

UNITED STATES PATENT OFFICE

2,588,485

LIQUID FUEL BURNER NOZZLE

John Stanley Clarke, Blacko, near Nelson, and
Leslie John Goddard, Bromborough, England,
assignors to Joseph Lucas Limited, Birmingham, England

Application March 6, 1950, Serial No. 147,952
In Great Britain March 7, 1949

2 Claims. (Cl. 299—118)

1

This invention has for its object to provide improved liquid fuel burner nozzles of the swirl-chamber type and having in association with the swirl-chamber flow control means responsive to the fuel pressure.

The accompanying drawing is a sectional side elevation illustrating one embodiment of the invention.

Referring to the drawing, a hollow body part *a* is provided at one end with a conical swirl-chamber *b* having the discharge orifice at its smaller end. The larger end communicates with an annular fuel supply duct *c* by way of tangentially disposed passages *d*. Within the body part is formed a cylindrical chamber *e* containing a piston *f* loaded by a spring *g*, and from the side of the piston remote from the spring, there extends (through a bore in the body part) a control member *h*, the outside diameter of which is substantially equal to the diameter of the larger end of the swirl-chamber. Fuel can enter the end of the said chamber *e* remote from the spring through a passage *i*, and the pressure exerted on the piston in opposition to the spring serves to move the control member in the direction for varying the effective cross-sectional area of the discharge ends of the tangential passages *d*.

In the piston and control member is formed an axial bore through which extends a hollow cylindrical stem *j* terminating in a conical portion *k* which is situated within the above mentioned swirl-chamber *b*. The conical portion of the stem is shaped to form within it a subsidiary conical swirl-chamber having a discharge orifice at its smaller end, and within the stem is located a swirl plug *m* formed with peripheral and helical grooves *n*, for admitting fuel to the associated swirl chamber from a passage *o* communicating with the supply duct *c*, the plug *m* being held in position by a spring *p*.

The arrangement is such that variation of the pressure of the fuel admitted at *q* to the duct *c* is accompanied by variation of the rate of flow to the main swirl-chamber *b*, and under a con-

2

dition of low pressure (when the spring *g* causes the control member *h* to interrupt the flow to the said chamber) a restricted flow is maintained through the subsidiary swirl-chamber past the plug *m*.

By this invention the automatic control of the liquid fuel through the nozzle in response to variations of fuel pressure can be effected in a simple and convenient manner.

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

1. A liquid fuel nozzle comprising in combination a hollow body provided with an inlet for liquid fuel under pressure, and with a main swirl-chamber through which liquid fuel can be discharged from said hollow body, a hollow cylindrical member immovably secured within said hollow body and terminating at one end in a subsidiary swirl-chamber provided with a discharge orifice, said hollow cylindrical member being in communication with said inlet, and said subsidiary swirl chamber being situated within said main swirl chamber, a movable control member surrounding said hollow cylindrical member and having one end arranged to control fuel flow from the interior of said hollow body to said main swirl chamber, and means for moving said control member in response to the pressure of the liquid fuel supplied to the said hollow body.

2. A liquid fuel nozzle as claimed in claim 1 and having within the subsidiary swirl-chamber a swirl plug formed with helical peripheral grooves.

JOHN STANLEY CLARKE.
LESLIE JOHN GODDARD.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,607,805	Sprado	Nov. 23, 1926
2,436,815	Lum	Mar. 2, 1948