

No. 767,369.

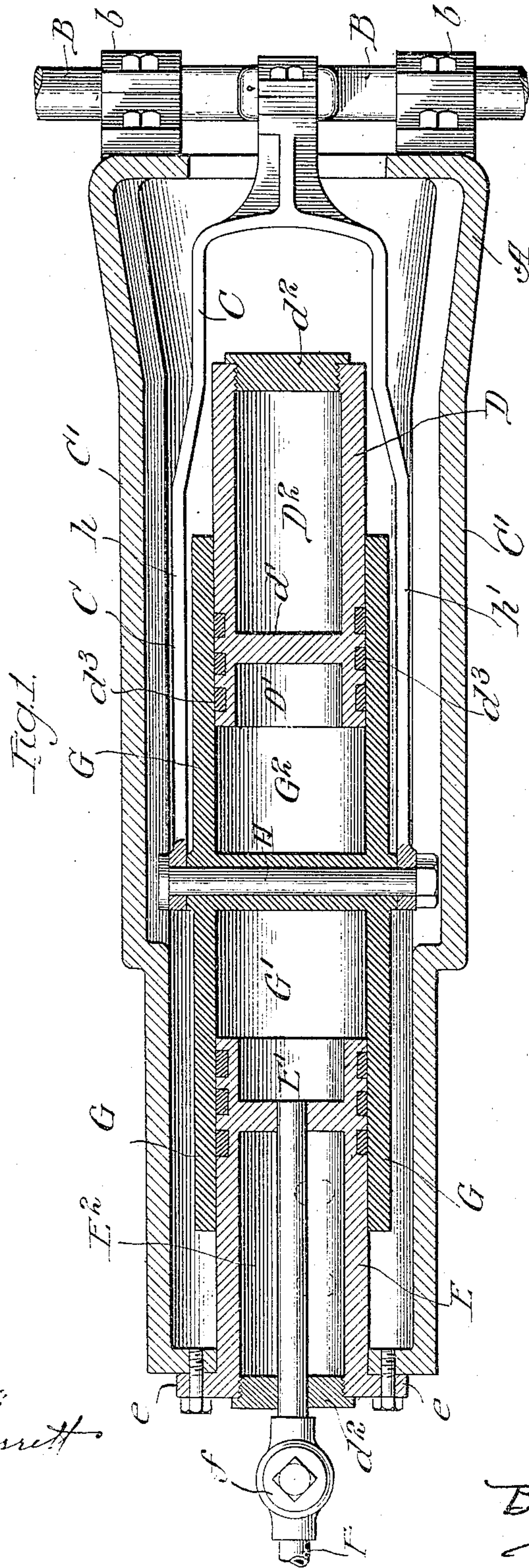
PATENTED AUG. 9, 1904.

P. SCHMITZ.
GAS ENGINE.

APPLICATION FILED OCT. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Inventor
Peter Schmitz
By J. H. H.

No. 767,369.

PATENTED AUG. 9, 1904.

P. SCHMITZ.
GAS ENGINE.

APPLICATION FILED OCT. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

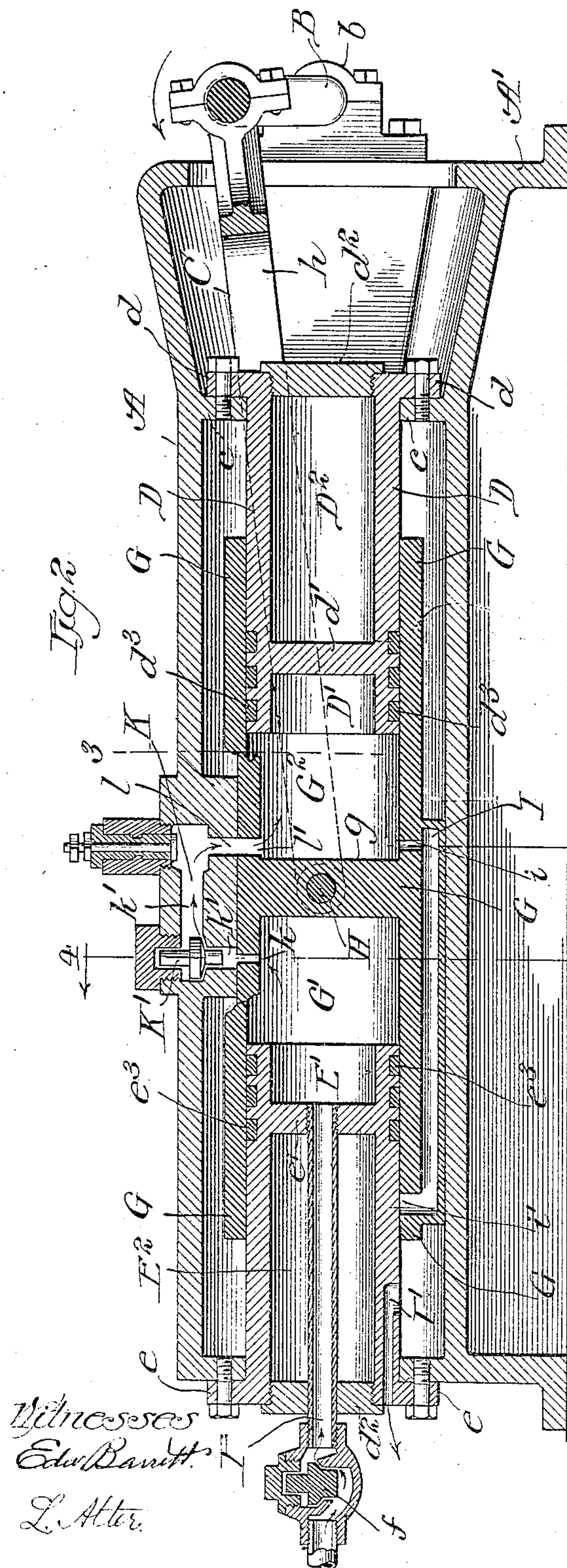


Fig. 2.

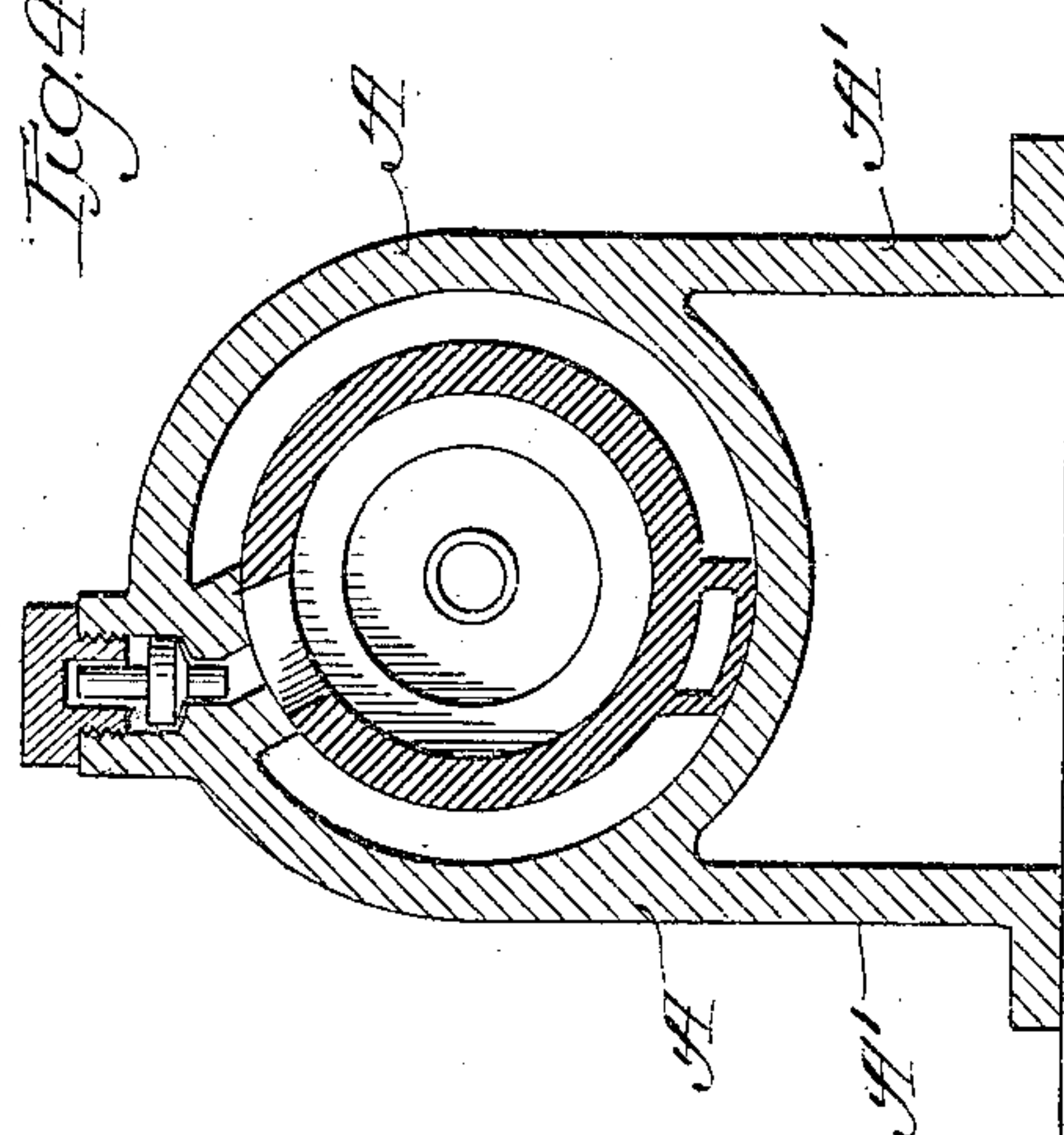
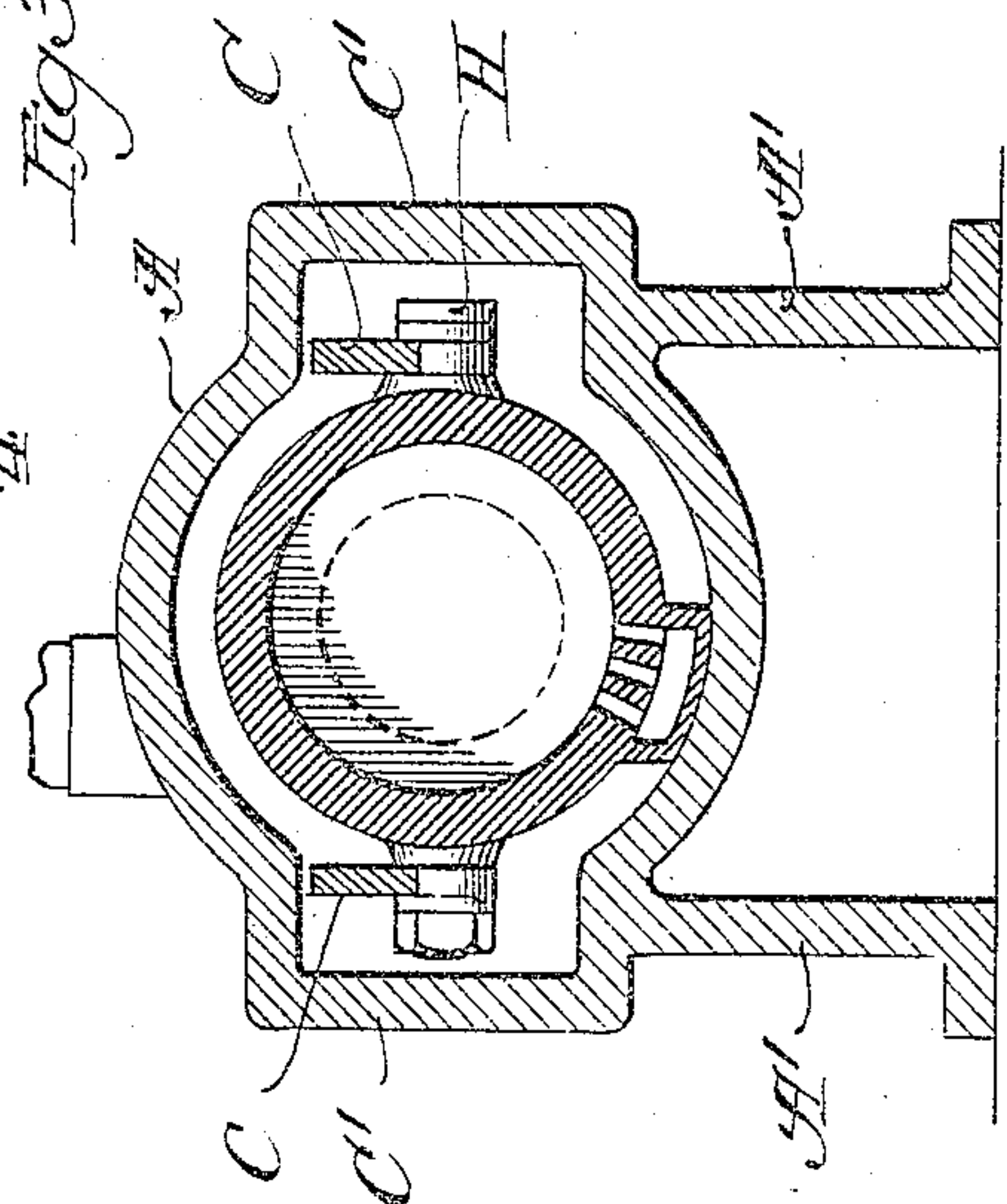


Fig. 3.



Witnesses
Edw. Banitt.
L. Alter.

Inventor
Peter Schmitz
By George King, Atty.

UNITED STATES PATENT OFFICE.

PETER SCHMITZ, OF CHICAGO, ILLINOIS.

GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 767,369, dated August 9, 1904.

Application filed October 12, 1903. Serial No. 176,682. (No model.)

To all whom it may concern:

Be it known that I, PETER SCHMITZ, a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful
5 Improvements in Gas-Engines, of which the following, taken in connection with the drawings, is a specification.

This invention relates to gas-engines of the type known as "two-cycle" engines. It is designed to receive an impulse for each revolution of the crank-shaft and to apply the resultant force to said shaft, which may be considered a main shaft.

In carrying out said invention I have provided a reciprocating compression-cylinder
15 divided into two chambers, one purely for compression and the other for compression and combustion, by a central piston fixed relatively thereto and working in connection
20 with two fixed cylinders having abutments and water-chambers, over which latter cylinders the chambers of the compression-cylinder telescopes. Valve connections and inlet and exhaust ports are provided, whereby the
25 expansion of the ignited gases in the combustion-chamber causes compression of gas in the opposite chamber, which is then led into the exhausted combustion-chamber and then further compressed in the reverse stroke and ignited at the termination of said stroke, which
30 corresponds with the completion of one revolution of the crank-shaft.

Other novel features of the invention will appear in the accompanying description and
35 by reference to the accompanying drawings, in which—

Figure 1 represents a central sectional view in top plan of a machine embodying said invention in its preferred form. Fig. 2 is a side
40 elevation of said machine in longitudinal central section. Fig. 3 is a cross-section thereof on the correspondingly-numbered line in the preceding figure, and Fig. 4 is a similar cross-section on the line 4 4 of Fig. 2.

Referring to said drawings, A represents the casing of the machine fixedly supported on
45 legs A' or in any other desirable manner.

B is the crank-shaft turning in bearings b, secured to the rear end of the casing or other-

wise. The casing is advisedly made cylindrical throughout its length, except toward the rear, where it begins to flare from lugs c to the end to accommodate the play of the
50 forked pitman C or connecting-rod for the piston. It has also lateral bulges C' for the latter purpose. To the lugs c is bolted the
55 flange d of a cylinder D, concentric with the casing and divided by diaphragm d' into the compartments or chambers D' D², the former or forward one of which is open and forms
60 part of the combustion-chamber, while the rearmost, D², is filled with water, also closed by a cap d² to confine its charge. Packing-rings d³ are inserted in channels in the forward periphery of this cylinder, hereinafter
65 termed the "rear" fixed cylinder.

To an inseting-rim at the front of the casing is bolted the flange e of a second or forward concentric fixed cylinder E, likewise divided by a diaphragm or abutment e' into two
70 chambers or compartments E' and E², the former, in this instance the rearmost one, being open and constituting part of the primary compressing-chamber, and the latter or front chamber being filled with water and closed
75 by cap e² to confine the contents. Like the rear fixed cylinder, the forward one has exterior packing-rings e³ set in peripheral channels, but at its rear end. The cap and abutment of the cylinder E are both penetrated by
80 inlet-pipe F, leading from a suitable chamber and opening into the primary compressing-chamber to deliver the motive fluid thereto. A check-valve f in this pipe permits the inflow of the charge through the pipe, but cuts off
85 its exit thereby.

Closely fitting over and playing upon the two fixed cylinders is a piston-cylinder G, divided by piston g into two chambers G' and G², the chamber G' constituting, with the piston and the new chamber and abutment of the
90 front fixed cylinder, the primary compression-chamber, and the chamber G² constituting, with the piston, the front chamber, and abutment of the rear fixed cylinder, the secondary
95 compressing and combustion chamber.

The pitman, as above stated, is forked, its arms h h' passing one on each side of the pis-

ton-cylinder between the latter and the casing and being journaled upon the ends of a rod H, passing through the piston.

Formed in the wall of the piston-cylinder is an exhaust-passage I, extending longitudinally thereof and having ports i i' , which in the position of parts indicated in Fig. 2 are both closed by the walls of the fixed cylinders; but when the piston-cylinder moves farther to the left under the force of the expanding gases in the explosion-chamber are caused to register, the first with exhaust-port I' and the second with said chamber, thus opening a passage-way for the dead charge.

Through the wall of the compressing-chamber of the piston-cylinder is found an education-port k , which at a certain point in the reciprocation of said cylinder registers with a passage-way k' in valve-box K, being at other times cut off by the close-fitting contact of the external surface of the cylinder with the contacting planed surface of the valve-box. A check-valve K' permits the passage of the charge from the compression-chamber into the passage k , but prevents its return. From the passage k' a port l^3 leads through the valve-box in such position that at the moment port k and passage k' are in registry the port l^3 registers with the port l' , leading into the explosion chamber, being at other times cut off by the closing of the outer wall of the reciprocating-cylinder therepast.

In operation the piston-cylinder is moved to the left by the energy of the exploded gases compressing the gas in the left-hand or compression cylinder until the port i opens to the

explosion-chamber, when the latter is at once exhausted by the concurrent registry of the port i' and the exhaust-port I'. This takes place at the moment the crank is passing the inner dead-center. In its further movement the ports k and l^3 are opened to the passage k' and the combustion-chamber receives a fresh charge, which is compressed therein until the crank passes the outer dead-center, when ignition takes place, and the piston moves again to the left.

I claim—

The combination of the two fixed cylinders and their abutments dividing them into water-compartments and compression and combustion chambers, the piston-cylinder playing over said fixed cylinders and divided by the piston into coöperating compression and combustion chambers, a valved inlet for the motive fluid delivering to the combustion-chamber, a passage-way and check-valve, ports in the respective sections of the piston-cylinder which register with the respective ends of the said passage-way at determined intervals, the forked connecting-rod and a crank-shaft operated thereby, an exhaust-port in one of said fixed cylinders and an exhaust-passage in the piston-cylinder opened to the combustion-chamber and to said port at the end of the forward stroke thereof, substantially as described.

PETER SCHMITZ.

Witnesses:

N. P. BLAIN,
Mrs. E. D. KANALEY.