Sept. 6, 1955 F. R. HOWE 2,716,901

CONTROL DEVICE FOR FUEL PUMPS

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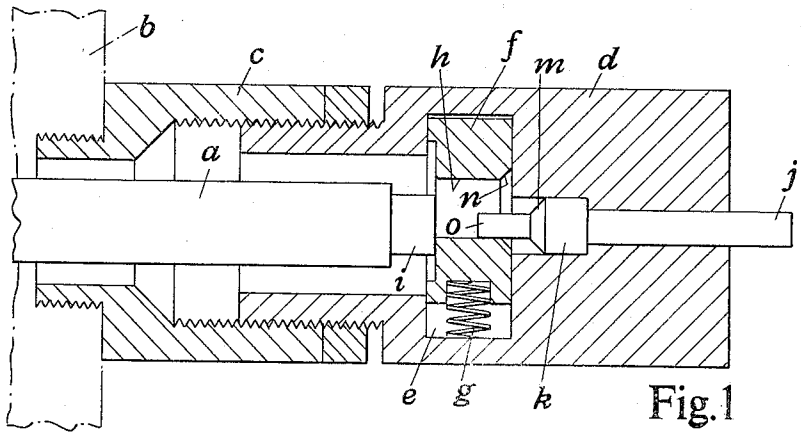


Fig.1

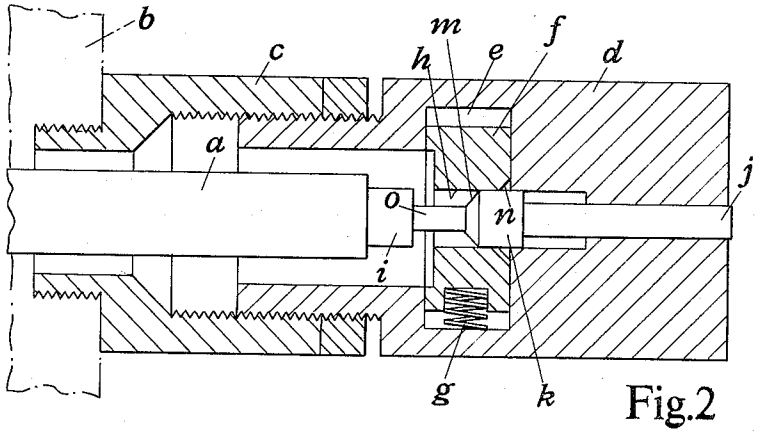


Fig.2

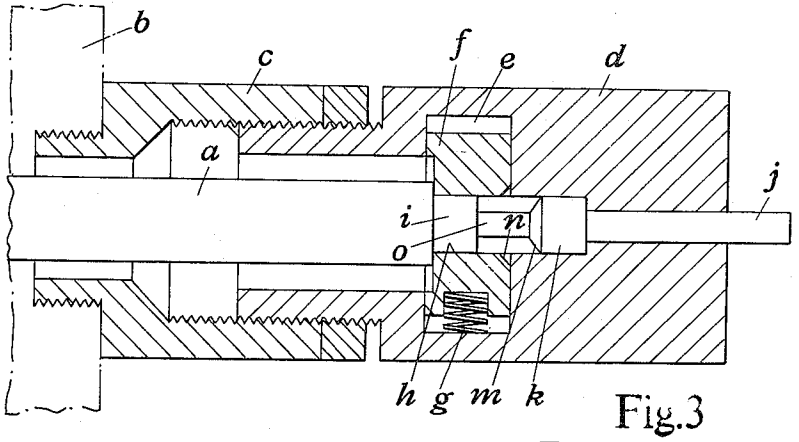


Fig.3

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CONTROL DEVICE FOR FUEL PUMPS

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2 Claims. (Cl. 74—526)

This invention relates to liquid fuel injection pumps for internal combustion engines of the kind in which the output is variable under variable load or speed conditions, and in which provision is made for enabling the normal maximum output of the pump to be temporarily increased when starting the engine.

The object of the invention is to provide a simple device for controlling the temporary increase of output of the pump.

The invention comprises the combination of a hollow body part formed or adapted to be mounted on the pump adjacent to the output control member, a spring-loaded stop slidable transversely to the path of the said member and having therein a hole or gap adapted to receive one end of the said member, and a manually-operable plug adapted to move the stop into its temporary position and to be disengaged from the stop by the pump control member.

In the accompanying drawings:

Figures 1, 2 and 3 are sectional side elevations illustrating three positions of a stop device embodying the invention.

In the drawings *a* indicates a slidable bar which is adapted to be actuated manually or automatically to vary the output of a liquid fuel injection pump *b* of the reciprocatory plunger type by imparting rotational adjusting movements to the pump plunger or plungers. Such a slidable bar and pump are well known and do not require further description.

In the application of the invention as shown to the liquid fuel injection pump above described, there is secured to the body of the pump *b* by a fitting *c* adjacent to one end of the said bar, a hollow body *d* into which the said end can extend. Alternatively the said body *d* may be formed integrally with the pump. In the said body is formed a cylindrical chamber *e* the axis of which is at right angles to the path of the pump control member, and in this chamber is contained a slidable stop *f* which is loaded by a spring *g*. In the stop is formed a transverse hole (or gap) *h* parallel with the said path, the hole being adapted to receive a reduced portion *i* of the adjacent end of the control member *a*, or an adjustable extension of the said member. Alternatively an open-sided gap may be formed in the stop.

At the side of the stop remote from the control member there is mounted in the part *d* a manually slidable plug *j* which is arranged coaxially with the control member and consists of two parts of different diameters. The part *k* of larger diameter is of approximately the same size as the hole in the stop, and the shoulder *m* between the two parts is bevelled and adapted to co-operate with a bell-mouthed or coned entrance *n* to the said hole. Further the part *o* of smaller diameter is preferably made

of such length that when the plug is in its operative position it extends beyond the hole (as shown in Figure 2).

The arrangement is such that during normal working conditions of the engine, the plug *j* is in the position shown by Figure 1, and the stop *f* is pressed by its spring to a position in which the axis of the hole *h* (or gap) is out of alignment with the axis of the control member. The outer surface of the stop then serves to determine the position of normal maximum fuel delivery of the control member.

When starting the engine, the plug *j* is pushed inwards and the stop *f* is thereby moved into the position shown in Figure 2. On releasing the plug, the part *i* of the control rod enters the hole in the stop as shown in Figure 3, under the action of the spring (not shown) by which the control bar *a* is loaded so enabling the desired extra output to be obtained from the pump. This movement of the bar *a* also returns the plug to its previous position.

When the engine is in motion, the bar *a* is moved to the left under the action of a governor or other actuating means acting on the bar, so withdrawing the part *i* from the stop. The latter is then returned by the spring *g* to its normal position.

To prevent the driver from rendering an "extra" supply of fuel automatically available at all times by securing the slidable plug *j* against return movement after actuation, the smaller end of the manually slidable plug *j* is made of such length that it would then serve as a stop for preventing the bar *a* from assuming a position in which the "extra" fuel supply is obtainable.

By this invention, a device for enabling a temporary "extra" delivery of fuel to be supplied by the pump to the engine when starting, is provided in a very simple and convenient form.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a liquid fuel pump having a slidable bar for regulating the output of the pump, the combination of a stationary hollow body part into one end of which the slidable bar extends, a spring-loaded stop slidable within the hollow body part in a direction at right angles to the direction of movement of the slidable bar, the stop being formed with a transverse opening into which the said end of the bar is movable when the stop is in an appropriate position, but which in the normal position of the stop is inaccessible by the bar so that the extent of movement of the bar into the body part is limited by contact with the stop of the adjacent end of the bar, and a manually slidable plug extending through the end of the body remote from the bar, and shaped to co-operate, when moved inwardly, with the adjacent end of the aperture in the stop to move the latter into a position in which the aperture is accessible by the adjacent end of the bar which upon being moved into the aperture serves to return the plug to its initial position.

2. A liquid fuel pump according to claim 1, in which the inner end of the plug is formed with a reduced extension which serves to limit the extent of movement of the bar into the body part if the plug is secured against return after actuation.

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