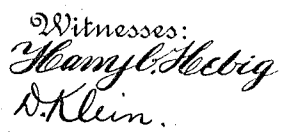


1,063,897.

2 SHEETS—SHEET 1.



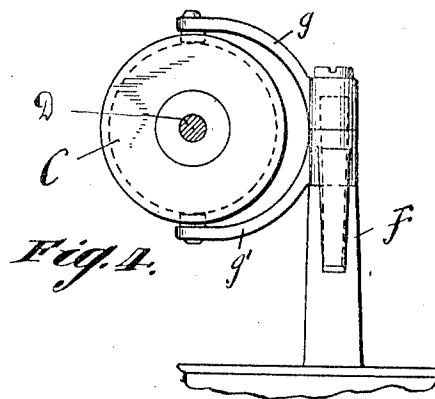
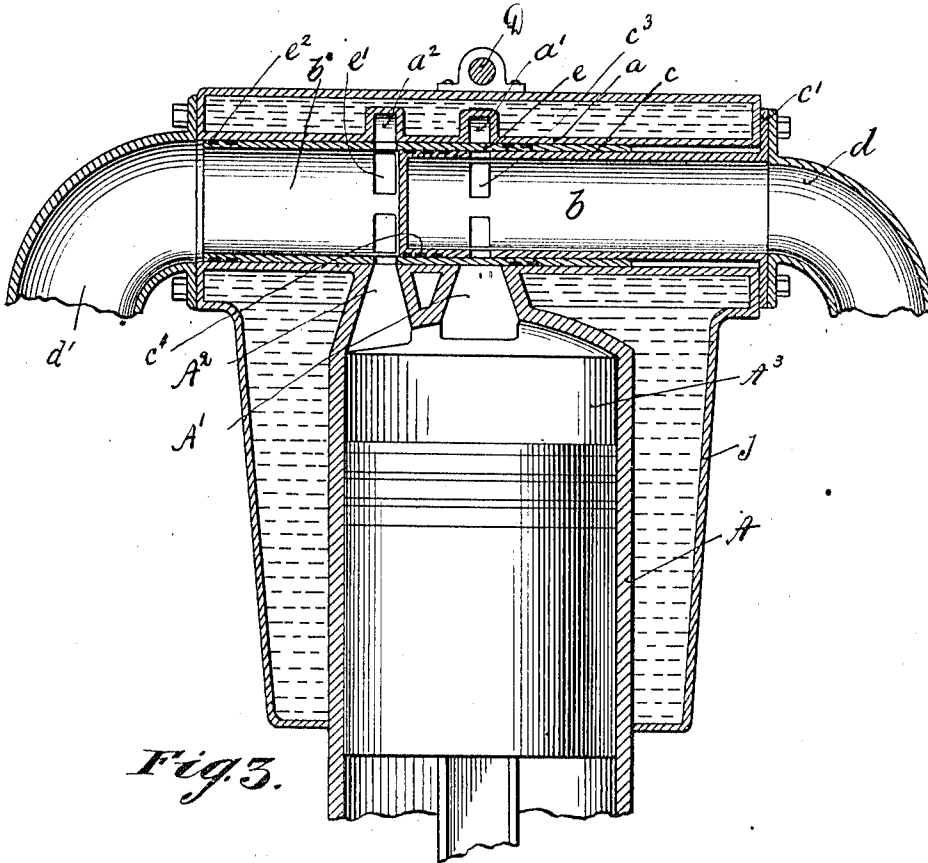
Inventor
Oscar Freier
By an Attorney
Max. Drachman

O. TREIER.
ENGINE VALVE MECHANISM.
APPLICATION FILED MAR. 23, 1912.

1,063,897.

Patented June 3, 1913.

2 SHEETS—SHEET 2.



Witnesses:
Kamp & Hebig
A. Klein.

Inventor
Oscar Treier
By *m* Attorney
Max & Dr. Dr. Dr.

UNITED STATES PATENT OFFICE.

OSCAR TREIER, OF NEW YORK, N. Y.

ENGINE VALVE MECHANISM.

1,063,897.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed March 23, 1912; Serial No. 685,896.

To all whom it may concern:

Be it known that I, OSCAR TREIER, a citizen of the Republic of Switzerland, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Engine Valve Mechanisms, of which the following is a specification.

The present invention relates to valves and has for its object to provide a new and improved valve mechanism more especially designed for use in internal combustion engines and arranged to insure proper opening and closing of the admission and exhaust valves.

A practical embodiment of my invention is represented in the accompanying drawing forming a part of this specification and in which similar reference letters indicate corresponding parts.

Figure 1 is a top plan of a duplex engine and a longitudinal section of the valves thereof; Fig. 2 is a section on line 2--2 of Fig. 1; Fig. 3 is a section on line 3--3 of Fig. 1, and Fig. 4 is a side elevation of the valve operating means.

With reference to the drawing each of the engine cylinders A has the admission and the exhaust passages A', A² arranged adjacent to one another at one end of the working chamber A². Extending transversely to the said passages and to the cylinder is the valve casing a which comprises two compartments adapted to be tightly closed against one another. The valve casing is of cylindrical cross section and is divided into two compartments b, b' by a concentrically interposed tubular body c, one of said compartments, the inlet, being the interior of the said tubular body c and the other, the exhaust, being the interior of that portion of the valve casing which lies to the left of said tubular body. The latter extends longitudinally of the chamber a and terminates at an intermediate point thereof. At its outer end, it has a flange c' which overlaps one of the outer ends of the chamber a and forms a tight closure therefor and at its inner end it has a wall c² whereby the compartment b is tightly closed against the compartment b'. The outer open end of the compartment b is connected to the motive agent supply pipe d, while the opposite end of the compartment b' is connected to a pipe d' serving as exhaust. The casing a is provided with peripheral pas-

sages or flues a', a² arranged in alinement with the admission and the exhaust passages A', A² respectively and the compartment b has peripheral openings c³ arranged in alinement with the admission passage A' of the engine cylinder and consequently also with the passage a' of the casing a.

The valve c is a hollow cylindrical body, which is slidably arranged in the said valve casing a bearing against the inner surface of the latter and the outer surface of the inner tubular body c, suitable packing rings c² and c⁴ being provided between the bearing surfaces. This hollow valve is formed with circumferential openings c' which, as the valve reciprocates, are alternately brought into communication with the passage a' through the openings c³ of the compartment b and the passage a². When the hollow valve c communicates with the passage a' as shown in Fig. 1, the exhaust passage A² is open, while the admission is closed and vice versa.

J indicates a suitable cooling jacket which envelops the valve chambers and cylinder.

Various means may be employed for operating the hollow valves. In the present example, I have shown the same to consist of a disk C provided with a cam groove C' and mounted on a spindle D extending over the valves, and angular levers of which one arm is in engagement with the cam groove and the other arm is connected to the hollow valve.

With duplex engines it is desired to have the valves operate in such a manner that while in one cylinder there is admission or exhaust period, in the other cylinder compression takes place. To accomplish this, I arrange the angular levers f, g and f', g' on a common fulcrum F projecting from above the valve chambers and arranged centrally between the two cylinders. The levers and the cam groove C' are accordingly shaped to bring about the desired result. The arms f, f' are connected to the valves by means of links h, h'.

What I claim and desire to secure by Letters Patent is:

1. In a valve mechanism for engines, the combination with an engine cylinder, of a valve casing comprising two compartments tightly closed against one another and serving for the passage of the motive agent to and from said cylinder and a hollow valve slidably arranged in said casing and sur-

rounding one of the said compartments to alternately establish communication between one of the compartments and the cylinder and the other compartment and the cylinder.

2. In a valve mechanism for engines, the combination with an engine cylinder having admission and exhaust passages arranged adjacent to one another, of a valve casing comprising two compartments tightly closed against one another and serving for the passage of the motive agent to and from said cylinder and a hollow valve slidably arranged in said casing and surrounding one of said compartments and adapted to alternately establish communication between one of said compartments and the admission chamber and the other compartment and the exhaust chamber of the said cylinder.

3. In a valve mechanism for engines, the combination with an engine cylinder having admission and exhaust passages arranged adjacent to one another, of a valve casing comprising two concentrically interposed compartments tightly closed against one another and serving for the passage of the motive agent to and from said cylinder, a hollow valve slidably arranged in said casing and surrounding one of said two compartments and adapted to alternately establish communication between one of said compartments and the admission chamber and the other compartment and the exhaust chamber of the said cylinder.

4. In a valve mechanism for engines, the combination with an engine cylinder having admission and exhaust passages arranged adjacent to one another, of a valve casing comprising two compartments tightly closed against one another, one of said compartments serving for the passage of the motive power to the said cylinder and having openings in alinement with the admission chamber of the latter, and a hollow valve slidably arranged in said casing and surrounding one of said compartments and having openings adapted to alternately communicate with the said first named openings of the inner compartment and the outer compartment, to alternately establish communication between one of said compartments and the admission chamber and the other compartment and the exhaust chamber of said cylinder.

5. In an engine, the combination with an engine cylinder having an admission and an exhaust passage arranged adjacent to one another at one end of the working chamber

of the said cylinder, of a valve casing extending transversely to said cylinder and said cylinder chambers, said valve casing comprising two compartments tightly closed against one another and serving for the passage of the motive agent to and from the said cylinder and a hollow valve extending longitudinally of and slidably arranged in said casing and surrounding one of said compartments, said valve being adapted to alternately establish communication between one of the said compartments and said admission chamber and the other compartment and said exhaust chamber of the cylinder.

6. In an engine, the combination with an engine cylinder, having an admission and an exhaust passage arranged adjacent to one another at one end of the working chamber of said cylinder, of a valve casing extending transversely to said cylinder and comprising two concentrically interlocated compartments tightly closed against one another, one of said compartments serving for the passage of the motive agent to the said cylinder and having openings arranged in alinement with the admission chamber of the said cylinder and the other compartment serving as an exhaust passage, and a hollow valve slidably arranged in said casing and surrounding one of said compartments and adapted to alternately establish communication between one of the compartments and the admission chamber and the other compartment and the exhaust chamber of the said cylinder.

7. In a duplex engine, the combination with the engine cylinders each having an admission chamber and an exhaust passage arranged adjacent to one another, a valve casing for each cylinder comprising two compartments tightly closed against one another, a hollow valve slidably arranged in said casing and surrounding one of said compartments to alternately establish communication between one of the compartments and the admission chamber and the other compartment and the exhaust chamber and valve controlling means whereby while there is admission or exhaust in one cylinder, there will be compression in the other cylinder and vice versa.

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

OSCAR TREIER.

Witnesses:

H. J. MEYER,
DIEDRICH RIEMSTADT.