June 3, 1930. C. W. McKINLEY 1,761,931

CARBON REMOVING LIQUID INJECTOR

Filed July 9, 1928

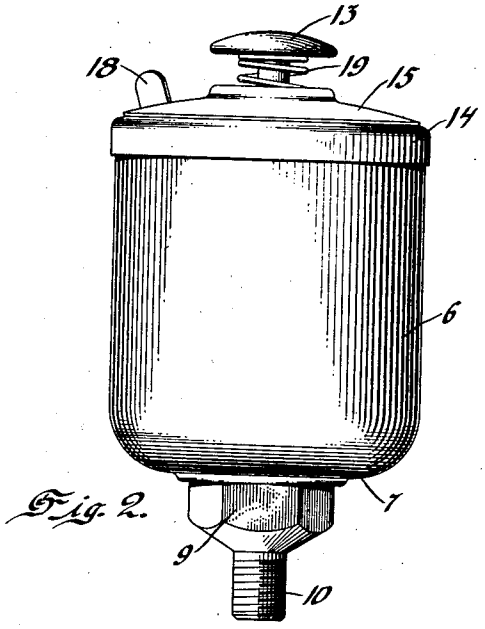


Fig. 2.

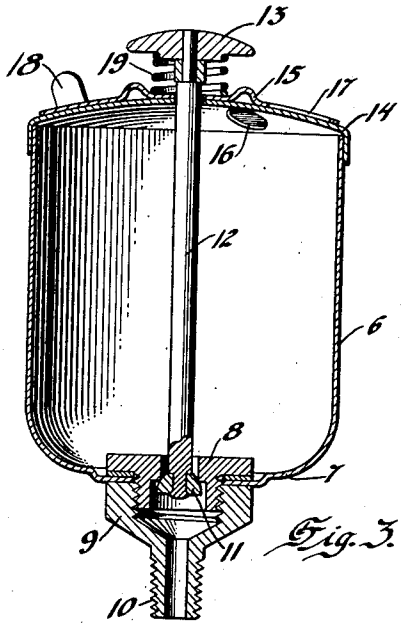


Fig. 3.

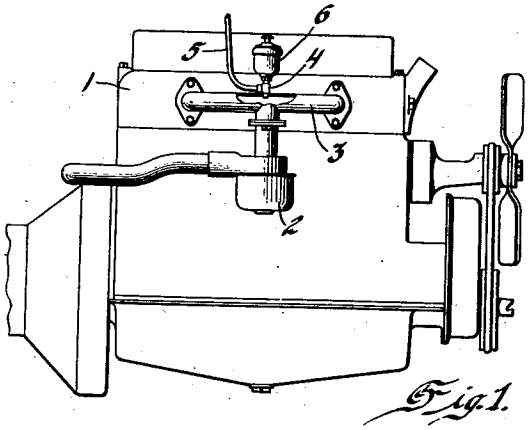


Fig. 1.

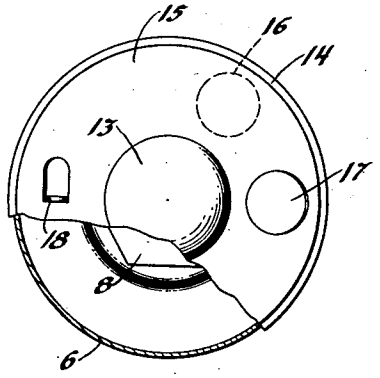


Fig. 4.

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UNITED STATES PATENT OFFICE

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CARBON-REMOVING-LIQUID INJECTOR

Application filed July 9, 1928. Serial No. 291,371.

This invention relates to internal combustion engines, and more particularly to a device for attachment on the intake manifold of the engine for the purpose of introducing a carbon softening or dissolving compound into the engine cylinders.

It is an object of the invention to provide a device which will be simple in design and economical in manufacture, and which may be readily applied at small cost on existing engines without necessitating the drilling and tapping of holes for attachment, and which may be left on the car as a permanent engine accessory. The device comprises a container for the decarbonizing liquid, of a capacity sufficient for one treatment, having a filler opening that is normally covered by a closure plate to preclude the entrance of dirt when the device is not in use, and an outlet valve controlling the flow of liquid into the intake manifold, the valve being yieldingly held on its seat by a tension spring which also bears against the closure plate, resulting in a certain amount of frictional resistance to the movement of the closure plate.

A preferred, but not necessarily the only embodiment of the invention, is illustrated in the accompanying drawing in which Figure 1 is a side elevation of an internal combustion engine with the present invention applied thereto.

Figure 2 is an elevation of the device forming the present subject matter.

Figure 3 is a vertical sectional view thereof, and

Figure 4 is a top plan view with parts broken away.

Referring to the drawings, the numeral 1 indicates an internal combustion engine having a carburetor 2 and an intake manifold 3 leading to the combustion chambers of the engine. Most engines now on the market have intake manifolds that are provided with fittings threaded therein for the attachment of a suction conduit leading to either a suction operated windshield wiper or a vacuum operated fuel feed system. It is proposed in the present instance to substitute for the standard screw threaded fitting, a T-fitting 4 to one leg of which the suction line 5 leading to the windshield wiper or vacuum tank is connected, and to the other leg of which is attached the device with which the present invention is concerned.

This device consists of a receptacle or container 6, preferably formed from sheet metal, having an opening in the bottom wall 7 thereof, through which extends the threaded projection of a hollow fitting 8, the marginal edge portions at the opening in the wall 7 being clamped between the fitting 8 and a fitting 9 screw threaded thereon and having an extension 10 for engagement with the T-fitting 4. Seated against a shoulder in the hollow fitting 8 is a valve head 11 carried by the stem 12 having at its upper end a knob 13. The stem 12 extends through a cap 14 secured over the top of the receptacle 6 and a plate 15, the cap and plate having corresponding openings 16 and 17 respectively which may be brought into alignment upon rotation of the plate 18, to permit the receptacle to be filled with decarbonizing liquid. A tongue or ear 18 is preferably struck up from the plate 15 to facilitate the rotation of the plate about the stem 12. Surrounding the stem and interposed between the knob 13 and plate 15 is a coiled tension spring 19 which tends to yieldingly hold the valve on its seat and at the same time bears against the plate, pressing the plate toward the cap 14 and serving thereby to hold the plate against movement relative to the cap.

At such regular intervals, when it is desired to inject the decarbonizing liquid into the engine cylinders, the container is first filled with the fluid and the engine started. When the engine is running at a fair rate of speed the carburetor throttle valve is allowed to suddenly snap shut and at the same instance the knob 13 is depressed, whereby the vacuum present in the manifold sucks the contents of the container into the manifold and distributes it to the several cylinders. The high vacuum produces a spray which can be easily and uniformly distributed to the cylinders. As soon as the engine combustion chambers become filled with the

decarbonizing fluid the engine will cease to operate, and if the engine is allowed to stand idle for a certain period long enough to allow the fluid to attack and dissolve or soften the carbon, the loosened carbon will be blown out through the exhaust when the engine is again started.

I claim:

1. A decarbonizer of the character described, including a fluid container adapted for attachment with an engine intake passage, a closure cap for the top of the container, having a filler opening therein, a plate movable relative to said cap to cover or uncover said filler opening, a valve manually movable in one direction to open position to allow the flow of decarbonizing fluid from the container into the intake passage under influence of suction in the passage, and having a stem projecting thru the closure cap, and a tension spring between the end of the valve stem and said plate holding the valve normally on its seat against engine suction and resisting movement of said plate.

2. A decarbonizer of the class described, including a fluid container, adapted for attachment with an engine intake passageway, and having a filler opening therein, a rotary closure plate adapted upon movement to cover or uncover said opening, a valve controlling fluid flow from the container into the intake passage under influence of suction in the passage and having a stem projecting thru the plate and forming a pivotal mounting therefor, a knob on the end of the stem, the depression of which unseats said valve, and a tension spring surrounding the valve stem and bearing at opposite ends against the knob and said plate and serving to normally hold the valve closed and the plate against movement.

In testimony whereof I affix my signature.

CHARLES W. McKINLEY.