

(No Model.)

L. C. PARKER.

ELECTRIC IGNITING DEVICE FOR GAS ENGINES.

No. 287,855.

Patented Nov. 6, 1883.

Fig. 1.

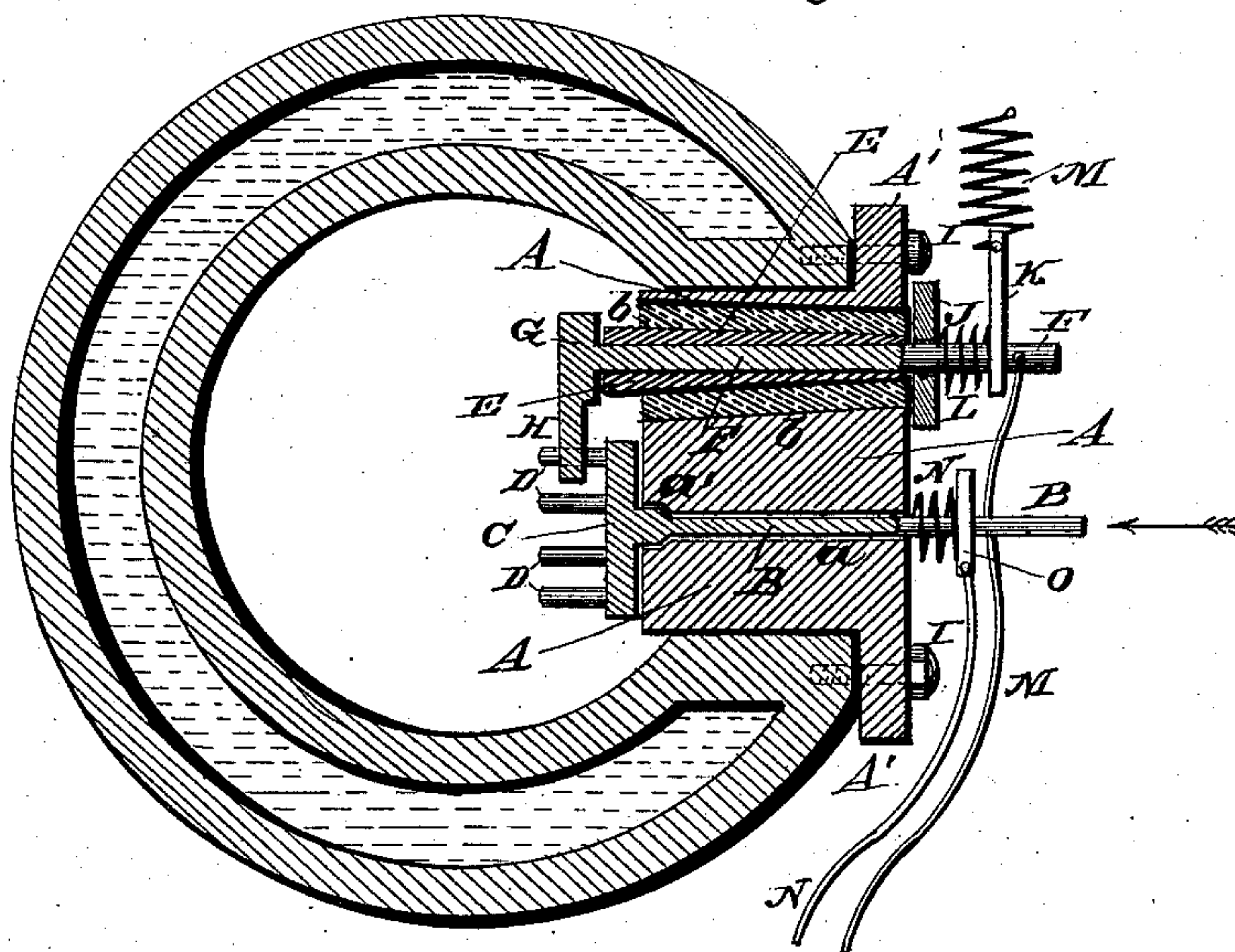


Fig. 2.

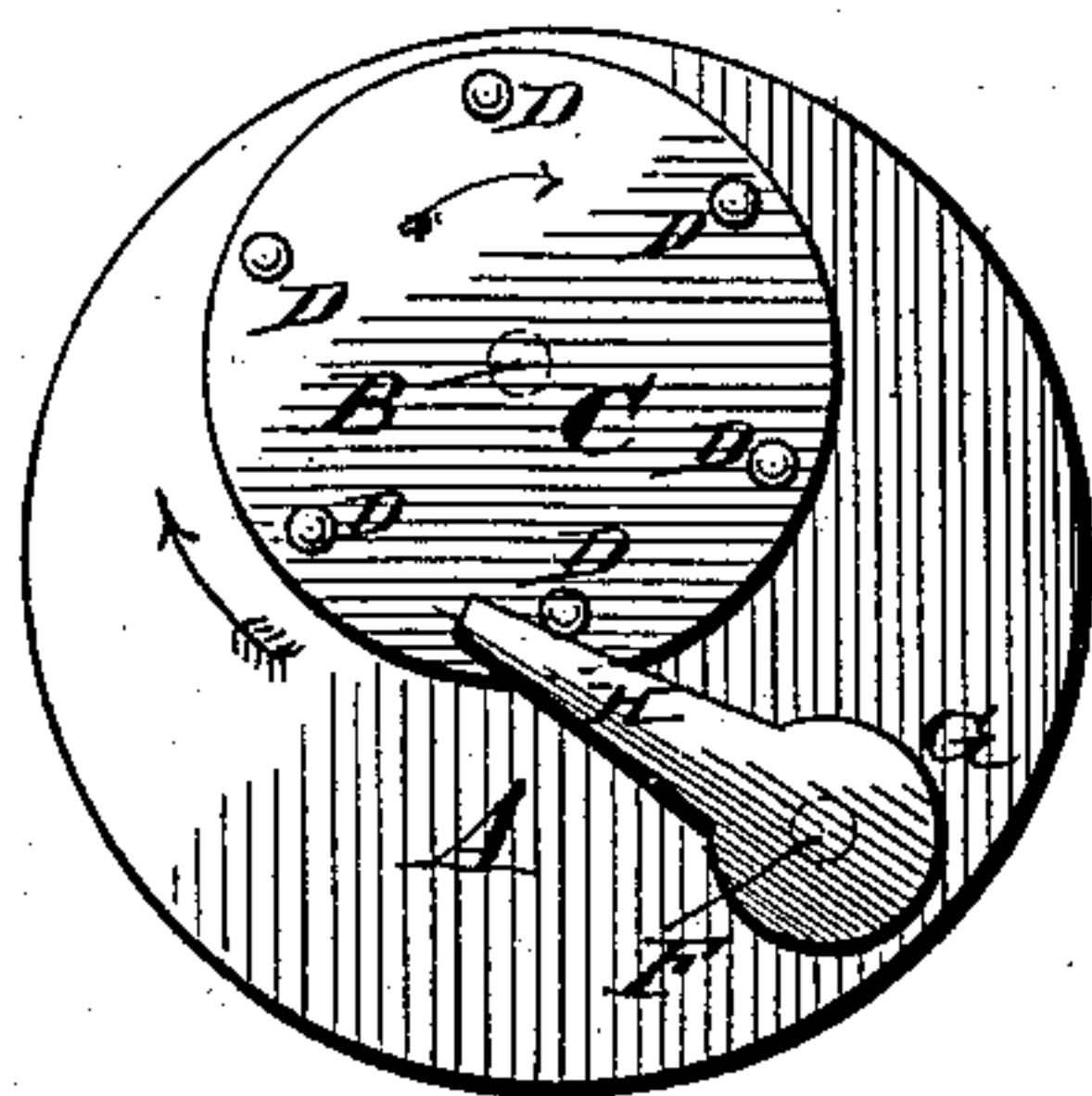


Fig. 3.

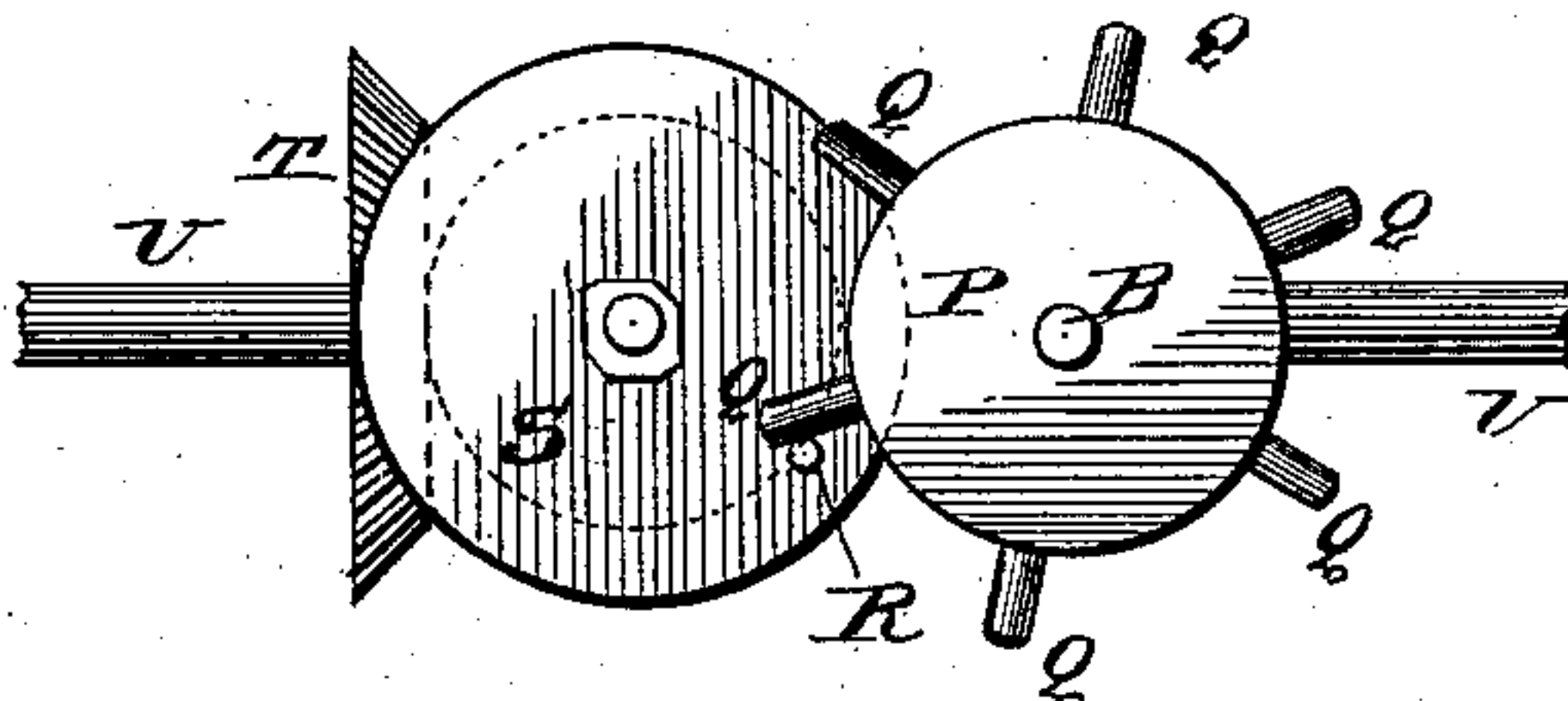
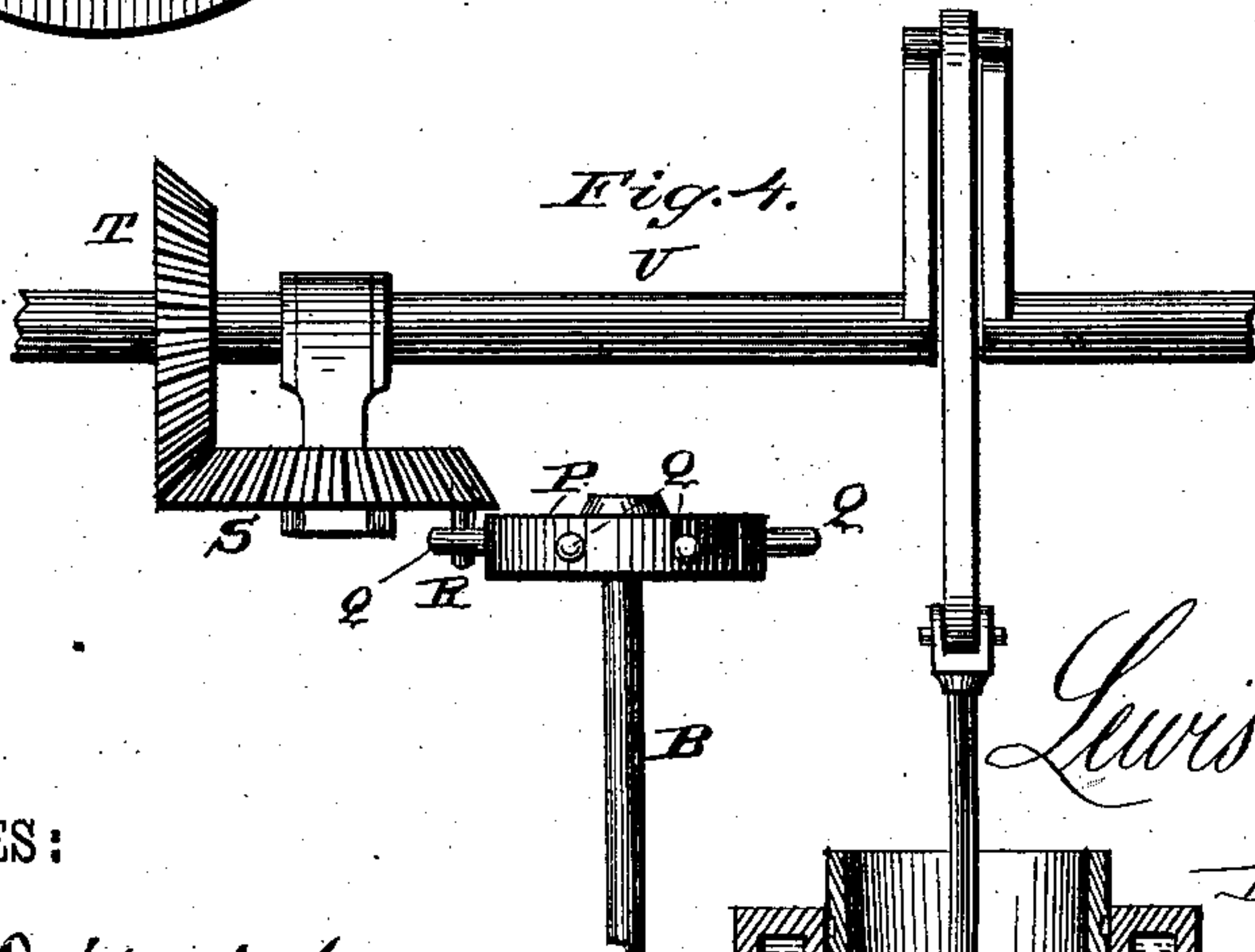


Fig. 4.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

LEWIS C. PARKER, OF YONKERS, NEW YORK.

## ELECTRIC IGNITING DEVICE FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 287,855, dated November 6, 1883.

Application filed August 7, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS C. PARKER, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Electric Igniting Devices for Gas-Engines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a cross-section of the cylinder of a gas-engine, showing the construction and arrangement of my improved electrical igniting device. Fig. 2 is a plan or top view of the igniting apparatus, and Figs. 3 and 4 are detail views illustrating the mechanism for operating the igniting device.

Similar letters of reference indicate corresponding parts in all the figures.

My invention relates to an improvement in the igniting devices of explosive gas-engines, the object being to insure the prompt ignition of the charge of mixed gas and air behind the piston of the motive cylinder which constitutes the operating force.

To this end it consists in the construction, arrangement, and combination of parts, as hereinafter more fully described and claimed, of a current-breaker in connection with suitable electrical conductors terminating inside the motive cylinder or engine, whereby a spark may be produced between the terminals of said conductors by the current from a dynamo or other mechanical electrical generator driven by the engine, which spark is produced at the proper time for igniting the charge of mixed air and gas, in the manner hereinafter more fully described.

In the accompanying drawings, A denotes a plug, preferably, but not necessarily, cylindrical in shape, and made of cast-iron or any other suitable material. This plug has a longitudinal bore, *a*, countersunk at one end to form the seat *a'*, and another tapering bore, *b*. Inserted through the bore *a*, and working smoothly therein, is a spindle, B, which is provided with a head, C, adapted to fit closely in a countersunk seat, *a'*. The head C is in the

form of a circular disk, as shown in Fig. 2, and is provided with a series of projecting pins or studs, D, of any suitable metal, arranged in a circle around and in proximity to the periphery of the circular disk C, and equidistant from one another. Inserted through the conical or tapering bore *b* is a metallic bushing, E, which is held firmly in place in the bore, but separated from contact with the body of the plug by any suitable non-conductive packing—such as porcelain, glass, rubber, asbestos, or any other suitable substance. Inserted through this bushing E is a spindle, F, the head G of which has an arm, H, the outer end of which overlaps disk C. The plug A is fastened to one side of the cylinder by screws or bolts I inserted through the flange A', and the projecting outer end of spindle F passes through a non-conducting washer, J. Upon the projecting outer end of spindle F is secured at right angles an arm, K, and a spring, L, placed between the non-conducting washer J and arm K, operates to draw the head G of spindle F against its seat upon the inner end of bushing E. Another spring, M, one end of which is fastened to any suitable part of the machine or machine-frame, and its other end to the free end of arm K, operates to press the inside arm, H, gently against the pins D, as shown more clearly in Fig. 2 of the drawings. In order to keep the head C of spindle B to its seat *a'*, I insert a spring, N, between the outside of the plug and a disk or pin, O, fastened on the projecting outer end of spindle B, and connecting the spindle with one of the electrical conductors from the dynamo.

I do not confine myself to any particular means or mechanism for operating the device, but prefer to use the mechanism which is illustrated in Figs. 3 and 4 of the drawings, and which is substantially the same as the operating mechanism for operating the current-breaker shown and described in the specification of my Letters Patent for a gas-engine reissued February 20, 1883, No. 10,290, with some modifications—that is to say, on the outer end of spindle B, I fasten a sprocket-wheel, P, having a series of equidistant peripheral projecting pins, Q, corresponding in number to the number of pins D upon head C. These pins engage a stud or projection, R, upon a disk or



bevel-wheel, S, which meshes with a bevel-wheel, T, upon a shaft, U, which is the drive-shaft of the engine, and is operated by the crank and piston rod, with its connecting-rod, 5 in the usual manner.

From the foregoing description, taken in connection with the drawings, the operation of this device will readily be understood. A rotary motion being imparted to the wheel S its 10 projecting pin or stud R will intermittently engage the pins or projections Q upon the periphery of disk P, thereby imparting an intermittent rotary motion to the spindle B. The current from the dynamo or other electrical generator flows through the spindle B in 15 the direction of the arrow, and up through the disk C and pins D. The current from the other pole of the generator flows through spindle F and up into its head G and arm H. As 20 long as spindle B remains stationary arm H will be in contact with one of the pins D, and the current will flow uninterrupted through spindle D, head C, one of the pins D, arm H, head G, and the spindle F; but as spindle B 25 is being rotated intermittently, either by the mechanism described or by any other suitable mechanism connected with or operated by the gas-engine, the current will be broken every time arm H slips from one of the pins D to 30 the other, disk C being rotated in the direction of the arrow shown in Fig. 2, and every time the arm slips from one of the pins to another a spark is produced, caused by the temporary breaking of the electrical current, 35 by which the charge of mixed gas and air is ignited and exploded.

The advantages of this construction are its inexpensiveness, simplicity of construction and arrangement, durability, and the ease and

certainty with which it is operated. If the 40 pins D become worn, they can easily be replaced at a small expense, and by their intermittent contact with arm H both they and the arm are always kept metallically clean and bright, so that there will be no failure in producing the 45 spark at the proper moment.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. An electrical current-breaker or igniter 50 for gas-engines, consisting of the plug A, having bores *a b* and countersunk seat *a'*, spindle B, having circular head or disk C, provided with the pins D, insulated spindle F, having head G, and arms H and K, and spring M, 55 constructed and combined, in connection with a suitable actuating mechanism, to operate substantially in the manner and for the purpose shown and set forth.

2. The combination, with the motive cylinder of a gas-engine, of the electrical current-breaker or igniter herein shown and described, the same consisting of the plug A, having 60 bores *a b* and countersunk seat *a'*, spindle B, having circular head or disk C, provided with 65 the pins D, insulated spindle F, having head G, and arms H and K, the springs L, M, and N, and a suitable mechanism operated by the gas-engine for rotating the spindle B intermittently, substantially as and for the purpose 70 shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

LEWIS C. PARKER.

Witnesses:

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W. A. DRINKWATER,