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F. GOSSLAU ET AL
REGULATOR VALVE FOR INTERNAL
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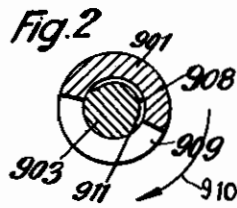
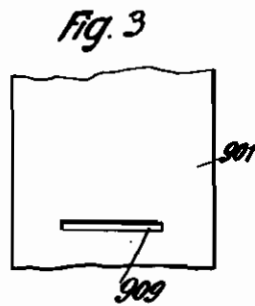
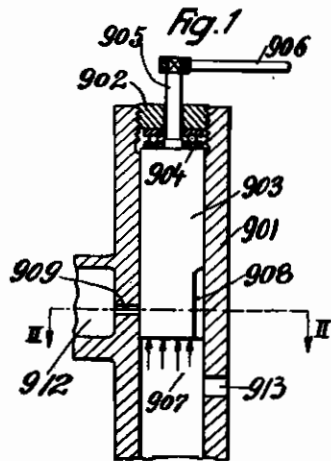
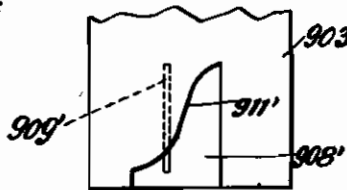
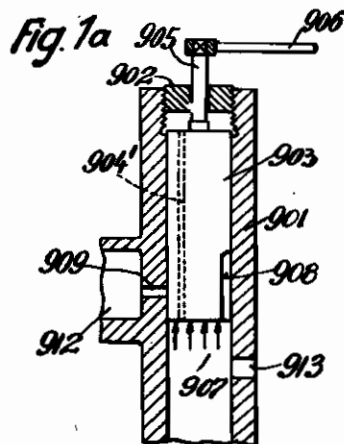


Fig. 4



Inventors
Fritz Gossau
Verner Zarnack
E. A. Osner
Agent

ALIEN PROPERTY CUSTODIAN

REGULATOR VALVE FOR INTERNAL COMBUSTION ENGINES

Fritz Gosslau and Werner Zarnack, Berlin-Charlottenburg, Germany; vested in the Alien Property Custodian

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This invention relates to a valve, and more particularly to a regulator valve for internal combustion engines provided with a fuel pump forcing the fuel through the fuel injecting nozzle.

This application is a divisional application based upon certain subject matter contained in our prior copending application Serial No. 233,728, filed October 7, 1938.

In internal combustion engines provided with fuel spray pumps the quantity of fuel to be injected into the cylinders of the engine must be regulated depending upon the power required from the engine as well as in accordance with the quantity of air simultaneously fed to the engine cylinders.

Accordingly, it is an object of the invention to provide a regulator valve for the above purposes which is of very simple construction and which may be actuated with the smallest power consumption.

It is another object of the invention to provide a regulator valve comprising a cylinder and a recessed piston which may be brought to register with a slot in the walls of the cylinder.

It is a further object of the invention to provide a regulator valve which may be actuated with a very small power consumption irrespective of the pressure exercised by the fluid to be regulated.

It is still another object of the invention to provide a regulator valve having a rotatable piston with a recess of a predetermined outline of its control which permits of a particularly simple regulation.

These and other objects will become more evident in the following description taken in connection with the drawing, in which

Fig. 1 is a longitudinal section of a regulator valve,

Fig. 2 is a cross section of the valve taken along the line II—II of Fig. 1.

Fig. 3 is an elevation of a portion of the valve cylinder casing shown in Fig. 1.

Fig. 4 is an elevation of the piston of a modified valve.

Referring more particularly to the drawings, 901 is a cylinder having a threaded cover 902. Piston 903 is inserted into cylinder 901, the piston bearing against the cover 902 by means of a ball

pressure bearing 904. Piston rod 905 extends through the cover 902 of the cylinder and may be rotated by means of a lever, 906. Lever 906 may be actuated by hand or the same may be operatively connected to a regulator. This regulator must be so constructed that it rotates lever 906 about the longitudinal axis of piston 903.

The fluid fed by a pump, for instance a geared pump, flows as indicated by the arrows into the cylinder space 907 below the piston 903. Piston 903 is provided with a lateral recess 908 which may be brought into register with a slot 909 provided in the side-wall of the cylinder 901 as shown in Fig. 2. If the piston is rotated as indicated by the arrow 910 (Fig. 2), an increasing quantity of fluid flows through the slot 909 as soon as the control edge 911 of recess 908 surpasses the slot 909. Slot 909 discharges into an overflow channel 912 which returns the fluid to the inlet side of the pump. Below piston 903 a slot 913 is provided in the wall of cylinder 901. The fluid which is not returned through channel 912 is discharged through slot 913.

Instead of the ball pressure bearing 904 any other arrangement may be used which relieves the piston 903 against the fluid pressure, for instance by by-passing a portion of the fluid to the rear side of the piston.

A modification of the control slot arrangement is shown in Fig. 4. Cylinder 901 is provided with a slot 909' which extends parallel to the longitudinal axis of the cylinder. The recess 908' of the piston 903 has a control edge 911' which extends helically under a certain predetermined pitch. This arrangement has the advantage that the curve of the control edge 911' may be formed in accordance with the regulating law of the engine to be supplied with the fluid. Consequently, for the regulation itself a spring loaded diaphragm regulator, having but one regulator spring, may be used, the regulating characteristic of which, i. e. the regulating way in dependence upon the charging pressure, extends in a straight line, and yet the pump may feed any quantity of fluid in dependence upon the regulating way.

FRITZ GOSSLAU,
WERNER ZARNACK.