(No Model.)

D. S. REGAN.

GAS ENGINE.

No. 408,356. Patented Aug. 6, 1889.

Fig. 1.

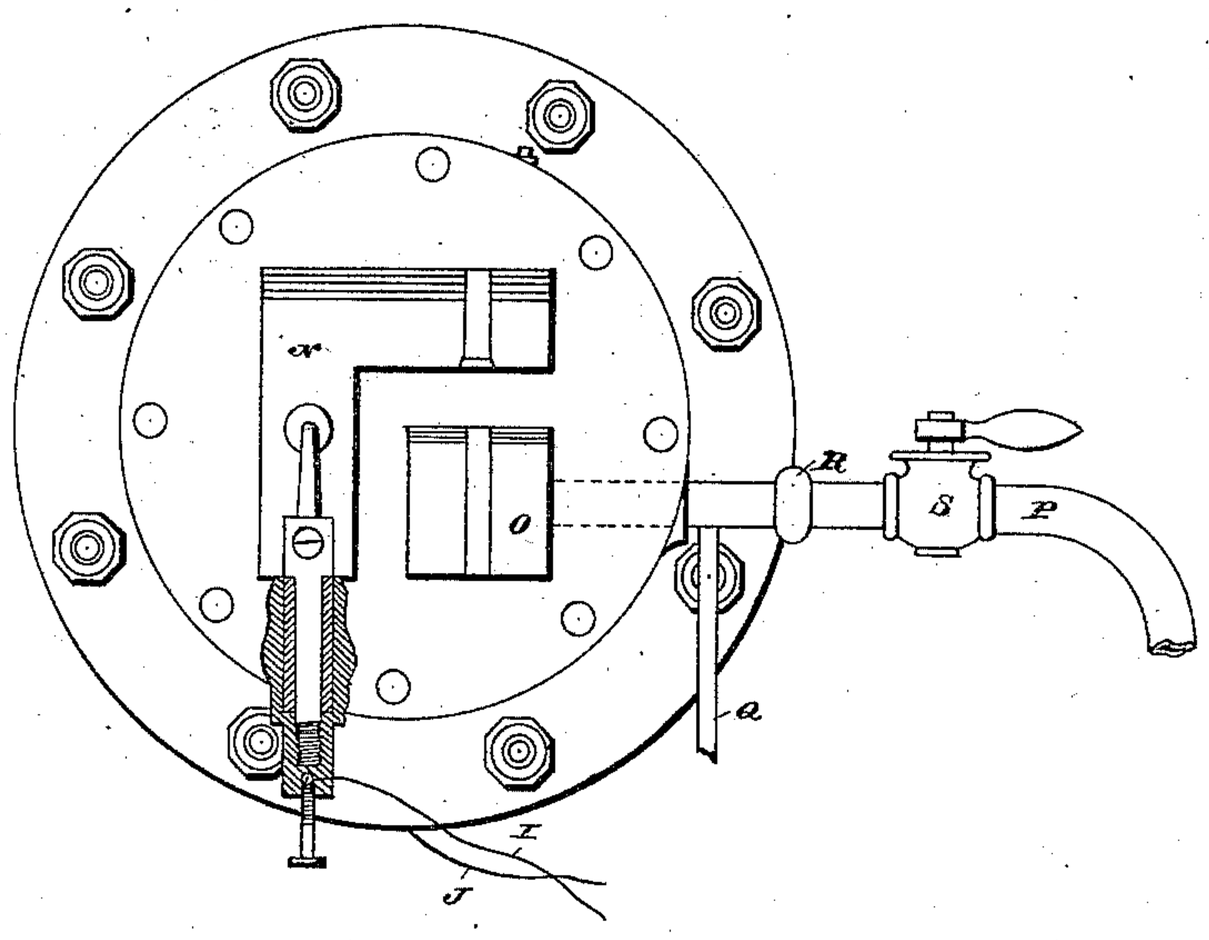
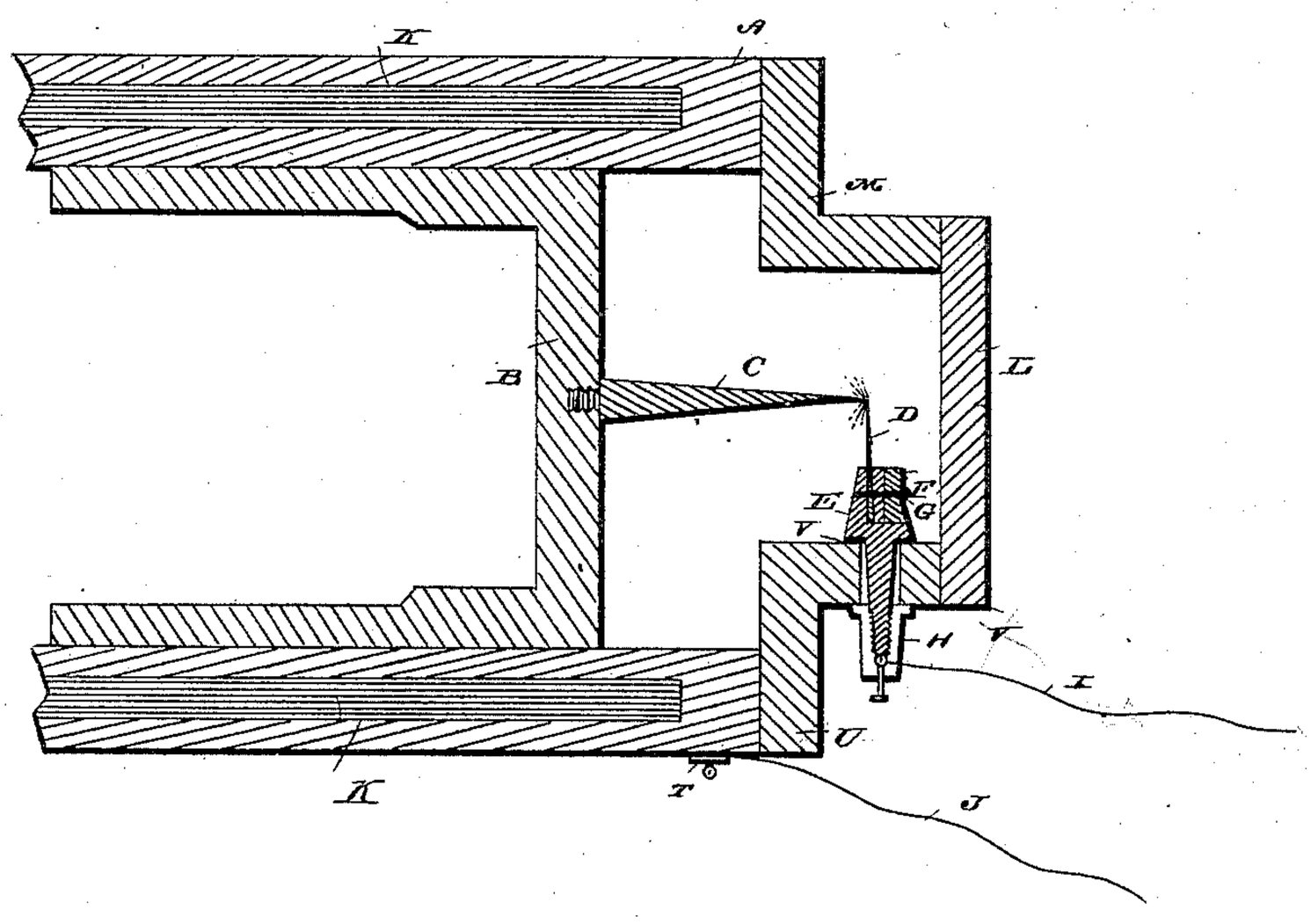


Fig. 2.



Witnesses:

D. H. Bashore.

T. E. Turpin.

Inventor:

D. S. Regan.

By, James J. Sheehy

Asso. Attorney.

UNITED STATES PATENT OFFICE.

DANIEL S. REGAN, OF SAN FRANCISCO, CALIFORNIA.

GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 408,356, dated August 6, 1889.

Application filed April 5, 1888. Serial No. 269,756. (No model.) Patented in England October 27, 1888, No. 15,448.

To all whom it may concern:

Be it known that I, DANIEL S. REGAN, a citizen of the United States, and a resident of the city and county of San Francisco, and State of California, have invented certain new and useful Improvements in Gas-Engines, (for which I have obtained Letters Patent in Great Britain, No. 15,448, October 27, 1888,) of which the following is a specification.

My invention relates to improvements in gas-engines; and it consists in making the piston a part of the electric circuit and fixing one of the electrodes to it, while the other electrode, properly insulated, is so arranged within the cylinder as to be touched by the piston-electrode at each stroke, so that the circuit is closed and broken at each stroke of the piston.

The object of my invention is to provide an explosive gas-engine with an ignitor the operation of which shall be dependent upon the movements of the engine-piston, and to close and open the electrical circuit by the stroke of the piston.

In the drawings, Figure 1 is an elevation showing the head of the engine with the cap of the igniting-chamber and the valve-chamber removed. Fig. 2 is a broken longitudinal sectional view showing the cylinder cut vertically through the center.

A represents the cylinder; B, the piston; C, the connecting projection; D, the connecting-spring; E, the insulated spring-holder; F, the spring clamping-block; G, the set-screw for clamping the spring D and holding the same.

H represents the set-nut for attaching the insulated spring-holder E and receiving the electric wire I, which connects with one pole of the battery.

J represents one of the electric wires.

K represents the water-jacket or water-space.

L represents the cap for the igniting-chamber.

M represents the cylinder-head.

N represents the igniting-chamber.

O represents the valve-chamber.

P represents the gas-supply pipe.

Q represents the air-supply pipe.

R represents the check-valve.

S represents the throttle-valve.

T represents the attaching-screw for the electric wire J.

The following is the construction, arrangement, and operation of my improved ignitor for gas-engines.

T represents the connection of the electric wire with the cylinder.

U represents the connection of the electric wire with the insulated spring-holder.

V represents the insulator. The wires being connected with any well-known battery or electric generator, one pole is connected directly with the cylinder at T and the other pole with the insulated spring-holder at U. I thoroughly insulate the spring-holder E by means of the insulator V and attach any suitable metal spring D, so as to be struck by the finger C at each stroke of the piston.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a gas-engine, an electrical circuit including the engine-piston, an electrode fixed to the piston and reciprocating with it, and a second electrode fixed within the explosive chamber of the engine and insulated therefrom, whereby the electrical circuit is closed and broken at each stroke of the piston, as described.

2. In a gas-engine, an electrical circuit including the engine-piston and electrode fixed to and reciprocating with the piston, in combination with a second insulated flexible electrode fixed within the engine-cylinder, so that contact is made and broken between the two electrodes at each stroke of the piston, as herein described.

3. In a gas-engine, the spring D, the insulated spring-holder E, having the clamp-block F and the set-nut H, connected with one pole of an electric battery, in combination with a connecting-finger C, attached to the piston B, and the cylinder A, connected with the battery by means of the electric wire J, for the purpose of making the circuit by direct connection with the piston at each stroke of the same, constructed and operated substantially as and for the purposes set forth.

DANIEL S. REGAN.

Witnesses:

J. H. REDSTONE,

F. R. BRAUN.