

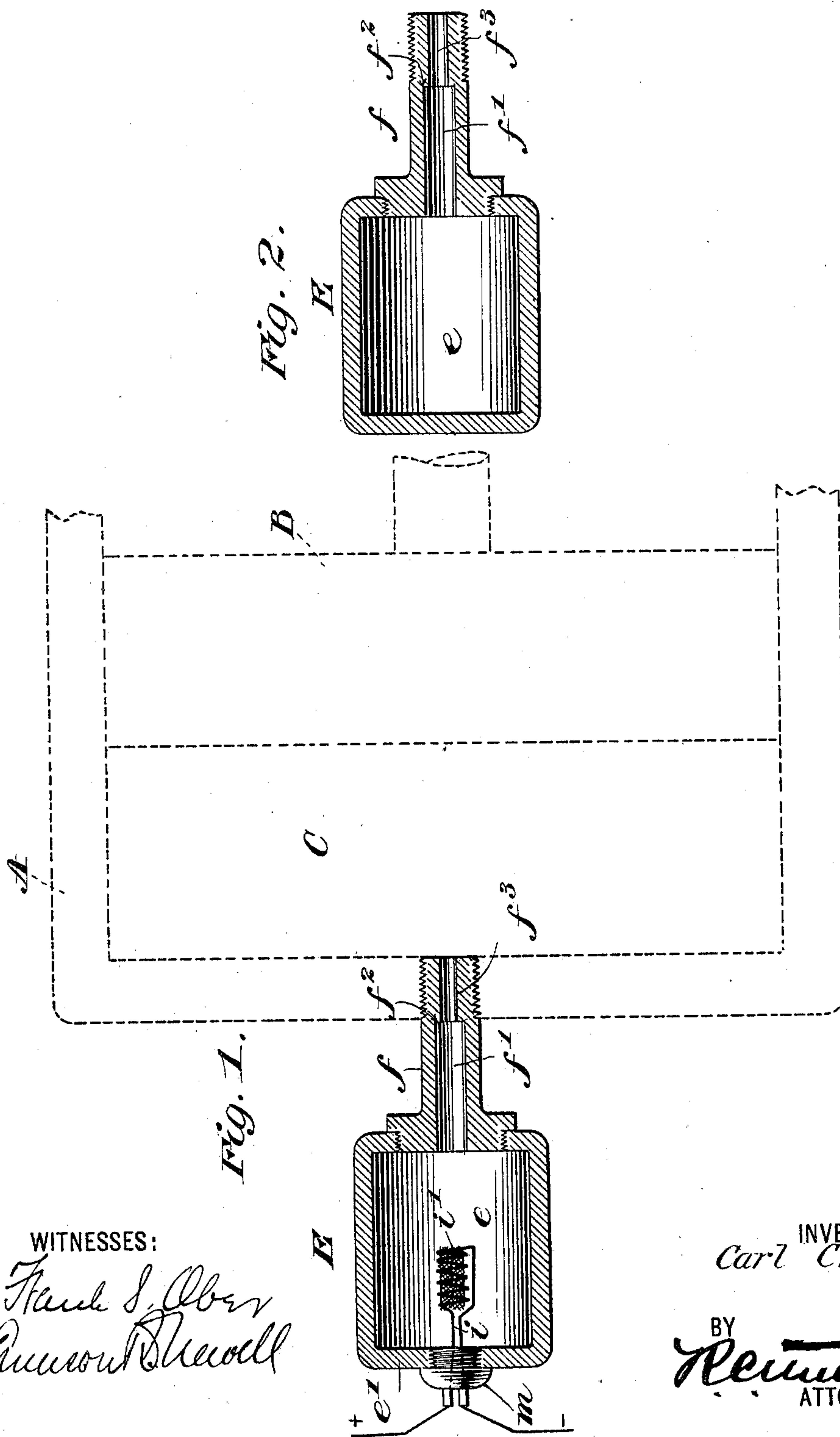
No. 626,394.

Patented June 6, 1899.

C. C. RIOTTE.  
IGNITER FOR GAS ENGINES.

(Application filed Mar. 29, 1898.)

(No Model.)



WITNESSES:

*Frank S. Ober*  
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# UNITED STATES PATENT OFFICE.

CARL C. RIOTTE, OF NEW YORK, N. Y., ASSIGNOR TO THE C. C. RIOTTE COMPANY, OF NEW YORK.

## IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 626,394, dated June 6, 1899.

Application filed March 29, 1898. Serial No. 675,541. (No model.)

*To all whom it may concern:*

Be it known that I, CARL C. RIOTTE, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Igniters for Gas-Engines, of which the following is a full, clear, and exact description.

This invention relates to igniters for gas-engines, the object being to provide a simple device which shall be applicable to any of the various types of such engines and which shall embody a provision whereby premature explosion of the compressed gas in the explosion-chamber may be prevented and such explosions permitted to take place only at the moment the piston shall have reached the limit of its back stroke; and the invention consists of the details of construction hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view of my improved igniter, the said cylinder and piston being shown in dotted lines; and Fig. 2 is a detached sectional view of a modification.

Referring to the drawings by letter, A, B, and C represent, respectively, the cylinder, piston, and explosion-chamber of an engine, the motive power of which is supplied by suitable gas or vapor in said explosion-chamber in the manner familiar to persons skilled in this art.

The igniter is shown at E and may be located at any desired point on the side or head of the cylinder where it can make communication with the chamber C.

The igniter consists of two principal parts, a hollow body portion or chamber  $e$  and a restricted opening thereto, in this embodiment consisting of a somewhat elongated neck  $f$ , having a passage  $f'$  therethrough, communicating with said chamber  $e$ . The two parts aforesaid are preferably made separate and are screwed or otherwise joined together to form a tight joint. The outer end of the neck  $f$  is provided with a screw-thread, whereby the igniter may be attached to the cylinder A.

In the preferred form of the igniter the passage  $f'$  at a suitable point intermediate the extremities thereof is provided with a shoulder  $f^2$ , so that the area of said passage

from the shoulder to the outer end of the neck  $f$  is somewhat reduced, as indicated at  $f^3$ .

$i$  is a resistance-coil, of, preferably, platinum wire, to be raised to a temperature sufficient to explode the gas by an electric current extending into the chamber  $e$  and preferably supporting a bunch or tuft of gauze  $i'$ , which can be quickly heated. The wire  $i$  is preferably attached to a removable cap or plug  $m$ , as shown, so that the said gauze may be accessible for inspection or renewal.

In starting the engine I usually employ the electric primary igniter  $i$  or other common means (not shown) for producing the first few explosions. After two or three explosions the parts become so heated that the gauze will be kept hot enough to explode the gas, and then the current from the wire coil may be shut off and the operation will then go on automatically. I may omit the platinum wire and gauze entirely and use the form shown in Fig. 2, and the starting may be accomplished by applying a flame to the outside of the chamber  $e$  until a sufficient degree of heat has been absorbed to ignite the confined gas, in the same manner as explained below.

In the regular operation of the machine gas is admitted in the usual manner to the explosion-chamber C during the forward stroke of the piston and is compressed by said piston on the back stroke thereof and forced into the chamber  $e$  of the igniter. On reaching said chamber the gas so admitted is ignited, burning in a strong jet, which increases in strength as the gas is further compressed. The flame, however, is prevented from then burning back through the passage  $f^3$  to the chamber C by the pressure of the gas behind it, which, being forced through the restricted portion  $f^3$  of said passage, acts as a blast upon the jet. When the piston reaches the limit of its back stroke, the blast ceases and an equilibrium of pressure is established, whereupon the flame travels forward through the passage  $f^3$  and ignites the gas in the explosion-chamber C. Thus it will be observed that the structure is such that as soon as the igniter is heated it will be automatically sustained at a sufficiently high heat to effect successive explosions at the proper time.



Having described my invention, I claim—

1. In combination a cylinder, and an igniter having a metallic ignition-chamber, a restricted opening therefrom through which gas  
5 to be ignited is adapted to be forced in part and to burn with a jet, said chamber being closed in its normal operation to the egress of gas except through said opening, said igniter located outside of said cylinder and hav-  
10 ing an electric igniting attachment therein, so as to be away from the direct heat from said combustion-chamber.

2. In combination, a cylinder and an igniter having a metallic ignition-chamber, a re-  
15 stricted opening therefrom through which gas

to be ignited is adapted to be forced, said chamber being enlarged relatively to said opening, said chamber being also closed in its normal operation to the egress of gas except through said opening, said igniter lo- 20 cated outside of said cylinder, so as to be away from the direct heat of the combustion-chamber and containing in said ignition-chamber an electric igniting attachment.

Signed at New York, N. Y., this 26th day 25 of March, 1898.

CARL C. RIOTTE.

Witnesses:

EMERSON R. NEWELL,  
FRANK S. OBER.