

W. W. HAMILL.
LIQUID FUEL SPRAYING DEVICE.
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1,179,912.

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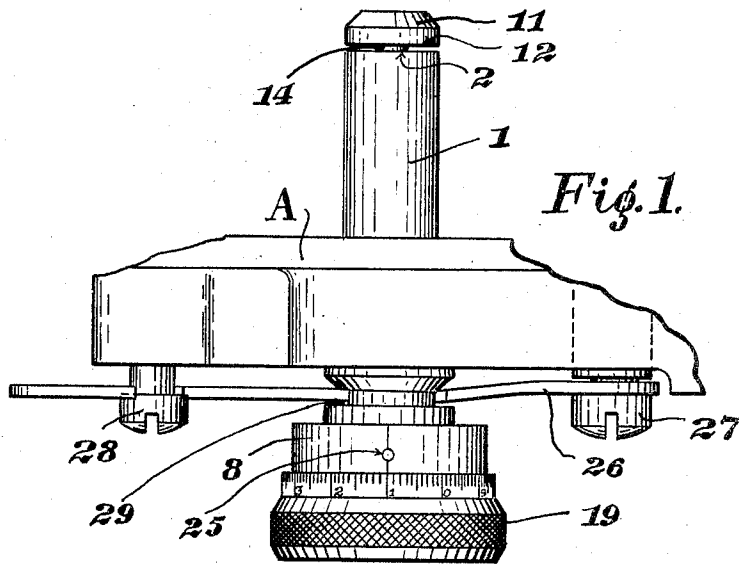


Fig. 1.

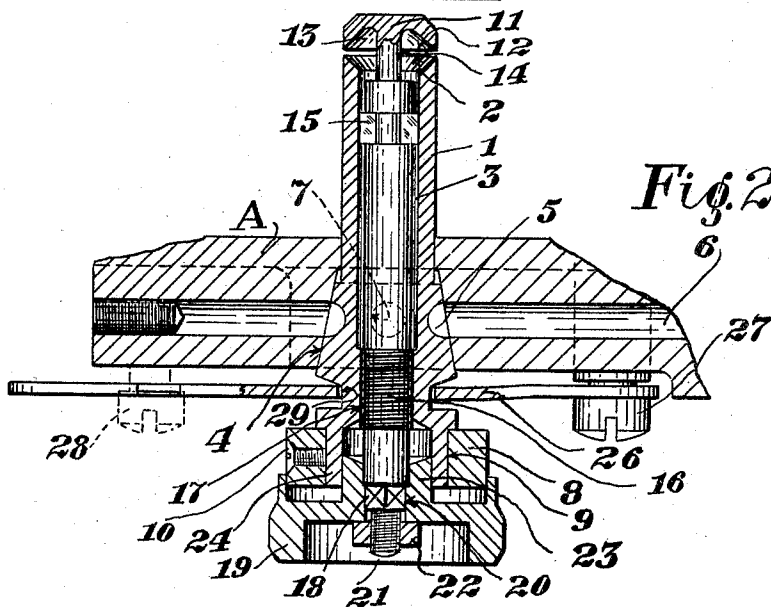


Fig. 2.

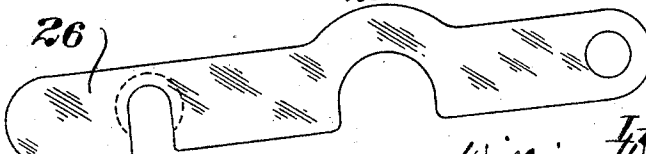


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM WILSON HAMILL, OF BROOMHILL, GLASGOW, SCOTLAND.

LIQUID-FUEL-SPRAYING DEVICE.

1,179,912.

Specification of Letters Patent.

Patented Apr. 18, 1916.

Original application filed September 7, 1911, Serial No. 648,190. Divided and this application filed March 24, 1913. Serial No. 756,326.

To all whom it may concern:

Be it known that I, WILLIAM WILSON HAMILL, a subject of the King of Great Britain, residing at Broomhill, Glasgow, Scotland, have invented certain new and useful Liquid-Fuel-Spraying Devices, of which the following is a specification.

This invention relates to fuel spraying devices adapted for use in connection with vaporizers and carbureters for internal combustion engines and is a sub-division of my co-pending patent application Serial Number 648,190 filed 7th September, 1911.

Under my invention the spraying device is self contained and consists of a tubular nozzle having a spray opening at its upper end covered by a head or cap which is connected to an inner concentric spindle, said nozzle and cap forming therebetween an annular orifice which may be adjusted, and the adjustment noted, with great exactitude by means of a micrometer device arranged in connection with the tubular nozzle and internal spindle.

In order that my invention may be clearly understood I have hereunto appended an explanatory drawing showing, by way of illustration or example, in elevation at Figure 1, in a vertical section at Fig. 2 a preferred form of spraying device constructed in accordance with this invention and fitted in the vaporizer or carbureter casing which is shown broken away. Fig. 3 is a plan view of the lever 26.

Referring now to the drawing, the spraying device consists of a spray nozzle 1 preferably of a tubular formation, and provided, at its upper end, with a circumferential and upwardly projecting knife edge 2 concentric with the axial fluid passage 3 of the nozzle 1. Near the lower end of the nozzle 1 is a conical part 4 adapted to seat rotatably in a corresponding recess in the casing A of the vaporizer or carbureter, said conical part 4 having a circumferential groove 5 communicating with the fluid inlet passage 6 of the vaporizer or carbureter and, by way of one or more radial passages 7, communicating with the axial passage 3 of the nozzle 1.

A collar 8, which fits over a reduced or grooved part 9 on the lower end of the nozzle 1, is provided with a set screw 10 which latter secures the collar to the reduced or grooved part 9 of the nozzle. Surmounting said knife edge 2 is an adjustable head

11 provided with a corresponding but downwardly projecting knife edge 12, said knife edge being, preferably, formed by making the underside of the head with an annular cavity 13 against the wall of which the fluid is adapted to impinge before passing out between the knife edges, thereby absorbing the momentum thereof. The aforesaid head 11 is carried at the end of a spindle 14 passed through the axial passage 3 of the nozzle, said spindle being provided with one or more projections 15 adapted to fit said axial passage and thereby maintain the upper knife edge 12 concentric with and in proper relation to the lower knife edge 2. The lower end of the aforesaid spindle 14 is provided with a very fine screw thread 16 engaging a similarly threaded part 17 in the axial passage of the nozzle and the lower end of said spindle 14 is also provided with a squared part 18 on which is fixed a micrometer wheel 19 by means of a corresponding square part 20 therein.

The end of the spindle 14 is provided with a screw thread 21 with which engages a nut 22 the said nut holding the micrometer wheel 19 in engagement with the square part 18 of the spindle 14. The said micrometer wheel may be formed with a boss 23 adapted to fit in an annular recess 24 in the extended lower extremity of the nozzle 1 so as to form a packing gland and thereby prevent leakage of any fluid which may have worked through between the threaded part 17 of the axial passage and the screwed part 16 of the spindle.

The micrometer wheel is suitably graduated and its upper flange works over the collar 8 which is provided with a zero mark at 25. The zero mark can be set at different positions to compensate for wear or damage by slackening the screw 10 and turning the collar 8 and thereafter again tightening the screw.

The micrometer wheel, after adjustment, may be prevented from rotating by tightening the nut 22.

By means of the micrometer adjustment the area of the annular orifice of the sprayer can be regulated with great exactitude.

The sprayer device is adapted to be inserted from the underside of the casing of the vaporizer or carbureter and may be held in place by means of a spring arm 26 pivotally mounted on a set pin 27 and having a

recess at its outer end adapted to engage a second pin 28 and a second recess adapted to engage a reduced part 29 on the sprayer device and by simply depressing slightly the outer end of the arm 26 and turning same back on its pivot pin 27 the sprayer is released and may drop, or be withdrawn, from the vaporizer or carbureter.

The knife edges 2 and 12 cause very little fluid friction and prevent foreign matter lodging in the opening and tending to choke the same.

Having now fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. A liquid fuel spraying device for carbureters comprising, in combination, an outer part with a fuel outlet at its end, an inner part secured in said outer part and having means adapted to close against said fuel outlet, means for moving said inner part longitudinally with respect to the outer part and means for moving said inner part angularly with reference to said outer part, the parts of the spraying device constituting a unitary structure capable of being fitted in and removed from the carbureter casing.

2. A liquid fuel spraying device for carbureters comprising, in combination, an outer part with a fuel outlet at its end, an inner part secured in said outer part and having means adapted to close against said fuel outlet, means for moving said inner part longitudinally with respect to the outer part, means for moving said inner part angularly with reference to said outer part and means for noting the extent of the angular movement, the parts of the spraying device constituting a unitary structure capable of being fitted in and removed from the carbureter casing.

3. A liquid fuel spraying device for carbureters comprising, in combination, an outer part with a fuel outlet at its end, an inner part secured in said outer part and having means adapted to close against said fuel outlet, means for moving said inner part longitudinally with respect to the outer part, means for moving said inner part angularly with reference to said outer part and rotatable means for indicating the extent of the angular movement, the parts of the spraying device constituting a unitary structure capable of being fitted in and removed from the carbureter casing.

4. A liquid fuel spraying device for carbureters comprising, in combination, an outer part with a fuel outlet at its end, an inner part secured in said outer part and having means adapted to close against said fuel outlet, means for moving said inner part longitudinally with respect to the outer part, means for moving said inner part an-

gularly with reference to said outer part and means mounted on said inner part and movable therewith and also movable on said outer part for indicating the extent of the angular movement, the parts of the spraying device constituting a unitary structure capable of being fitted in and removed from the carbureter casing.

5. A liquid fuel spraying device for carbureters comprising, in combination, an outer part, an inner part, means for moving the inner part angularly in and also longitudinally of said outer part so as to leave a circumferential opening between said parts for the escape of the fuel radially, the parts of the spraying device constituting a unitary structure capable of being fitted in and removed from the carbureter casing.

6. A liquid fuel spraying device for carbureters comprising, in combination, an outer part, an inner part, means for moving the inner part angularly in and also longitudinally of said outer part so as to leave a circumferential opening between said parts for the escape of the fuel radially and means for indicating the amount of said rotatable movement, the parts of the spraying device constituting a unitary structure capable of being fitted in and removed from the carbureter casing.

7. A liquid fuel spraying device for carbureters comprising, in combination, a casing member, a sprayer comprising as a unitary structure an outer member and an inner member, the outer member being push jointed into said casing member, means for moving said inner member longitudinally and angularly of said outer member, said inner and outer members being shaped to leave an annular and circumferential fuel outlet therebetween and means for holding the sprayer removably in position in the casing member.

8. A liquid fuel spraying device comprising, in combination, a casing member, a sprayer comprising as a unitary structure an outer member and an inner member, the outer member being push jointed into said casing member, means for moving said inner member longitudinally and angularly of said outer member, said inner and outer members being shaped to leave an annular and circumferential fuel outlet therebetween, means for indicating the extent of the angular movement of the inner member with respect to the outer member and means for holding the sprayer removably in position in the casing member.

9. A liquid fuel spraying device comprising, in combination, a casing member, a sprayer comprising as a unitary structure an outer member with upwardly and outwardly tapered circular orifice at its end and an inner member with downwardly and

outwardly tapered cap at its end, the outer member being push jointed into said casing member, means for moving said inner member longitudinally and angularly of said outer member, said inner and outer members being shaped to leave an annular and circumferential fuel outlet therebetween and means for holding the sprayer removably in position in the casing member.

10 10. A liquid fuel spraying device comprising, in combination, a casing member, a sprayer comprising as a unitary structure an outer member partly of cylindrical and partly of conical formation exteriorly and
15 an inner member, the outer member being push jointed into said casing member, means for moving said inner member longitudinally and angularly of said outer member said inner and outer members being shaped
20 to leave an annular and circumferential fuel outlet therebetween and means for holding the sprayer removably in position in the casing member.

11. A liquid fuel spraying device comprising, in combination, a casing member, a sprayer comprising as a unitary structure an outer member partly of cylindrical and partly of conical formation exteriorly and
25 an inner member of varying diameter, the outer member being push jointed into said casing member, means for moving said inner member longitudinally and angularly of said outer member said inner and outer members being shaped to leave an annular
30 and circumferential fuel outlet therebetween.

12. A liquid fuel spraying device comprising, in combination, a casing member, a sprayer push jointed into said casing member and comprising as a unitary structure an outer member rotatable in the casing member and an inner member screwed into said
40 outer member, means for rotating said inner member, a circular opening at the end of said outer member, a cap on said inner member above the opening of the outer member and a circumferential knife edge on the underside of the cap and on the opening
45 of the outer member.

13. A liquid fuel spraying device comprising, in combination, a casing member, a sprayer comprising as a unitary structure an outer member and an inner member, the outer member being push jointed into said
50 casing member, means for moving said inner member longitudinally and angularly of said outer member said inner and outer members being shaped to leave an annular and circumferential fuel outlet therebetween and
55 means for holding the sprayer removably in position in the casing member.

14. The combination with a fuel conduit casing member having an opening therein, of a fuel spraying device push jointed in said member and having an outer tubular
65 part with fuel outlet, an inner adjustable part concentric therewith and having means adapted to close said outlet, means for adjusting the inner part relatively to the outer part, means whereby the adjustment of the
70 inner part may be noted and pivoted means for holding the spraying device removably in position and pressing same tightly in place.

15. The combination with a fuel conduit casing member having an opening therein, of a fuel spraying device push jointed in said member and having an outer tubular
75 part with fuel outlet, an inner adjustable part concentric therewith and having means adapted to close said outlet, means for adjusting the inner part relatively to the outer part, means whereby the adjustment of the
80 inner part may be noted and pivoted and laterally movable means for holding the spraying device removably in position and pressing same tightly in place.

16. The combination with a fuel conduit casing member having an opening therein, of a fuel spraying device push jointed in said
90 member and having an outer tubular part with fuel outlet, an inner adjustable part concentric therewith and having means adapted to close said outlet, means for adjusting the inner part relatively to the outer
95 part, means whereby the adjustment of the inner part may be noted, and pivoted and laterally movable locking means for holding the spraying device removably in position and pressing same tightly in place.

17. The combination with a fuel conduit casing member having an opening therein, of a fuel spraying device push jointed into said member and having an outer tubular
100 part with fuel outlet and having a circumferential reduced part, an inner adjustable part concentric therewith and having means adapted to close said outlet, means for adjusting the inner part relatively to the
105 outer part, means whereby the adjustment of the inner part may be noted and locking means pivoted on the casing member and engaging the reduced part on the spraying device to hold said spraying device removably in position and press same tightly in
110 place.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM WILSON HAMILL.

Witnesses:

W. G. PEARSON,
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