

P. S. TICE.
CARBURETER.

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1,166,560.

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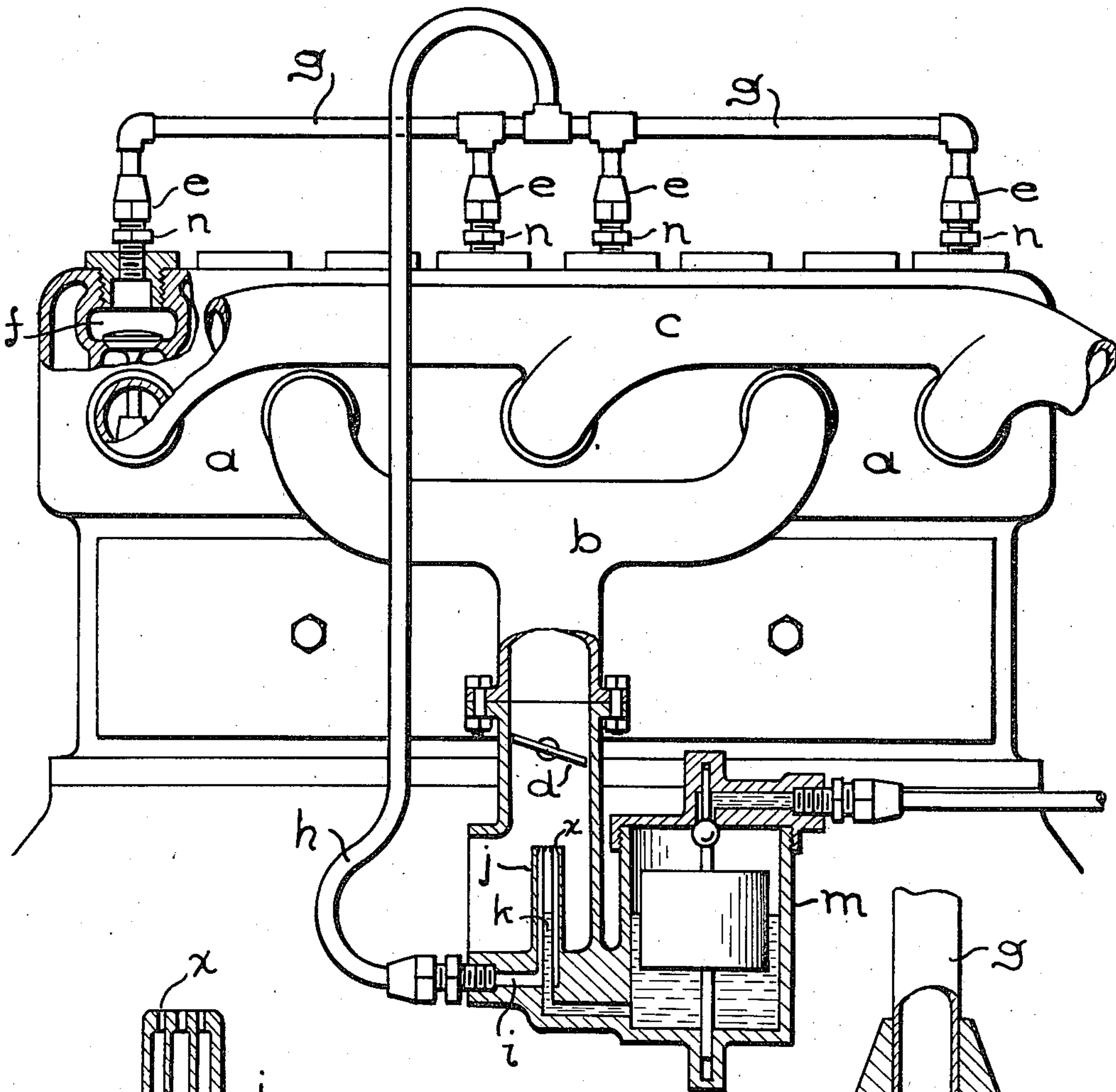


Fig. 1

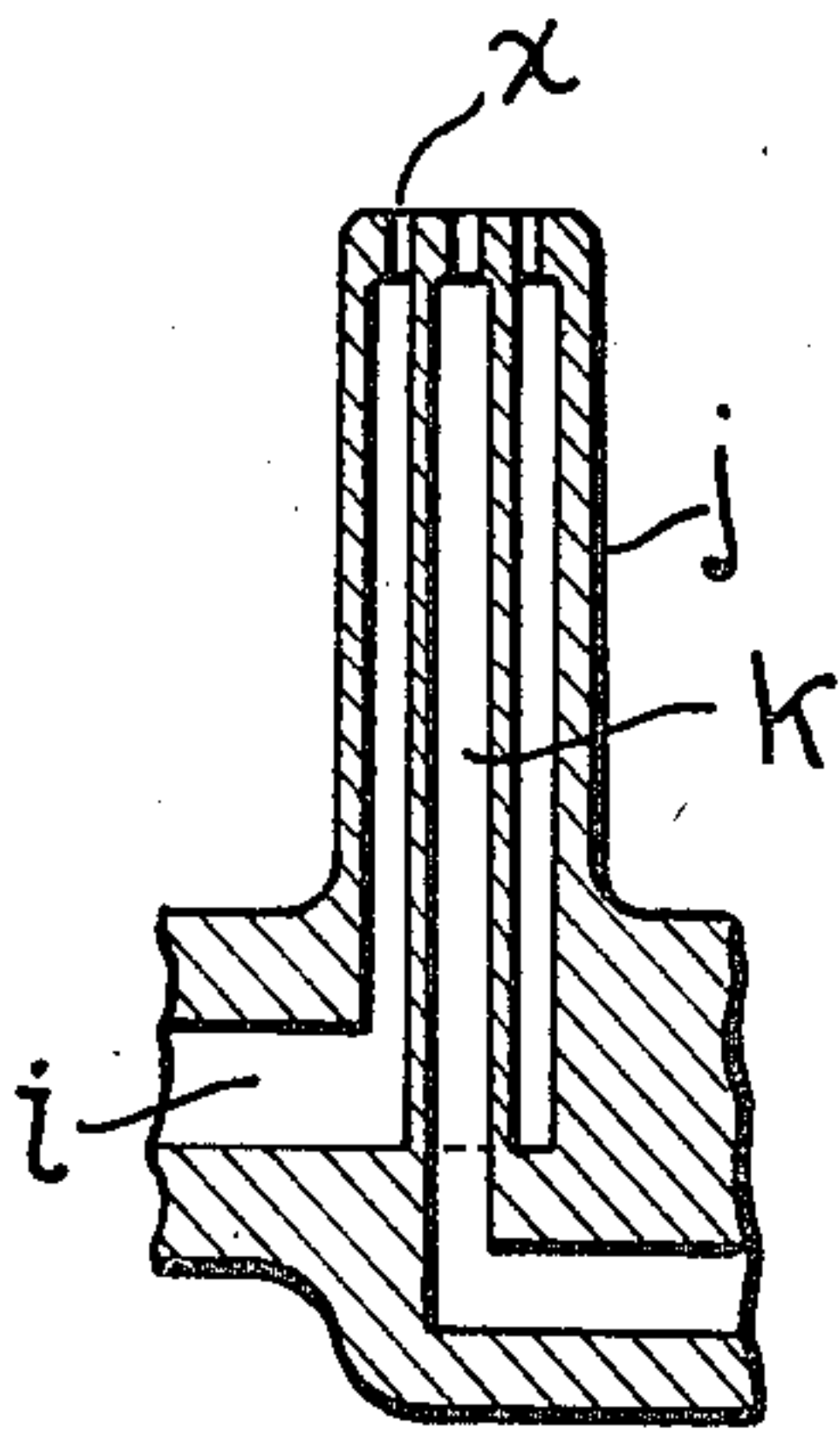


Fig. 2

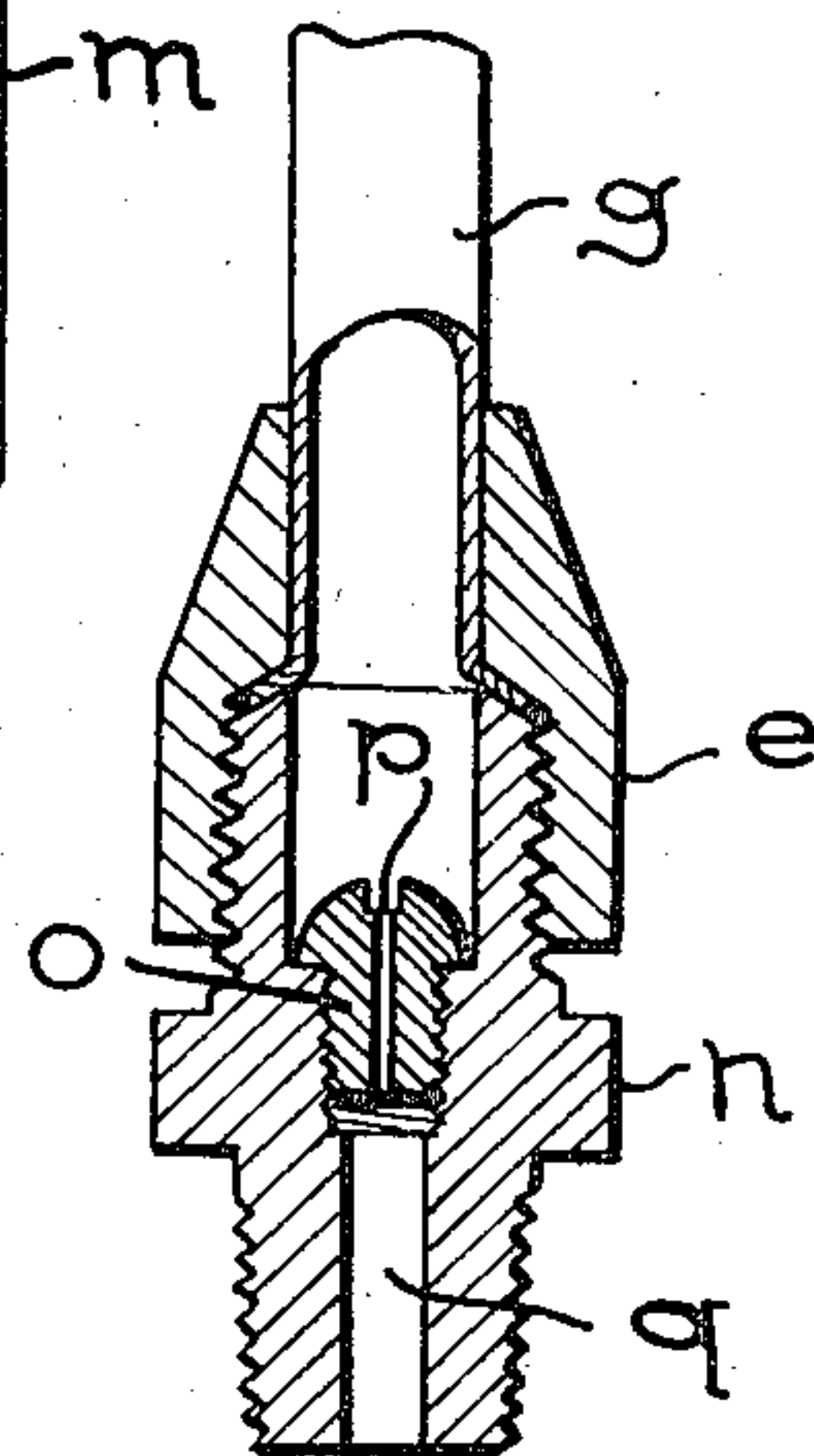


Fig. 3

WITNESSES:

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CARBURETER.

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To all whom it may concern:

Be it known that I, PERCIVAL S. TICE, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Carbureters, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to means for supplying liquid fuel to internal combustion engines.

In the accompanying drawings: Figure 1, is a side elevation of a portion of a multi-cylinder internal combustion engine with the apparatus embodying my invention attached thereto. Fig. 2, is a detail sectional view of the spraying nozzle, and Fig. 3, is a detail sectional view of the pressure supplying attachment.

a, a represent the cylinders of a four cylinder *en bloc* engine.

b, is an intake pipe common to all the engines.

c, is the manifold exhaust pipe.

d, is a throttle valve in the pipe *b*. There is a plug *n* passing through an aperture in the head of each of the four cylinders.

e, e, e, e, are unions connecting a pipe *g* with the four plugs *n*.

q, is an aperture formed through each of the plugs *n* and communicating with the combustion chamber *f* of each of the cylinders.

o, is a screw threaded plug in the upper end of the passage *q*.

p, indicates a very small aperture formed through the plug *o* and communicating with the passage *q* and thereby with the combustion chamber *f* of the cylinders.

m, is a reservoir for liquid fuel provided with a usual float apparatus for maintaining a constant level of fluid therein.

k, is a delivery spout through which fluid passes from the reservoir *m*, and is delivered into the intake pipe *b*.

j, is a casing surrounding the spout *k* leaving an annular passage *x* around the upper end of said spout.

h, is a pipe connecting with the pipe *g* at the center thereof and at the lower end connected with a passage *i* communicating with the interior of the casing *j*.

The operation of the above described device is as follows: The passage *p* through the screw plug *o* is always in open communication with the pipe *g* and therefore with the pipe *h* and the interior of the casing *j*. A pressure in the pipe *g* is therefore maintained proportional to the average pressures at any instant in the cylinders and also influenced by the size of the annular passage *x* and the speed of the engine. By the gas under this pressure, when the engine is working, the fuel is sprayed from the spout *k* by the action of the gases issuing in a jet out of the annular passage *x* and this sprayed fuel is taken up by the air passing to the cylinders.

The size of the passage *p* is a matter of design and is proportioned to the engine with which it is to be used. I have used passages ranging in size from that corresponding to a number sixty, to that corresponding to a number eighty drill. This passage being so small it does not interfere with the operation of the engine and at the same time supplies sufficient gas to the casing *j* to effectively spray the fuel. As the speed of the engine varies the spraying action will be varied so that a proper mixture is automatically maintained. The gas forming the jet for spraying the fuel being supplied from the combustion chamber is quite hot and its heat assists the vaporization of the fuel.

What I claim is:—

1. In an internal combustion engine, a working cylinder having a combustion chamber, a conduit for delivering liquid fuel, a passage communicating with said combustion chamber and so located that it shall project a jet of gas past the delivery end of said conduit so as to spray the liquid therefrom, said passage being unobstructed throughout its length and in uninterrupted connection with said combustion chamber by an aperture of such a size that the gas shall be impelled through said passage by a pressure which is the algebraic sum of the pressures in said combustion chamber.

2. In an internal combustion engine, the combination of a plurality of cylinders, each of said cylinders having a combustion chamber, a manifold, means for placing said manifold in uninterrupted connection with the combustion chamber of each of said cylinders, a conduit for liquid fuel and a passage continuously open throughout its length leading from said

- manifold and so located that it shall project a jet of gas past the delivery end of said conduit so as to spray the liquid fuel from said conduit, the connection between said passage and combustion chamber being such that the gases shall be impelled through said passage by a pressure which is the algebraic sum of the pressures in the combustion chamber.
- 10 3. In an internal combustion engine, a working cylinder having a combustion chamber, a conduit for delivering liquid fuel, a passage communicating with said combustion chamber and so located that it shall project a jet of gas past the delivery end of said conduit so as to spray the liquid therefrom, said passage being unobstructed throughout its length and in uninterrupted connection with said combustion chamber, the opening from said passage into said combustion chamber and the opening from said passage through which the jet is delivered having their areas proportioned to each other so that the proper rate of delivery of fuel shall be secured under different conditions of the operation of the engine.
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- In testimony whereof, I sign this specification in the presence of two witnesses.
- PERCIVAL S. TICE.
- Witnesses:
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ELLIOTT J. STODDARD.