

(No Model.)

2 Sheets—Sheet 1.

W. S. SHARPNECK.
GAS ENGINE.

No. 441,028.

Patented Nov. 18, 1890.

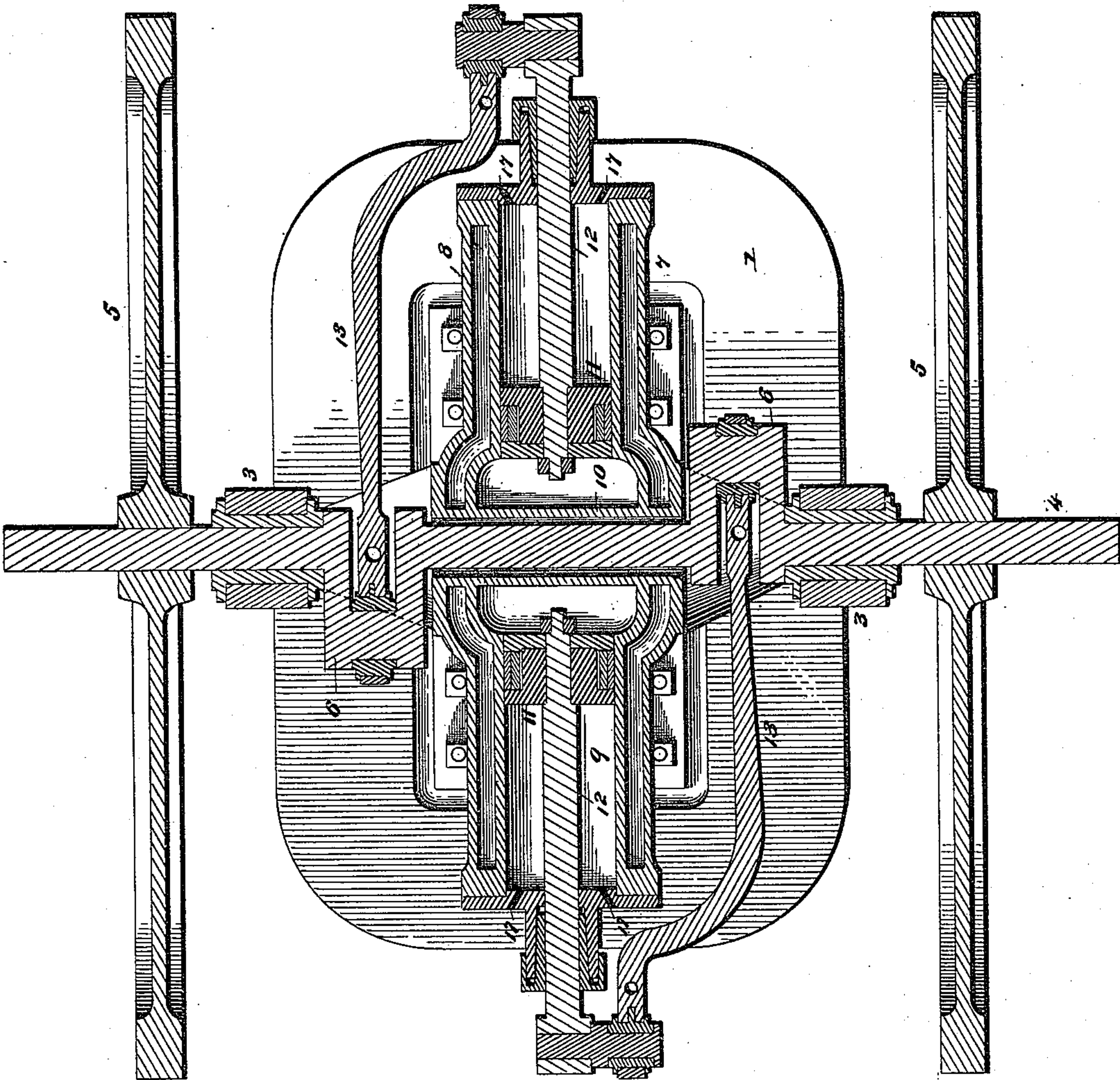


Fig. 1.

Witnesses:

J. E. Robertson
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Inventor:
William S. Sharpneck

By *J. W. Robertson*

Attorney.

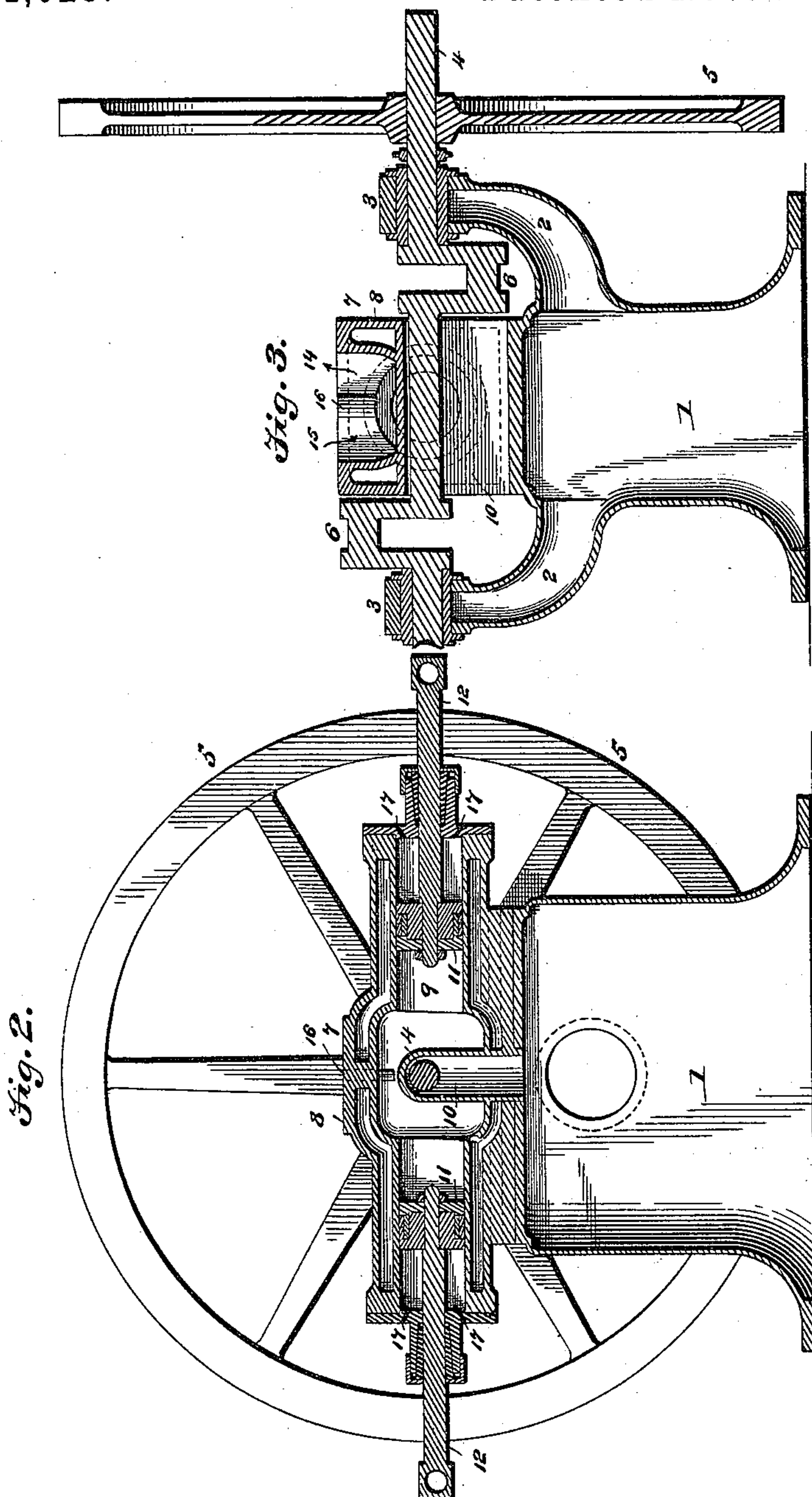
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J. E. Robertson
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Inventor:
William S. Sharpneck
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UNITED STATES PATENT OFFICE.

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

GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 441,028, dated November 18, 1890.

Application filed February 5, 1890. Renewed October 20, 1890. Serial No. 368,715. (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-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in gas-engines; and the leading object of my invention is the provision of an engine of this character which will be superior to others which have preceded it in simplicity, durability, inexpensiveness, and efficiency.

The invention consists in the novel construction and combination of parts, substantially as herein illustrated, described, and specifically defined and distinguished by the claims.

In the accompanying drawings, in which I illustrate a gas-engine constructed in accordance with and embodying my invention, Figure 1 represents a horizontal sectional view of the engine. Fig. 2 represents a vertical longitudinal sectional view thereof. Fig. 3 represents a vertical transverse sectional view thereof.

Referring now to the drawings, in which similar numerals denote corresponding parts in the several figures, the numeral 1 designates the frame or bed of my engine, which is of substantially rectangular form and is provided on each side with an arm or extension 2, which receive bearings 3 for the driving-shaft 4. These arms or extensions 2, it will be observed, extend outward from each side centrally of the frame, and by that means the driving-shaft is journaled centrally in the frame and the weight of the parts is properly distributed. The driving-shaft carries the fly-wheels 5, and is formed with reversely-arranged cranks 6.

The cylinder 7 rests upon and is secured to the top of the frame, and is provided with the usual water-jacket 8, the central or intermediate chamber 9, and is arched or depressed at 10 to allow the passage of the driving-shaft. From this construction it will be seen that the cylinder rests flat upon the frame and that the

driving-shaft is arranged at or about the center of the cylinder.

The pistons 11 fit in the cylinder, and the rods 12 thereof are connected at their outer ends to the outer ends of the links 13, (in this instance by means of a pin or stud,) and the links have their inner ends connected to the cranks 6 of the driving-shaft. It will be understood from this construction that the pistons are caused to simultaneously approach each other and simultaneously return.

The cylinder is provided with a suitable exhaust-port 14, inlet 15, and igniting-opening 16.

I would here state that I employ in connection with my engine a valve which forms the subject-matter of another application, Serial No. 339,279, filed the same date as the present one, and to which I would call attention.

The heads of the cylinder are preferably provided with a series of openings 17, which allow the escape of air when the pistons return, and thus cause said pistons to move without any backward compression.

The operation of my engine will be readily understood from the foregoing description, taken in connection with the drawings, and, briefly stated, is as follows: The pistons are in their normal positions, as shown in Fig. 1, and a charge is in the enlarged chamber of the cylinder. The charge is exploded and the pistons are forced outward, and upon their inward movement force the burned products or residue from the charge out through the exhaust. The exhaust has closed and the inlet is opened. The pistons move outward, drawing in through the open inlet a new charge; then upon their inward movement again compressing the charge, and the firing or explosion of the charge occurs, the operation being repeated in this manner, and the charge being exploded at every other inward movement of the pistons.

I am aware that it is not new to provide an engine having two pistons working in a cylinder with a tubular opening through the center of the cylinder for the admission of the shaft of the engine. This, however, requires that the shafts and cranks shall be separable, while by my arrangement of an open arch or

groove through the center of the cylinder, or in the chamber in the center of the cylinder, the cranks and shaft can be forged in one piece and yet be easily set in place, which it
5 would be impossible to do if the opening in which the shaft is set were tubular.

I claim as my invention—

1. A gas-engine comprising a cylinder having a transverse groove substantially in the
10 center of its length, a driving-shaft passing through said groove and provided with cranks, and two pistons in the cylinder connected with said cranks, substantially as described.
2. A gas-engine comprising a cylinder, two

pistons therein, an intermediate chamber between the pistons, a transverse groove substantially in the center of the length of the intermediate chamber, and a driving-shaft set in said groove and connected with the pistons, substantially as described. 15 20

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.