

No. 721,238.

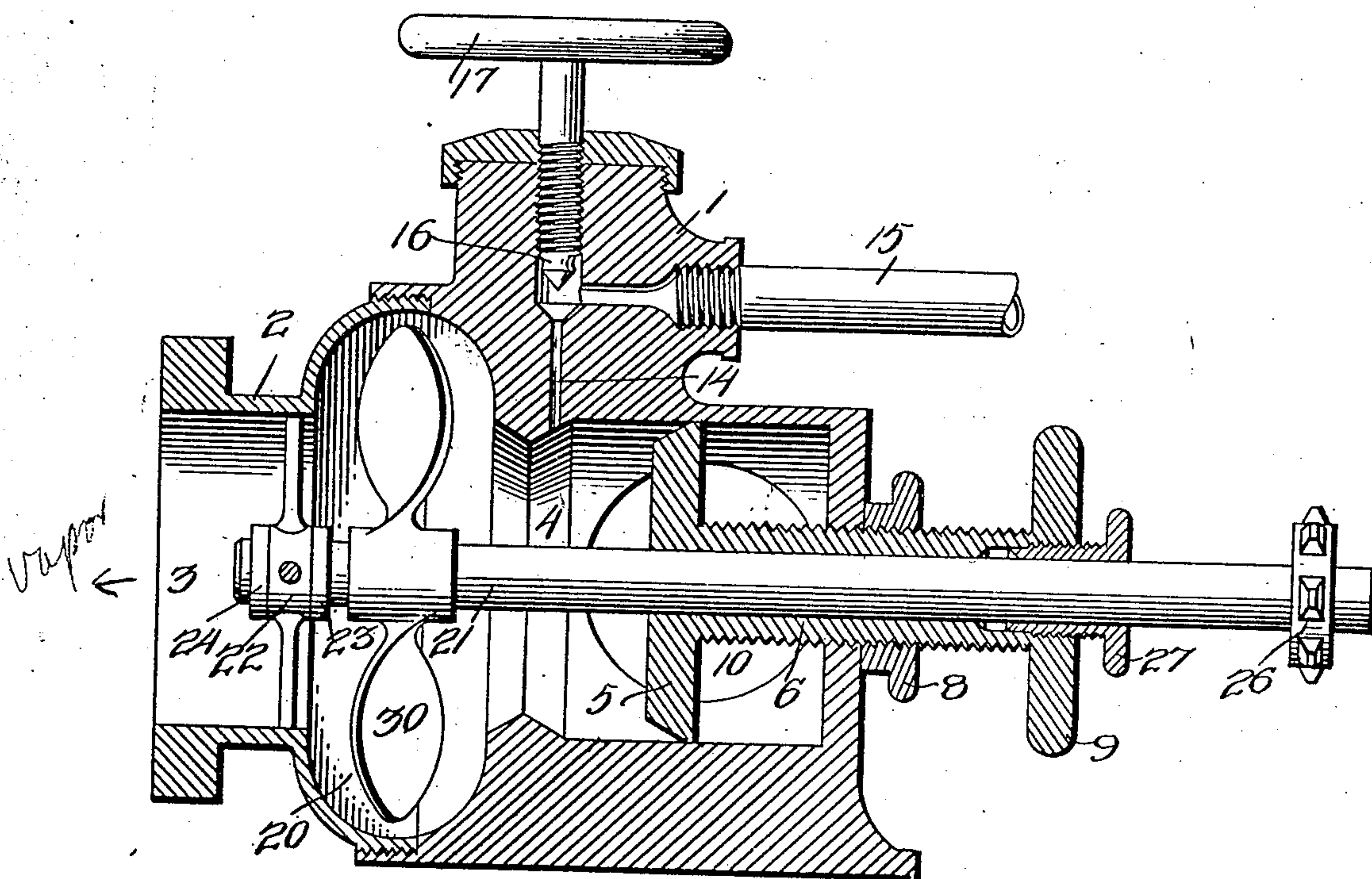
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E. H. ROUSSEAU.

VAPOR FEEDER AND THROTTLE FOR GAS ENGINES.

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NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN H. ROUSSEAU, OF PORT EADS, LOUISIANA.

VAPOR FEEDER AND THROTTLE FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 721,238, dated February 24, 1903.

Application filed August 29, 1902. Serial No. 121,526. (No model.)

To all whom it may concern:

Be it known that I, EDWIN H. ROUSSEAU, a citizen of the United States, residing at Port Eads, Plaquemines parish, and State of Louisiana, have invented a new and useful Vapor Feeder and Throttle for Gas-Engines, of which the following is a specification.

The invention relates to certain improvements in gas-engines of that general class in which the explosive mixture is forced into the cylinder as the exploded charge is being exhausted therefrom, and is particularly applicable to the ordinary two-cycle engine in which the exploded charge exhausts at the end of the working stroke and a fresh explosive compound is forced into the cylinder under slight pressure and compressed on the return stroke of the piston.

The principal object of the invention is to provide a simple form of mixer for combining a fluid hydrocarbon with air and for intimately mixing the same so that the air will be thoroughly saturated and the explosive vapor of uniform density before it is forced into the explosion-chamber, a further object being to employ the agitating and mixing device as a means for forcing the vapor into the cylinder and assist in expelling the exploded charge from the cylinder of the engine.

A still further object of the invention is to arrange the vaporizing mechanism in connection with a single throttle-valve which may be closed to entirely shut off the supply of explosive mixture to the engine and which may be opened to a greater or less extent to regulate the quantity of air mixed with the gasolene or other hydrocarbon.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawing, and particularly pointed out in the appended claims.

The accompanying drawing represents in sectional elevation a vapor mixing and feeding device constructed in accordance with my invention.

At a convenient point on or adjacent to the cylinder of the engine is bolted a casing comprising two members 1 and 2, suitably connected together, the section 2 of the casing being provided with an outlet 3 in communi-

cation with the cylinder inlet-port. Within the section 1 of the casing is a valve-seat 4 for the reception of a valve 5, having a hollow externally-threaded stem 6, adapted to a threaded opening in the casing, a lock-nut 8 being employed in order to confine the valve-stem in adjusted position. The stem of the valve is provided with an operating-handle, in the form of a ring or flange 9, for convenience in adjusting the position of said valve. In one or in both sides of the section 1 of the casing are ports 10 for the admission of air, which may be drawn directly from the outer air or may be passed through a suitable feeding device in order that it may be better combined with the gasolene or other hydrocarbon with which it is to be mixed, the quantity of air admitted being governed by the extent to which the valve is moved from its seat and the area of the inlet-ports 10 exposed between the valve-seat and the inner face of the valve. In the casing is a gasolene-inlet passage 14, communicating through a pipe 15 with a gasolene-tank, the passage terminating at the valve-seat 4, so that when the valve 5 is fully closed the supply of gasolene will be cut off. To regulate the quantity of gasolene admitted, I employ a needle-valve 16, having a suitable operating-handle 17.

Within the sections 1 and 2 of the casing is formed a cylindrical mixing-chamber 20, through which extends a shaft 21, mounted at one end in a bearing 22, carried by a number of spider-arms, the shaft being provided with a fixed collar 23 at one side of the bearing and at the opposite side being provided with a removable collar or ring 24, held in position by a clamping-nut. This shaft extends through the hollow valve-stem 6 and is provided at its outer end with a sprocket or gear wheel 26, to which motion is transmitted from the crank-shaft to the engine or from any other suitable source of power. To prevent leakage, the outer end of the shaft passes through a stuffing-box formed at the end of the hollow stem 6 and provided with a gland-nut 27 of ordinary construction. At a point within the chamber 20 the shaft 21 carries a fan 30, which is rotated by the shaft and draws within the chamber quantities of gasolene or other hydrocarbon and air. These elements forming the explosive compound are

thoroughly intermingled within the chamber and a vapor of uniform density is formed, the vapor being driven through the port leading to the explosion-chamber of the engine.

- 5 The fan may be revolved by any desired mechanism, and the quantity of gasolene admitted may be accurately regulated by the needle-valve 16, while the valve 5 governs the admission of air to regulate the quality and
10 quantity of the vapor. An advantage gained by the employment of this device is that when the needle-valve is once properly adjusted it need not be moved when the engine is stopped, as the valve 5 when seated shuts off both the
15 supply of gasolene and of air.

While the construction herein described, and illustrated in the accompanying drawing, is the preferred form of the device, it is obvious that various changes in the form,
20 proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, what
25 I claim is—

1. A vapor feeding and mixing device, comprising a fan-containing chamber having an inlet for the admission of air and liquid hydrocarbon and an outlet for vapor, a revolvable
30 shaft, and a fan mounted on said shaft and acting to draw the vapor-forming elements into the chamber and to intermingle said elements and force the resultant vapor from the chamber.

- 35 2. In a device of the class specified, a chamber, a revolvable fan mounted therein, a casing having inlet-ports for the admission of air and liquid hydrocarbon, an adjustable valve for controlling the admission of both
40 the air and the hydrocarbon and for regulating the area of said air-entrance ports and the quantity of air admitted, and an auxiliary valve for regulating the quantity of hydrocarbon admitted to the casing.

- 45 3. In a device of the class specified, a casing having air and hydrocarbon inlet ports, an adjustable valve disposed within the casing and provided with a hollow stem, a mixing-fan, a shaft carrying the fan and extending
50 ing through the hollow stem to a point outside the casing, and means for revolving said shaft.

4. In a device of the class specified, a cas-

ing having ports for the admission of air and hydrocarbon, a controlling-valve adapted to
55 a seat within the casing, a hollow stem carrying said valve, a stuffing-box in the valve-stem, a revolvable shaft extending through the stuffing-box to a point within the casing, and a mixing-fan carried by said shaft. 60

5. In a device of the class specified, a casing having an internal valve-seat, a hydrocarbon-inlet passage terminating at the valve-seat, a valve adapted to the seat and provided
65 with a hollow externally-threaded stem, an air-inlet port at the side of the casing and of which the available area is controlled by the position of the valve, a stuffing-box in the hollow stem, a mixing-chamber, a shaft extending through the mixing-chamber and the
70 stuffing-box, means for revolving the shaft, and a fan disposed on said shaft at a point within the mixing-chamber.

6. In a device of the class specified, a casing formed of two connected sections, an internal
75 valve-seat in one of the sections, a passage formed in the casing for the entrance of hydrocarbon, said passage having a terminal port at the valve-seat, a regulating-valve in the hydrocarbon-passage, a valve adapted to
80 said valve-seat, a hollow externally-threaded valve-stem carrying said valve and adapted to a threaded opening in the casing, a jam-nut adapted to the threaded stem and serving to lock the latter in adjusted position, a
85 stuffing-box formed at the outer end of the hollow stem, a cylindrical mixing-chamber of which a part is formed by each of the sections of the casing and one of said sections being provided with a vapor-escape passage,
90 a spider having a central bearing, a shaft adapted to the bearing and extending through the hollow valve-stem and its stuffing-box to a point outside the casing, means for revolving the shaft, a mixing-fan mounted on the
95 shaft at a point within the cylindrical mixing-chamber, and an air-inlet port formed in the casing, the available area of said port being controlled by the position of the valve.

In testimony that I claim the foregoing as
100 my own I have hereto affixed my signature in the presence of two witnesses.

EDWIN H. ROUSSEAU.

Witnesses:

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