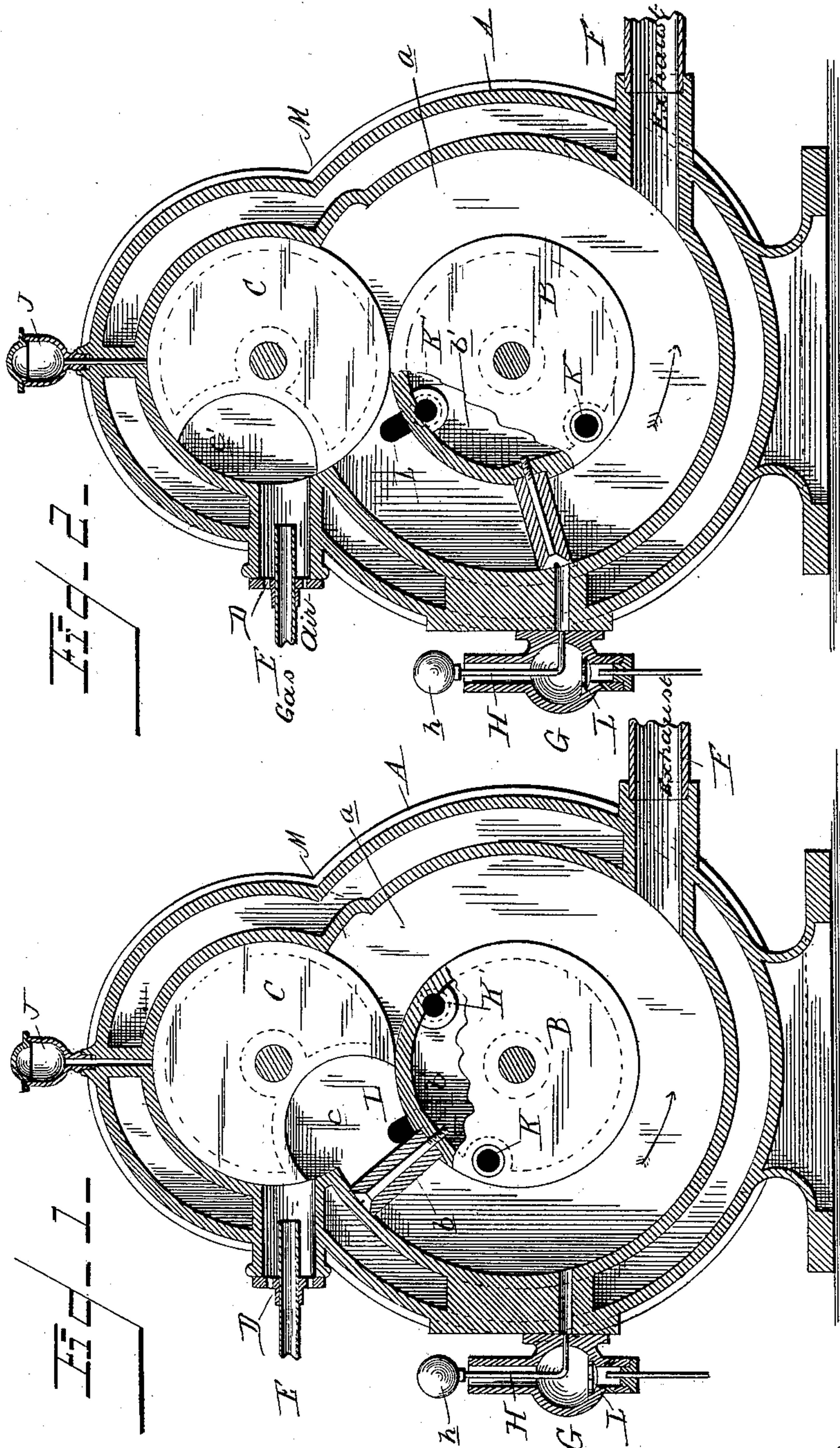


2 Sheets—Sheet 1.

No. 428,762.

Patented May 27, 1890.



Inventor

William S Sharpneck

By his Attorney *J. W. Robertson*

(No Model.)

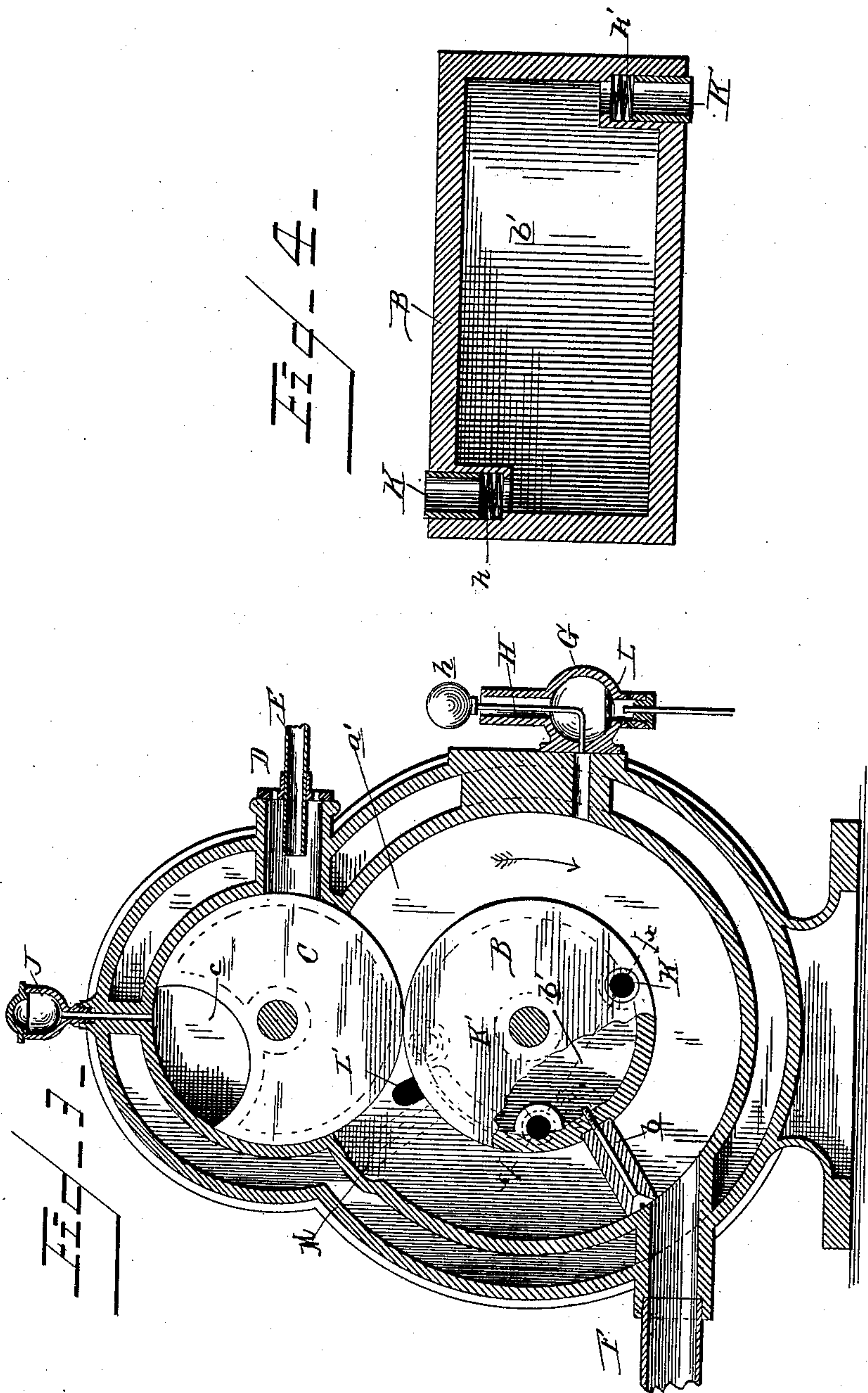
2 Sheets—Sheet 2.

W. S. SHARPNEEK.

ROTARY GAS ENGINE.

No. 428,762.

Patented May 27, 1890.



Witnesses

Thos. E. Robertson

Thos. E. Robertson

Inventor

William S. Sharpneek

By his Attorney

T. W. Robertson

UNITED STATES PATENT OFFICE.

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

ROTARY GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 428,762, dated May 27, 1890.

Application filed August 12, 1889. Serial No. 320,465. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. SHARPNEEK, 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 Rotary Gas-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention is an improvement on that class of gas-engines in which a rotary piston is employed; and it consists in the peculiar construction, arrangement, and combinations of parts hereinafter more particularly described, and then definitely claimed.

In the accompanying drawings, Figure 1 is a side view of an engine constructed according to my improvement with one of the heads removed and part of the piston broken away. 20 Fig. 2 is a similar view with the piston in a different position. Fig. 3 is a similar view on the opposite side of the engine; and Fig. 4 is a section of the drum of the piston on the line $x x$ on Fig. 3, looking in the direction of the arrows on said line.

Referring now to the details of construction, A represents the casing provided with spaces to form a water-jacket, in which case revolve the drums B C, the former having a piston b and the latter a recess c to allow of the piston b passing as the two revolve together in a manner well known in rotary engines of various patterns, the two drums being connected together by gearing, (not shown,) so as to always revolve with equal speed. Both drums are preferably cast hollow, the drum C being hollow simply to make it light; but the drum B is made hollow to form a compression-chamber b' , whose use will 40 be more fully hereinafter explained.

At D is shown the inlet of the air, and E is the gas-inlet pipe set in the center of the air-inlet. The exhaust is shown at F and the igniting apparatus at G. The igniting apparatus consists of a pipe H, having a chamber h at its top, and the pipe is kept at a red heat by the Bunsen burner I, in a manner well known.

At the top of the casing is a lubricator J,

through which the necessary lubricant may 50 be supplied.

On opposite sides of the drum B are thimbles K K', set in apertures formed in the heads of the drum, and having at their inner ends spiral springs $k k'$, which tend to force out 55 said thimbles and keep them in contact with the heads of the casing.

In one of the heads a is a short recess or port L, and in the other head a' a longer recess or port L', curved for the greater portion 60 of its length, so as to register with the thimble K' as it travels around the drum.

At M is a recess in the casing, which forms a kind of port for the escape of gas, &c., as will be explained hereinafter. 65

It will of course be understood that the engine is provided with the necessary fly-wheel, pulley, &c., although such devices are not shown, as they form no part of the present invention. 70

The operation is as follows: Supposing the piston to be in the position represented at Fig. 1 and traveling in the direction indicated by the large arrow, as it revolves it draws in a charge of air and gas until the piston assumes the position shown in Fig. 2, when the further inlet of gas and air is prevented by the edge c' of the drum C coming in contact with the interior of the casing. As soon as the piston b passes the lighting device the 75 charge is ignited by the red-hot pipe H, and the piston is driven round with great force past the exhaust F, when the exhaust takes place and compression begins as soon as the piston passes the exhaust-opening. As the 85 piston continues to revolve the thimble K' registers with the curved part (see dotted lines in Fig. 3) of the port L', which allows of the air and exploded gas contained in the space above the piston b to enter the upper part of the port L' and then pass down through it and the thimble K' into chamber b' , to be compressed into the chamber b' until the thimble K' passes the end of the port L', when communication therein and the casing 95 is cut off, shutting the compressed air and exploded gas therein. To prevent any back-lash from further compression after the com-

munication is cut off, the port M is provided, which allows a passage over the top of the piston *b*. As the piston continues to revolve it draws in a charge, as before, and
 5 when the thimble K registers with the port L, which will be when the parts reach the position shown in Fig. 2, the compressed air and exploded gas contained in the chamber *b'* will rush out into the casing through
 10 said thimble K and port L and force a portion of the charge just drawn in into the pipe H, where it is ignited, and thus the charge is exploded under compression and the operation continues as before. The chamber *h* al-
 15 lows of the compression of a considerable quantity of gas in it by the force of the compressed air and gas from the chamber *b'*, which insures that enough gas shall pass through the pipe H to surely ignite the same,
 20 which is not always the case with the igniting devices of this character heretofore used.

From this it will be seen that I have invented a revolving gas-engine that is simple in construction and cheaply built, is under
 25 power for a large part of every revolution, and fires the charge while it is under compression, thus making a very powerful engine of comparatively little weight, bulk, and cost.

30 What I claim as new is—

1. A rotary engine having a casing, and a piston working therein, constructed and arranged to draw in a charge, and means, as the chambers *b'* and port L, for containing and
 35 admitting compressed gases to the charge, substantially as described.

2. A rotary engine having a casing, a piston working therein, suitable inlet and outlet passages, and a compression-chamber, ar-
 40 ranged substantially as described, whereby the piston draws in a charge at one portion of its revolution, is acted upon by the exploded charge at another portion, and acts as a compressor during a third period of its revo-
 45 lution, as set forth.

3. A gas-engine in which the drum of the piston acts as a compression-chamber, substantially as described.

4. The combination, with the casing of a

gas-engine, of a rotary piston acting as a com- 50
 pressor, and having a hollow drum forming a compression-chamber, substantially as de-
 scribed.

5. The combination, in a gas-engine, of a rotary piston having a hollow drum forming 55
 a compression-chamber, an inlet and outlet for the compressed air and gas, and ports in the casing registering with said inlet and out-
 let, substantially as described.

6. The combination, in a gas-engine, of a 60
 casing A, a hollow drum B, piston *b*, the drum C, having a recess for the piston *b*, an inlet and outlet to the hollow drum, and ports for registering with the inlet and outlet, substan-
 tially as described. 65

7. The combination, in a gas-engine, of the casing and two drums working therein, one having a piston to draw in the charge and the other acting as a valve to cut off the supply
 of gas, substantially as described. 70

8. The combination, in a gas-engine, of a casing A, a hollow drum B, having piston *b*, drum C having a recess for the piston *b*, and an inlet for the charge arranged in that part
 of the casing in which drum C works, where- 75
 by said drum acts as a valve, substantially as described.

9. The combination, in a gas-engine, of the casing having the charge-inlet, an ignitor, and an exhaust, with a drum B, piston *b*, and 80
 a drum C, having a recess for the piston and acting as a valve, substantially as described.

10. The combination, in a gas engine, of a casing having a charge-inlet, an ignitor, and an exhaust, with piston *b*, hollow drum B, 85
 having an inlet and outlet to the chamber in said drum, ports in the casing-heads register-
 ing with said inlet and outlet, and drum C, having a recess for the piston *b* and acting as
 a valve to the charge-inlet, substantially as 90
 described.

In testimony whereof I affix my signature, in presence of two witnesses, this 10th day of August, 1889.

WILLIAM S. SHARPNEEK.

Witnesses:

THOS. E. ROBERTSON,
 SAMUEL A. DRURY.