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LIQUID FUEL NOZZLE
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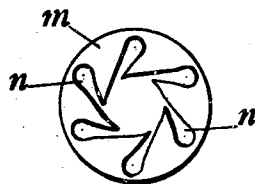
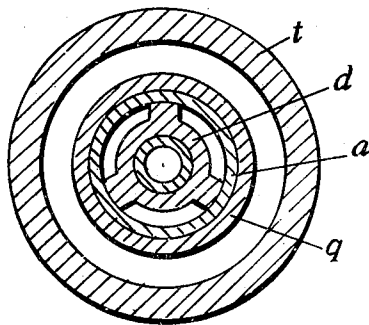
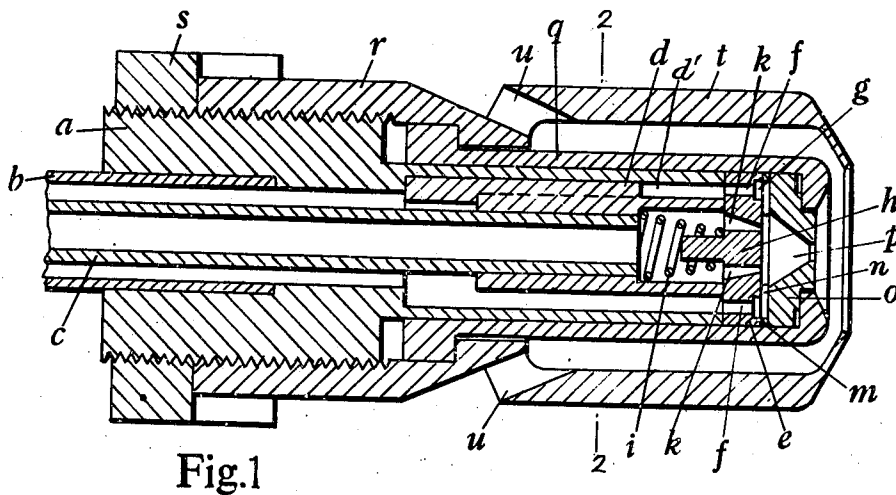


Fig 3

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LIQUID FUEL NOZZLE

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1 Claim. (Cl. 299-115)

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This invention has for its object to provide improved liquid fuel nozzles of the swirling-jet type adapted to convey liquid fuel to a common discharge orifice from either or both of a pair of fuel supply ducts, and adapted for use more particularly with internal combustion prime movers.

The invention comprises the combination with a hollow body part having a pair of supply ducts, of a swirl plug located at the exit of one of the ducts, an annular swirl plate at the exit of the swirl plug and in communication with the other duct, and a discharge nipple adapted to form a swirl chamber.

In the accompanying drawings, Figure 1 is a longitudinal section and Figure 2 a cross section on the line 2-2, Figure 1, of a liquid fuel nozzle embodying the invention. Figure 3 is a front elevation of a swirl plate forming part of this nozzle.

Referring to the drawings, I employ a hollow cylindrical body part *a* adapted at one end to be connected to one end of the outer pipe of a pair of inner and outer pipes *b, c*. In the other end of the part *a* and over the adjacent end of the inner pipe *c* is placed a piece *d* which is grooved externally to receive liquid fuel from the outer pipe *b*, and which at its forward end is chambered to receive fuel from the inner pipe *c*. In contact with the forward ends of the parts *a, d* is placed a disc *e*. This is formed with holes *f* situated opposite an adjacent annular groove *d'* around the part *d*, and these holes open into an annular groove *g* in the front face of the disc *e*. At the centre of the disc *e* is formed a tapered hole which is occupied by a correspondingly tapered swirl plug *h*, this being held in position by a spring *i*, the exterior of the plug being formed with helical grooves *k* through which liquid fuel can flow from the inner pipe *c*. In contact with the front of the disc *e* is placed an annular swirl plate *m* having formed in its slots *n* (Figure 3) which open tangentially into the inner periphery of the plate and which at their closed ends lie opposite the groove *g* in the disc *e*. At the front side of the swirl plate *m* and in contact with it is placed a nipple *o* which has a conical bore forming the swirl chamber *p*. The parts are held together by a shouldered sleeve *q* which fits over the part *a* and is secured by another sleeve *r* in screw thread connection with the part *a*, accidental slackening of the sleeve *r* being prevented by a lock nut *s*.

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Integrally with the sleeve *r* may be formed a hollow part *t* which surrounds and forms with the sleeve *q* an annular air passage through which cooling air can flow, the air being admitted by perforations *u*.

Liquid fuel flowing into the nozzle from the inner pipe *c*, has imparted to it a rotary motion by the swirl plug *h*, and likewise liquid fuel flowing from the outer pipe *b* has a rotary motion imparted to it by the swirl plate *m* before entering the swirl chamber *p*.

By the invention I am able to construct nozzles of the type specified in a very simple and convenient form. The invention is not, however, limited to the example described as subordinate constructional details may be modified to suit different requirements. Thus it is not essential that the ducts *b, c* shall be concentric as they may be arranged side by side in which case appropriate variation is made in the passages leading to the swirl plug *h* and the swirl plate *m*.

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

A liquid fuel nozzle comprising the combination of a body having a pair of liquid fuel passages, a disc situated at one end of said passages and formed with holes and a central bore through which fuel can flow from said passages, a swirl plug situated in said bore, an annular swirl plate having one face in contact with the outer face of said disc and having tangential slots in communication with the holes in said disc, a nipple in contact with the outer face of said swirl plate and having a swirl chamber formed therein, and means securing the parts of the nozzle together.

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