

(No Model.)

J. B. CARSE.
GAS ENGINE.

No. 518,178.

Patented Apr. 10, 1894.

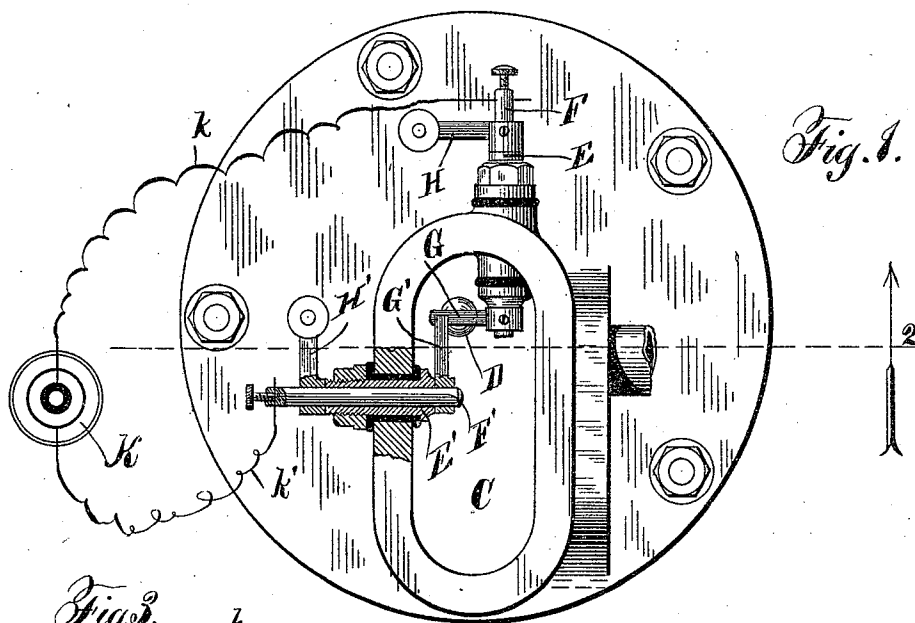


Fig. 1.

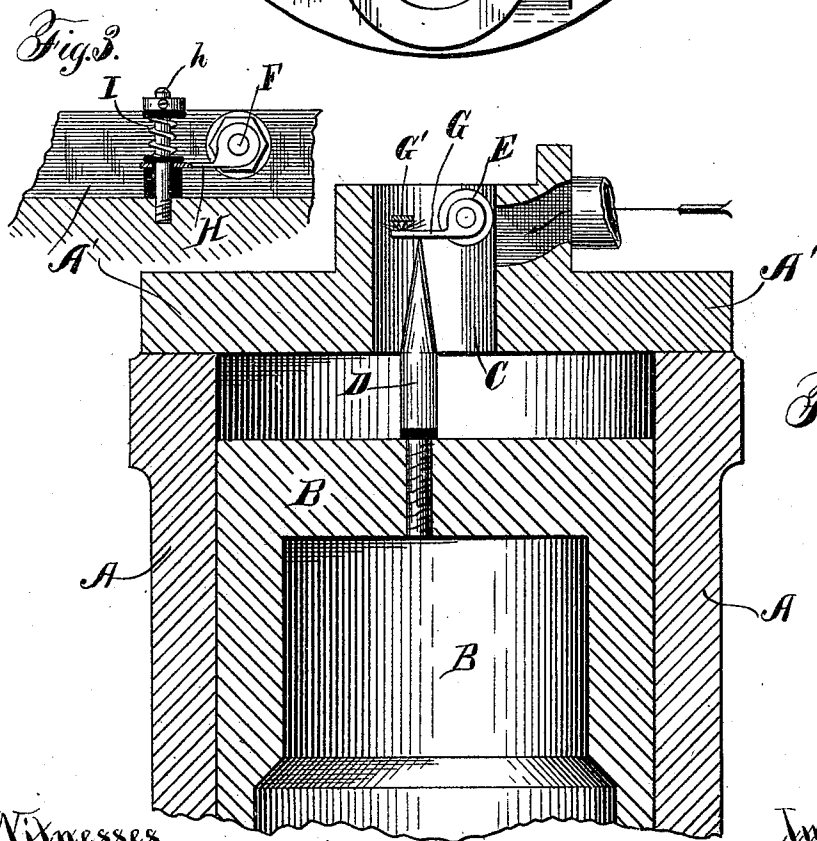


Fig. 2.

Witnesses.
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GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 518,178, dated April 10, 1894.

Application filed April 26, 1893. Serial No. 471,939. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. CARSE, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful
5 Improvements in Gas-Engines, of which the following is a specification.

This invention has reference to gas engines in which an explosive charge to operate the piston is ignited by means of an electric spark.

10 The invention has in view the production of a simple and durable mechanism for interrupting an electric circuit to produce the spark.

To this end it consists in the combination
15 of pivoted spring supported electrodes, arranged to act one upon the other and operated from the reciprocating piston, either directly or through the intermediate pushing device.

20 In the accompanying drawings, I have represented the construction which I prefer to employ in practice, the piston being provided with an insulated finger or pusher, which is projected by the movement of the piston into
25 the combustion chamber, in order to act upon one of the electrodes and push it against the other.

In the drawings, Figure 1 is an end elevation of my improved gas engine, with the head
30 of the combustion chamber removed; Fig. 2 a longitudinal section of a portion of the engine, taken in the line 2 of Fig. 1; and Fig. 3 a detail of a tension device hereinafter described.

35 In making my improved gas engine, I make a cylinder, A, which may be of the desired size and of the ordinary construction, and which is provided with a cylinder head, A', as usual. I arrange a piston, B, in the cylinder, adapted to be moved back and forth, and
40 which is connected with the crank of the engine. I arrange a combustion chamber, C, in the head of the cylinder, extending through the interior of the cylinder. This combustion chamber is of course intended to be provided with a cap or cover to inclose it and
45 confine the explosive power of the gas, so that it will operate against the piston. I provide the piston with a pusher, D, which is preferably insulated from it, as shown, and which
50 has its point or end advanced by the forward

movement of the piston into the combustion chamber. I pass two sleeves, E and E', through the walls of the combustion chamber, and preferably at right angles to each other, as shown
55 in the drawings—although this is a matter of construction that need not be rigidly adhered to. The sleeves are insulated from the walls of the combustion chamber, as represented in the drawings, although, if preferred, but one
60 of such sleeves need be insulated when the pusher is insulated from the piston, as shown. Otherwise, they should both be insulated from the walls of the combustion chamber. I arrange
65 metallic rock shafts, F and F', in the sleeves, and mount on their inner ends rigid metallic arms, G and G'. In their normal positions, the free ends of these arms lap each other, but with a space between them, so that they do not contact. The inner one of the
70 arms is intended to be in position to be contacted by the point or end of the pusher as it moves into the combustion chamber, and to be carried by it back against the outer arm, so as to rub or scrape against its free end.
75 This rubbing or scraping action will serve to keep the arms clean at their point of juncture, so as to always insure a complete and perfect contact. I arrange on the outer ends of the rock shafts rigid arms H and H', whose
80 free ends are provided with holes surrounding a pin or bolt, h, which is insulated from the arm. This bolt is provided with a coiled spring, I, which is also preferably insulated from the arm and bolt. As the rock shafts
85 are turned or rotated by the pusher bearing against the inner rigid arms, the outer arms bear against the tension of the spring, so that as the pusher retreats, the springs will restore the rock shafts and their arms to their
90 normal or working position.

It is obvious that instead of a coiled spring, as shown, weights or other kinds of springs might be employed to restore the rock shafts and their connected parts to their position for
95 work; and I do not therefore desire to limit myself strictly to these particular details, except as they may be mentioned in the claims.

I arrange a battery, K, in suitable position, one pole of which is connected by the wire, k, 100 to the rock shaft, F, and the other pole of which is connected by the wire, k', to the rock

shaft, F', so as to include the rock shafts and their arms in the circuit. Where one of the rock shafts is not insulated from the wall of the combustion chamber, the attachment of
5 the wire to the frame or wall of the combustion chamber will equally serve to include such shaft and its arm in the circuit. As the piston advances, it moves the point or end of the pusher into the combustion chamber and
10 against the inner of the rigid arms arranged therein. As it moves such arm back, it brings it into contact with the other of the rigid arms, and thus completes the circuit.

It will of course be understood that the combustion chamber is intended to be charged with gas or vapor preparatory to each explosion.

What I regard as new, and desire to secure by Letters Patent, is—

20 1. In a gas engine, the combination of a cylinder, a piston movable back and forth therein, a pusher connected to and moving with the piston, a combustion chamber into which the point of the pusher moves, rock
25 shafts passing through the walls of the combustion chamber, inner rigid arms mounted on the inner ends of the rock shafts with their

free ends lapping and adapted to contact as the pusher moves one of the arms, means for restoring the rigid arms to their normal position as the pusher retreats, and an electric circuit which includes the inner rigid arms as parts, substantially as described. 30

2. In a gas engine, the combination of a cylinder, a piston movable back and forth
35 therein, a pusher connected to and moving with the piston, a combustion chamber into which the point of the pusher moves, rock shafts passing through the walls of the combustion chamber, inner rigid arms mounted
40 on the inner ends of the rock shafts with their free ends lapping and adapted to contact as the pusher moves one of the arms, arms on the outer ends of the rock shafts, springs exerting their tension on such arms for restoring them, the rock shafts and the inner arms
45 to their normal position as the pusher retreats, and an electric circuit which includes the inner rigid arms as parts, substantially as described.

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Witnesses:

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