

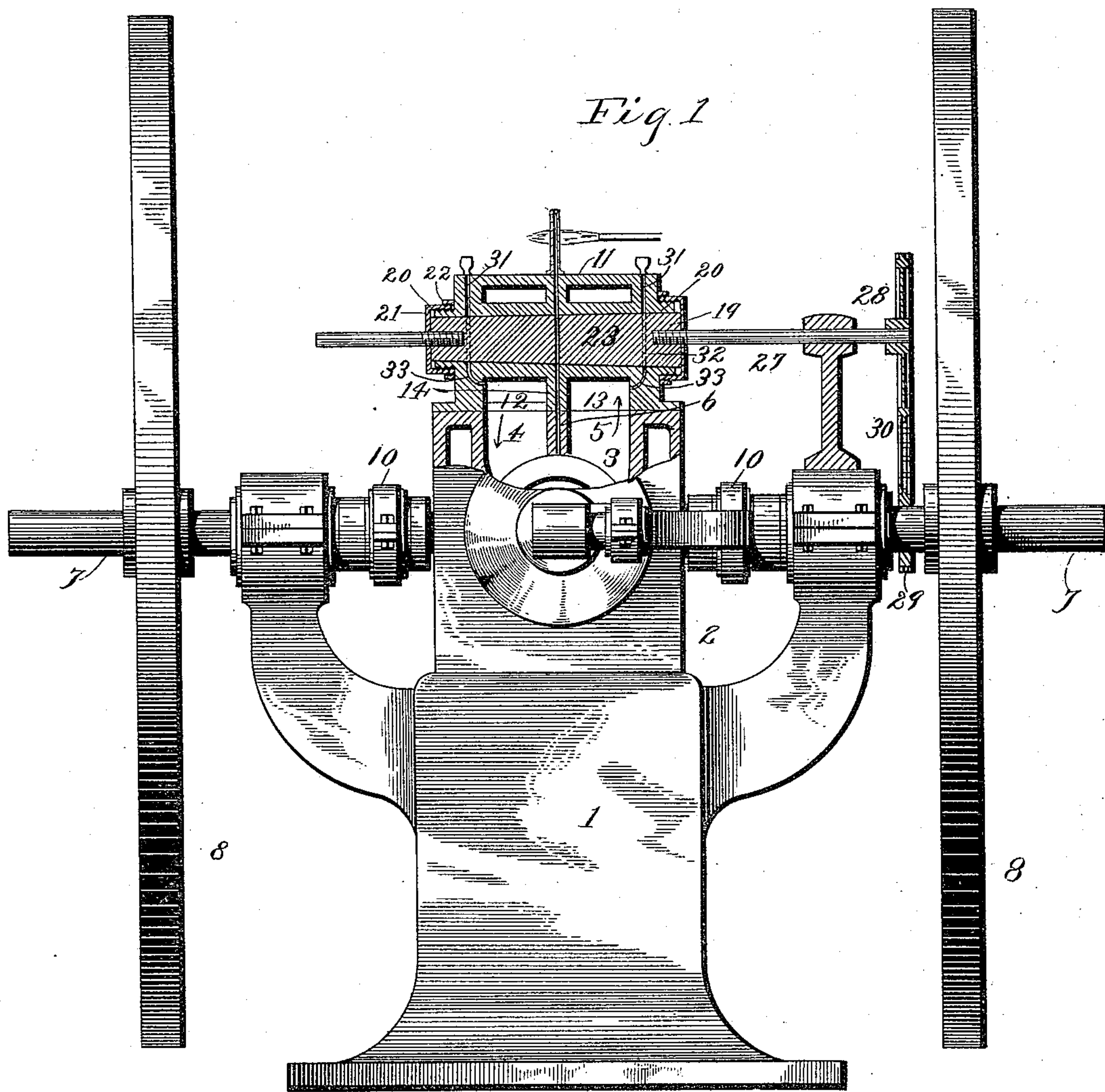
(No Model.)

2 Sheets—Sheet 1.

W. S. SHARPNECK.
GAS ENGINE VALVE.

No. 441,029.

Patented Nov. 18, 1890.



Witnesses.
C. C. Burdine
J. E. Robertson

Inventor
William S. Sharpneck
per J. M. Robertson
Atty

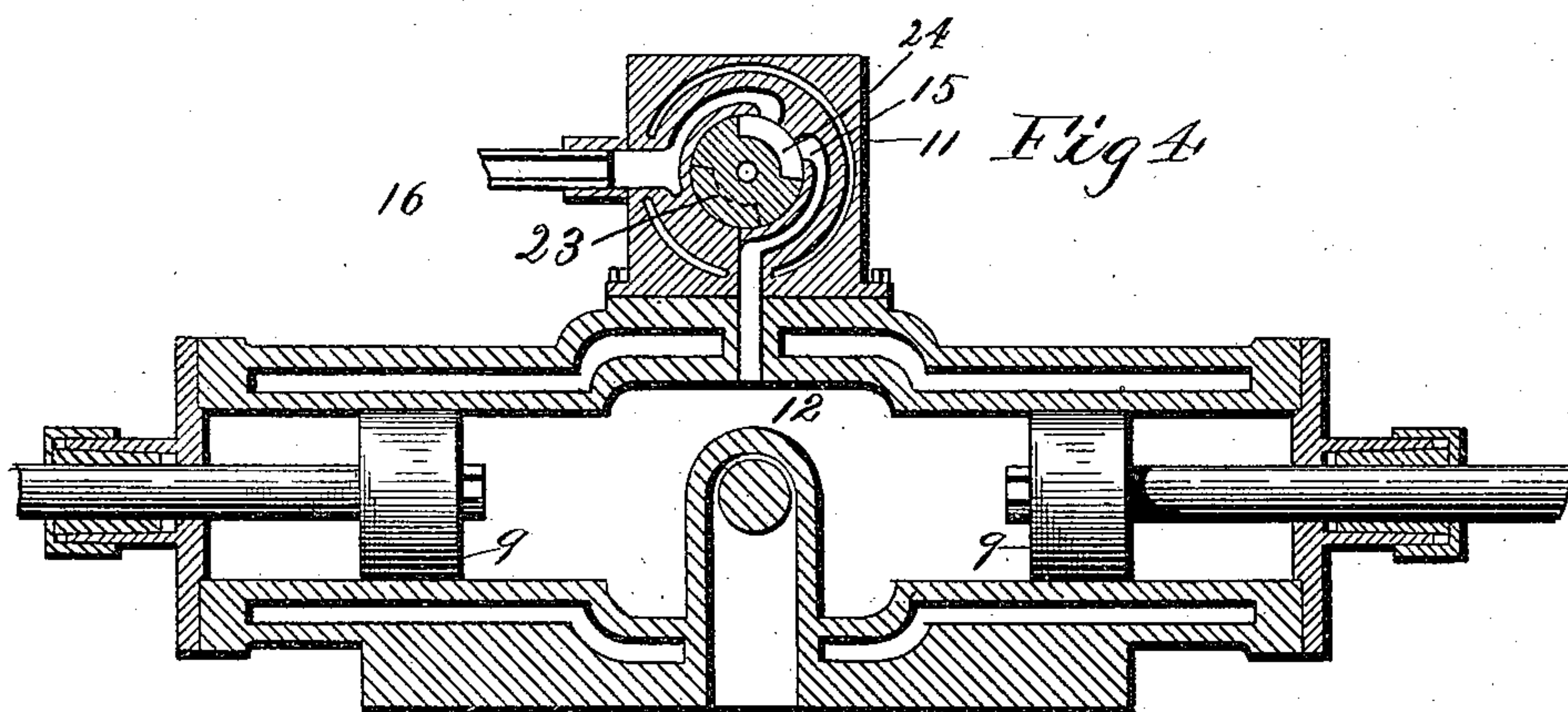
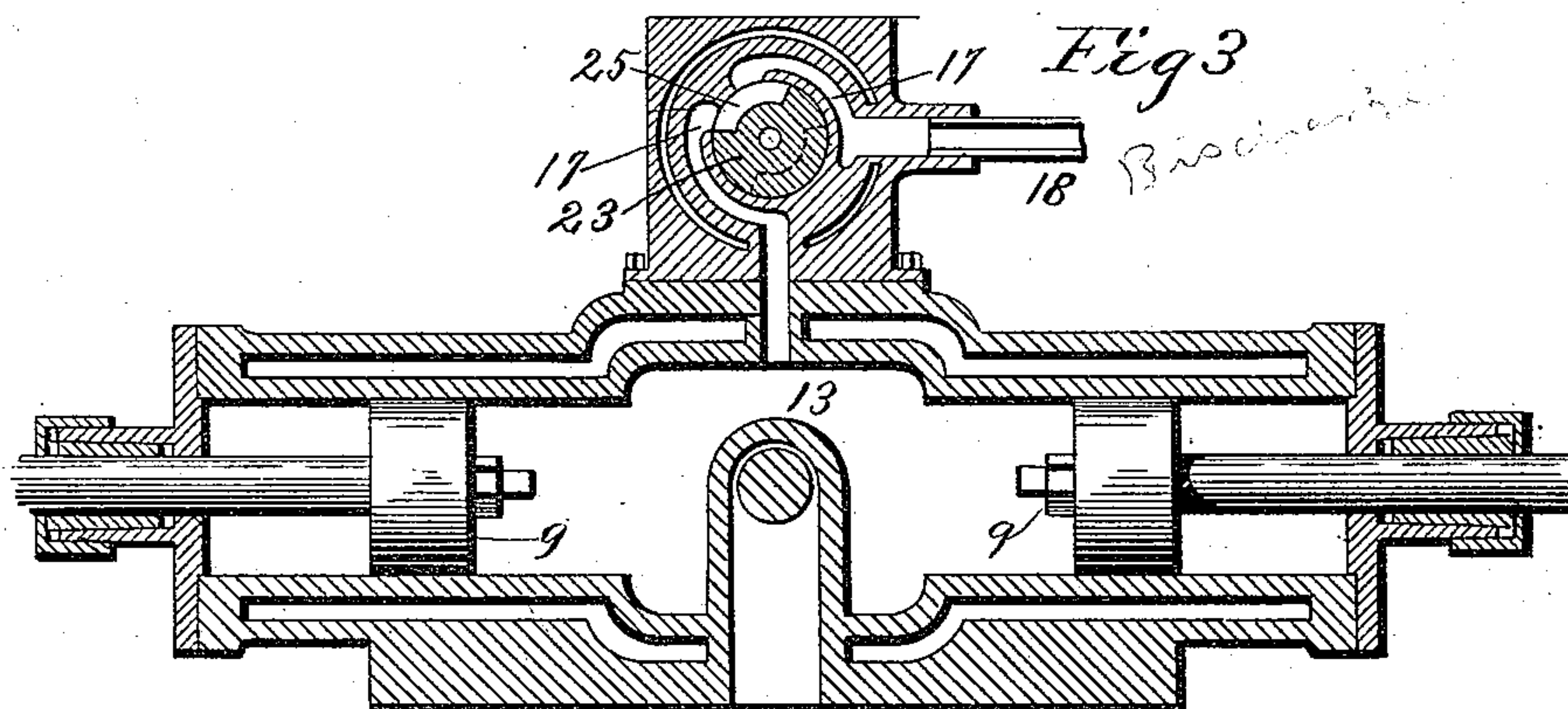
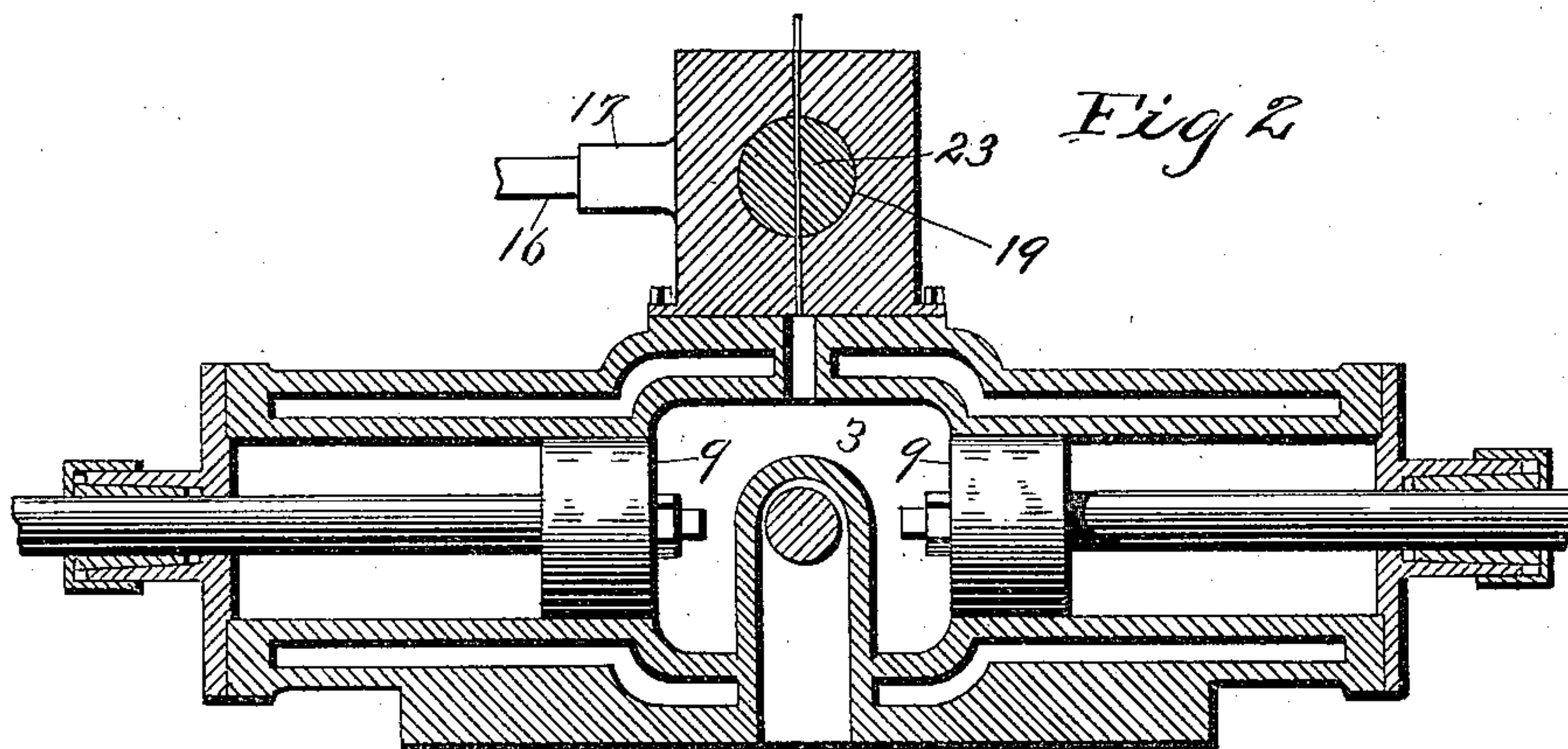
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UNITED STATES PATENT OFFICE.

WILLIAM S. SHARPNECK, OF CHICAGO, ILLINOIS, ASSIGNOR TO FRANCIS T. WHEELER, OF SAME PLACE.

GAS-ENGINE VALVE.

SPECIFICATION forming part of Letters Patent No. 441,029, dated November 18, 1890.

Application filed February 5, 1890. Renewed October 20, 1890. Serial No. 368,716. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. SHARPNECK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Engine Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in gas-engine valves especially adapted for use in connection with the gas-engine described and claimed in an application filed by me of even date herewith, bearing the serial number 339,278, although I may apply my valve in connection with any engine when it could be properly applied.

The object of my invention is the production of a valve which will comprise few parts, thus rendering the same inexpensive and simple, and which will be thoroughly efficient in operation.

To attain the desired object my invention consists in the improved construction of valve substantially as illustrated, described, and definitely claimed.

In the accompanying drawings, in which is illustrated a valve embodying my invention, Figure 1 represents an end elevation of my improved engine with my valve applied, the valve being shown in section. Fig. 2 represents a vertical longitudinal section of my valve and a part of the engine, the parts being in the position they assume when the explosion occurs. Fig. 3 represents a similar view, the parts being in the position they assume after the explosion and when the residue or burned products are being exhausted. Fig. 4 represents a similar view, the parts being in the position they assume when a new charge is being drawn into the cylinder when the inlet is open.

Referring by numerals to the drawings, in which similar numerals denote corresponding parts in the several figures: 1 denotes the frame of the engine; 2, the cylinder mounted thereon; 3, the intermediate chamber of the cylinder; 4, the inlet-port; 5, the exhaust-port; 6, the igniting-port; 7, the cranked driving-shaft carrying fly-wheels 8; 9, the pistons,

and 10 the pitmen or links connecting the piston-rods with the cranks of the driving-shafts. These parts are fully described in the aforesaid application for the engine filed by me, and hence need no further description here; nor is any claim here made for them.

Mounted on the cylinder is a valve-case 11, having an inlet-port 12, which communicates with the inlet-port 4, and exhaust-port 13, which communicates with the exhaust-port 5, and a port 14, which is in line with the firing or igniting port 6, all as clearly shown in Fig. 1 of the drawings.

The inlet and exhaust ports of the valve-case, it will be seen, are in each end of the case, and the inlet-port leads to an inlet-chamber 15 of the valve-case, with which communicates the inlet or supply-pipe 16, and the exhaust-port leads to the exhaust-chamber 17 of the valve-case, which communicates with the exhaust or discharge pipe 18. It will be seen, from this construction that the inlet enters one side of the casing and the outlet or exhaust leaves the other side of the casing.

The valve-case is provided with a bore or passage 19, which is preferably conical or tapering, and the case at each end of the bore or passage is formed with an annular ring or flange 20, which is exteriorly screw-threaded to receive the cap-nuts 21, and the nuts 21 are also exteriorly threaded to receive the jam-nuts 22. From this construction it will be seen that the annular rings or flanges 20 can be moved or pressed inward, the purpose of which will appear.

Arranged in the bore or passage of the case is the rotating valve 23, having on one side the inlet-chamber 24, adapted to communicate or coincide with the inlet-chamber of the case, and on the opposite side the exhaust-chamber 25, adapted to communicate with the exhaust-chamber of the case, as clearly shown in Figs. 3 and 4 of the drawings, and the valve is further provided with a channel 26, adapted to communicate with the firing-ports of the case and cylinder, as clearly shown in Fig. 1 of the drawings. In this instance a rotary motion is imparted to the valve by means of the shaft 27, on which it is mounted, carrying the gear-wheel 28, the pinion 29 on the driv-

ing-shaft, and the chain 30, the valve being rotated in the proper time to insure its perfect operation; but other means may be employed.

5 To provide for lubricating the valve and the working-pistons, I form ducts 31 in the top of the valve-case, which deposit the oil in the openings 32 of the valve, and which carry the oil to the ducts 33 leading to the cylinder
10 and conveying the oil to the pistons.

It is evident that the frictional contact of the valve with the case will in time wear the parts, and to take up this wear and thus cause the valve to be always properly adjusted to
15 the case, I make the passage and valve conical or tapering, and as the valve becomes worn it can be forced inward and the nuts 21 and 22 operated to press the flanges 20 against the periphery of the valve and retain
20 the same in the proper position, as will be readily understood.

The operation of my invention will be readily understood from the foregoing description, taken in connection with the drawings, and,
25 briefly stated, is as follows: The parts or mechanism is in the normal position, as shown in Figs. 1 and 2 of the drawings, the exhaust and inlet ports being closed by the solid face of the valve, the charge being in the chamber
30 of the cylinder, and the igniting-port being open to permit the firing. The charge is fired or exploded, moving the pistons outward, and upon their return the exhaust is open, as shown in Fig. 3, and the pistons expel the
35 residue of the explosion. The pistons then move outward, the exhaust closes, and the inlet opens, the charge being drawn in by the pistons, the parts then being as shown in Fig. 4; and, finally, when the pistons again move

inward, the inlet and exhaust ports are again 40 closed, and the parts are in their normal position ready for the next explosion, the operation being repeated. It will be understood that the mechanism is timed so that the explosion first occurs, next the products or resi- 45 due of the explosion are expelled, and next the engine is charged, the explosion occurring at each alternate stroke of the pistons. The oil is drawn into the cylinder by the action of the pistons upon their outward stroke si- 50 multaneously with the drawing in of the charge.

I claim as my invention—

1. A valve consisting of a case having a firing-opening and inlet and exhaust ports, a 55 valve fitting in said chamber having inlet and exhaust ports, means for rotating said valve to cause the ports to register with those of the case, and oil-ducts in the valve-case and valve registering with each other at in- 60 tervals, whereby oil is drawn in with the charge, substantially as described.

2. In a gas-engine, the combination of the cylinder having the central chamber provided with the inlet, exhaust, and firing ports, the 65 pistons in said cylinder, and mechanism for operating the same, the valve-case having ports communicating with said ports of the cylinder, the valve in the case having inlet, outlet, and firing ports, and mechanism for 70 rotating the valve.

In testimony whereof I affix my signature, in presence of two witnesses, this 31st day of January, 1890.

WILLIAM S. SHARPNECK.

Witnesses:

THOS. E. ROBERTSON,
WM. N. MOORE.