in the other construction except of greater lengths, but located with respect to the dash-board 9 and the instrument board 8 in a similar manner.

In Figs. 6 and 7 is shown still another modified construction, which is intended for the use in cleaning certain parts of the engine. In this form, the valve and its connections with the container 13 and with the instrument board and dash-board are omitted and the container 13 can be supplied with any suitable kind of cleaning material or liquid which is drawn from the pipe or tube 18, it being understood that the construction of the container 13 in this present modification is the same as before described. The cleaning instrument used in the present modification in connection with the pipe of the container 13 is in the form of a cylindrical body 41 of any suitable material and size having its ends closed by caps 42 and 43 in the screw engagement therewith. Extended through a suitable opening in the cap 42 is a piston rod 44 which has on its outer end a handle 45 for its back and forth movement, and on its inner end, a double faced piston

46, which moves with the rod or member 44 as is apparent. The cap 43 is provided with a nozzle 47, which nozzle has communicating therewith a valve casing 48 in an enlargement of which is movably located a ball valve 49 which is prevented closing the part 50 when liquid is being forced from the body 41 by means of a projection 51 extended into the enlarged part of the casing at its bottom. This enlarged part of the casing is provided with a tapered valve seat 52, which has a port 53 leading through a reduced portion 54 of said casing to the outer end of the portion 54 and is connected to one end of a flexible tube 55, the other end of which is connected to, and communicates with, the pipe 18 of the container 13, which may be supported on the dash-board 9 in a convenient position. Thus it will be seen that the cleaning instrument can be utilized as a pump or spray in cleaning various parts of the automobile engine and that in operating the rod 44 back and forth, liquid, such as kerosene and water, will be withdrawn through the flexible tube 55 upon the backstroke of the piston 46 and expelled from the body 41 through the nozzle 47 upon the forward stroke of said piston.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a device of the class described, the combination with an automobile having the usual dash-board, instrument-board, and an engine having an intake manifold, of a multi-fluid container mounted on the dash-board and having a perforated pipe vertically mounted therein and extended above its top, a valve casing mounted for communication therewith on the top of said pipe and having a port in communication with said manifold and an opening to the atmosphere, a needle valve mounted in said casing for reciprocation and a connection leading from said valve through said dash-board and instrument-board for operating the valve.

2. In a device of the class described, the combination with an engine having an intake manifold, of a multi-fluid container suitably mounted near said manifold and having a perforated pipe vertically mounted therein to extend into the different fluids and to project above its top, a valve casing mounted for communication therewith on the top of said pipe and having a port at one of its ends in communication with said manifold and an opening to the atmosphere, a needle valve mounted in said casing for reciprocation and a connection leading from said valve to a suitable point for conveniently operating said valve.

3. In a device of the class described, the combination with an engine having an intake manifold, of a water and kerosene container suitably mounted near said manifold and having a perforated pipe vertically mounted therein and extended above its top, a valve casing mounted for communication therewith on the top of said pipe and having a port in one of its ends in communication with said manifold and an opening to the atmosphere, a needle valve mounted in said casing for reciprocation and having a reduced portion normally located so as to permit the inner end of the opening to the atmosphere to be unclosed by said reduced portion, and a connection leading from said valve through suitable supports to a convenient point for operating said valve.

4. A device of the class described including a container adapted for the reception of two fluids and having a transverse partition within its walls at a considerable distance below the top of said container, said partition having a central opening and plurality of openings arranged concentrically with respect to said center opening, an annular baffle member mounted on the container below said partition and extended under said perforations, a perforated pipe vertically mounted in said central opening and extended above the top of the container, said pipe having a beveled, yet open, lower end resting on the bottom of the container.

5. A device of the class described including in combination with the intake manifold of an engine, a suitably mounted valve casing having communication with a supply of water and kerosene and provided with a port in one of its ends located in communication with said manifold and an opening to the atmosphere, a needle valve mounted in said casing for reciprocation and having a reduced portion normally located over the said opening to the atmosphere but permitting said opening to remain open, the enlarged part of said needle valve normally closing the opening leading to said supply of liquid and a connection leading from said valve through suitable supports to a convenient point for operating said valve.

WILLIAM DAVIS.