Dec. 2, 1924. 1,517,326

A. F. WATKINS

CARBON ELIMINATOR AND FUEL SAVER FOR INTERNAL COMBUSTION ENGINES

Filed April 20, 1922 2 Sheets-Sheet 1

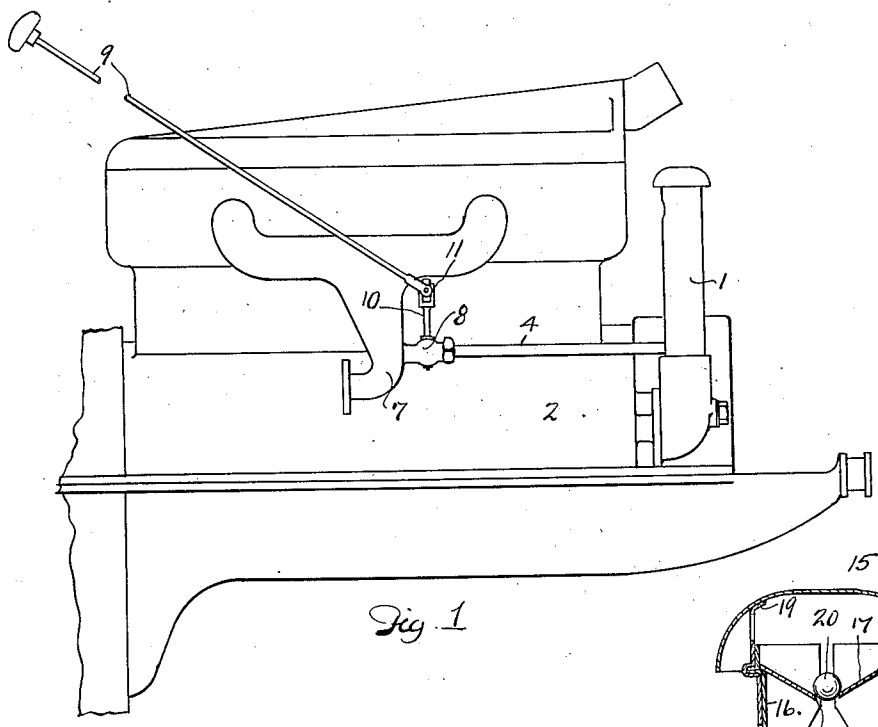


Fig. 1

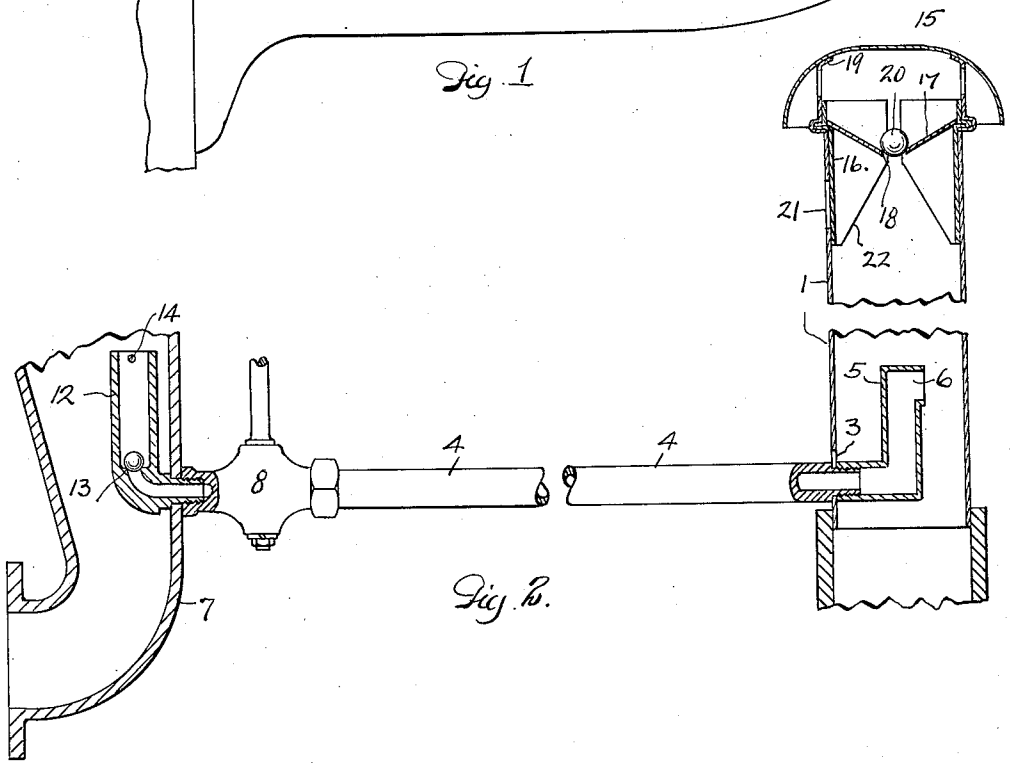


Fig. 2.

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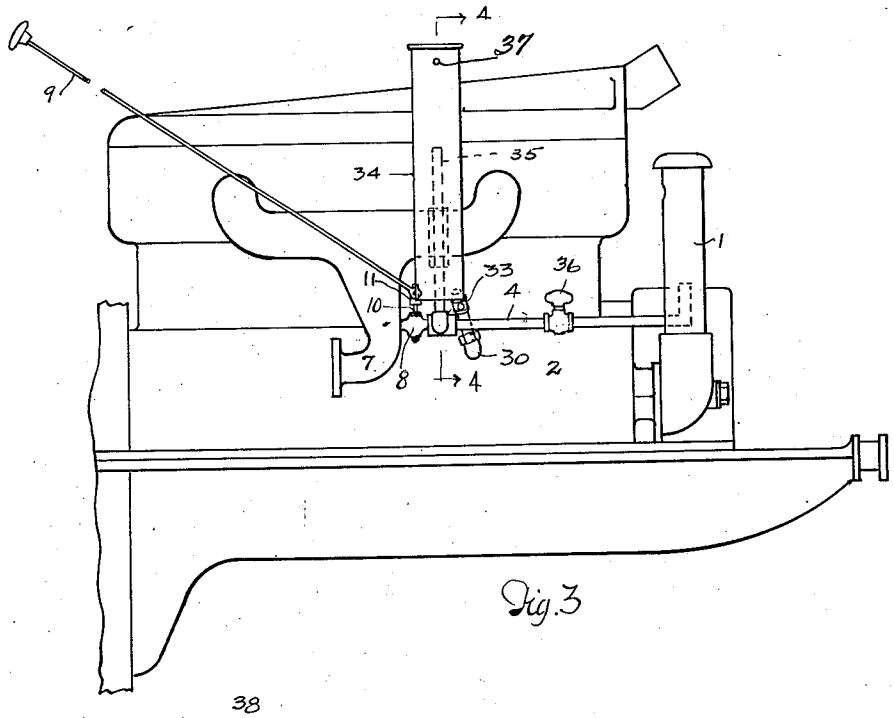


Fig. 3

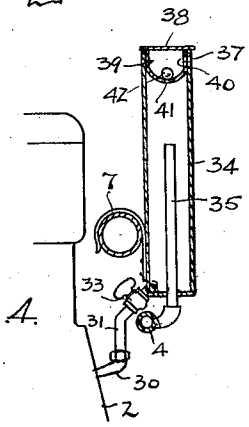


Fig. 4.

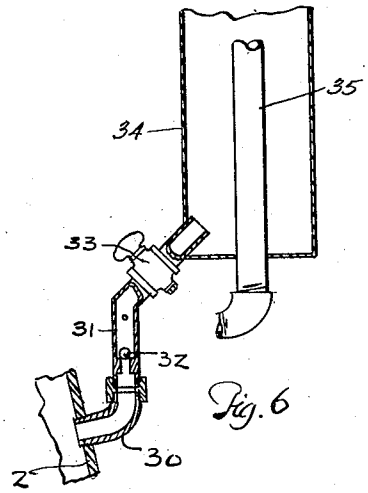


Fig. 6

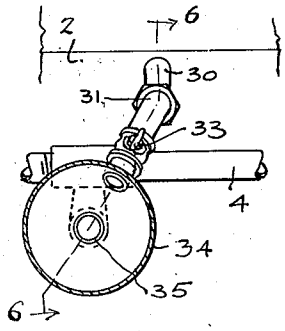


Fig. 5

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UNITED STATES PATENT OFFICE.

ARTHUR F. WATKINS, OF LAKEWOOD, OHIO.

CARBON ELIMINATOR AND FUEL SAVER FOR INTERNAL-COMBUSTION ENGINES.

Application filed April 20, 1922. Serial No. 555,682.

To all whom it may concern:

Be it known that I, ARTHUR F. WATKINS, a citizen of the United States, and a resident of Lakewood, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Carbon Eliminators and Fuel Savers for Internal-Combustion Engines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to attachments for internal combustion engines, and more particularly, to an attachment for saving fuel and for obtaining more perfect combustion, thus eliminating or reducing carbon deposits in the cylinders. The present device is arranged to take gases from the engine crank case where they are produced, and to deliver them to the engine manifold into the stream of carbureted gas and air to obtain a better firing mixture and to reduce the amount of fuel used by the carburetor.

In all internal combustion engines there is a certain amount of fuel leakage around the pistons and rings and into the crank case of the engine. It is also possible that the tremendous agitation of the lubricating oil in the crank case under high temperature causes some cracking of the oil and thus makes other volatile combustible gases. There is also a certain amount of both live and spent gases which leak past the pistons. This collection of gases in the crank case is dry gas compared with the carbureted mixture, and this gas is in the present instance used with the carburetor gas to increase the engine efficiency. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claim.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a side elevational view of my improved apparatus showing certain parts in section; Fig. 2 is sectional view of the construction shown in Fig. 1; Fig. 3 is a view similar to Fig. 1 showing a modified construction; Fig. 4 is a sectional view showing the construction of the form shown in Fig. 3; Fig. 5 is a plan view showing the arrangement of the parts; and Fig. 6 is a section on the line 6—6 of Fig. 5.

The present device is shown in connection with a "Ford" engine but may of course be attached to any form of internal combustion engine and as illustrated in Figs. 1 and 2, there is a breather tube 1, which communicates with the interior of the engine crank case 2, this tube being provided just above the crank case with an aperture or slot 3 to receive the gas conduit 4 which is provided within the tube with an upturned hooded end 5 having an opening 6. The conduit extends along the engine to a point adjacent the engine manifold 7 where it is provided with a valve 8 having a valve handle and rod 9 connected to the valve stem 10 by means of a universal joint 11, the valve handle, rod and handle being of sufficient length to preferably extend through the dash-board of the vehicle to be conveniently placed for the vehicle driver.

Within the engine manifold is mounted a gas delivery nozzle 12 suitably connected to the end of the valve casing and this nozzle is mounted in the vertical portion of the manifold with its delivery end well up in the manifold adjacent to the horizontal portion which communicates with the valve openings. The nozzle itself is a short hollow tube placed in the same direction as the flow of gas through the manifold and this nozzle is provided at the bottom with a valve seat 13 and at the top with a retaining pin 14, a ball valve being mounted in the nozzle to prevent back-firing.

The breather tube is provided at the top with a cap 15 which has a downwardly extending flange 16 provided with a concave disk 17 having a center opening 18, the flange above the disk being attached to the caps at several points 19 leaving air spaces. Between the cap and disk is mounted a ball 20 adapted to normally close the aperture in said disk to prevent air leakage into the breather tube. The breather tube is provided with an aperture 21 and the flange 16 has a slot or aperture 22 which may be brought into alignment with the aperture 21 by turning the cap and thus an adjustable air inlet opening for the breather tube is obtained.

The aperture 3 at the bottom of the breather tube where the gas conduit enters the same is loose enough to allow air to enter the tube at this point and it is found that the auxiliary air opening at the top of the breather tube may be kept closed in cold weather but may be opened slightly in warm weather or to suit certain engine conditions.

In the form shown in Figs. 3 to 6 an added reservoir for gases is used and the construction provides for an elbow 30 tapped into the crank case, this elbow being connected by a pipe 31 having a ball valve 32 and and hand shut-off valve 33 to a cylindrical reservoir 34 in which is mounted a stand pipe 35 extending well up into the reservoir.

This stand pipe passes through the bottom of the reservoir and is connected to one side of a T-union in the conduit 4, this union being mounted closely adjacent the valve 8. In the conduit 4 a second hand valve 36 is mounted by which the breather tube 1 and pipe therein may be shut off. The reservoir is provided with an aperture 37 and has a cap 38 having a depending flange 39 with an aperture 40 which is adapted to be moved into alignment with the aperture 37 to admit air to the reservoir.

This cap flange 39 extends down to form a closed bottom except for a hole 41 in which is mounted a ball valve 42, thus allowing air to escape when necessary.

The upstanding end of the gas conduit or stand pipe in the breather tube is placed far enough above the level of the crank case to eliminate all oil splash so that the gas entering the stand pipe is dry gas free from globules. The cover or hooded end also prevents oil from entering the pipe when filling the crank case through the breather tube. Likewise the stand pipe 35 in the reservoir is well above the crank case level and no oil splash is possible.

The delivery nozzle is mounted longitudinally in the direction of flow of carburetor gases and high above the carburetor so that the gas through the device quickly passes to the engine cylinders giving with the carburetor gas a very dry combustible gas which burns completely without excess free carbon, thus keeping the cylinders and sparkplugs and valves clean.

The ball valve in the nozzle prevents danger from back firing and the use of the device may be easily controlled from the driver's seat. Marked improvement in engine efficiency and economy is obtained and the parts of the device are easily assembled and installed or removed and the entire apparatus can be cheaply and economically assembled and installed. The use of the reservoir and stand pipe connected to the crank case about the middle thereof aids in the efficiency of the entire device and both stand pipes may be opened or either one closed depending upon the operating conditions. A continuous flow of hot gases are fed into the inlet manifold giving better carburetor and adding combustible mixture to that from the carburetor giving a marked improvement in economy as running qualities to the engine.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by the following claim or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

In an apparatus of the character described, the combination with an internal combustion engine having an inlet manifold and a crank case, of a cylindrical reservoir positioned centrally of one side of said crank case and extending upwardly above a horizontal plane at the level at the top of said engine, a valve closure at the top of said reservoir, an integral closure for the lower end of said reservoir, a pipe connecting said crank case with said lower end of said reservoir, a check valve and a cut-off valve in said connecting pipe, a gas supply conduit extending upwardly within said reservoir to a point above a horizontal plane located at the top of the breather pipe of said engine, a second gas conduit connected with the lower end of said first-named gas conduit and extending forwardly to said breather pipe and upwardly within the same, a cut-off valve in said second conduit, a gas delivery nozzle mounted within the engine manifold, a check valve within said delivery nozzle, a connecting section between said delivery nozzle and said two conduits, and a controlling valve in said connecting section having an extension rod with its upper end located adjacent the position of the driver of the automobile.

Signed by me, this 17 day of April, 1922.

ARTHUR F. WATKINS.