

No. 731,956.

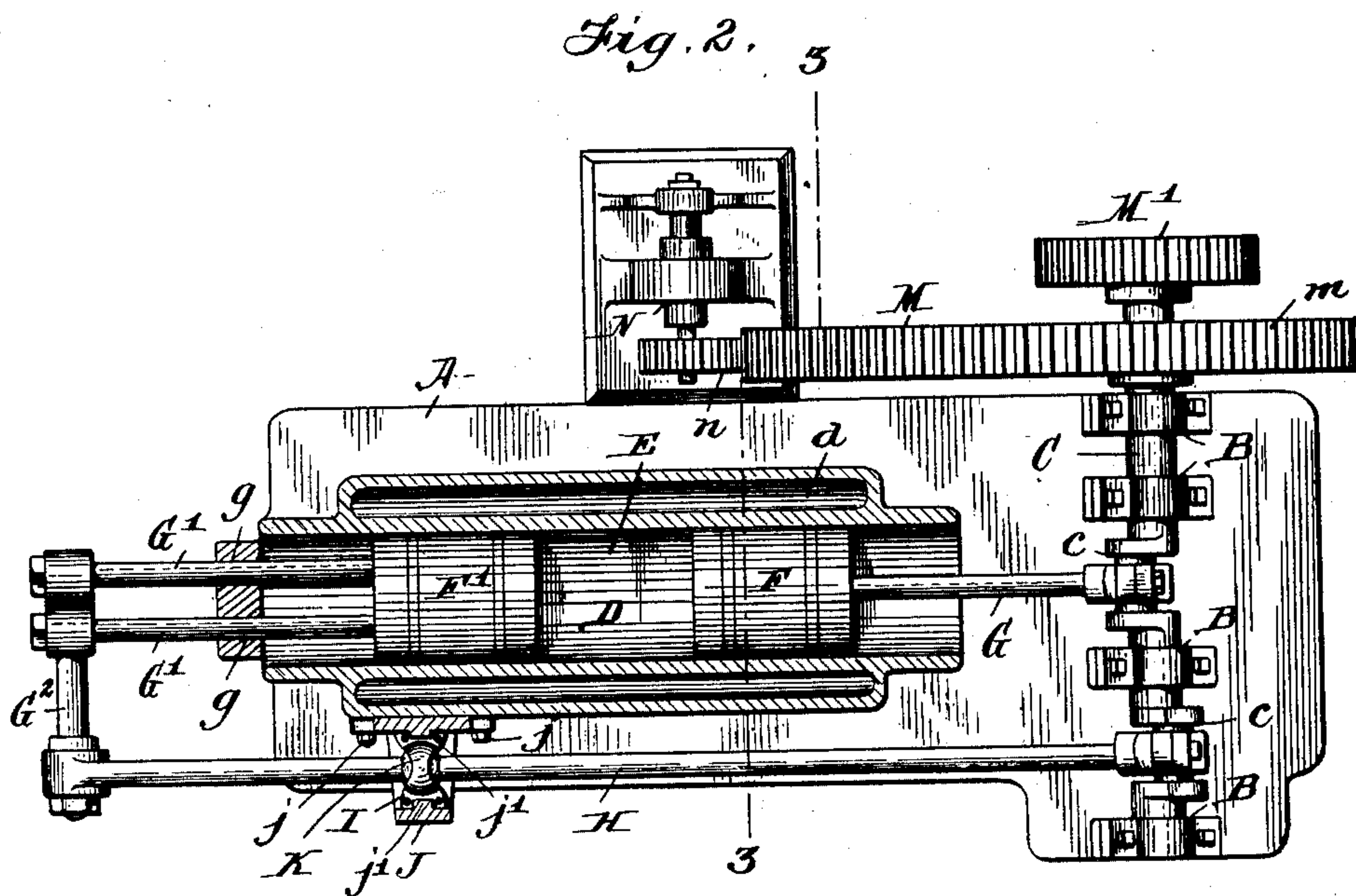
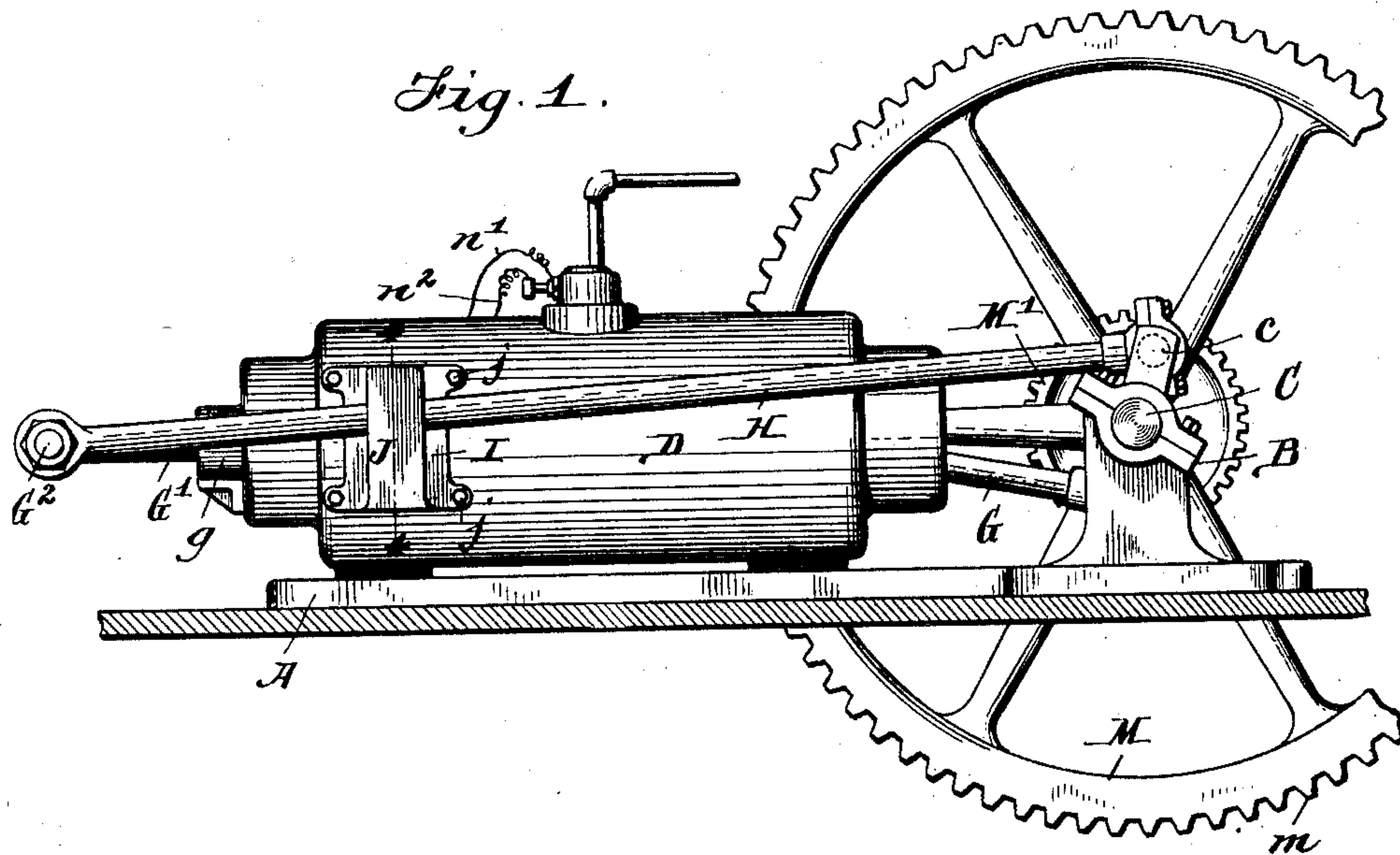
PATENTED JUNE 23, 1903.

C. ROSSLER.
GAS ENGINE.

APPLICATION FILED FEB. 27, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

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2 SHEETS—SHEET 2.

NO MODEL.

Fig. 3.

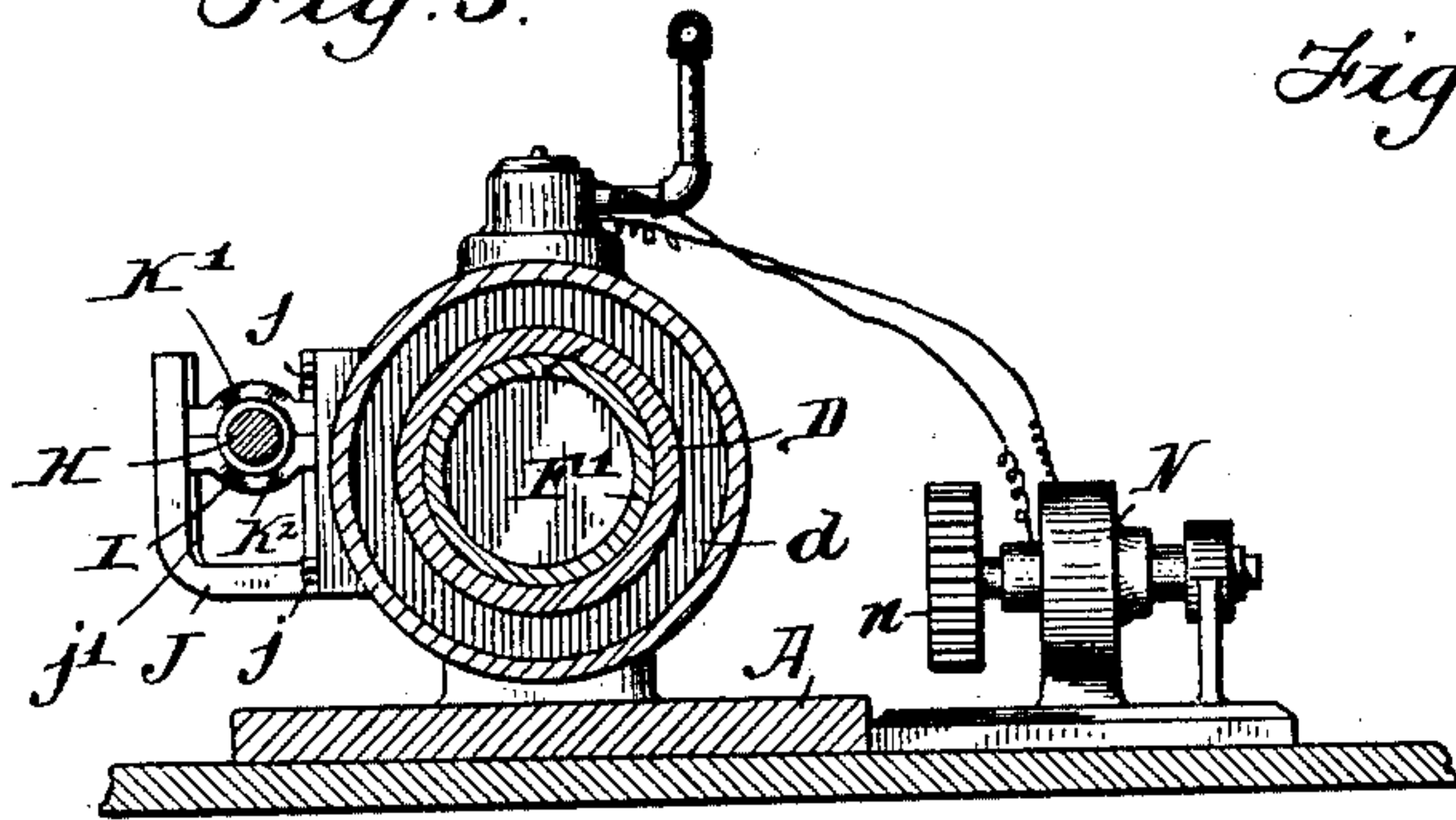


Fig. 4.

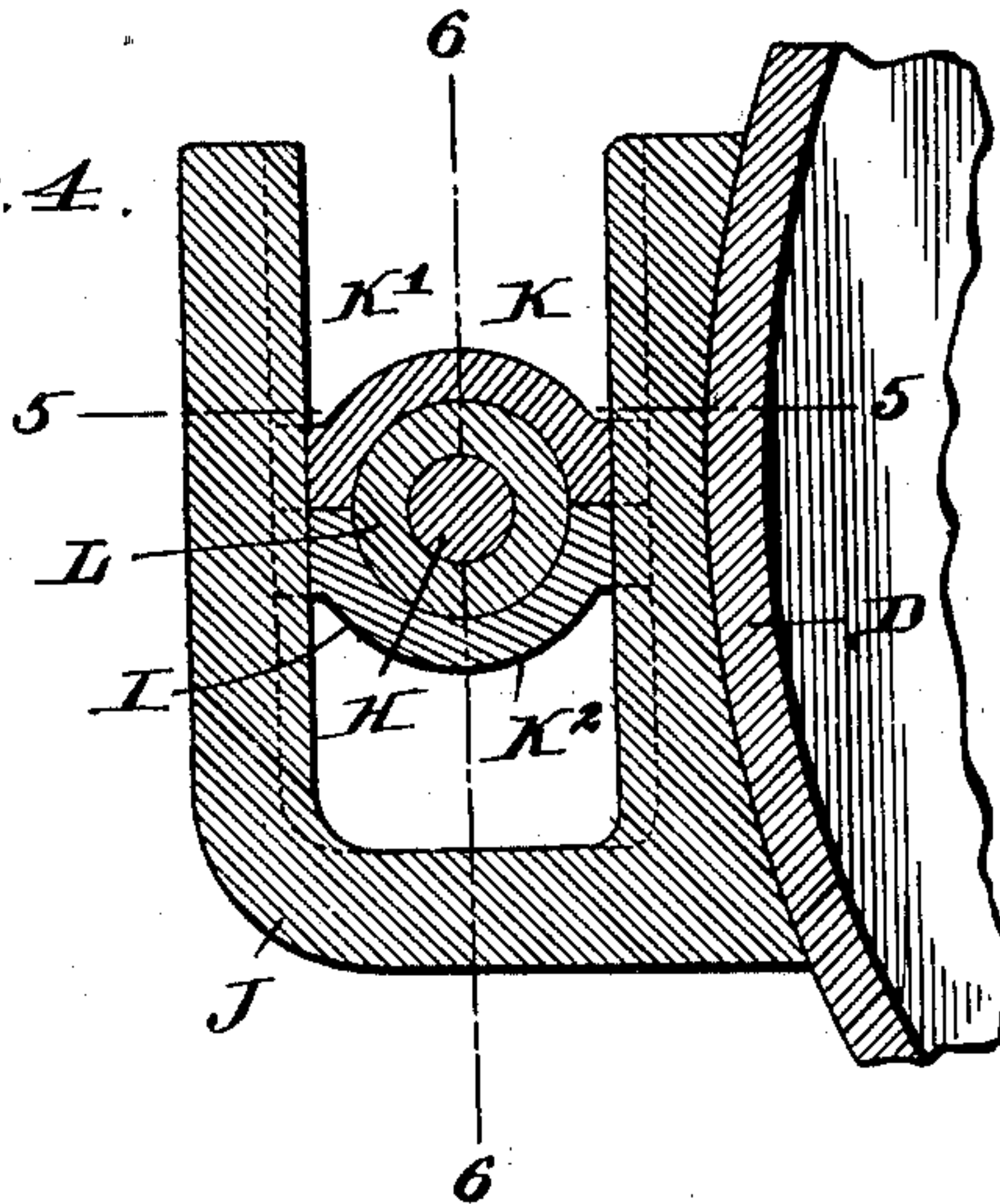


Fig. 5.

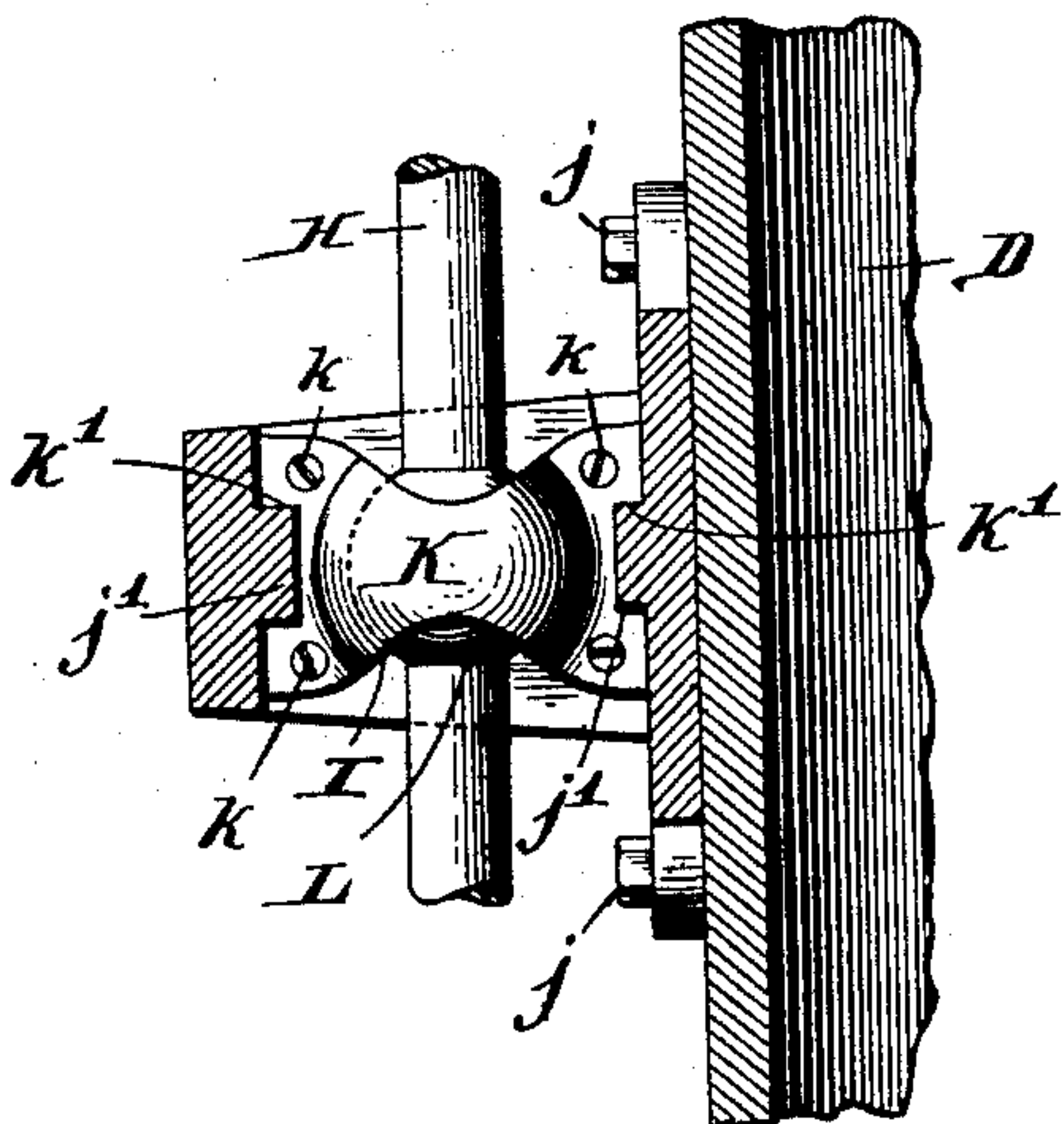
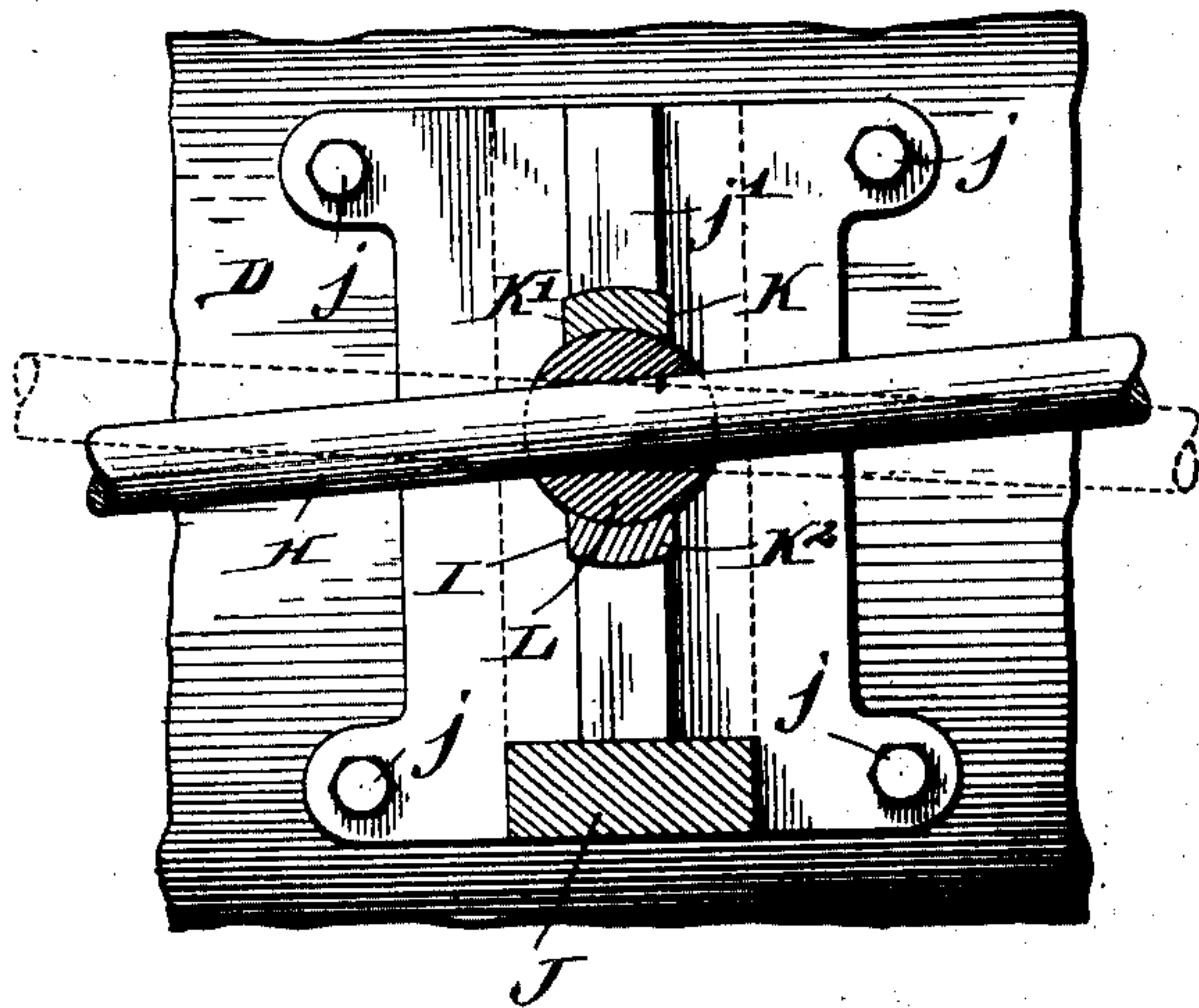


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES ROSSLER, OF BUFFALO, NEW YORK.

GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 731,956, dated June 23, 1903.

Application filed February 27, 1902. Serial No. 95,874. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ROSSLER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Gas-Engines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to gas-engines of that type in which two pistons working in a single cylinder are employed, said cylinder having an igniting-chamber common to both pistons.

The invention has for its object to provide an improved driving connection between the pistons and the driving-shaft, whereby the strain exerted on the driving-shaft by the connecting-rod and one of the piston-rods will be equalized, and to provide a vertically-slidable and rocking bearing for the connecting-rod, which connects the distant piston with the driving-shaft.

Another object is to provide an engine without slideways and cross-heads, which I dispense with by the employment of two piston-rods on the piston connected to the crank-shaft by the connecting-rod lying outside of the cylinder.

The invention consists, substantially, in the combination and relative arrangement of the parts, all as will be hereinafter more fully described, as shown in the accompanying drawings, and as specifically pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of my improved engine. Fig. 2 is a sectional plan view of the same, the cylinder being shown in horizontal section. Fig. 3 is a transverse section taken on line 3 3, Fig. 2. Fig. 4 is an enlarged vertical section through the vertically-movable and rocking bearing, taken on line 4 4, Fig. 1. Fig. 5 is a horizontal section taken on line 5 5, Fig. 4. Fig. 6 is a vertical section taken on line 6 6, Fig. 4.

Reference is to be had to the accompanying drawings, in which like letters of reference refer to like parts in the several figures.

The letter A designates the bed-plate or base, which has the pillow-blocks B formed thereon, in which the crank-shaft C, having oppositely-disposed cranks c, is journaled.

The cylinder (designated by the letter D) is supported on the base in any suitable man-

ner and has the usual water-jacket d surrounding the same, and the igniting-chamber E, which is common to all gas-engines. This igniting-chamber is arranged midway between the ends of the cylinder, and the explosive force is directed against the pistons F F' and forces them outward. The piston F, being nearer the crank-shaft than the piston F', has connection with one crank of said crank-shaft by a piston-rod G, while the distant piston F' is provided with two piston-rods G', having their outer ends connected together by a laterally-extending arm G², which acts as a pivot for one end of a connecting-rod H, which has its opposite end secured to the crank-shaft. The piston-rods G' reciprocate in guides g, formed on or secured to the cylinder. The two piston-rods provide a simple and effective connection and prevent the possibility of the piston turning in the cylinder and also tend to prevent the end of the connecting-rod lowering, which would otherwise be the tendency unless the usual slideway and cross-head were employed. This construction prevents all twisting strains and always leaves the parts free acting and easily accessible. It also reduces the number of moving parts and greatly strengthens such parts as receive the severest strains. To properly support the connecting-rod H, a vertically-slidable and rocking bearing I is provided. To one side of the cylinder, near that end adjacent to the piston-rods G', a U-shaped bracket J is secured by bolts j, and therein the said bearing is slidably held. Vertically-disposed guide-ribs j' are formed on this bracket to prevent displacement of the bearing I, as will presently appear. The bearing I comprises a socket K, divided centrally and consisting of an upper half-section K' and a lower half-section K², both held together by screws k or in any other suitable manner. The socket is grooved, as at k', to fit the guide-ribs j', formed on the bracket J, thus permitting of vertical movement, but preventing lateral displacement. A spherical guide portion L is held in the socket and is capable of rocking therein to compensate for the change of angle of the connecting-rod caused by the raising and lowering of that end secured to the crank-shaft. It is therefore apparent that the change of angle of the connecting-rod is compensated

for by the spherical guide portion L, while the ascension and descension of the same at the point of the bearing is compensated for by the vertical travel of the socket wherein the spherical guide portion L is held.

M designates the fly-wheel, secured to the crank-shaft, said fly-wheel having peripheral teeth *m*. M' is a gear-wheel from which power may be transmitted to any desirable object.

10 A dynamo or other suitable mechanical electric generator N is provided with a pinion *n*, which meshes with the teeth *m* of the fly-wheel, whereby the dynamo or electric generator is driven, the latter being in electric connection with the igniting-chamber, as shown by the wires *n'* *n*².

Having thus described my invention, what I claim is—

1. In a gas-engine, the combination with the 20 cylinder having two pistons therein, of a crank-shaft having two oppositely-disposed cranks and being journaled at or near one end of the cylinder, a piston-rod connecting the adjacent piston with one crank of the crank-shaft, a piston-rod secured to the other piston, a connecting-rod located outside of the cylinder and having connection at one end with the last-mentioned piston-rod and at its other end with the other crank of the crank-shaft, and a vertically-moving bearing wherein said connecting-rod is guided, substantially as set forth.

2. In a gas-engine, the combination with the cylinder having two pistons therein, of a 35 crank-shaft having two oppositely-disposed cranks and being journaled at or near one end of the cylinder, a piston-rod connecting the adjacent piston with one crank of the crank-shaft, a piston-rod secured to the other piston, a connecting-rod located outside of the cylinder and having connection at one end with the last-mentioned piston-rod and at its other end with the other crank of the crank-shaft, and a bearing having a combined rocking and vertical movement wherein said connecting-rod is guided, substantially as set forth.

3. In a gas-engine, the combination with the cylinder having two pistons therein, of a 50 crank-shaft having two oppositely-disposed cranks and being journaled at or near one end of the cylinder, a piston-rod connecting the adjacent piston with one crank of the crank-shaft, a piston-rod secured to the other piston, a connecting-rod located outside of the cylinder and having connection at one end with the last-mentioned piston-rod and at its other end

with the other crank of the crank-shaft, a guideway secured to one side of said cylinder, and a ball-and-socket guide capable of vertical movement in said guideway, said ball portion being capable of movement in the socket and having the said connecting-rod sliding therein, substantially as set forth. 60

4. In a gas-engine, the combination with the cylinder having two pistons therein, of a 65 crank-shaft having two oppositely-disposed cranks and being journaled at or near one end of the cylinder, a piston-rod connecting the adjacent piston with one crank of the crank-shaft, a piston-rod secured to the other piston, a connecting-rod located outside of the cylinder and having connection at one end with the last-mentioned piston-rod and at its other end with the other crank of the crank-shaft, a guideway secured to one side of said cylinder, a socket divided into two parts guided in said guideway, and a spherical portion located in said socket wherein said connecting-rod is guided, substantially as set forth. 75

5. In a gas-engine, the combination with the 80 cylinder having two pistons therein, of a crank-shaft having two oppositely-disposed cranks and being journaled at or near one end of the cylinder, a piston-rod connecting the adjacent piston with one crank of the crank-shaft, two piston-rods secured to the other piston, a laterally-projecting arm connecting the outer ends of the last-mentioned piston-rods together, a connecting-rod located outside of the cylinder and having connection at 90 one end with said laterally-projecting arm and at its other end with the other crank of the crank-shaft, and a bearing having a combined rocking and vertical movement wherein said connecting-rod is guided, substantially as set forth. 95

6. In a gas-engine, the combination with the cylinder having two pistons therein, of a crank-shaft having two oppositely-disposed cranks, a piston-rod connecting one crank 100 with one of said pistons, a connecting-rod lying outside of the cylinder and connecting the other crank of the crank-shaft with the second piston, and a vertically-movable bearing wherein said connecting-rod is guided. 105

In testimony whereof I affix my signature in the presence of two subscribing witnesses.

CHARLES ROSSLER.

Witnesses:

EMIL NEUHART,
CHAS. A. BURKHART.