

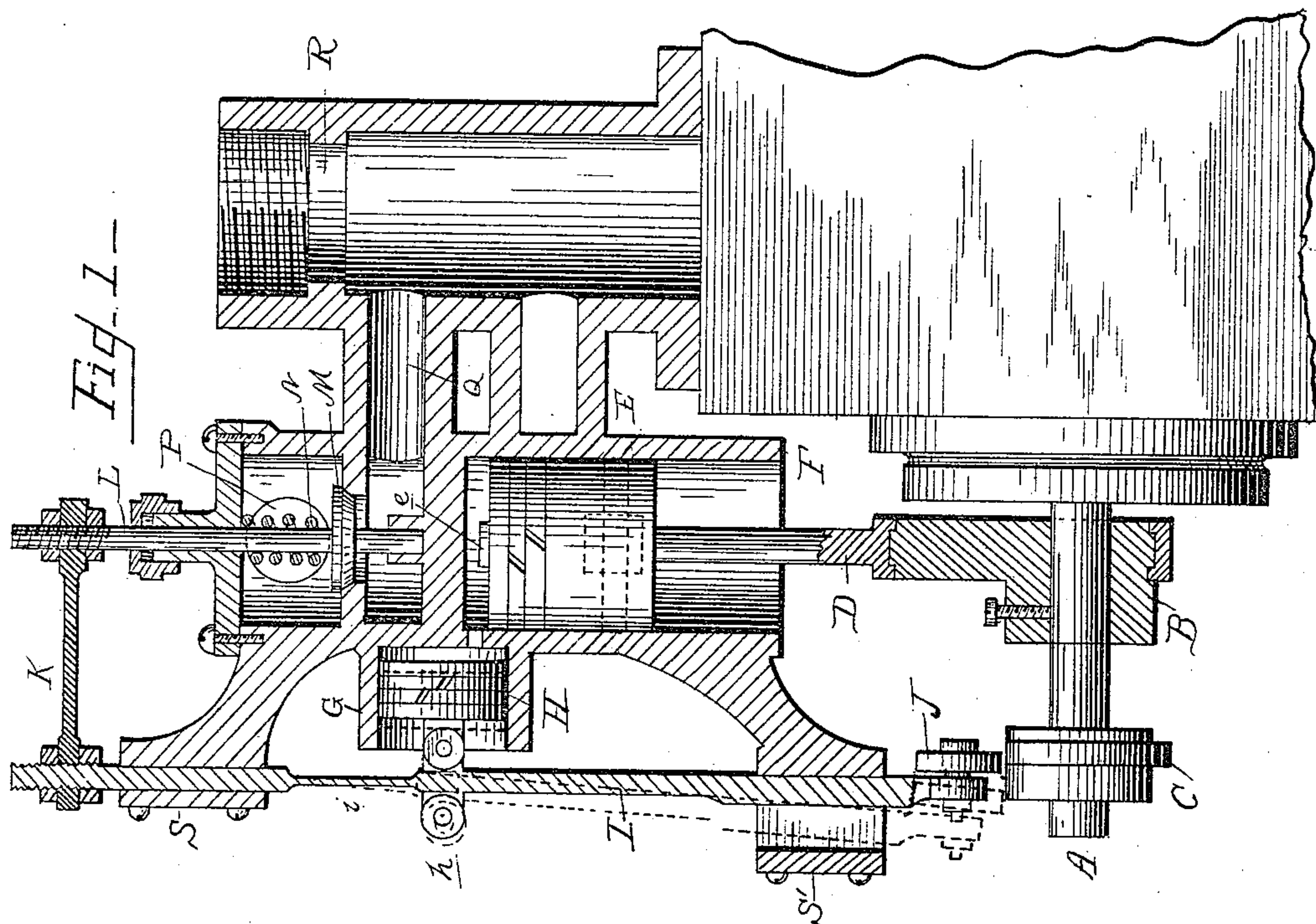
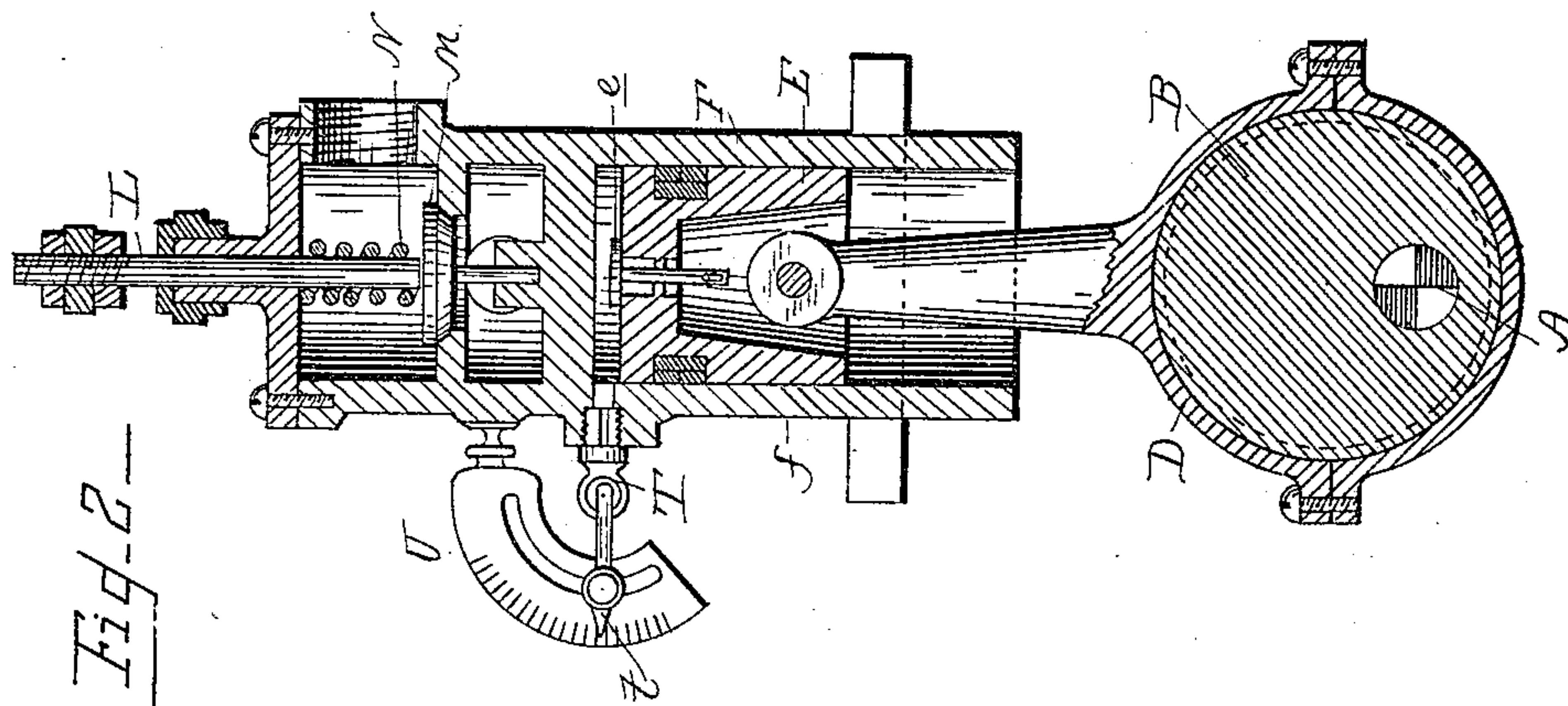
(No Model.)

2 Sheets—Sheet 1.

W. S. SHARPNECK.  
GAS ENGINE GOVERNOR.

No. 441,025.

Patented Nov. 18, 1890.



Witnesses  
Thos. B. Robertson  
Francis H. White

Inventor  
William S. Sharpneck  
By T. J. W. Robertson  
Attorney

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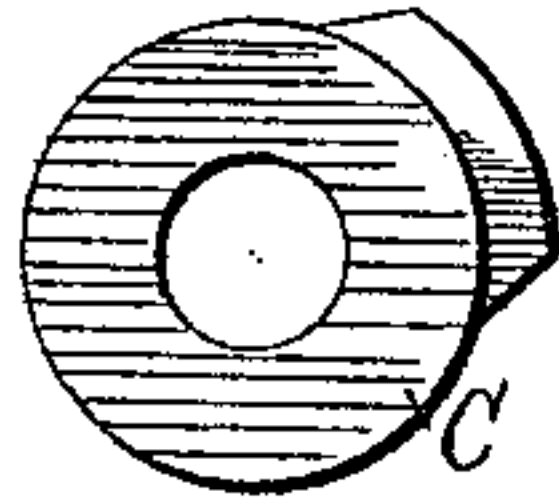
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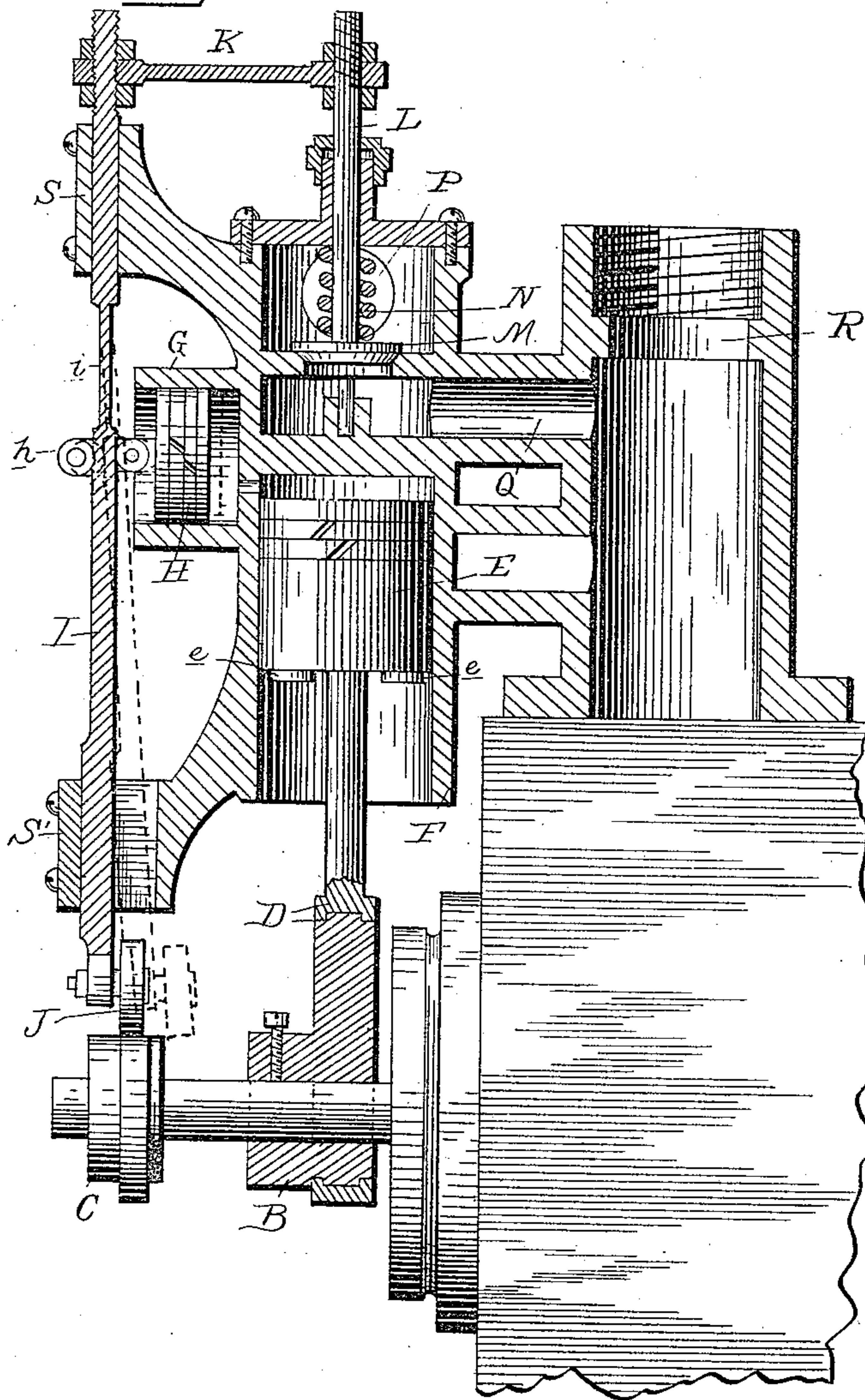
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*Fig. 3*



*Fig. 4*



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# UNITED STATES PATENT OFFICE.

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

## GAS-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 441,025, dated November 18, 1890.

Application filed May 6, 1890. Serial No. 350,778. (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 Governors, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This improvement relates to governors for gas-engines of that class shown in my application No. 339,277, filed February 5, 1890; and it consists in the peculiar construction, arrangement, and combinations of parts, hereinafter more particularly described, and then definitely pointed out in the claims.

In the accompanying drawings, Figure 1 shows a central vertical section of a governor constructed according to my improvement; 20 Fig. 2, a similar section at right angles to that shown in Fig. 1. Fig. 3 is an elevation of a cam. Fig. 4 is a modification.

Referring now to the details of the drawings by letter, A represents a shaft carrying 25 an eccentric B and valve-cam C. D indicates an eccentric strap and rod connected to a piston E, working in a cylinder F, on the side of which and communicating with it is a second cylinder G, containing a piston H, carrying 30 rollers *h*, between which works the governor-rod I, which is operated by a cam *c*, bearing on the anti-friction roller J. The governor-rod I is reduced at *i*, so as to form a spring at that point, and is connected by means of the 35 arm K with the valve-rod L, at the bottom of which is a valve M, forced down by a spring N. The valve M works in a chamber O, having a gas-inlet P, which, when the valve is open, allows the gas to pass through said inlet 40 and through the valve-seat to the passage Q, where it mingles with the air entering through the air-inlet R, and passes to the cylinder to be exploded.

The governor-rod moves in guides S S', the 45 latter being very much larger than the rod, so as to allow of said rod moving laterally, as hereinafter explained.

At *e* is shown a valve in the piston E to admit air to the cylinder F above said piston.

50 On the side of the cylinder F is a relief-

cock T, having an arm and pointer *t*, to indicate on the quadrant-scale U the size of the opening through which air may pass, and thus the speed of the engine is regulated, as it is governed by the amount of air contained in the 55 cylinders.

The operation is as follows: Motion being given to the shaft and the engine remaining at its normal speed, the cam C raises the 60 valve M by means of the rods I L and arm K, which admits gas to the cylinder. At the same time the piston E is acting to compress air into the cylinders F G, against the piston H, which is held in place by the spring *i* in the rod I, which is so arranged as to nor- 65 mally keep the lower end of said rod I in position to be acted on by the cam C. Should, however, the engine begin to run too fast, the air would be compressed into the cylinders E G, and the piston H would be forced out- 70 ward, thus carrying the lower end of rod I and its roller J on one side and out of the way of the cam C, as shown in dotted lines, so that the latter would not raise the valve M, and no gas would pass to the cylinder of the engine, 75 which of course would then begin to slacken its speed, and when it resumed its normal speed the piston H and governor-rod I would return to their usual position and the cam C would operate the valve again. 80

In the modification shown in Fig. 2 the action depends on the formation of a partial vacuum in the cylinders E G, which draws the piston H inward and moves the rod I and its roller J in the opposite direction to that 85 shown in Fig. 1, but still clear of the cam C. In this case valve in the piston E should open downward, as shown in Fig. 4, instead of upward, as in Fig. 1.

It is obvious that a regulating device similar to that shown in Fig. 2 may be employed on this style of governor also.

What I claim as new is—

1. A governor having two pistons, the first of which operates on the air between the two, 95 and a spring governor-rod operating on the second piston against the action of the first, substantially as described.

2. A governor having two pistons, an eccentric for operating one of them, a spring gov- 100

ernor-rod for operating the second piston in one direction, and a cam for operating the governor-rod, substantially as described.

5 3. A governor having two pistons, an eccentric for operating one of them, a spring governor-rod for operating the second piston in one direction, a valve operated by the governor-rod, and a cam for operating the same, substantially as described.

10 4. The combination in a gas-engine governor, of a cylinder F, a reciprocating piston E working therein, a cylinder G, a piston H set therein, a spring-rod I, connected with said piston H, a cam for giving said rod a longitudinal motion, and valve M, connected with  
15 the governor-rod, substantially as described.

5. The combination, in a gas-engine governor, of a cylinder F, a piston E, working therein, an eccentric and connection for operating said piston E, a cylinder G, connected 20 with the cylinder F, a piston set therein and having rollers *h*, a spring-rod I, passing between said rollers, a valve M, connected with said spring-rod, and a cam C for operating the same, substantially as described. 25

In testimony whereof I affix my signature, in presence of two witnesses, this 5th day of May, 1890.

WILLIAM S. SHARPNECK.

Witnesses:

T. J. W. ROBERTSON,  
FRANCIS W. WHITE.