

(No Model.)

J. W. LAMBERT.
EXPLOSIVE GAS ENGINE.

No. 536,287.

Patented Mar. 26, 1895.

Fig. 1.

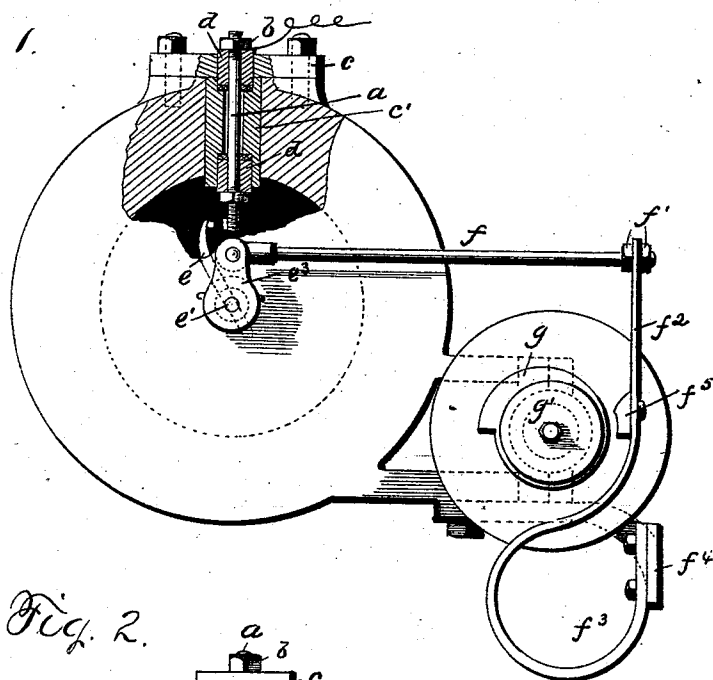


Fig. 2.

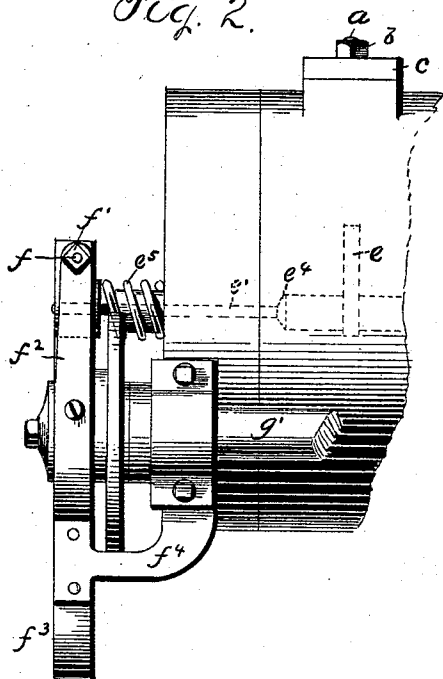


Fig. 3.

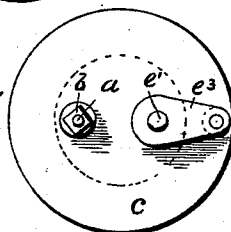
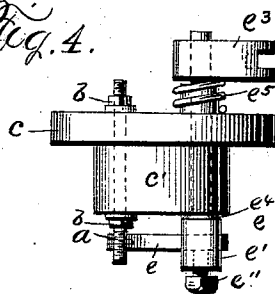


Fig. 4.



Witnesses
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JOHN W. LAMBERT, OF UNION CITY, OHIO.

EXPLOSIVE-GAS ENGINE.

SPECIFICATION forming part of Letters Patent No. 536,287, dated March 26, 1895.

Application filed July 18, 1894. Serial No. 517,906. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. LAMBERT, a citizen of the United States, residing at Union City, in the county of Darke and State of Ohio, have invented certain new and useful Improvements in Explosive-Gas Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to that class of gas engines in which the gas is exploded in the cylinder by means of an electric-spark, and the special object of the present improvement is to provide a simple arrangement whereby
15 a strong, live spark will be produced at the proper instant, as more fully hereinafter set forth.

In the drawings, Figure 1 is an end elevation, partly in section, of a gas-engine cylinder provided with my improvements. Fig. 2
20 is a side elevation thereof, and Figs. 3 and 4 slightly modified forms of the sparking-points or electrodes.

In the drawings, *a* designates the stationary
25 contact, which consists of a rod adjustably supported, by means of clamping nuts *b*, in an opening formed in the top of the cylinder. This electrode is carried by a plate *c* which is bolted over the opening in the cylinder and
30 is provided with a cylindrical extension *c'* which extends into the cylinder through the opening therein. The electrode passes through this plate and its extension and is insulated therefrom by means of insulating
35 blocks *d*, these blocks being held in place by said nuts *b*. One of the electric wires is attached to this stationary electrode and the other wire is, as is usual, connected to the frame of the engine. The movable contact *e*
40 consists of an arm secured to the inner end of a rock shaft *e'* by means of a set screw *e''*, said rock shaft being journaled in and extended through the adjacent cylinder head and provided at its outer end with an operating
45 arm *e³*. This rock shaft is shouldered and beveled at *e⁴* and adapted to fit in a beveled seat in the inner side of the cylinder head, in order that the escape of gases out through the shaft-opening shall be prevented. To keep
50 the beveled shoulder *e⁴* pressed constantly to

its seat a coil-spring *e⁵* is placed around the shaft between the cylinder head and the arm *e³*. Pivottally connected to the upper end of the arm *e³* is a rod *f* which extends out horizontally to one side of the cylinder and is adjustably connected by means of clamping nuts
55 *f'* to the upper end of an upright spring *f²*. This spring extends down straight for a portion of its length and is formed into a spring coil *f³* at its lower end, and its lower end is
60 bolted firmly to an arm *f⁴* carried by the engine. Secured to the spring *f²* at a suitable point on its straight portion is a bearing block *f⁵*, against which impinges a cam *g*, secured on a shaft *g'* journaled alongside the cylinder.
65

The tendency of the spring *f²* is to push rod *f* and thereby keep the contacts separated. As the shaft *g'* rotates, cam *g* will impinge against the block *f⁵* and gradually bring the
70 sparking-contacts together, and as the shoulder of the cam passes below the bearing block the pressure of the strong spring-arm *f²* will suddenly separate the contact points and thereby produce a good, live spark. It will be
75 seen that the essential feature of this arrangement lies in the use of the shouldered cam and the bearing-shoe carried by the strong spring connected by an operating rod to the movable contact or electrode, whereby the contacts
80 shall be brought together gradually but positively and then suddenly separated, thereby insuring a good spark at each operation. By the adjustment afforded by clamp nuts *f'* the pressure of the contact points against each other and the suddenness with which they
85 separate may be readily regulated.

In the modified arrangement shown in Figs. 3 and 4, the rock shaft carrying the movable electrode is journaled in the plate *c'* parallel to and alongside the stationary electrode and
90 the contact arm *e* swings at right angles to the stationary electrode; otherwise the construction is the same as in the other form. The plate *c* in this arrangement is preferably bolted over an opening in the head of the cylinder instead of on top of the cylinder as in
95 the other form shown.

Having thus fully described my invention, what I claim is—

The combination of a gas engine, a station- 100

ary contact extending into the cylinder there-
of, a rock shaft also extending into the cylin-
der and carrying another contact, a rod con-
nected to the outer end of said rock shaft, and
5 a strong leaf spring attached at its lower end
to the engine frame and at its upper end to
said rod, a stationary shoe ^f, carried by said
spring, and a shouldered cam supported ad-
jacent to said shoe and adapted to impinge
10 against the same and bring the contacts gradu-

ally together and suddenly separate them,
substantially as and for the purpose herein set
forth.

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

JOHN W. LAMBERT.

Witnesses:

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H. E. LONGENECKER.