

May 14, 1957

D. T. GLENN

2,792,008

DEVICES FOR CLEANING OUT INTERNAL COMBUSTION ENGINE CARBURETORS

Filed Dec. 31, 1953

2 Sheets-Sheet 1

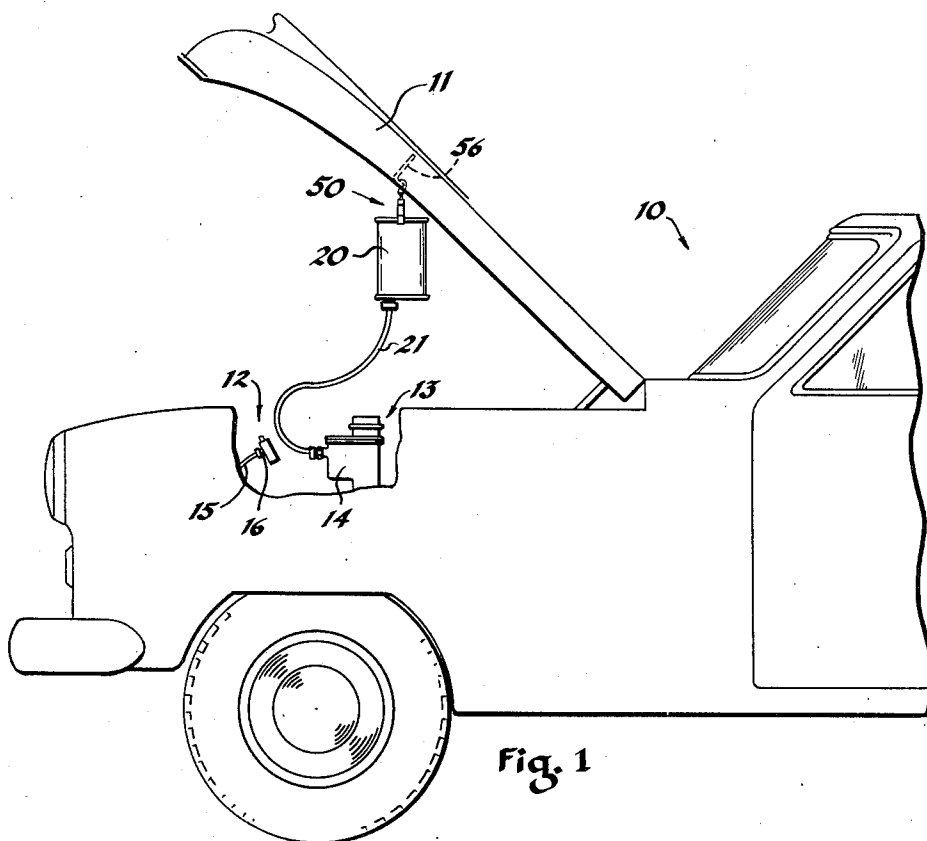


Fig. 1

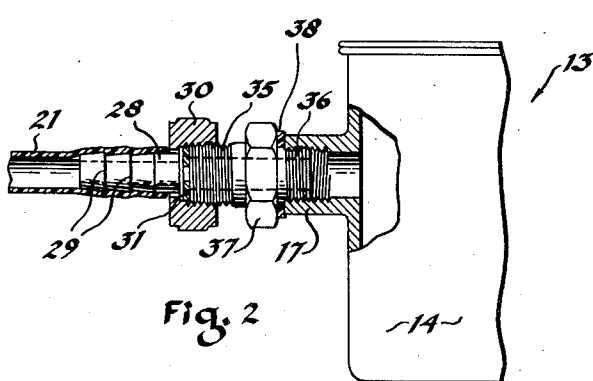


Fig. 2

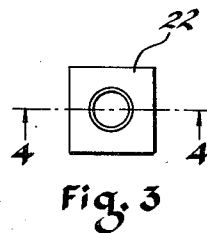


Fig. 3

INVENTOR.

Dale T. Glenn

BY

Hyde, Meyer, Baldwin & Doran

ATTORNEYS

May 14, 1957

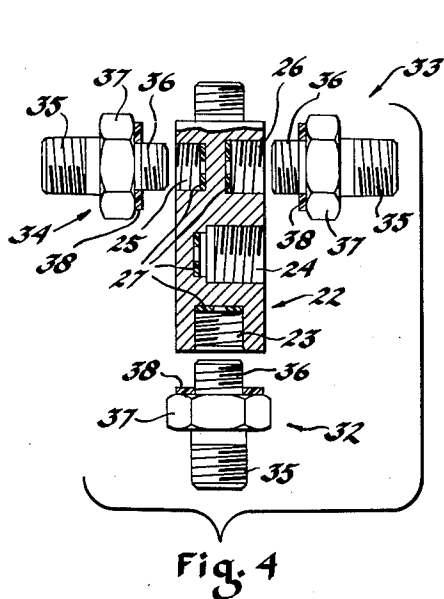
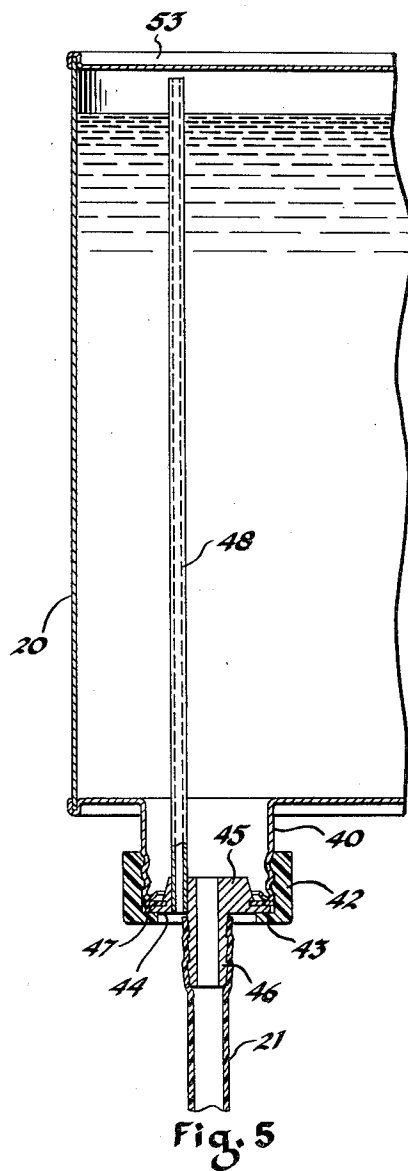
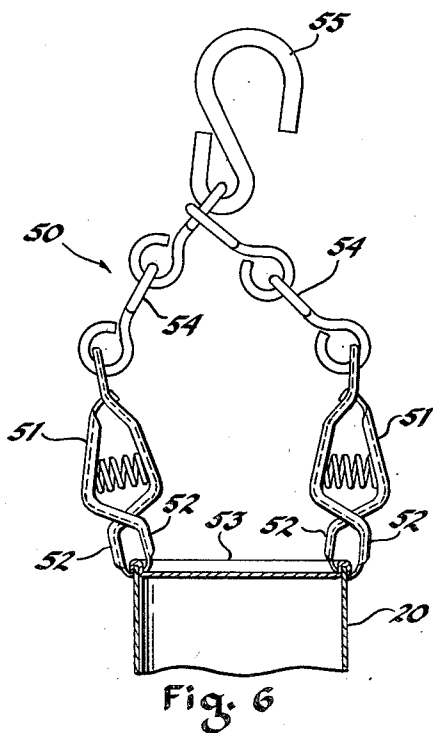
D. T. GLENN

2,792,008

DEVICES FOR CLEANING OUT INTERNAL COMBUSTION ENGINE CARBURETORS

Filed Dec. 31, 1953

2 Sheets-Sheet 2



INVENTOR.
Dale T. Glenn
BY
Hyde, Meyer, Baldwin & Doran
ATTORNEY

1

2,792,008

DEVICES FOR CLEANING OUT INTERNAL
COMBUSTION ENGINE CARBURETORS

Dale Theodore Glenn, University Heights, Ohio, assignor
to Pennsylvania Refining Company, Cleveland, Ohio, a
corporation of Pennsylvania

Application December 31, 1953, Serial No. 401,641

4 Claims. (Cl. 134-167)

This invention relates to devices for cleaning out carburetors for internal combustion engines.

As is well known, the gasoline which is used in internal combustion engines causes gums to be deposited in the carburetor passages, with resulting sluggishness, increased gasoline consumption, and impaired general engine efficiency. Although these petroleum gums can be dissolved by certain solvent fluids the effective use of such solvent fluids has heretofore required the removal of the carburetor, with attendant cost and trouble.

The present invention therefore has for an object thereof the provision of a device for delivering to an internal combustion engine carburetor a combustible gum-dissolving solvent fluid, the delivery of such solvent fluid to the carburetor being effected in a simple and convenient manner and without the necessity of removing the carburetor or of taking it apart.

A further object of the present invention is the provision of a device for freeing an internal combustion engine carburetor of the petroleum gums deposited therein by the delivery to said carburetor, after it has been disconnected from the gasoline supply line, of a gum-dissolving solvent fluid and by thereafter putting the engine and the carburetor into operation for the removal of the dissolved gums.

A further object of the present invention is the provision of a device for freeing an internal combustion engine carburetor of the petroleum gums deposited therein by the delivery to the carburetor of a gum-dissolving solvent fluid, and wherein the delivery conduit for said solvent fluid is of transparent character so that the flow of solvent therethrough can be observed and the operation of the carburetor terminated before the float chamber thereof is emptied, thereby making unnecessary the subsequent priming of the carburetor.

A further object of the present invention is the provision of a carburetor clean-out device which includes a number of differently sized fittings to enable the clean-out device to be used with all standard sized carburetors, and which device also includes a member that not only functions as a carrier for said fittings, but also, as a block-off means for the fuel line during the carburetor clean-out operation.

A further object of the present invention is the provision of a carburetor clean-out device that is characterized by its efficiency, simplicity, and economy.

Further objects of the present invention, and certain of its practical advantages, will be referred to in or will be evident from the following description of the present carburetor clean-out device, said device being illustrated in the accompanying drawings, in which—

Fig. 1 is a side elevational view of the front end portion of an automobile, with the hood cover raised and with part of the hood body portion being broken away to show the use of the present clean-out device in delivering, by gravity, a gum-dissolving solvent fluid to the carburetor of the automobile;

Fig. 2 is a fragmentary side elevational view of said

2

carburetor and of the conduit of the present clean-out device which is connected to said carburetor in use of the device, parts being in section;

Fig. 3 is an end view of the fuel line block-off member of the present clean-out device, a member which also serves as a carrier for the fittings of the present device;

Fig. 4 is a longitudinal sectional view of said block-off member and fittings carrier, the view being on the line 4-4 of Fig. 3, with three of the fittings being shown in association therewith;

Fig. 5 is a longitudinal vertical sectional view, on an enlarged scale, of the solvent receptacle, and a portion of the conduit connected thereto, of the present clean-out device; and

Fig. 6 is a view of the clamp assembly by which the solvent receptacle of the present device may be suspended from the automobile hood cover.

Before the carburetor clean-out device here illustrated is specifically described, it is to be understood that the present invention is not limited to the structural details or the particular arrangement of parts here shown, as devices embodying the present invention may vary. It also is to be understood that the phraseology or terminology herein used is for purposes of description and not of limitation, as the scope of the present invention is denoted by the appended claims.

For the disclosure of one embodiment of the present invention, there is illustrated in the accompanying drawings the front end portion of an automobile 10, with the usual alligator type hood cover 11 for the engine compartment 12. 13 designates the carburetor for the internal combustion engine (not shown) of the automobile, with 14 being the carburetor bowl which contains the float chamber which is supplied with gasoline by the fuel line 15, the externally threaded end 16 of which is adapted to be secured within the intake opening 17 of said carburetor bowl.

As will hereinafter more fully appear, the present carburetor clean-out device includes a container 20, a combustible solvent fluid and a conduit 21 having one of its ends connectible to said container and its other end connectible to the carburetor bowl 14 for the delivery to the float chamber of said bowl of solvent fluid from said container. The conduit 21 is of a transparent and flexible material, such as polyethylene, the transparency of the conduit enabling the flow of solvent fluid therethrough to be observed and operation of the carburetor terminated before the float chamber of the carburetor is emptied of such solvent fluid. By a simple pinching operation, the conduit can be collapsed and fluid flow therethrough arrested at any time, and additionally, the flexibility of the conduit makes it simple and easy to use and store, as will be readily understood.

For the connection of said conduit to the carburetor bowl 14, the fuel line 15 is disconnected from the carburetor intake opening 17 and an end of said conduit is secured in said opening, as will hereinafter appear.

To close the fuel line end 16 after its disconnection from the carburetor bowl 14, the present clean-out device includes a "block-off" member 22, which may be and here is of bar form, as shown in Figs. 1, 3 and 4. Inasmuch as the carburetor connectible ends of fuel lines vary, in diametral size and/or thread formation, the present block-off member 22 is provided with a series of internally threaded sockets of varying diametral size and/or thread formation to thereby adapt said block-off member for use with substantially all fuel lines now in use. As here shown, there are four such sockets, designated by the reference numerals 23, 24, 25 and 26, and one of such sockets should properly receive the carburetor disconnectible end of each fuel line now in use. To insure the effective closing of each such fuel line end upon its car-

buretor disconnection, each socket of the block-off member 22 is provided at its bottom with a gasket 27 for sealing engagement with such fuel line end, as will be readily understood. For the connection, detachably of course, of the solvent delivery conduit 21 to the carburetor which is to be cleaned or freed of its gum deposits, such as the carburetor 13, one end of said conduit is here provided with a tubular connector 28, one end portion of which is secured within said conduit, with the securement being aided, if desired and as here shown, by forming tapered annular ridges 29 on such connector portion. The other end portion of the connector projects axially outwardly from the conduit and is swivelly provided with a coupling socket nut 30, which contains at the bottom thereof a gasket 31 for sealing purposes.

The hereinbefore mentioned variations in the diametral size and/or thread formation of the carburetor connectible ends of the gasoline supply lines of automobiles is due, of course, to the variation in the carburetor intake openings which receive said fuel line ends. The present clean-out device therefore includes a series of tubular adaptors to enable the conduit 21 to be connected to carburetors having intake openings of differing size and/or thread formation.

As here shown, there are three such adaptors, designated by the reference numerals 32, 33, and 34, and each includes an externally threaded end portion 35 for securement to and within the socket coupling nut 30 of the conduit connector 28, and an externally threaded end portion 36 for securement within the intake opening of the carburetor to be cleaned. The end portions 36 of the adaptors vary, in diametral size and/or thread formation, and thus adapt the present clean-out device for use with carburetors having differing intake openings. For example, the end portion 36 of one adaptor may have a $\frac{1}{16}$ inch thread; the end portion 36 of another adaptor may have a $\frac{3}{8}$ inch thread; and the end portion 36 of the third adaptor may have a $\frac{1}{2}$ inch thread, a thread range which adapts the present clean-out device for use with all standard carburetors, as will be readily understood.

To enable the adaptors 32, 33 and 34 to be readily turned in their connection to and disconnection from carburetors and conduit connectors, said adaptors are provided between their threaded end portions 35, 36 with hexagonal or equivalent non-circular portions 37, and for insuring an effective seal between each adaptor and the carburetor to which it is secured, a gasket 38 is disposed alongside the adaptor portion 37, adjacent the threaded end portion 36 thereof.

One feature of the present clean-out device is that the block-off member 22 not only serves as a closure for the carburetor connectible end of the gasoline supply line during use of the present clean-out device but also serves as a carrier for the adaptors 32, 33 and 34, as indicated in Fig. 4. Even when said block-off member is performing its fuel line block-off function in use of the present clean-out device, it can carry, if desired, all but the adaptor which is then in use, and at other times, it can carry all adaptors. As the result, the adaptors can be kept together, with minimization of the likelihood of loss of any of them.

In the present embodiment of the invention, the solvent fluid container 20 is provided with a single opening in an end wall thereof, with said opening being surrounded by an annular neck 40 of threaded form for the attachment thereto of a simple cap (not shown) for closing the opening when the present device is not in use and when the container has solvent fluid therein and also, for the attachment thereto of a special cap structure during use of the present clean-out device.

As best shown in Fig. 5, such special cap structure includes a cup-shaped cap member having a cylindrical side wall portion 42 threaded for detachable connection to the container neck 40, and an intumed annular bottom

flange 43 for the support, and the retention against the end of the container neck 40, of a disc-like member 44. In the present embodiment of the invention, this disc-like member of the special cap structure has an apertured central portion 45, which may be and here is of increased thickness, and also has a depending tubular portion 46, in registry with the aperture of the central portion 45, and which tubular portion serves as a connector for the connection of the conduit 21 to the container 20. To aid in such conduit connection, the depending connector portion 46 may be provided with tapered annular ribs, such as those of the connector 28 to which the other end of the conduit 21 is connected. To provide an effective seal between this special cap structure and the container neck 40, a gasket 47 is interposed between the end of such container neck and the disc-like member 44 of the cap structure, all as shown in Fig. 5.

For air venting of the solvent fluid container 20, in use of the present device, the lower end of a vent tube 48 is mounted in an opening in the thickened central portion 45 of the disc-like member 44 of the special cap structure, at one side of the depending conduit connector portion 46 of said member 44. As shown in Fig. 5, said vent tube mounting opening, and hence the tube itself, is in communication with the outside atmosphere, and the upper end of the tube is above the level of the solvent fluid in the container 20, when the container is in its inverted position of use shown in Figs. 1, 5 and 6. Thus, an effective vent is provided for the solvent container in use of the present device.

For the suspension of the solvent fluid container 20, and the conduit 21 connected thereto, in a position above the carburetor to be cleaned, for gravity flow of the solvent fluid to said carburetor, the present device includes a suitable suspension structure generally designated by the reference numeral 50. As best shown in Fig. 6, the suspension structure comprises two conventional type clamps 51, each having a pair of jaws 52 for gripping engagement with the bottom rim 53 of the container 20, at opposite sides thereof. By means of chains 54, the two clamps are connected to the eye of a hook 55 which is adapted to be hung on an abutment of the automobile hood 11, such as an abutment 56 formed by or constituting one of the braces or supports of the hood cover 11.

From the foregoing, it will be evident that the present invention involves a clean-out device in which the carburetor to be cleaned out is operated on a gum-dissolving solvent fluid, in place of the usual gasoline fuel; in which the solvent fluid is contained in a receptacle suspended above the carburetor, such as from the automobile hood cover, so that the solvent fluid can flow by gravity to the carburetor; in which the solvent fluid is delivered to the carburetor through the same intake opening through which gasoline is ordinarily delivered to the carburetor, the gasoline line, during use of the present clean-out device, being disconnected from the carburetor and its end temporarily closed by a block-off member which is so formed that it is adapted for use with gasoline lines of various sizes and/or thread formations; in which said block-off members also serves as a carrier for adaptors by which the solvent fluid conduit can be connected to carburetors having intake openings of various sizes and/or thread formations; and in which the solvent fluid conduit is of transparent and flexible material, and transparency of the material of the conduit enabling fluid flow therethrough to be observed, so that the operation of the carburetor, and hence the clean-out operation therefor, can be terminated before the float chamber of the carburetor is emptied of solvent fluid.

Other features and advantages of the present clean-out device will be evident to those skilled in the art to which the invention relates.

What I claim is:

1. An internal combustion engine carburetor cleanout device, comprising a container for combustible solvent

5

fluid for location above the engine carburetor and having a bottom discharge opening, a cap structure for said discharge opening, a vent tube carried by said cap structure and projecting upwardly into said container above the level of solvent fluid therein, and a conduit connected to said cap structure and connectible to the carburetor for the delivery by gravity of solvent fluid to the float chamber of the carburetor, the operation of the carburetor on said solvent fluid effecting the cleaning out of the carburetor.

2. A clean-out device as set forth in claim 1, characterized in that said conduit is of transparent character so that the flow of solvent fluid therethrough can be observed and the operation of the carburetor terminated before the float chamber thereof is emptied.

3. A clean-out device as set forth in claim 1, characterized in that said conduit is of a material which enables the conduit to be collapsed by manual pinching of the

6

conduit when termination of solvent fluid flow is desired.

4. A clean-out device as set forth in claim 1, characterized in that said conduit is of transparent and collapsible material, to thereby enable the flow of solvent fluid through the conduit to be observed and, when desired, terminated by collapsing of the conduit.

References Cited in the file of this patent

UNITED STATES PATENTS

1,040,147	Clairmont	Oct. 1, 1912
1,240,977	Horn	Sept. 25, 1917
1,299,805	Stekelberg	Apr. 8, 1919
1,820,552	Wooley	Aug. 25, 1931
2,201,773	Hofele	May 21, 1940
2,266,288	Thompson	Dec. 16, 1941
2,281,695	James	May 5, 1956