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LIQUID FUEL BURNER NOZZLE

2,544,417

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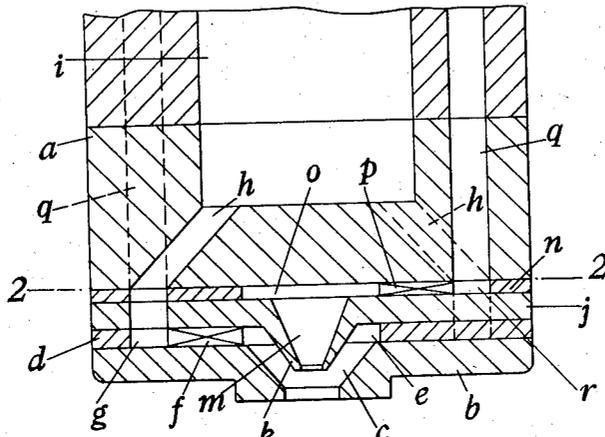


Fig. 1

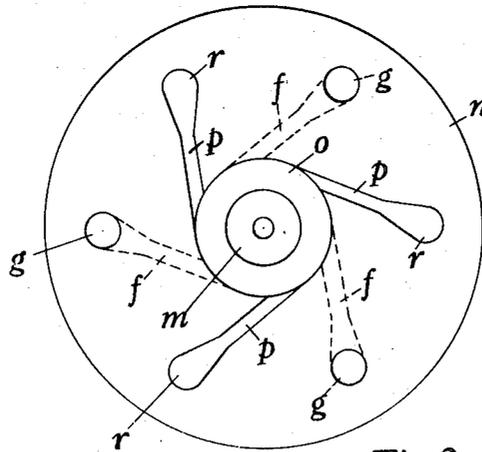


Fig. 2

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# UNITED STATES PATENT OFFICE

2,544,417

## LIQUID FUEL BURNER NOZZLE

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1 Claim. (Cl. 299—120)

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This invention has for its object to provide an improved liquid fuel burner nozzle of the type in which a main swirl chamber has combined with it a coaxial subsidiary swirl chamber.

The invention comprises the combination with a body part, of an end piece having formed therein a conical swirl chamber, the latter having a discharge orifice at its smaller end, a disc in contact with the rear surface of the said piece and having therein one or more tangential passages leading to the swirl chamber from a supply passage in the body part, a second piece in contact with the said disc having formed therein a subsidiary swirl chamber arranged coaxially with and extending into the main swirl chamber, and having a discharge orifice at its smaller end, and a second disc in contact with the second piece and an adjacent surface of the body part and having therein one or more tangential passages leading to the subsidiary swirl chamber from supply passages.

In the accompanying drawings:

Figure 1 is a sectional side elevation and Figure 2 a cross section on the line 2—2 Figure 1, illustrating one embodiment of the invention.

Referring to the drawings, there is employed any convenient hollow body part *a*. To one end of this is secured an end piece *b* in the centre of which is formed the main swirl chamber *c* of conical form having a discharge orifice at its smaller end. In contact with the flat rear face of this end piece *b* is placed a disc *d* having therein a central hole *e* of not less diameter than the larger end of the said swirl chamber *c*, and one or more tangential passages *f*. At the end, remote from the central hole *e*, the passages *f* communicate through holes *g* (and corresponding holes in intermediate parts to be hereinafter described) with passages *h* leading to a main fuel supply passage *i* in the body part.

In contact with the rear side of the said disc *d* is placed another piece *j* from the front face of which extends a conical boss *k* which enters and occupies a central region in the larger end of the main swirl chamber *c*. The said boss is hollow and is shaped internally to provide a subsidiary swirl chamber *m* of conical form having an outlet orifice at its smaller end. Between and in contact with the rear face of the piece *j* and an adjacent face on the body part *a* is inserted a disc *n* having a central hole *o* of not less diameter than the larger end of the subsidiary swirl chamber *m*, and one or more tangential passages *p* leading to this hole from subsidiary fuel supply passages *q* in the body part through holes *r*.

The elements above described are secured in

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position on the body part in any convenient manner.

The mode of use of the nozzle is the same as that of other nozzles of similar type, the main supply of fuel being discharged through the main swirl chamber *c*, and a subsidiary or pilot discharge being supplied through the subsidiary swirl chamber *m* when the main chamber is not in use.

By this invention high efficiency of performance in nozzles of the kind specified can be obtained with simplicity of construction.

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

A liquid fuel burner nozzle of the type specified, comprising in combination a body having formed therein at least two fuel supply passages, an end plate spaced from one end of the body and formed with a centrally arranged main conical swirl chamber which has a discharge orifice at its smaller end, a second plate situated between the said end of the body and the end plate and formed with a subsidiary conical swirl chamber which is coaxial with and extends into the main swirl chamber, and which has a discharge orifice at its smaller end, an annular disc arranged between and in contact with adjacent faces of the body and the second plate and formed with at least one tangential slot having an open end in communication with the subsidiary swirl chamber, the other end of the slot being in communication with one of the fuel supply passages, and a second annular disc situated between the two plates and formed with at least one tangential slot having an open end in communication with the main swirl chamber, the first mentioned disc and the second plate being formed with registering openings which are arranged to effect communication between the other end of the last mentioned slot and the other of the fuel supply passages.

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