

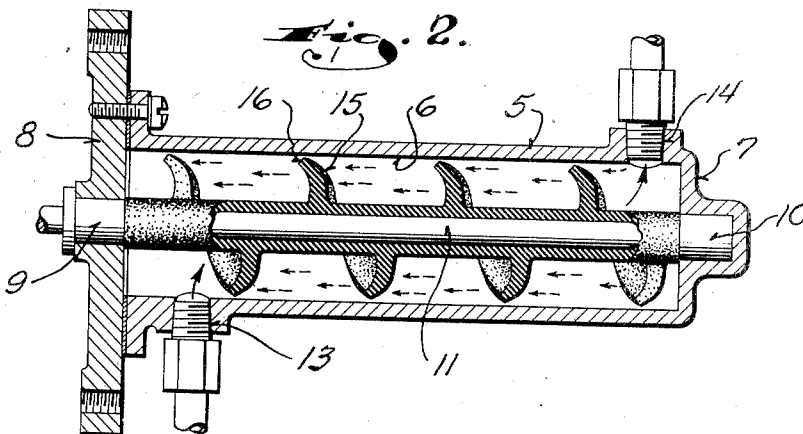
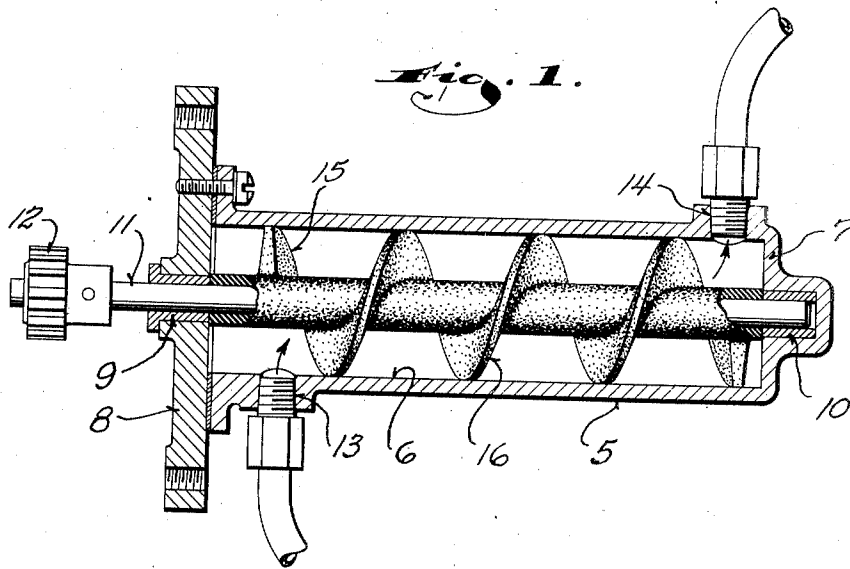
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FUEL PUMP FOR INTERNAL COMBUSTION ENGINES

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FUEL PUMP FOR INTERNAL COMBUSTION
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2 Claims. (Cl. 103—89)

This invention relates to pumps, and refers particularly to fuel pumps for internal combustion engines.

Fuel pumps now in general use embody a reciprocating pumping member which draws fuel into a pump chamber during one stroke and expels it during the other stroke. This construction entails the use of check valves, which often do not operate properly, particularly when vapor develops inside the pump. This latter condition is known to the art as a "vapor lock."

The present invention proposes to overcome the objections incident to a pump structure subject to the development of vapor locks, and accomplishes this object through the provision of a continuously rotating feed screw which propels the liquid forwardly as long as a demand exists, and which is so constructed as to permit slippage in the event of back pressure in excess of a predetermined amount.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein-disclosed invention may be made as come within the scope of the claims.

The accompanying drawing illustrates one complete example of the physical embodiment of the invention constructed in accordance with the best mode so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a sectional view through a pump constructed in accordance with this invention; and

Figure 2 is a view similar to Figure 1, but showing the manner in which back pressure causes the liquid to slip past the pumping member.

Referring now particularly to the accompanying drawing in which like numerals indicate like parts, the numeral 5 designates the body of the pump, which has a cylindrical bore 6 open at one end and closed at its opposite end by a wall 7. The open end of the pump body is fixed to an end plate 8 designed to close an aperture in the crankcase of the engine with which it is used.

This end plate and the opposite end wall of the body have axially aligned bearings 9 and 10, respectively, in which a shaft 11 is journaled. The inner end of the shaft projects beyond the end plate 8 to mount a pinion 12 by which the shaft is driven from any suitable power source inside the crankcase (not shown).

At one end, the pump body has an inlet 13 leading to its bore 6 and at its opposite end, an outlet 14 leads from the bore 6. Liquid is propelled through the bore 6 from the inlet to the

outlet by a screw 15 mounted on the shaft 11 to be rotated thereby. The screw 15 is formed of rubber, or other similar material having cubical elasticity, and its normal shape is such that its peripheral edge 16 has a firm engagement with the bore 6 to provide a fluid tight seal capable of creating a suction in the inlet end of the body to draw liquid fuel into it and propel it to the outlet 14.

The resiliency of the rubber screw allows it to flex, as shown in Figure 2, whenever back pressure, indicated by the dotted arrows in Figure 2, exceeds a predetermined value. In this manner, the liquid is allowed to slip past the vanes of the screw so that the output of the pump is responsive solely to the demands of the carburetor.

From the foregoing description taken in connection with the accompanying drawing, it will be readily apparent that this invention effects a substantial improvement in pumps designed for use in feeding fuel to the carburetors of internal combustion engines as it eliminates the possibility of vapor locks.

What I claim as my invention is:

1. A pump comprising: a body having a bore provided with longitudinally spaced inlet and outlet openings; and a rubber screw rotatable in the bore and having a convolution of a diameter such that its periphery is normally held in fluid tight engagement with the wall of the bore so as to propel liquids from the inlet to the outlet upon rotation of the screw in one direction in said bore, the thickness of said convolution being substantially less than its height whereby the convolution is rendered flexible to permit flexure thereof out of engagement with the wall of the bore whenever back pressure in the pump body exceeds a predetermined value.

2. In a pump of the character described: a body having a substantially cylindrical fluid passageway; and a screw rotatable in said passageway for propelling fluids therethrough, said screw having a convolution of non-metallic material capable of substantial deflection without deformation and of a diameter such that its periphery normally engages the wall of the passageway in fluid tight relationship therewith to produce a pressure below a predetermined value during rotation of the screw in the passageway, the thickness of said convolution being substantially less than its height whereby the convolution is rendered flexible to permit the same to be flexed out of fluid tight relationship with the wall of the passageway when resisted by a fluid pressure in said passageway above said predetermined value.

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