No. 718,064. PATENTED JAN. 6, 1903.

J. C. WHITE.

VALVE GEAR FOR GAS ENGINES.

APPLICATION FILED MAR. 26, 1902.

NO MODEL.

Fig. 1.

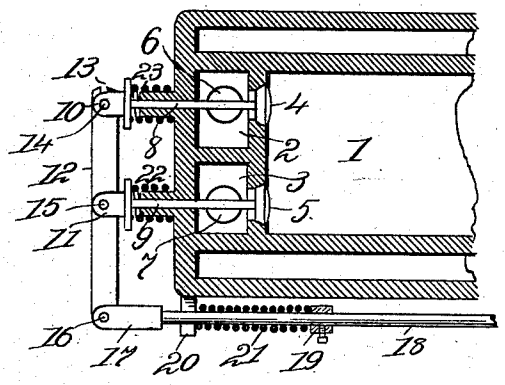


Fig. 2.

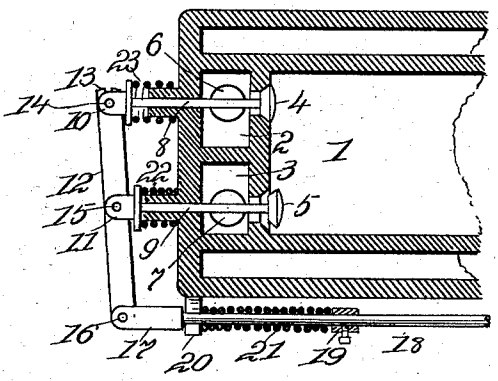
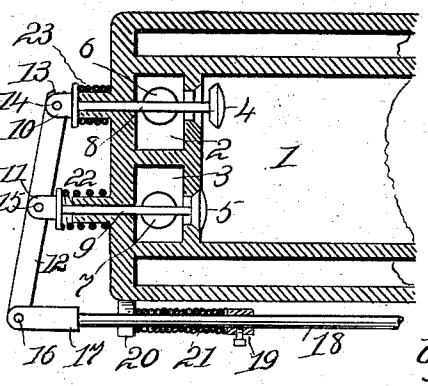


Fig. 3.



Witnesses.
Nora Graham.
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Inventor.
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by L. R. Graham
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UNITED STATES PATENT OFFICE.

JOHN C. WHITE, OF DECATUR, ILLINOIS, ASSIGNOR TO WILLIAM L. OAKES, OF DECATUR, ILLINOIS.

VALVE-GEAR FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 718,064, dated January 6, 1903.

Application filed March 26, 1902. Serial No. 100,133. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. WHITE, of the city of Decatur, county of Macon, and State of Illinois, have invented a certain new and useful Valve-Gear for Gas-Engines, of which the following is a specification.

The object of this invention is to provide improved and simplified means for positively controlling and operating the valves of gas-engines by means of a single lever.

The invention is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a section through an end of the cylinder of a gas-engine, the section plane being horizontal and both valves being shown closed. Fig. 2 is a section similar to that shown in Fig. 1, the inlet-valve being shown open and the outlet-valve closed. Fig. 3 is the same as Fig. 2, except that in the latter figure the outlet is open and the inlet closed.

A fragment of a cylinder is shown at 1, an exhaust-chamber at 2, and an inlet-chamber at 3. The exhaust-valve is shown at 4 and the inlet-valve at 5. An outlet for the exhaust-chamber is shown at 6, and a supply for the inlet-chamber is shown at 7. The stem 8 of the exhaust-valve extends through the outlet-chamber 2 and has sliding bearings in the outer head of the cylinder. The stem 9 of inlet-valve 5 extends through the inlet-chamber 3, and it also has bearings in the outer head of the cylinder. Valve-stem 8 has a forked head 10 on its outer end, and valve-stem 9 has a similar head 11 on its outer end. A lever 12 is pivoted between its ends on a pin 15 in the forked head 11 of valve-stem 9, and one of its ends is slotted, as shown at 13, to engage a pin in head 10 of valve-stem 8. A valve-actuating rod 18 has a forked end 17, that connects pivotally with lever 12 through pin 16. A lateral extension 20 from the cylinder-casing straddles the valve-actuating rod 18. A collar 19 is secured to the rod back of extension 20, and a spring 21 encircles the rod between the extension and the collar. A spring 22 encircles the boss that forms the bearing for valve-stem 9, and it tends to hold the valve closed by exerting pressure outward from the cylinder-head and against a collar in the outer end of the stem. Spring 23 tends to hold valve 4 closed by pressing outward against a collar on the outer end of stem 8.

In a four-stroke cycle-engine valve 5 is held open for the admission of the charge during one stroke of the engine. Both valves are closed, as shown in Fig. 1, during a compression and subsequent explosion of a charge in the cylinder, which occupies two strokes of the engine, and the exhaust-valve is held open, as shown in Fig. 3, during the other stroke.

While the lever 12 is opening one valve it uses the other vavle as a fulcrum. It is a lever of the first class while opening and closing the exhaust-valve. It is a lever of the second class while opening and closing the inlet-valve, and when the reciprocating movements of the rod 18 are uniform in extent the exhaust-valve is opened much wider than the inlet-valve.

The springs 22 and 23 are desirable, for the reason that they hold the valves seated and prevent dancing thereof. They are desirable but not indispensable elements. Of the two springs, 23 is the most important, for the reason that the stem of the exhaust-valve is more likely to become heated and stick in its bearings than is the stem of the inlet-valve.

The spring 21 is intended to move the actuated rod 18 in one direction when such rod is thrown positively in one direction only. When the rod is moved positively in both directions, the spring 21 is not needed.

I claim—

1. In a valve-gearing for engines, the combination of an inlet-valve, an exhaust-valve, a lever pivoted only to said valves, to one valve at a point between its ends and to the other valve at one end, and actuating means applied to the other end of the lever.

2. In a valve-gearing for engines, the combination of an inlet-valve, an exhaust-valve, a lever pivoted only to said valves, at one end with the exhaust-valve and between its ends with the inlet-valve, and valve-actuating means applied to the other end of the lever.

3. In a valve-gearing for engines, the combination of an inlet-valve, an exhaust-valve,

a lever pivoted only to said valves, at one end with the stem of the exhaust-valve and between its ends with the stem of the inlet-valve, valve-actuating means applied to the other end of the lever, and a spring tending to hold the exhaust-valve closed.

4. In a valve-gear for engines, the combination of an inlet-valve, an exhaust-valve, a lever pivoted only to said valves, at one end with the exhaust-valve and between its ends with the inlet-valve, valve-actuating means applied to the other end of the lever, and springs tending to hold the valves closed.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

JOHN C. WHITE.

Witnesses:
WM. L. OAKES,
GEO. R. OAKES.