

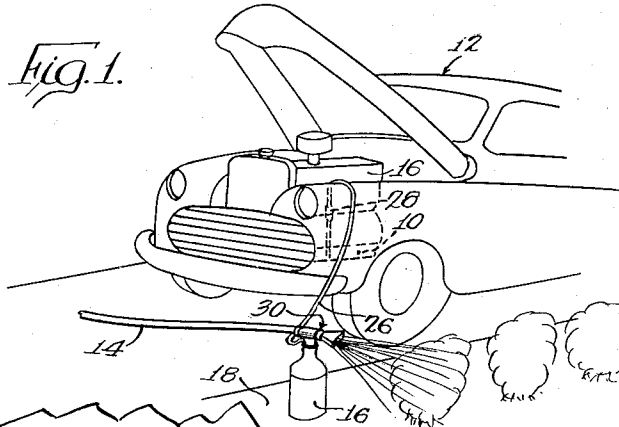
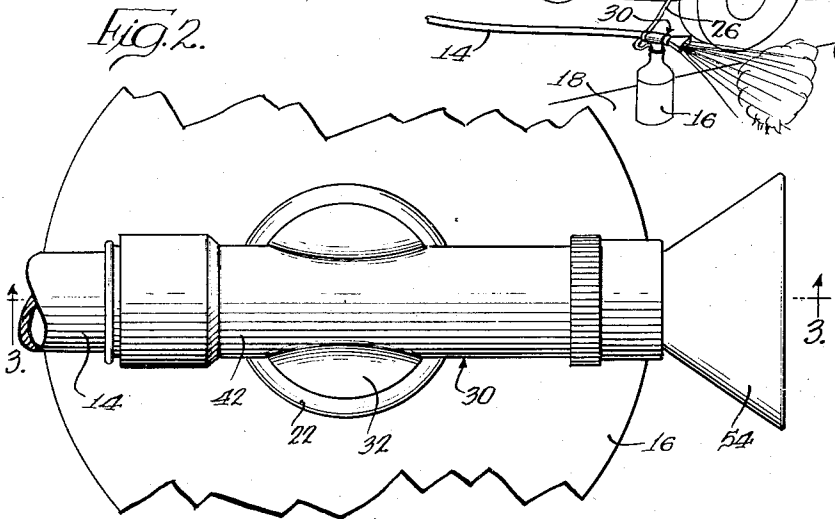
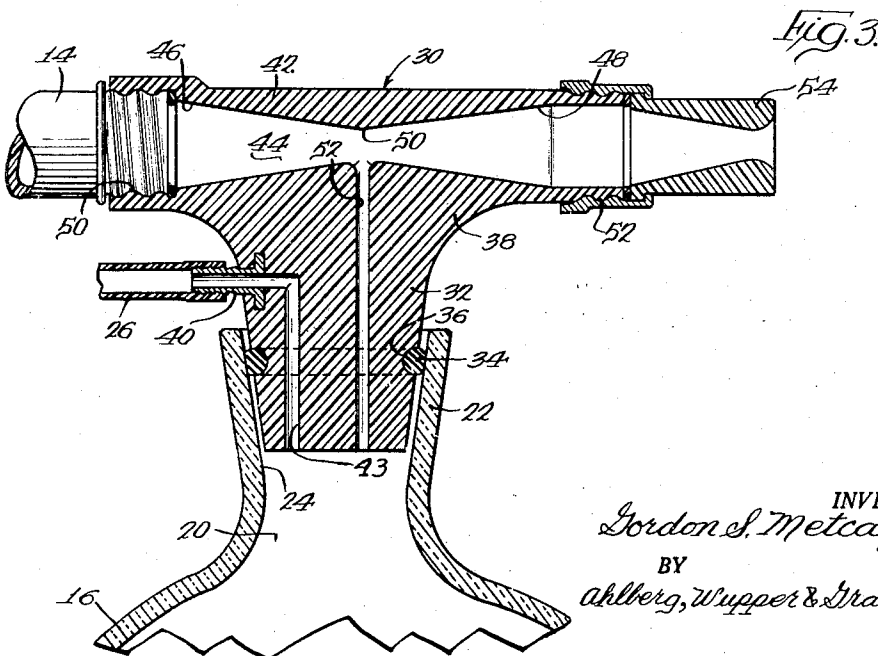
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HYDRAULIC ENGINE OIL ASPIRATOR

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HYDRAULIC ENGINE OIL ASPIRATOR

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The present invention is directed to the changing of engine oil in automotive vehicles. Paradoxically enough, the deceptively simple matter of emptying used oil from an automotive vehicle engine has been an inconvenient and unpleasant task to perform without the special, rather expensive facilities usually available only in automobile service stations. Without such facilities, it is difficult to obtain access to the crankcase drain plug of most vehicles and inconvenient to collect the used oil which issues upon removal of the drain plug. Moreover, the withdrawal of crankcase oil by means of a hand pump has been a distasteful procedure. This expedient ordinarily has involved considerable effort and manipulation by an operator whose hands and clothing usually become heavily soiled with oil and dirt.

One object of the invention is to provide, for ownership and use by the individual motorist or trucker, improved means for aspirating vehicle engine oil in an extremely practical, highly convenient manner which enables the user to make crankcase oil changes with great ease, thus avoiding the cost and delay entailed in the use of service station facilities.

A more specific object is to provide the individual automobile owner with extremely economical yet highly efficient means which operates without manual effort to hydraulically aspirate crankcase oil into a container in a manner which does not soil the hands and clothing of the user. A related object is to provide for this purpose an extremely simple structure which utilizes running water from a garden hose or the like as a source of oil aspirating energy while at the same time facilitating use of the water for secondary purposes such as lawn watering.

Other objects and advantages of the invention will be appreciated from the following description of the exemplary embodiment of the invention illustrated in the drawings, in which:

Fig. 1 is a perspective view illustrating use of the exemplary embodiment of the invention to simultaneously aspirate crankcase oil from an automobile and to water nearby plants;

Fig. 2 is a fragmentary plan view on an enlarged scale of the oil aspirating and water spraying structure; and

Fig. 3 is a fragmentary sectional view taken generally along the line 3—3 of Fig. 2.

Designed specifically for ownership and use by the individual motorist or trucker, the crankcase oil aspirating apparatus embodying the present invention is extremely simple and economical in construction and, as will presently appear, extraordinarily convenient and easy to use in a manner which virtually eliminates soiling of the hands and clothing of the user.

As illustrated in Fig. 1, the crankcase 10 of an automobile 12 is emptied without manual effort by utilizing the energy of running water from a garden hose 14 to aspirate used crankcase oil into a container 16 normally placed on the ground 18 or roadway adjacent the vehicle.

While the container 16 can be of any suitable impervious construction, it should have sufficient strength to

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withstand the collapsing force of atmospheric pressure incident to the production of a substantial vacuum within the container. The capacity of the container should be adequate to hold the used crankcase oil from at least one vehicle.

In the preferred form shown, the container 16 is formed by a glass bottle of substantial diameter which is shaped at the upper end to define a single opening 20, Fig. 3. Preferably, the marginal edge 22 of the bottle 16, which encircles the opening 20 is shaped to define an internal annular surface 24 of truncated conical shape progressively increasing in diameter toward its outer end. As will presently appear, this shaping of the surface 24 is well suited for coaction with simplified sealing means to prevent atmospheric air from entering the bottle around coating oil aspirating structure.

Used engine oil is withdrawn from the crankcase 10 through an aspirating tube 26 of a caliber or size suitable for quick insertion down into the crankcase through the dip stick opening or crankcase filling opening 28. Flexible in construction, the tube 26 is preferably formed from a suitable plastic material. Oil is sucked through the aspirating tube 26 into the container 16 by a hydraulic aspirating fitting or cap 30 which covers the container opening 20.

The fitting 30 has a T-shape as shown. A central stem 32, Fig. 3, of the T-shaped fitting is shaped to fit removably into the opening 20. A rubber O-ring 34 carried in an annular groove 36 in the stem 32 forms a tight seal with the conical container surface 24. In this connection, it will be appreciated that the effectiveness of the seal formed by incipient engagement of the ring 34 with the surface 24 is increased by the tendency which atmospheric pressure has to move the stem 32 farther into the opening 20 as the pressure within the container is reduced.

Preferably, the stem 32 constitutes an integral part of an aspirating cap body 38 molded from a suitable plastic material.

Convenient connection of the aspirating tube 26 to the aspirating fitting 30 is made by means of a centrally bored plug 40 anchored in and projecting from the body 38 near the juncture of the stem 32 with a T-head portion 42 of the body. As shown, the plug 40 connects the aspirating tube 26 to the inlet end of an aspirating passage 43 extending through the stem 32 to the extreme end of the stem at which the outlet end of the aspirating passage communicates with the interior of the container 16.

As shown in Fig. 3, the T-head 42 of the aspirating fitting 30 is shaped internally to define a venturi passageway 44 extending longitudinally through the head between an inlet 46 and an outlet 48. The transverse sectional size of the passageway 44 is progressively restricted from the inlet 46 and from the outlet 48 toward a central venturi throat 50 in which the pressure is reduced as an incident to the flow of fluid from the inlet 46 to the outlet 48. The venturi throat 50 communicates with the interior of the container 16 through a suction passage 52 extending through the body 38 from the throat to the extreme end of the stem 32 which projects into the container opening 20.

Convenient connection of the water supply conduit or hose 14 to the venturi passageway inlet 46 is made by means of female threads 50 formed on the adjacent end of the T-head 42 to receive the male threads of the hose.

In the preferred construction shown, male threads 52 are provided on the outlet end of the head 42 to connect the venturi passageway outlet 48 with a removable spray nozzle 54. As shown, the removable nozzle 54 is shaped to discharge water from the venturi passageway 44 in a broad spray pattern which distributes the water over an adjacent lawn, flower bed, or the like. The nozzle 54 is

progressively enlarged or flared from its inner end to its outwardly projecting end; but only in the horizontal plane, Fig. 2, and not in the vertical plane, Fig. 3. Thus formed, the nozzle 54 issues a vertically thin, yet horizontally broad stream of water which widens progressively as it moves away from the nozzle.

Thus, the invention provides to the individual motorist or trucker an extremely practical means of withdrawing crankcase oil in a manner which very satisfactory overcomes the inconveniences and disadvantages previously associated with the procedure of changing vehicle engine oil without the use of special service station facilities. In only a fraction of the time usually required to drive to a service station, the motorist can insert the aspirating tube 26 down into the crankcase 10 of his vehicle and connect the aspirating fitting 30 to a garden hose 14 or the like if this connection has not been previously made. When the water is turned on to flow through the supply conduit or hose 14, the structure operates without further attention to drain the crankcase.

As previously intimated, the water used in aspirating the oil in the manner described can be sprayed from the nozzle 54 onto an adjacent lawn or the like. If desired, the nozzle 54 may be removed to facilitate the outflow of water directly into a drain or into a second hose (not shown) connected to the discharge threads 52 of the cap 30 to carry the water to a drain, a distant flower bed, or the like.

After aspiration of the used crankcase oil in this manner, the user has merely to shut off the water and remove the aspirating tube 26 in preparation for pouring new oil into the engine—an extremely simple matter. The container 16 can be emptied at leisure. The whole procedure is carried out substantially without manual effort in a manner which virtually eliminates soiling the user's hands and clothing.

While distinct advantages are realized from the specific embodiment of the invention disclosed, it will be appreciated that the invention is not necessarily limited to the exact construction shown and described but includes structural variants falling within the scope of the appended claims.

I claim:

1. For hydraulically aspirating crankcase oil from an automotive vehicle engine, an oil receiving container defining an opening in the upper portion thereof, said container aside from said opening therein being impervious, an aspirating cap including a container closure element shaped to fit removably onto said container to tightly cover said opening therein, said aspirating cap being shaped internally to define therein a venturi passageway having an inlet and an outlet at opposite ends thereof opening outwardly of said container, means defining a water conduit connection communicating with said passageway inlet, said passageway being shaped between said inlet and said outlet to define a venturi throat within which the pressure is decreased as an incident to the flow of fluid through the passageway from said inlet to said outlet, said cap defining a suction passage communicating with said venturi throat and extending through said container closure element of the cap to communicate with the interior of said container when said closure element is disposed in closing relation to said opening, said cap defining an aspirating passage therein having an outlet end opening through said container closure element to communicate with the interior of said container, said aspirating passage having an inlet end opening outwardly of said container, and a flexible crankcase aspirating tube

connected to said inlet end of said aspirating passage and extending away therefrom.

2. For hydraulically aspirating crankcase oil from an automotive vehicle engine, the combination of an oil container defining an opening in the upper portion thereof, said container being impervious except for said opening, a hydraulic aspirating cap including a container closing element adapted to fit removably on said container in closing relation to said opening therein, said cap defining therein an oil aspirating passage having an outlet end opening through said container closing element to communicate with said container through said opening therein, said aspirating passage having an inlet end opening outwardly of said container, a flexible aspirating tube connected to said inlet end of said aspirating passage and extending away from said cap, said cap defining therein a venturi passageway having an inlet and an outlet at opposite ends thereof opening outwardly of said container, said passageway being shaped between said inlet and said outlet to define a venturi throat within which the pressure is decreased as an incident to the flow of fluid therethrough from said inlet to said outlet, said cap defining a suction passage communicating with said venturi throat and opening into said container through said container closing element, a threaded water conduit connection on said cap communicating with said passageway inlet, a threaded outlet connection on said cap communicating with said passageway outlet, and a spray nozzle removably threaded to said outlet connection.

3. For hydraulically aspirating crankcase oil from an automotive vehicle engine, the combination of a container having on the upper portion thereof a peripheral edge defining an opening and shaped to define an interior surface encircling the opening, said surface having a conical shape progressively enlarged in diameter outwardly with respect to the container, said container being impervious except for said opening, a T-shaped hydraulic aspirating cap having a horizontally elongated head and a stem depending from the medial portion of the head, said stem being shaped and dimensioned to extend into the space encircled by said conical surface, a resilient annular seal encircling said stem to form a seal between the latter and said conical surface, said head defining a venturi passageway extending longitudinally therethrough and having an inlet and an outlet opening outwardly through opposite ends of the head, an intermediate portion on said passageway being shaped to define a venturi throat in which the pressure is reduced as an incident to the flow of fluid through said passageway from said inlet to said outlet, said cap defining a suction passage communicating with said venturi throat and opening outwardly through the extreme end of said stem to communicate with said container through said opening therein, the venturi passageway inlet end of said head including a threaded water conduit connection communicating with said passageway inlet, said cap defining an aspirating passage having an outlet end extending through said stem to the outer end thereof to communicate with said container, said aspirating passage having an inlet end opening out through said cap externally of said container, and a crankcase aspirating tube connected to said outlet end of said aspirating passage and extending away therefrom.

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