Feb. 27, 1962 C. H. TUCKEY 3,022,737

FUEL PUMP

Filed May 6, 1959

FIG. 1

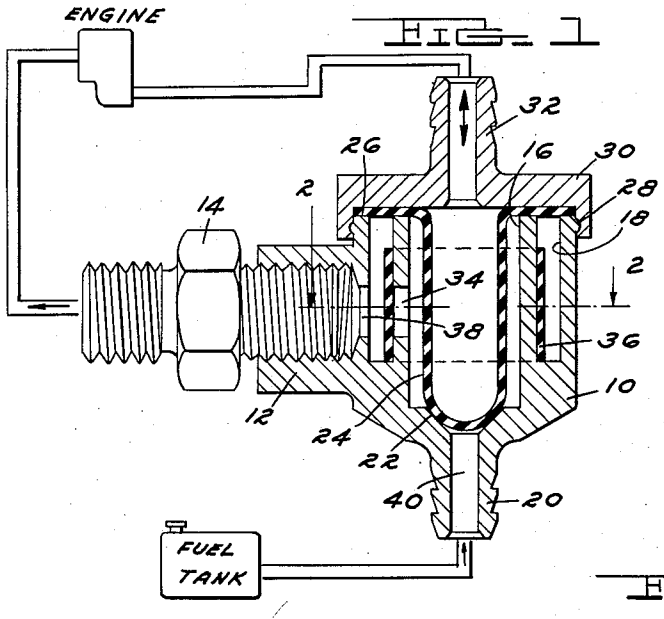


FIG. 2

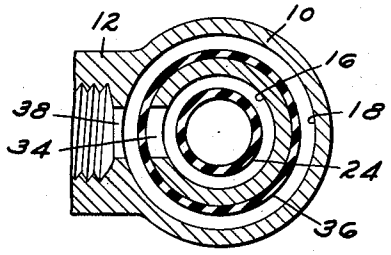
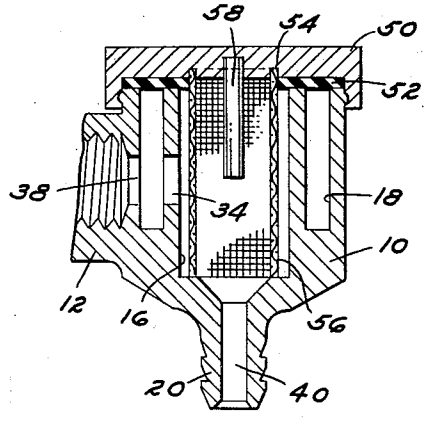


FIG. 3



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FUEL PUMP

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2 Claims. (Cl. 103—44)

This invention relates to a fuel pump and is particularly intended to be an improvement on co-pending application, Serial No. 766,614, filed October 10, 1958, now Patent No. 2,984,188.

It is an object of the present invention to provide a construction which is relatively simple and economical as far as the manufacture is concerned and one in which there are no mechanical parts which can wear out or become mechanically out of order.

Another object of the invention is the provision of a housing which adapts to a very simple valve construction for a fuel line pump.

Other objects and features of the invention relating to details of construction and operation will be apparent in the following description and claims.

Drawings accompany the disclosure and the various views thereof may be briefly described as:

FIGURE 1, a sectional view showing the relationship of the parts of the pump.

FIGURE 2, a sectional view on line 2—2 of FIG. 1.

FIGURE 3, a modified view of the construction showing the manner in which the housing can be used as a filter.

Referring to the drawings, in FIGURE 1, a main housing 10 has a side extension 12 tapped to receive a nipple connection 14. The housing has a central bore forming an elongate chamber 16 and a concentric annular recess 18 around the central bore. At the bottom of the housing is a hose connector projection 20 opening into the central bore 16. At the bottom of the central bore is a conical valve seat 22.

Disposed within the central bore is a sac diaphragm 24 having a radial, outwardly extending, sealing flange 26 extending outwardly over the recess 18. The closed end of the sac 24 contacts and seals the valve seat 22 as a unidirectional valve admitting fuel from a supply. The sac also divides elongate chamber 16 into a fuel receiving chamber outside the sac and a pulsation pressure chamber inside the sac.

A cap 30 is pressed over a slight annular ridge 28 on to the open end of the housing 10 and serves to clamp the sealing flange 26 over the top of the housing. The cap 30 has a hollow hose connection 32 which is adapted to be connected to a source of pulsating pressure such as a crank case of a two-cycle engine or a manifold or a carburetor passage. The hollow projection 20 serves as an inlet for a fuel supply and the nipple 14 serves as an outlet. In the wall between the bore 16 and the recess 18 is an opening 34 which is closed by a wide

rubber band or cylinder 36. This hole 34 is aligned with a second hole 38 leading to the nipple 14.

In the operation, pulsating pressure in the main bore inside the sac 24 will cause the sac to enlarge and ensmall, thus reducing the pressure in passage 40 and also causing the sac which contacts the valve seat 22 to retract from the valve seat. This carries fuel into the bore 16 outside the sac 24. Re-expansion of the sac 24 again seals the valve seat 22 and forces liquid out through hole 34 past the elastic band 36 into the outlet passage 38. There is thus provided an extremely simple pump construction which has no mechanical parts.

In FIGURE 3 a modified construction is shown using the same housing but using a closed cap 50 with an annular seal ring 52. The cap 50 has an annular recess 54 which receives one end of a cylindrical screen element 56, the other end of which bears against the bottom of bore 16. Also in the cap is a depending magnetic element 58 which projects into the area inside the screen 56. In the operation of the device flow will enter the passage 40, pass through the screen and out the openings 34 and 38. Any metal particles in the gas will be attracted to the magnetic element 58 to keep them out of the engine. The cap may be removed and the element 56 cleaned or replaced.

I claim:

1. A fuel pump for small engines to operate from a source of pulsating pressure in the engine of the type having a housing with a pumping chamber, an inlet and an outlet to said opening, an inlet valve and a diaphragm within said chamber, that improvement which comprises a means forming an annular chamber around said pumping chamber, a passage through the wall of said pumping chamber connecting to said annular chamber, said annular chamber being connected with the outlet of said pump, and an outlet valve comprising a band of resilient material positioned snugly around the inner walls of the annular chamber overlying the connection with said pumping chamber, said material permitting flow outward from said pumping chamber into said annular chamber and blocking flow in a reverse direction.

2. A pumping device as defined in claim 1 in which the pumping chamber and the annular chamber are opened at one end of the housing, and means closing the open ends of said chambers at said end of said housing for connecting said pumping element to a source of pulsating pressure.

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