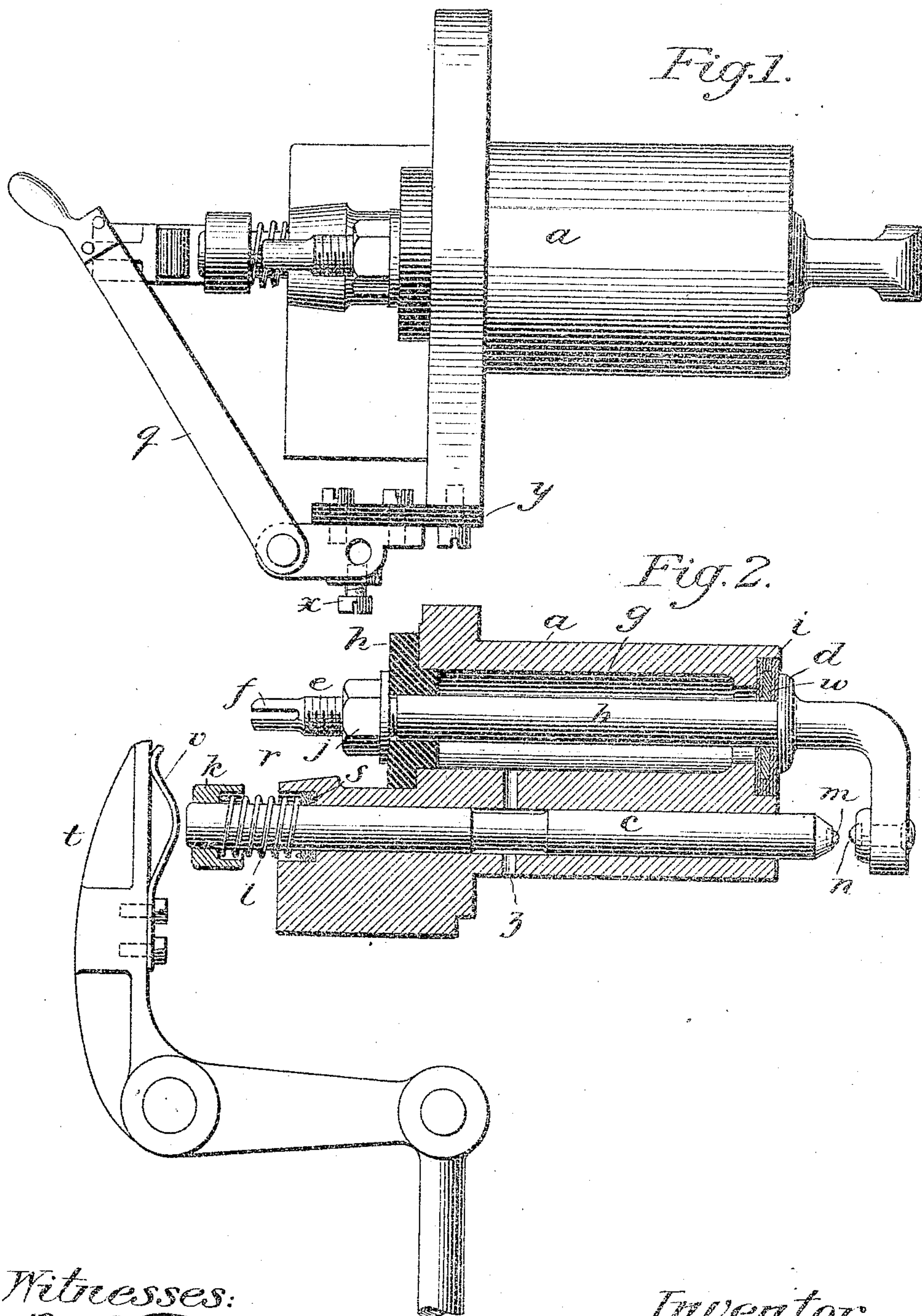


No. 868,404.

PATENTED OCT. 15, 1907.

F. W. BRADY.
SPARK PLUG FOR EXPLOSIVE ENGINES.
APPLICATION FILED MAY 11, 1906.



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANCIS W. BRADY, OF ENGLEWOOD, NEW JERSEY.

SPARK-PLUG FOR EXPLOSIVE-ENGINES.

No. 868,404.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed May 11, 1906. Serial No. 316,322.

To all whom it may concern:

Be it known that I, FRANCIS W. BRADY, a citizen of the United States, residing at Englewood, county of Bergen, State of New Jersey, have invented certain new and useful Improvements in Spark-Plugs for Explosive-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in spark plugs for oil and gas engines, and is designed to provide a highly efficient insulation of the parts, reliability of the ignition spark, and a simple and durable construction, cheap of manufacture and readily kept in serviceable condition.

A preferred form of my improved spark-plug is illustrated in the accompanying drawing, wherein,

Figure 1 is a plan view, and, Fig. 2 is a sectional view through the central axial line of Fig. 1.

Similar letters of reference indicate similar parts in the two views.

Referring to the drawing, *a* is a casing of brass or other suitable metal supporting the stationary terminal *b* and the movable terminal *c*. The stationary terminal *b* is bent over at its inner end and carries near the extremity of the bent over portion a contact *n* of platinum or other suitable material, and it is further provided with a shoulder *d* and a stem terminating in a screw-threaded portion *e* and a contact-clip *f*. The stem passes through an enlarged cylindrical chamber *g* in the casing *a*, and is supported out of contact with the sides of said chamber by the insulating washers *h* and *i*. The shoulder *d* bears against the insulating washer *i*, which is preferably set into the end of the casing *a* so as to be flush with the surface thereof. The stem of the terminal *b* passes through the center of the said washers *h* and *i* and by means of the nut *j*, the parts are securely clamped together.

The washer *h* may be made of lava or any other suitable insulating material, but I prefer to make the washer *i* of the improved construction illustrated, for the purpose of reducing the escape of oil or gases from the cylinder of the engine into the chamber *g*, and at the same time to preserve the refractory character of the washer made necessary because of its relation to the interior of the engine cylinder. Accordingly, the washer *i*, as illustrated, is composed of layers of suitable

highly refractory insulating material, preferably mica, in which a stiffening plate *w*, preferably of steel, is embedded, thus giving it the requisite stability to resist the crushing strains imposed upon it by the tightening up of the screw *j*.

The movable terminal *c* passes through a cylindrical opening in the casing *a*, into which it fits snugly. The said movable terminal is provided at its inner end with a contact *m* of platinum or the like, and at its outer end, with a cap *k* having a recess surrounding the outer end of the retractile spring *l*, whose other end bears against a washer *r* in a recess of the casing *a*. This washer *r* and the packing *s* in the recess act as a stuffing box for the terminal *c*. It will be understood that in the operation of the engine the contact *m* is moved toward the contact *n* by the action of timing mechanism such as the rocking lever *t*, cushioned by the spring *v* (if need be) and that, on the backward swing of the lever, the retractile spring *l* serves for the purpose of striking the ignition spark. The terminal *c*, may, when the engine is at rest, be pushed inwardly by hand, so as to bring the two contacts *m*, *n*, together, and may then be rotated, so as to clean and brighten the contact surfaces.

For draining off any oil which may be forced into or condense within the chamber *g*, from the engine cylinder past the mica washer *i*, I provide the outlet passage *z* extending through the casing *a*, and in order that the movable terminal *c*, which is directly in the line of this outlet, may not stop the same, I cut away the said terminal, as shown, for a sufficient distance to leave the outlet passage open in any position of the terminal *c*. When the plug is set into the engine cylinder the passage will, of course, communicate with a similar passage leading outwardly through the wall of the cylinder.

The current is led to the terminal *b* through the binding post *x*, which is supported by the insulating material *y*, on the casing *a*, and the switch arm *q* which may be thrown into and out of engagement with the clip *f*, thus providing a convenient means for opening the circuit of the spark plug, or of cutting out one spark plug of a number supplied by the same current conductor.

In the above description, read in connection with the accompanying drawing, I have explained the manner in which I prefer to construct my improved spark plug, but I do not wish it to be understood that my invention is capable of embodiment in that specific form alone, since it is evident that many changes may be made

therein without departing from the spirit of my invention, which I have endeavored to incorporate in the following claims.

Having thus described my invention, what I claim is:

1. A spark-plug for explosive engines, provided with a stationary electrode, the stem of the stationary electrode being supported in insulating bearings and being surrounded intermediate of said bearings with an air-insulation space communicating with draining passages; substantially as described.
2. A spark-plug for explosive engines, provided with a

stationary electrode and a movable electrode, the stem of the stationary electrode being supported in insulating bearings and being surrounded intermediate of said bearings with an air-insulation space communicating with draining passages, and the stem of the movable electrode being of reduced diameter for a portion of its length, said reduced portion being interposed in the path of the draining passages; substantially as described.

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

FRANCIS W. BRADY.

Witnesses:

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