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SOLVENT APPLICATOR FOR CLEANING AUTOMOTIVE CARBURETORS

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FIG. 1

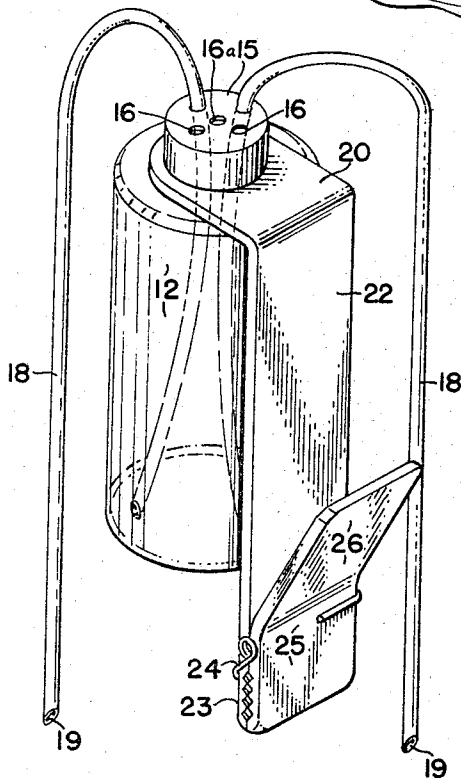
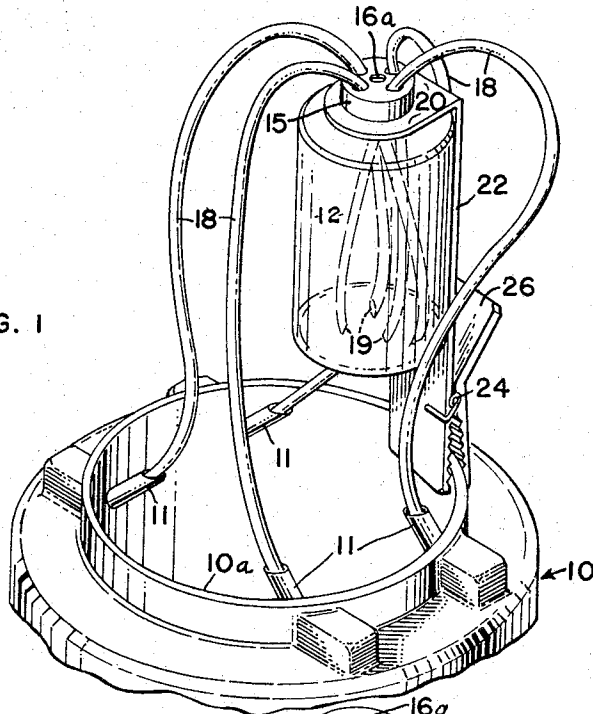


FIG. 2

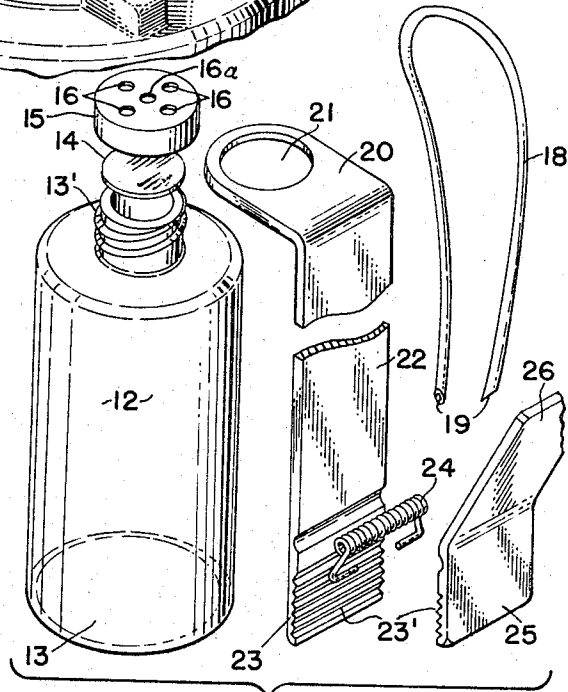


FIG. 3

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This invention relates generally to means for removal of residual contaminant matter which forms around the jets and float bowl components of carburetors of internal combustion engines and more particularly is a device for metering a combustible, gum dissolving solvent from a container or other source directly into one or more float bowls of the carburetor, during a period of operation of the engine.

It is one of the objects of this invention to provide simple, economical and easily applied means for supplying a solvent fluid to various styles of carburetors of internal combustion engines, for the purpose of efficiently removing contaminate matter, such as petroleum gums and the like, and without the necessity of removing the carburetor from the engine, or the removal or disconnection of the fuel line supplying the carburetor. To this end, my invention is directed to such means which may quickly and easily be attached to any style carburetor without fittings, adaptors, etc.

Another object is a device of this character which includes a disposable solvent fluid container for feeding by siphon action, the solvent fluid directly into the float bowl or bowls of the carburetor through the carburetor balance tube or tubes.

Another object is to provide a delivery system for the solvent from a container removably mounted on the lip of the carburetor, directly to the float bowl or bowls by inducing siphonic flow from the bottom of the container interior, through tubes or conduits, upwardly and out of the container and into the balance tube or tubes and thence into the float bowls thereby increasing the safety factor in the use of the device, since, in this manner, the highly inflammable solvent fluid is prevented from splashing onto hot engine surfaces.

A still further object is the provision of means whereby the siphonic action may readily and quickly be terminated, thus stopping solvent flow from the container to the carburetor, when desirable.

Another object is to provide for an internal mixture with the fuel fed from the fuel pump, so that when the solvent fluid in the container is exhausted or the siphonic action is otherwise terminated, the float bowl or bowls will still be filled with fuel, thus precluding the possibility of the float bowls running dry and eliminating the inconvenience of priming the bowls in order to start the engine again.

A still further object of this invention is its adaptability to various styles of carburetors, including those employing one or a plurality of float bowls.

Other and further objects and advantages of this invention will become more apparent from the following description and claims, reference being made to the accompanying drawings which shows an embodiment of the present invention and the principles thereof, and in which drawing like reference characters are employed to designate like parts throughout the same.

In the drawings:

FIGURE 1 is a perspective view of an embodiment of my invention shown applied in use for delivering solvent fluid to a four-bowl carburetor having four float bowls and balance tubes;

FIGURE 2 is a view similar to that of FIGURE 1, except that the invention is shown applied in use for delivering solvent fluid to a two-barrel carburetor having a balance tube for each float bowl; and

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FIGURE 3 is an exploded perspective view of a device embodying my invention showing the component parts.

In carrying out my invention, it is desired to provide a simple, effective construction which may readily be attached to the top of a carburetor air intake throat after removing the customary air cleaner from the throat lip. In this connection, it will be understood that the invention is equally applicable and effective in cleaning carburetors of from one to four bowl design. As an attachment, the device of my invention lends itself to low cost production, can be mounted in position for use without the use of tools since it is unnecessary to disconnect the fuel line leading into the float bowl or bowls. The singular term "float bowl" as used hereinafter is to be construed to apply to carburetors of the type or design having one or more float bowls, in which a separate balance tube directly communicates air from the carburetor throat to each of the float bowls incorporated in the design for the purpose of equalizing the internal air pressure and to feed solvent fluid from a container removably supported on the throat lip to the float bowl through each balance tube.

Referring now more particularly to the accompanying drawing, the air intake throat portion of an automotive carburetor is shown generally at 10 and which is provided with an annular lip 10a over which a complementary portion of a conventional air cleaner (not shown) is fitted during normal running of the engine (not shown) to which the carburetor is coupled. As illustrated in FIGURE 1, the carburetor there shown is a four-barrel type and is provided with balance tubes or vents 11, each having communication with a respective float bowl in the carburetor and with the throat or air inlet defined by the lip 10a. These balance tubes each serve to equalize the pressure in the bowl and to provide a passage through which a gum solvent may be supplied from a container 12 removably attached to the lip 10a by suitable means as will appear later.

The solvent container is preferably constructed of a flexible, non-breakable plastic material having a closed end 13 and a threaded open neck 13' located at its opposite end. A seal disk 14, which may be of thin plastic sheet or other suitable material is applied over the opening in the neck and is secured thereon by the threaded cap 15 when the latter is tightened in place. The cap 15 is provided with a plurality of perforations or openings 16 to receive flexible siphon tubes 18 of a suitable solvent resistance plastic material, such as polyethylene or polypropylene.

In FIGURES 1 and 2, which illustrate the device ready for use with four and two barrel carburetors, respectively, the seal disk 14 is of course removed from the neck and cap to permit the siphon tubes to be installed in the container through the openings 16 in the cap 15. Each siphon tube is inserted into the container, as shown, so that its one end extends to the bottom or end wall 13 of the container. In order to prevent these ends of the tubes from being blocked, they are cut on a bias, as at 19. The portions of the tubes disposed outside the container and the perforated cap are of sufficient length to be inserted at their opposite ends in the respective balance tubes 11, as clearly shown in FIGURE 1. It is, of course, desired that the outside diameter of the exterior tube end portions be such with respect to the inside diameter of the balance tubes that the balance tubes and the tube ends, respectively, may be telescoped readily without excessive clearance or looseness.

It is to be noted that one or more of the cap openings 16 or 16a which is not occupied by a tube 18 is open to atmospheric pressure and under such condition, as in FIGURE 1, when the engine is started, a siphonic action

may be induced by gently squeezing the flexible container 12 causing a flow of solvent up through the tubes in the container and out through the exterior portions of the tubes to be delivered into the balance tubes 11 and thence to the float bowls of the carburetor.

After a thorough cleaning of gum deposits in the carburetor by the solvent solution, whether or not it has been depleted from the container 12, the siphonic action may be quickly terminated by placing the finger tips over the open passages 16 or 16a in the cap of the container or by removing the entire device from the carburetor.

The container is easily and quickly removably mounted on the carburetor by suitable means which may include a bracket 22 comprising a rigid strip bent at one end at a substantially right angle to the body of the strip and having an opening 21 formed therein of sufficient diameter to receive the threaded neck 13' of the container, but of less diameter than the outer diameter of the cap 15, thus enabling the bracket to be securely mounted on the container. The opposite and lower end 23 of the bracket is formed with horizontally disposed serrations or teeth 23' on its outer side, and is provided with a recess or seat to accommodate a coiled spring 24. A clamp member 25, having complementary serrations or teeth 23' formed on its inner face, is formed with an outwardly disposed finger grip 26. The bracket and clamp member are hingedly connected by the ends of the coiled spring 24 in the customary manner so that the serrated jaw portions of the clamp and bracket are normally in closed position as in FIGURE 2, under spring loading, which is sufficient to firmly clamp the container to the lip of the carburetor as in FIGURE 1.

From the foregoing, it will be evident that the present invention involves a cleanout device in which the carburetor to be cleaned out is operated on a mixture of gasoline and gum-dissolving solvent in which the gasoline enters the float bowl of the carburetor by the usual pipeline from the fuel pump, and the solvent is contained in a container clamped to the edge of the carburetor, so that the solvent flows by siphon action directly into the balance tubes of the carburetor which open into the float bowl of the carburetor, thus completely eliminating the need to disconnect the fuel line, disassemble the carburetor, or employ the use of tools in any manner. This arrangement also eliminates the necessity of having to blend gasoline and solvent fluid in a container to accommodate the combustion characteristics of some internal combustion engines that would not run satisfactorily on a pure solvent fuel. It will also be evident that this device can be instantly removed from the carburetor without the use of tools or special fittings; and that the flow of solvent fluid can be terminated by covering the opening in the top of the solvent container with a fingertip to stop the siphon action; and that the simple construction, of low cost materials, permits the present invention to serve as a combination solvent package and cleanout device.

The foregoing description and accompanying drawing are considered as illustrative only of the principles of the invention and the solvent applicator for cleaning automotive carburetors of the present invention is not to be regarded as limited by the above described embodiment. Alternative arrangements of parts, substitution of materials and other organization and assembly procedures, ap-

parent to those skilled in the art, may be employed without departing from the scope and spirit of the invention as claimed.

I claim:

1. The combination with a carburetor for internal combustion engines and having an air intake throat and a balance tube communicating with a float bowl of the carburetor and with the throat, wherein the invention consists of a flexible container for a solvent solution, means for removably supporting the container over the carburetor throat, and a siphon tube having one end disposed in the bottom of the container and its other end extending outwardly of the container and inserted into said balance tube, whereby, upon starting the engine and compressing the container, solvent solution in the container is caused by siphonic action to flow into the carburetor float bowl and therein to be mixed with fuel supplied to the float bowl.

2. The combination with a carburetor for internal combustion engines and having an air intake throat and a balance tube communicating with a float bowl of the carburetor and with the throat, wherein the invention comprises a flexible solvent container having a closed bottom end and an open top end, means for removably supporting the container substantially vertically above the open throat of the carburetor, a perforated closure for the container open end, means insertable through the perforated top closure and extending substantially to the closed bottom of the container at one end and communicating at the opposite end with said balance tube of said float bowl for delivering solvent to the float bowl as a result of the siphonic action initiated upon starting of the engine and compression of the container to create a suction in said solvent delivery means.

3. The invention according to claim 2 in which said closure is formed with a plurality of perforations at least one of which is open to the atmosphere whereby the siphonically initiated flow of solvent to the carburetor may be terminated by closing said opening to the atmosphere.

4. The invention according to claim 2 in which said container is formed of a gum solvent resistant flexible material.

5. The invention according to claim 2 in which said solvent delivery means consists of a plurality of solvent resistant flexible tubes each having communication with the interior bottom of the container through said perforated closure and each with a respective float bowl of the carburetor.

6. The invention according to claim 3 in which the terminal end of the solvent delivery means situated in the container bottom area is disposed on a bias to the length of the said means.

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