

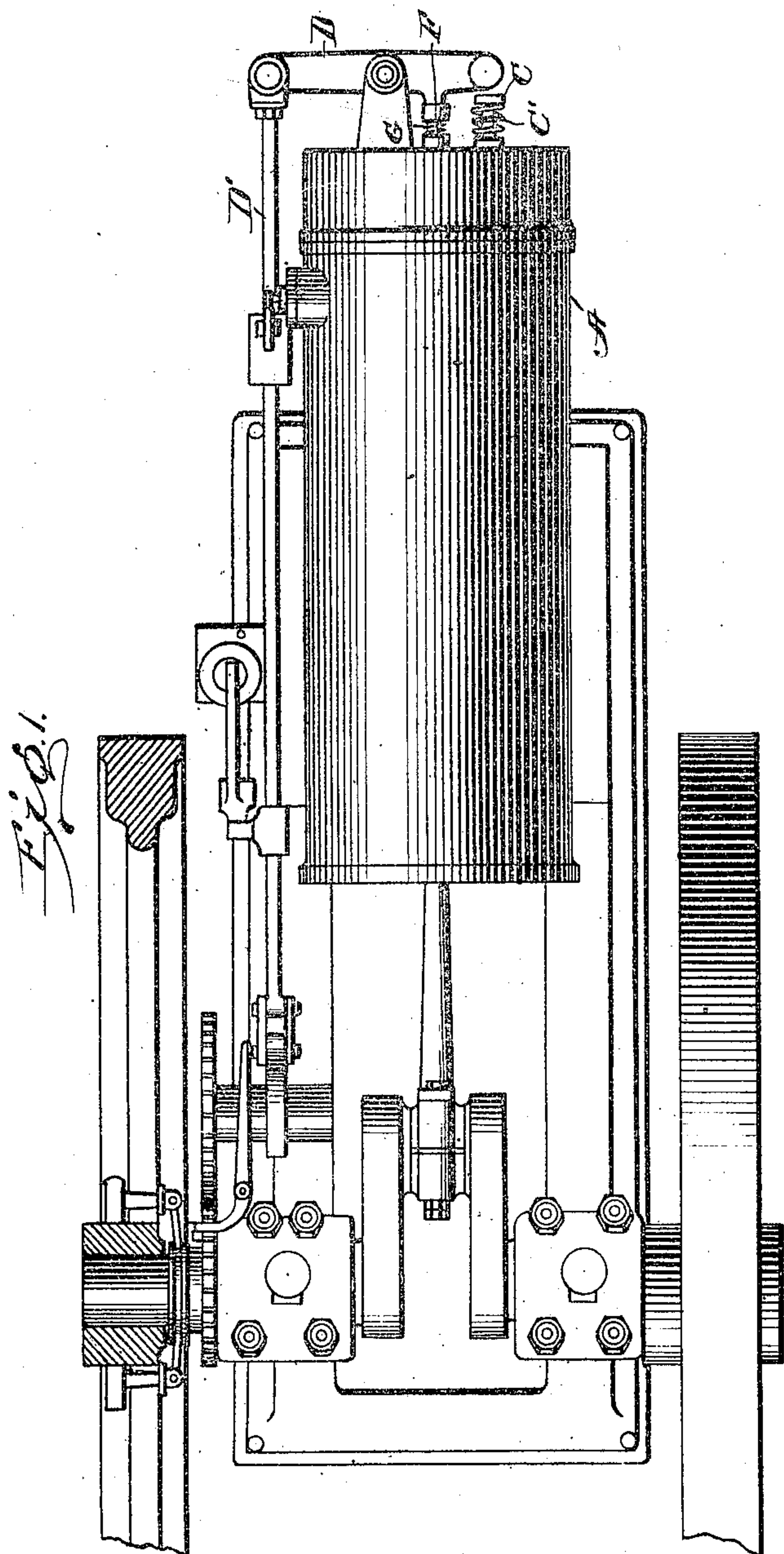
No. 877,378.

PATENTED JAN. 21, 1908.

P. F. SCHRYER & D. C. STOVER.
INTERNAL COMBUSTION ENGINE.

APPLICATION FILED AUG. 30, 1905.

2 SHEETS—SHEET 1.



Witnesses
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E. M. Spring

Inventors,
Paul F. Schryer
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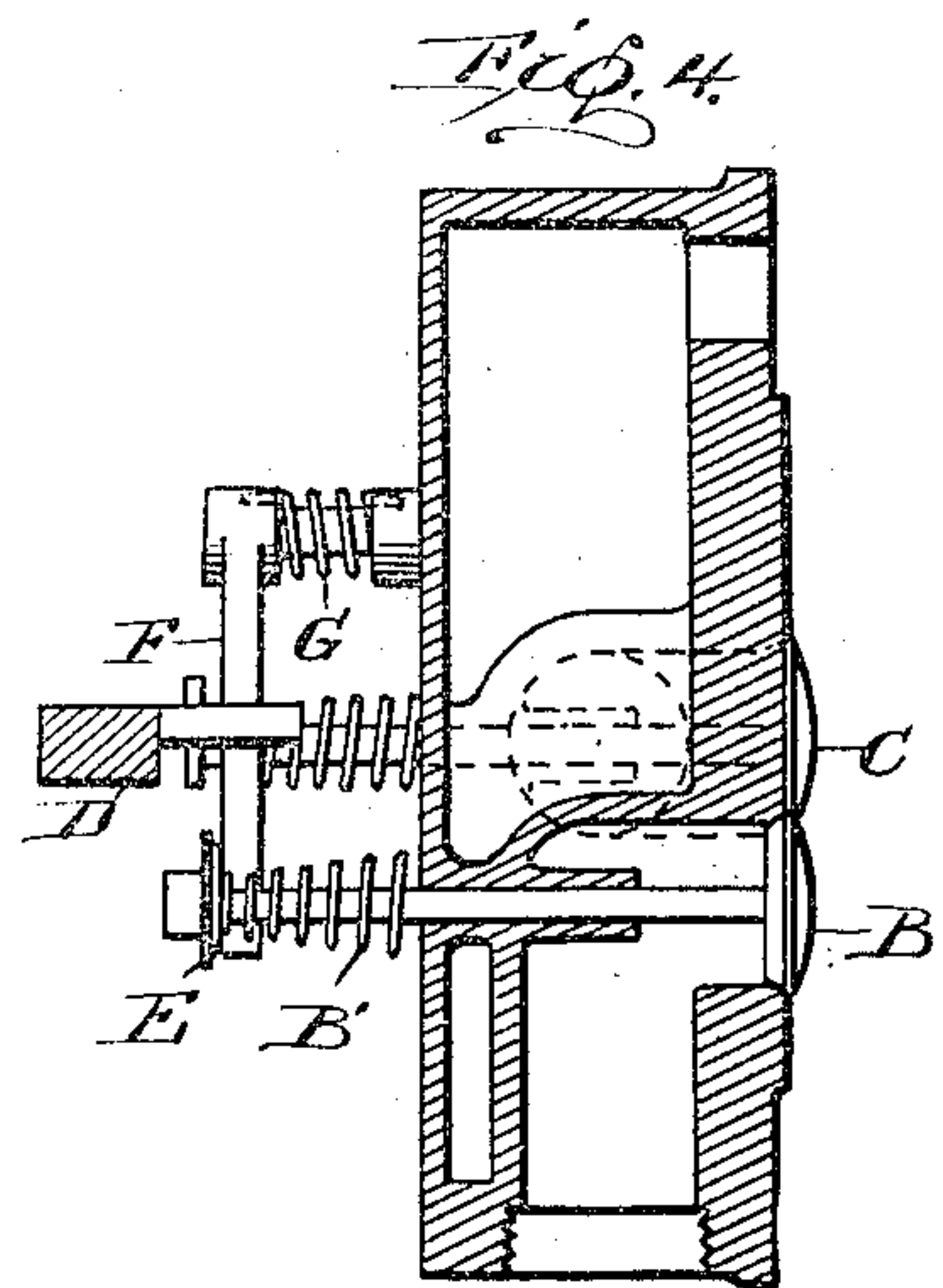
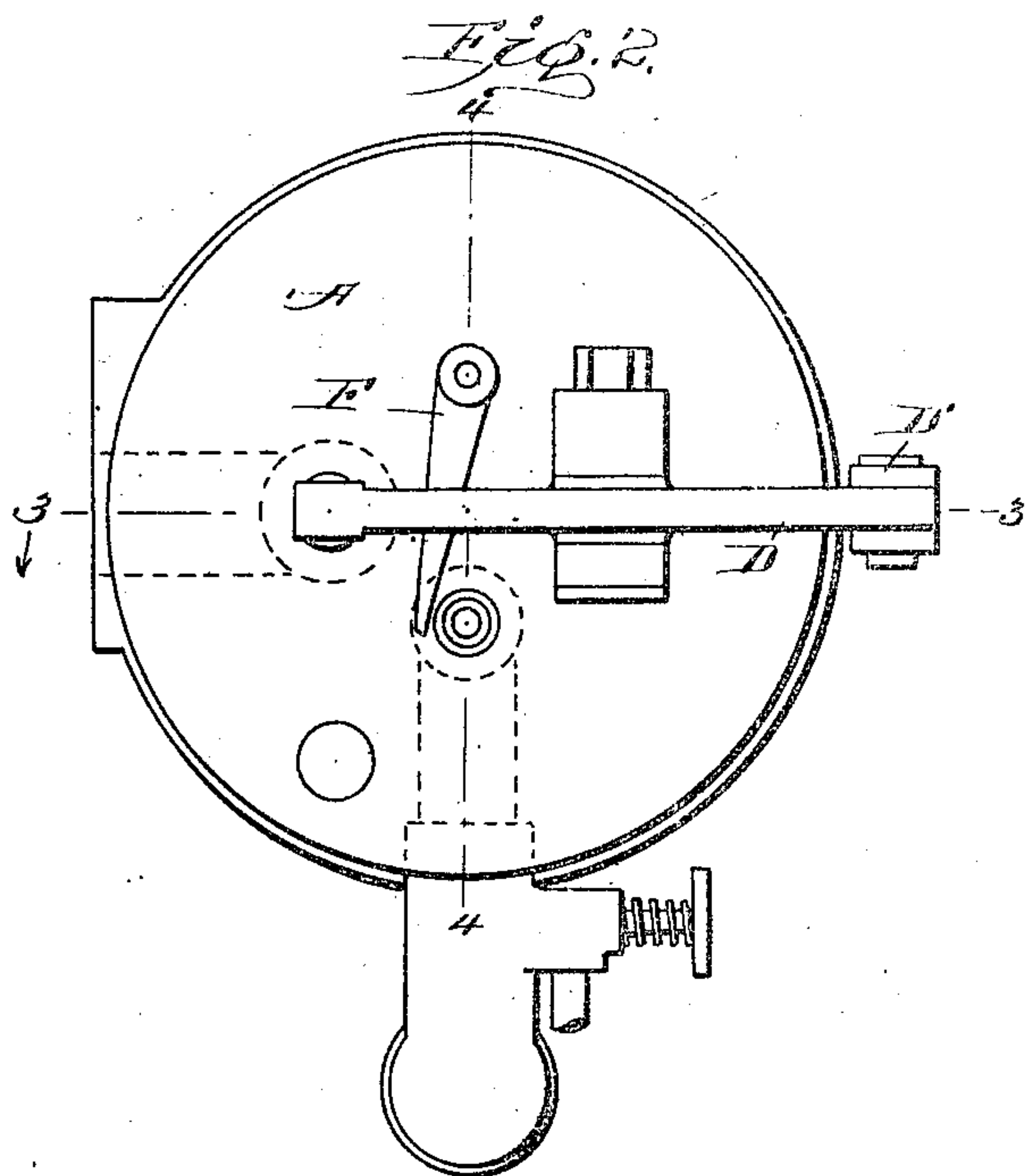
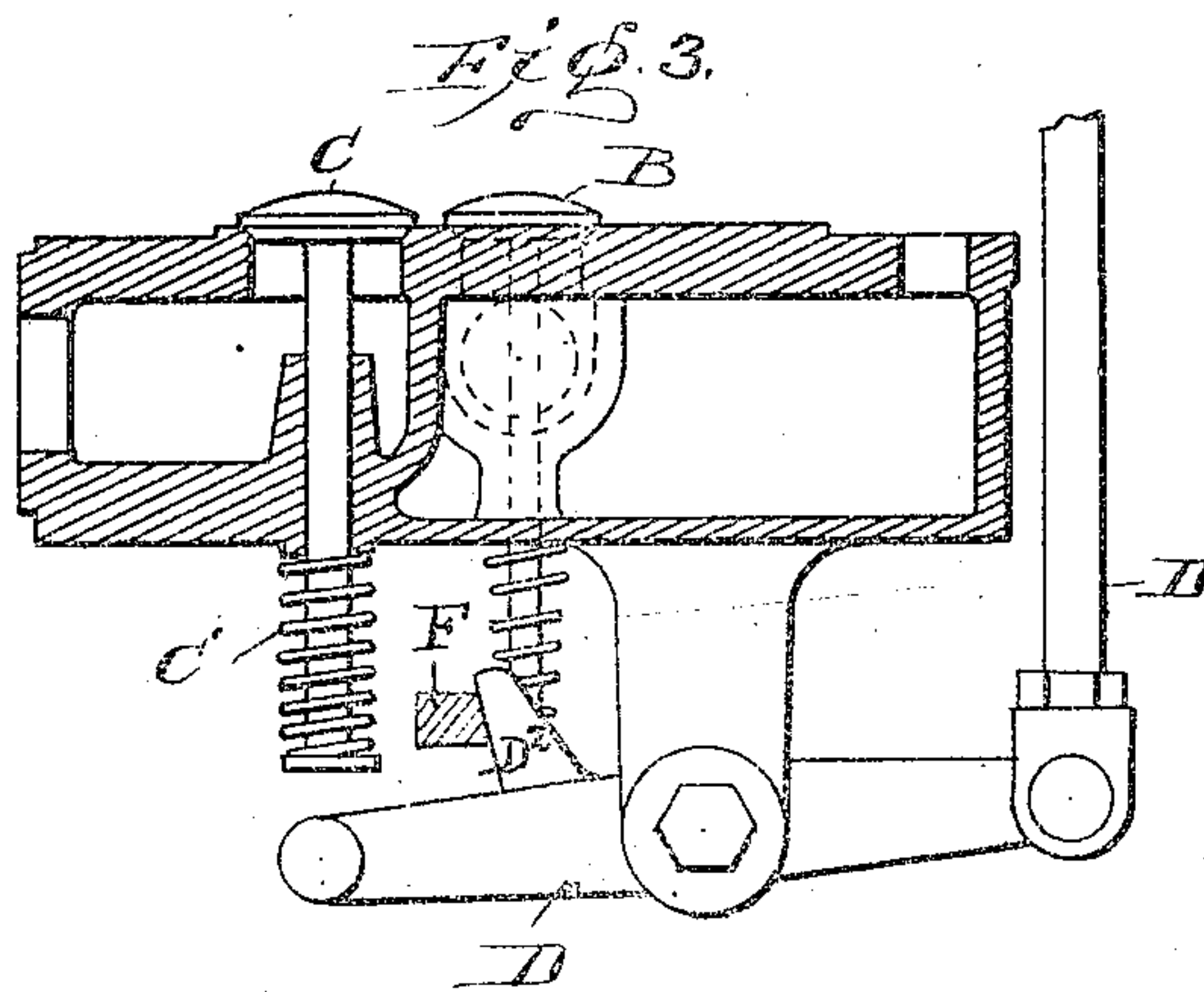
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Witnesses
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UNITED STATES PATENT OFFICE.

PAUL F. SCHRYER AND DANIEL C. STOVER, OF FREEPORT, ILLINOIS, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO STOVER ENGINE WORKS, OF FREEPORT, ILLINOIS, A CORPORATION OF ILLINOIS.

INTERNAL-COMBUSTION ENGINE.

No. 877,378.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed August 30, 1905. Serial No. 276,416.

To all whom it may concern:

Be it known that we, PAUL F. SCHRYER and DANIEL C. STOVER, citizens of the United States, residing at Freeport, in the county of Stephenson and State of Illinois, have invented new and useful Improvements in Internal-Combustion Engines, of which the following is a specification.

The invention relates especially to means whereby the admission valve is positively prevented from opening at improper times.

In the accompanying drawings,—Figure 1 is a plan view of an engine provided with my devices. Fig. 2 is an end elevation of an engine cylinder provided with the same devices. Fig. 3 shows the devices of Fig. 2 seen from above, the cylinder head being in section on the line 3—3, Fig. 2. Fig. 4 is a section on the line 4—4, Fig. 2.

In these views, A represents an engine cylinder provided with an admission valve B and an exhaust valve C which is opened at proper times by a rocking lever D, actuated by a rod D¹ itself caused to reciprocate longitudinally by devices connected with the engine or its shaft.

As in other engines of this general class, the exhaust valve is constantly acted upon by a spring which when the valve is closed yieldingly resists its opening and which when the valve is open tends to close it. In this instance, such spring is shown as a helical coil, C', inclosing the stem of the valve C, acting against a flange upon the free end of the valve stem, and re-acting against that portion of the structure in which said valve stem works. When the rod D¹ moves in the proper direction, it swings the lever D upon the central pivot of the latter, and thereby the free end of the lever is pressed against the free end of the stem of the valve C. The pressure thus exerted upon the free end of said valve stem exceeds the resisting power of the spring and such outward pressure as gases in the cylinder may chance to put upon the inner face of said valve, and as, but for such resistance of the spring and gas pressure, the valve and its stem are free to move inward, the spring yields and the valve opens, under the pressure of said lever. A spring B' acts in like manner upon the inlet valve but yields and allows the valve to open when a partial vacuum is created in the cylinder by the movement of the pis-

ton. This valve is however, automatically and positively locked against opening whenever the lever swings to open the exhaust valve, and is again unlocked when the lever swings in the contrary direction. To accomplish this automatic locking and unlocking, the admission valve stem is provided with a disk or catch E at its outer end, to be engaged by a latch F pivoted at one end to the cylinder and normally pressed laterally against the stem, beneath the catch, by means of a spring G. So long as the spring holds the latch beneath or in engagement with the catch, the stem is effectually prevented from moving inward, and thus the valve is positively locked in closed position. This position of the latch is permitted while the lever is swung toward the exhaust valve stem but when it swings in the opposite direction, a projection D² upon its inner side pushes the latch outward disengaging it from the catch and leaving the admission valve unlocked and prevented from opening only by the spring. In other words, the admission valve is closed and securely locked during intervals alternating with the explosions, and admission is possible only at proper times, the valve being locked against opening at other times.

What I claim is:

1. The combination with an engine cylinder having spring actuated inlet and exhaust valves, of a centrally pivoted lever arranged to swing toward and from the exhaust valve, to positively open it and then release it, a spring-actuated latch rigidly locking the inlet valve when the latter closes, and a device borne by said lever and adapted to force said latch out of locking position when the lever moves from the exhaust valve.

2. The combination with an engine cylinder, of a spring closed exhaust valve, a spring closed inlet valve having a catch upon its stem, a spring-actuated latch for engaging said catch and locking the inlet valve in closed position, and an engine-actuated lever arranged to swing toward the exhaust valve to open it and to push said latch out of locking position during its return movement.

3. The combination with an engine cylinder having in its end a spring-closed exhaust valve and a spring-closed inlet valve provided with a lateral catch on its stem, of a spring-actuated latch pivoted upon the cylin-

der to swing transversely into engagement with said catch, and an engine-actuated lever pivoted between its ends to the engine cylinder, swinging against the exhaust valve stem to open the valve, and provided with a projection in position to force said latch out of engagement as the lever moves away from the exhaust valve stem.

In testimony whereof we affix our signatures, in presence of two subscribing witnesses.

PAUL F. SCHRYER.
DANIEL C. STOVER.

Witnesses:

F. G. SHARBLE,
LEE MADDEN.