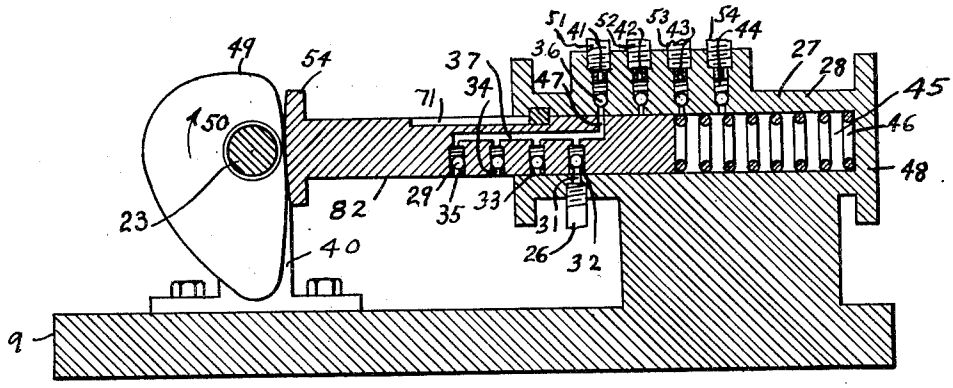
Sept. 5, 1950 C. Z. GREEN 2,521,119

FUEL DISTRIBUTOR

Filed Aug. 19, 1946



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Patented Sept. 5, 1950 2,521,119

UNITED STATES PATENT OFFICE

2,521,119

FUEL DISTRIBUTOR

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Application August 19, 1946, Serial No. 691,609

2 Claims. (Cl. 251—76)

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This invention relates to internal combustion engines and more particularly to those of the Diesel type and the distribution of fuel therefor for their actuation and propulsion.

In a particular form of fuel distribution used for Diesel engines the fuel is injected under air pressure into the various cylinders of the engines in selected sequence from a main pressure pump used therefor. The fuel is pumped in directly by an individual line to each cylinder. These lines are operated segregatively and each takes care of its own individual cylinder without regard to the others. They require separate injection valves for each cylinder, and of special design, which is quite complicated in its mechanism. This makes them subject to frequent correction and difficult to correlate with each other. The manner of connecting them up with the main pump is through a distributing valve employing air in conjunction with the fuel. The fuel is forced in under considerable air pressure, into each cylinder consecutively while under compression. The internal cylinder pressure is high, but not sufficient to prevent the injection of the fuel. The disadvantage of this form is that the sequence of injection of fuel and explosion or combustion in each cylinder, cannot be timed as accurately as desired, while the introduction of the compressed air in the fuel system introduces a diluting effect that upsets the calculations involved used in designing the ports for the proposed quantities of fuel to be used in each cylinder. This tends to make the combustion inefficient and produce undesirable operating effects, such as "knocking"; carbonizing, fouling and pre-ignition.

In the present invention, it is an object to provide a new and improved fuel distribution arrangement for Diesel type engines, that will avoid one or more of the disadvantages and limitations of the prior art.

Another object of this invention is to provide a new and improved fuel distribution arrangement for Diesel type engines, that will operate effectively, smoothly and efficiently.

An additional object of this invention is to provide a new and improved fuel distribution arrangement for Diesel type engines that will be structurally simple, automatic in function, and capable of providing for the reclamation of excess fuel introduced into the arrangement.

A further object of the present invention is to provide a new and improved fuel distributing unit for internal combustion engines that will keep a constant pressure of adequate value on the

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fuel to be introduced into the engines, and be designed to meter the quantities of fuel in predetermined amounts, for each predetermined section of the engine selected for the particular injection.

For a better understanding of the invention reference is made to the appended drawing and the following description which together illustrate a form of the invention, by way of example, while the claims particularly point out the scope and spirit thereof.

Referring to the drawing:

The figure is a sectional elevation illustrating the invention.

The distributor 27 consists of a cylinder housing 28 supported on the base 9. The wall of the housing 28 is provided with an inlet port 31 to receive the fuel fed to it by piping 26. At the opposite side and in the upper wall of the housing are four primary ports 41, 42, 43 and 44 having check valves 36 to prevent the outgoing fuel from returning back through these ports into the distributor. The fuel from the inlet port 31 flows through the cylinder secondary ports 32, 33, 34 and 35 in the plunger piston 82 in individual sequence, through the dead-ended passage 37 provided longitudinally in the plunger piston 82 during its reciprocation in the interior chamber 45 in the housing. The passage 37 terminates in a transverse port 47, which aligns with primary ports 41, 42, 43 and 44 in individual sequence when properly aligned. This alignment is made when the plunger 82 is moved into the housing 28 a sufficient distance to allow the secondary ports 31, 32, 37, 47 to align with 41. The plunger piston 82 is then moved further into the housing to align the ports 31, 33, 37, 47 with 42. The plunger piston 82 is then moved in a further distance to align the secondary ports 31, 34, 37, 47 with 43. The plunger piston 82 is then moved in a further distance to align the secondary ports 31, 35, 37, 47 with 44. This permits the functioning of the fuel through the system. The plunger piston 82 has a flange 54 at its exterior end to contact the peripheral surfaces 49 of a cam 50. A coiled spring 46 at the other end of the housing exerts pressure against the plunger 82 and rear wall 48 to push the flange 54 outwardly against the cam 50. This cam is rotated by shaft 23, which is coupled to the main shaft of the engine and rotates therewith.

Piping 51, 52, 53 and 54 attached to primary ports 41, 42, 43 and 44 of the distributor 27 feeds the fuel directly to the engine in a conventional manner. The inlet secondary ports 32, 33, 34 and

35 are fitted with check valves 29 and the outlet ports 41, 42, 43 and 44 are fitted with check valves 36. The drive shaft 23 has directly connected with it a suitable governor. The cam 50 has its contact face 49 designed to produce a gradual uniform stroke of plunger piston 82 in one direction from the beginning of its contact to the end of the revolution. The return stroke, under the force of the spring 46 gradually returns the plunger back to the first position as the cam rotates and allows it to do so.

The pump operates to increase the pressure when its plunger moves inwardly into its cylinder and forces the fuel out through the outlets. Its return stroke is unpressurized and does not cause the fuel to flow during that stroke even though fuel ports are uncovered.

While but one general form of the invention is shown in the drawings and described in the specifications, it is not desired to limit this application for patent to this particular form, as it is appreciated that other forms of construction could be made that would use the same principles and come within the scope of the appended claims.

Having thus described the invention; what is claimed is:

1. A fuel distributor for a multi-cylinder engine comprising a housing having a cylindrical chamber therein and a fuel admission passage in the walls of said housing, said housing also having a series of passages in its walls removed and separate from said fuel admission passage, said

series of passages being adapted to connect individually with each cylinder of the engine, all of said aforementioned passages having port openings in said chamber, a plunger in said chamber, said plunger having a longitudinal channel therein, a series of transverse passages extending from said channel to the periphery of said plunger and an oppositely positioned passage at the end of said longitudinal channel, said fuel admission passage being adapted to communicate serially with each of the transverse passages in said plunger, and the oppositely positioned passage in said plunger being adapted to concurrently communicate serially with each of the passages in said housing during a full stroke of said plunger, cam mechanism for moving said plunger in one direction and resilient means for retracting said plunger.

2. A fuel distributor as set forth in claim 1, including means carried by said housing for limiting the movement of said plunger in either direction.

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