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Patented Apr. 2, 1901.

J. L. ASH.

ELECTRIC IGNITER FOR GAS ENGINES.

(Application filed Nov. 4, 1899.)

(No Model.)

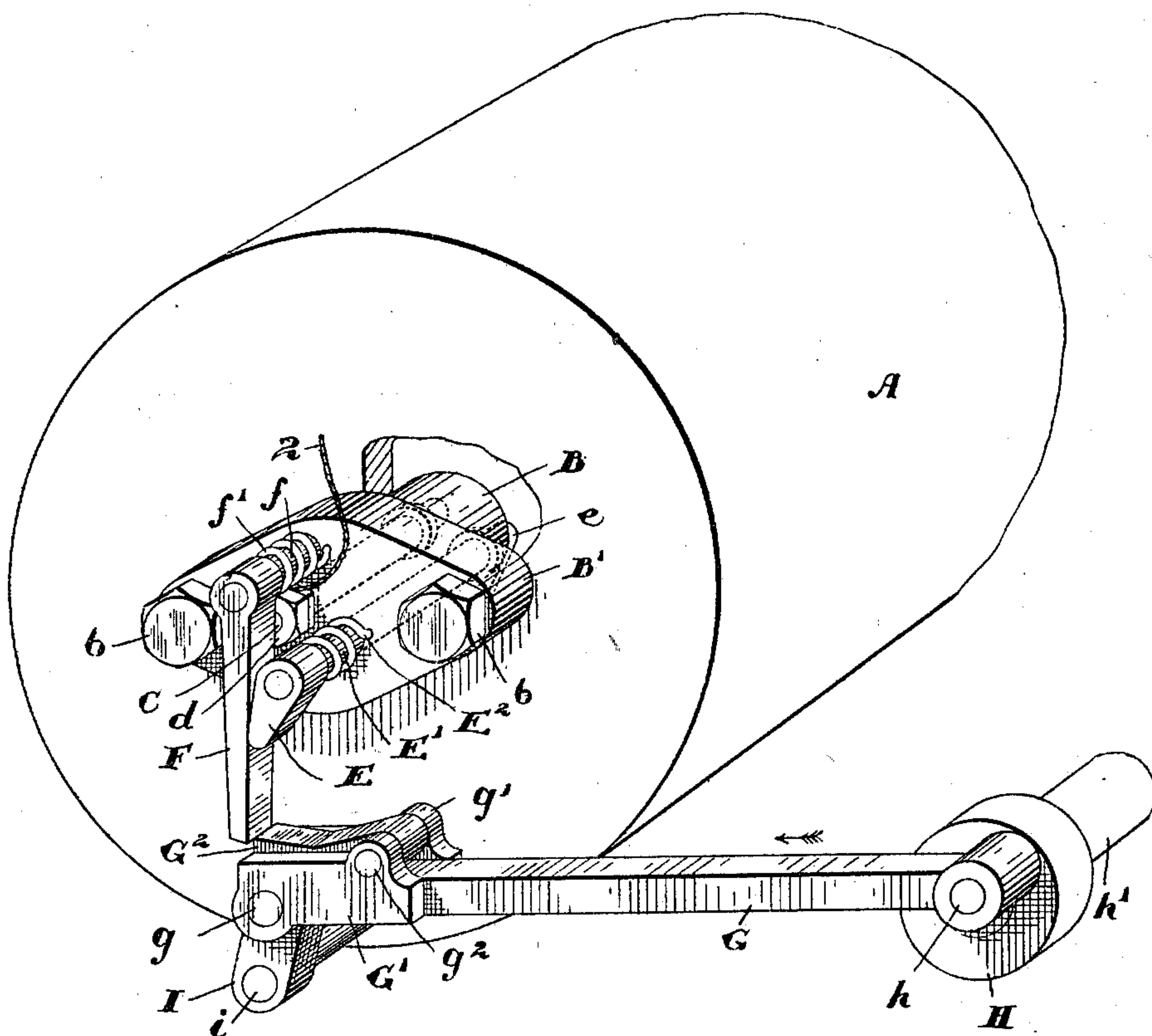


Fig. 1.

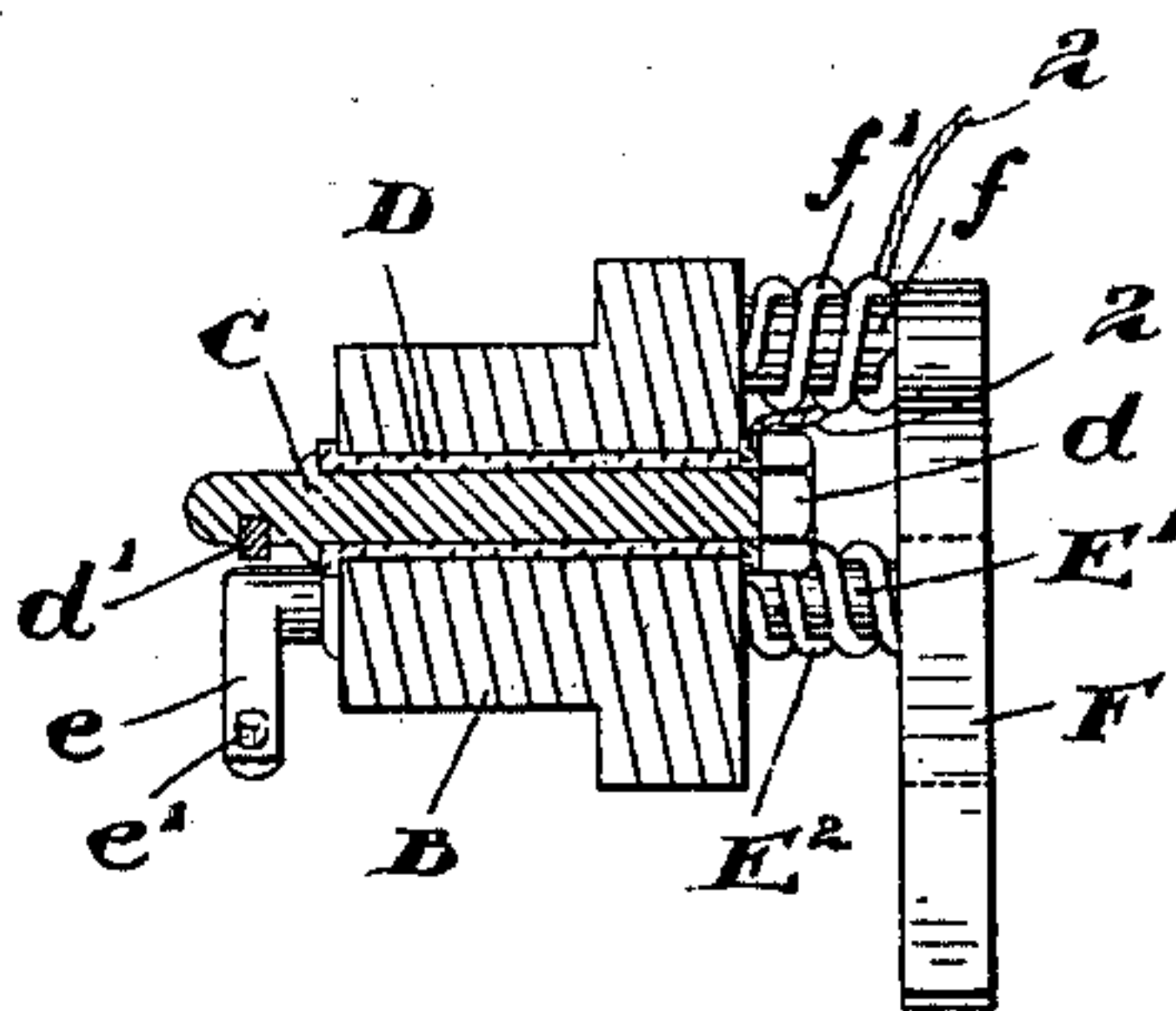


Fig. 2.

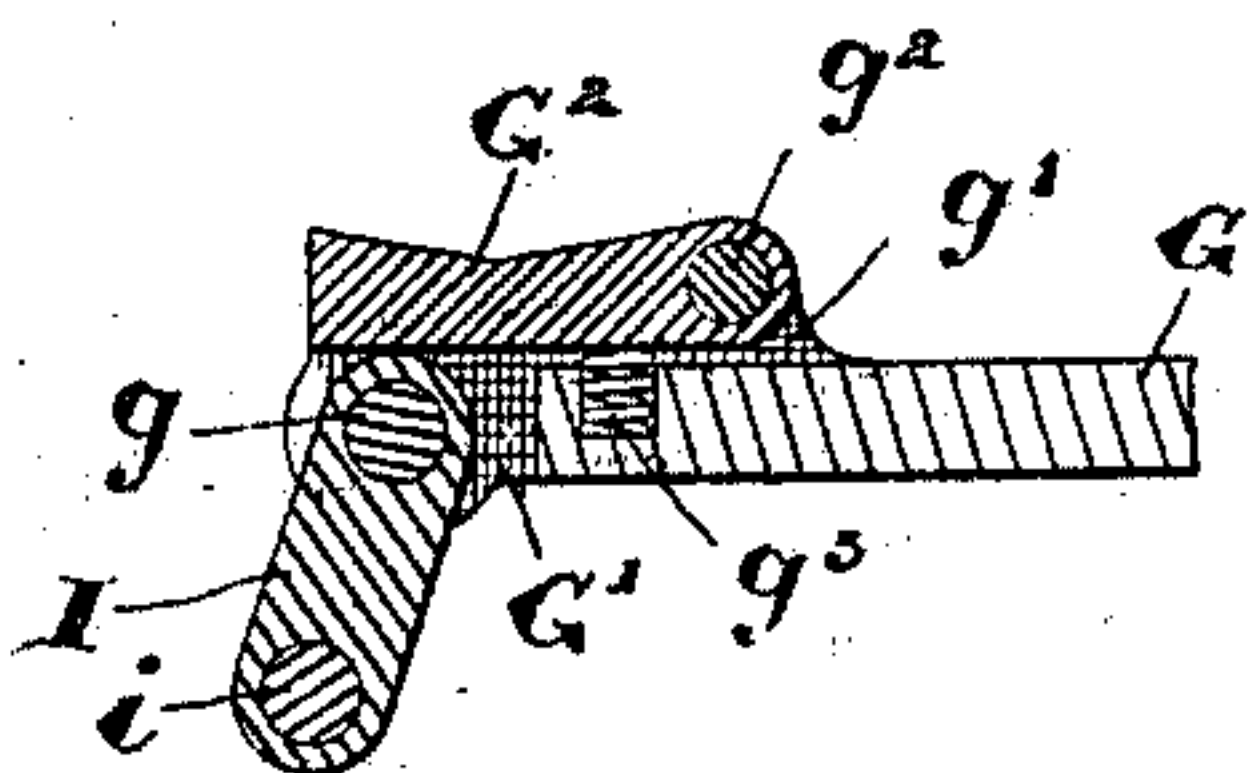


Fig. 3.

Witnesses.

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 670,946, dated April 2, 1901.

Application filed November 4, 1899. Serial No. 735,812. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB LAGRANGE ASH, of the city of Lansing, in the county of Ingham, in the State of Michigan, have invented certain new and useful Improvements in Igniters for Gas-Engines, of which the following is a specification.

My invention relates to improvements in igniters for gas-engines; and the object of the invention is to devise a simple device which will produce sparks intermittently and regularly in the explosion-chamber, so that the explosions will take place in regular succession as required by the speed of the engine; and it consists, essentially, of a pin extending through a suitable plug in the end of the cylinder and suitably insulated from such plug, such pin being provided at the inner end with a laterally-extending contact-pin, which is designed to be engaged with a corresponding pin on the end of a spindle extending through the plug, such pin being provided with an arm at the outer end designed to be spring-held in contact with a longer arm secured on a pin extending also into the plug, the long arm being operated successively from a swinging dog secured on the end of a pitman, which derives its movement from the side shaft of the machine, as hereinafter more particularly explained.

Figure 1 is a perspective view of the end of the cylinder of a gasolene-engine, showing the parts involved in my invention. Fig. 2 is a detail of the plug and sparking contact-pins. Fig. 3 is a sectional detail of the engaging dog and pitman on which it is supported.

In the drawings like characters of reference indicate corresponding parts in each figure.

A is a cylinder of the gasolene-engine, in the end of which is suitably secured a plug B by the bolts *b* extending through the flanges B' of the plug.

C is a pin extending through an insulating-plug D in the plug B. The pin C is held in position by a nut *d* at the outer end.

*d'* is a contact-pin located at the inner end of the pin C and extending laterally therefrom.

E is an arm secured on the outer end of the spindle E', and *e* is an arm secured to the inner end of the spindle E' and provided with sparking pin *e'*, which is designed to be

brought in contact with the sparking pin *d'* intermittently, as hereinafter more particularly explained.

E<sup>2</sup> is a spiral spring encircling the spindle E' at the outer end and having one end extending into the plug and the opposite end extending into the arm E. The spring E<sup>2</sup> is intended to exert a pressure upon the arm in the direction of the longer arm F. The arm F is secured on the end of a spindle *f* and is normally forced against the arm E by means of the spring *f'*, similarly arranged to the spring E<sup>2</sup>.

G is a pitman connected at one end to the crank-pin *h* of the crank-wheel H, which is secured on the shaft *h'* and derives movement from a suitable gear connected to the main shaft of the machine, which it is not necessary here to describe. The opposite end of the pitman G is connected by the pin *g* to a link I, pivoted on a pin *i*, extending outwardly from the cylinder A.

G' represents side bars secured to the pitman G and through which the pivot-pin *g* extends. In the lugs *g'* of the side bars is pivoted on the pin *g*<sup>2</sup> the dog G<sup>2</sup>.

It will be understood that the crank-wheel H derives its movement from the side shaft, which regulates the time for the explosion to take place. Upon each movement of the pitman in the direction indicated by the arrow the dog G<sup>2</sup> presses upon the end of the arm F, and consequently allows the arm E to pass in the same direction as the arm F, thereby bringing the pin *e'* in contact with the pin *d'*, and this action will take place intermittently. Of course the dog G<sup>2</sup> pushes the arm F sufficiently far so that the dog passes underneath the arm. When the arm is released by the dog G<sup>2</sup> passing underneath it, it will strike the arm E and drive it in the opposite direction from that in which it moved when the dog G<sup>2</sup> pushed the arm F away from it, and this action will cause the pins *d'* and *e'* to be quickly separated. The spring *g*<sup>3</sup> underneath the dog G<sup>2</sup> allows such dog to pass backwardly underneath the arm F without binding.

By the action I have above described it will be seen that the requisite movement of the contact-pin *e'* to the contact-pin *d'* is provided for, the electric circuit of course being com-



pleted from the wire 2 through the pin and plug or frame of the engine and the sparking taking place due to the breaking of the current as the pin *e'* leaves the pin *d'*.

5 From the form of igniter I have described it will be readily seen that as the pins *d'* and *e'* are preferably platinum pins the sparking will be effected very effectually and that there will be comparatively little wear and tear on  
10 such pins, which is an important desideratum.

It will be seen that the spring and arm controlled thereby are outside of the explosion-chamber and are not subjected to heat.

What I claim as my invention is—

15 In an igniter for gasolene-engines, the combination with the flanged plug extending through the end of the cylinder, of a pin extending through the plug and suitably insulated from it and provided at the inner end  
20 with a sparking point, a spindle extending

through the plug and provided at the inner end with an arm and a sparking point, an arm at the outer end of the spindle, a supplemental spindle provided with a coacting arm, both arms being spring-held against each other, the stud extending outwardly from the end of the cylinder, the link, the pitman pivotally connected thereto, the crank-wheel connected to the pitman and deriving movement from the main shaft and the spring-held dog  
25 suitably pivoted at the end of the pitman and located with the end normally in proximity to the lower end of the arm depending from the supplemental spindle as and for the purpose specified. 30

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Witnesses:

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