

J. D. RUSS.
GAS AND AIR MIXER.
APPLICATION FILED AUG. 9, 1912.

1,065,551.

Patented June 24, 1913.

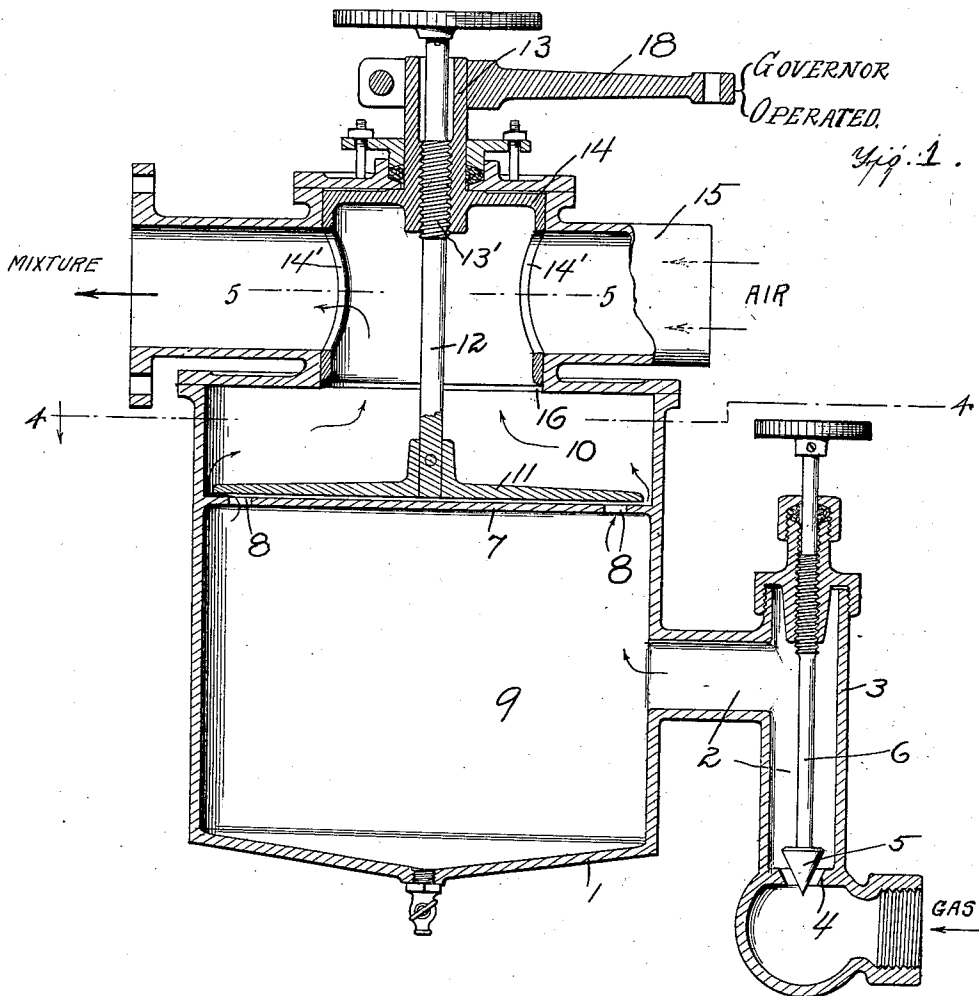
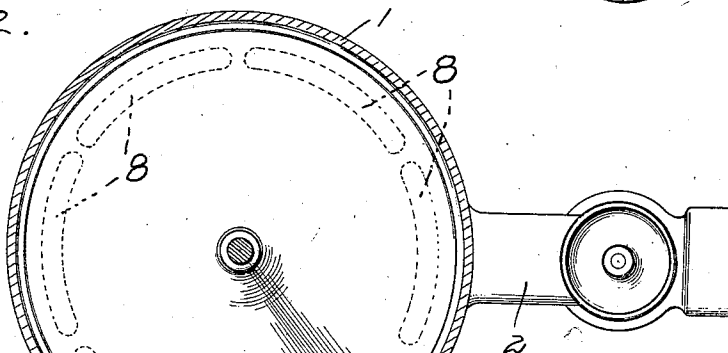


Fig. 2.



WITNESSES

Lt. Schmidt
John Scott

INVENTOR

JOHN D. RUSS

BY *E. J. Rosenberg*
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN D. RUSS, OF SPENCER, WEST VIRGINIA.

GAS AND AIR MIXER.

1,065,551.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed August 9, 1912. Serial No. 714,241.

To all whom it may concern:

Be it known that I, JOHN D. RUSS, a citizen of the United States, residing at Spencer, in the county of Roane and State of West Virginia, have invented new and useful Improvements in Gas and Air Mixers, of which the following is a specification.

My invention relates to engines, and the object is to provide improvements and refinements that will render the engine useful for small isolated electric-light plants.

Specifically, the object is to render such engines steady-running, by providing novel and practical means for mixing and controlling the gas and air entering the explosion-chamber and the crank-case.

I contemplate a mechanism wherein the gas is caused to spread in sheets or streams as it mingles with the air, whereby there is accomplished an intimate association of the gas with the air, and a perfect admixture is, consequently, taken into the explosion-chamber of the engine.

Other objects of improvement will appear as the specification proceeds and the nature of the invention more fully appears.

In the accompanying drawings, forming part of my specification, and in which like reference-characters denote corresponding parts throughout the several views, I have illustrated a form of embodiment of my invention capable of carrying out the underlying principles thereof; and in these drawings:

Figure I is a central vertical section through my air and gas mixer; Fig. II is a horizontal section on the line 4—4, Fig. I, looking downward, or in the direction of the arrow.

Referring, now, in detail to the drawings: 1 designates a fuel-chamber, into which gas is led through a port 2 in a valve-casing 3, having an internal valve-seat 4, engageable by a manually-operable valve 5, having a stem 6. The fuel-chamber 1 is provided, preferably nearer the top than the bottom thereof, with an internal, horizontally-disposed partition 7, having, preferably near its circumference, symmetrically-arranged, arcuate slots 8. It will be noted that the function of the partition 7 is that of a baffle, as the incoming gases strike the under surface of the partition and are caused to spread outward, toward the circumferential

edge of the partition, whence they escape through the arcuate slots 8. It will be seen that the partition or baffle 7 divides the fuel-chamber into a larger, lower compartment 9 and a smaller, upper compartment 10.

11 is a manually-operable imperforate disk-valve disposed in the upper compartment 10, and adapted to control the passage of gas from the lower to the upper compartment. Said valve is connected with a valve-stem 12, having a threaded portion 13' engaging the internally-threaded bore of the stem 13 of a hollow, open-bottomed throttle-valve 14, having oppositely-disposed side ports 14', 14' in the side wall thereof, said valve being situated in an air-tube 15, communicating, through an aperture 16 in the bottom thereof, with the upper compartment 10 of the fuel-chamber 1. The lower portion of the circumferential side wall of the throttle-valve 14 is disposed in said aperture 16, whereby the open bottom of said valve communicates with the upper compartment 10.

The air-tube 15 communicates, at one end thereof, with the explosion-chamber or cylinder 16 of the engine. In the air-tube 15, between the throttle-valve 14 and the working-cylinder or explosion-chamber 16 of the engine, is disposed the usual check-valve 17.

The movements of the throttle-valve 14 are controlled automatically by means of a governor-operated crank 18 fast, at one end thereof, to the upper end of the stem 13 of said valve.

In order to prevent back-firing and also to keep the crank-bearing cool, I admit air, in regulable quantities, into the base or crank-case 22 of the engine, by means of a pipe 23, provided with a check- or flap-valve and a manually-operable valve or throttle 25.

In operation, the gas enters the compartment 9 through the valve-chamber 3 and, striking the baffle 7, is deflected toward the circumferential edge thereof, whence it escapes through the arcuate slots 8 in said baffle. It will be seen that the volume of gas entering the chamber 9 is, by said slots 8, projected into the upper compartment 10 in a plurality of thin streams or sheets, causing an intimate association of the gas with the air and a perfect admixture thereof. In the operation of the mixer, the throttle-valve

14 is actuated automatically through the mechanism above described, to cut off passage through the tube 5 at the proper time.

Having thus fully described my invention, what I claim as new and desire to secure by Letters-Patent of the United States is:

1. In a gas and air mixer, an air-tube, a fuel-chamber communicating, at the top, with said air-tube, a partition dividing said fuel-chamber into two sections, said partition being provided with arcuate slots disposed near the circumferential edge thereof, and an imperforate disk-valve disposed in said fuel-chamber and movable into and out of engagement with said partition to control the passage of gas through said slots.

2. In a gas and air mixer, an air-tube having an opening in its bottom, a fuel-chamber communicating, at the top, with said air-tube through said opening, a hollow, open-bottomed throttle-valve disposed in said air-tube and projecting, at its bottom, into said opening in the bottom of the air-tube, said valve being provided with oppositely-disposed side-ports in the side wall thereof and being provided, also, with an internally-threaded stem, a partition dividing said fuel-chamber into two sections, said partition being provided with arcuate slots disposed near the circumferential edge thereof, and an imperforate disk-valve disposed in said fuel-chamber and movable into and out of engagement with said partition to control the passage of gas through said slots, said

disk-valve being provided with a partially-threaded stem engaging the internally-threaded portion of said throttle-valve.

3. In a gas and air mixer, an air-tube having an opening in its bottom, a fuel-chamber communicating, at the top, with said air-tube through said opening, a hollow, open-bottomed throttle-valve disposed in said air-tube and projecting, at its bottom, into said opening in the bottom of the air-tube, said valve being provided with oppositely-disposed side-ports in the side wall thereof and being provided, also, with an internally-threaded stem, means for automatically actuating said throttle-valve, a partition dividing said fuel-chamber into two sections, said partition being provided with arcuate slots disposed near the circumferential edge thereof, and an imperforate disk-valve disposed in said fuel-chamber and movable into and out of engagement with said partition to control the passage of gas through said slots, said disk-valve being provided with a partially-threaded stem engaging the internally-threaded portion of said throttle-valve.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN D. RUSS.

Witnesses:

JOHN KIRK,
LEAT SMITH.