

E. KUHN.
SPARKING PLUG.
APPLICATION FILED NOV. 22, 1910.

995,543.

Patented June 20, 1911.

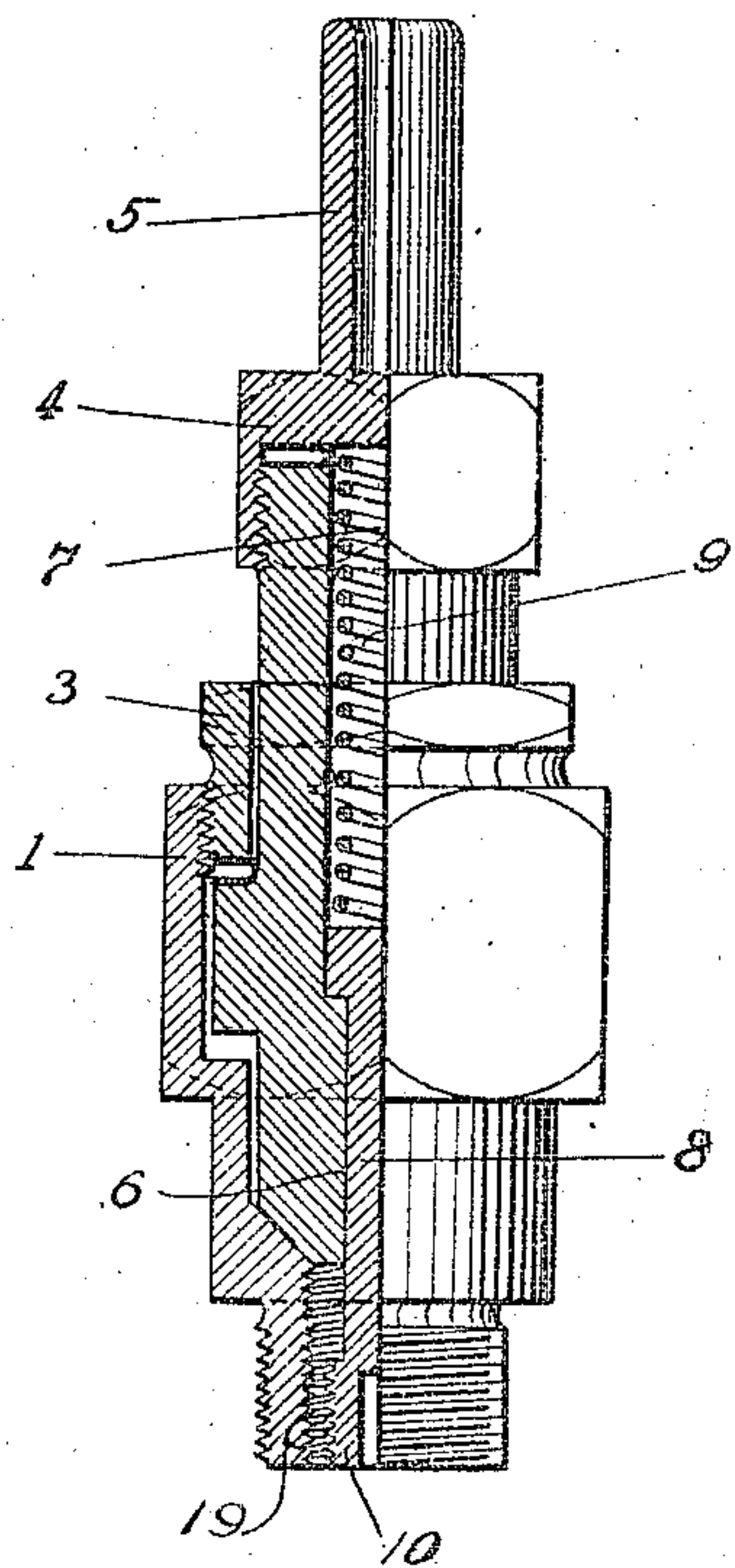


Fig. 1.

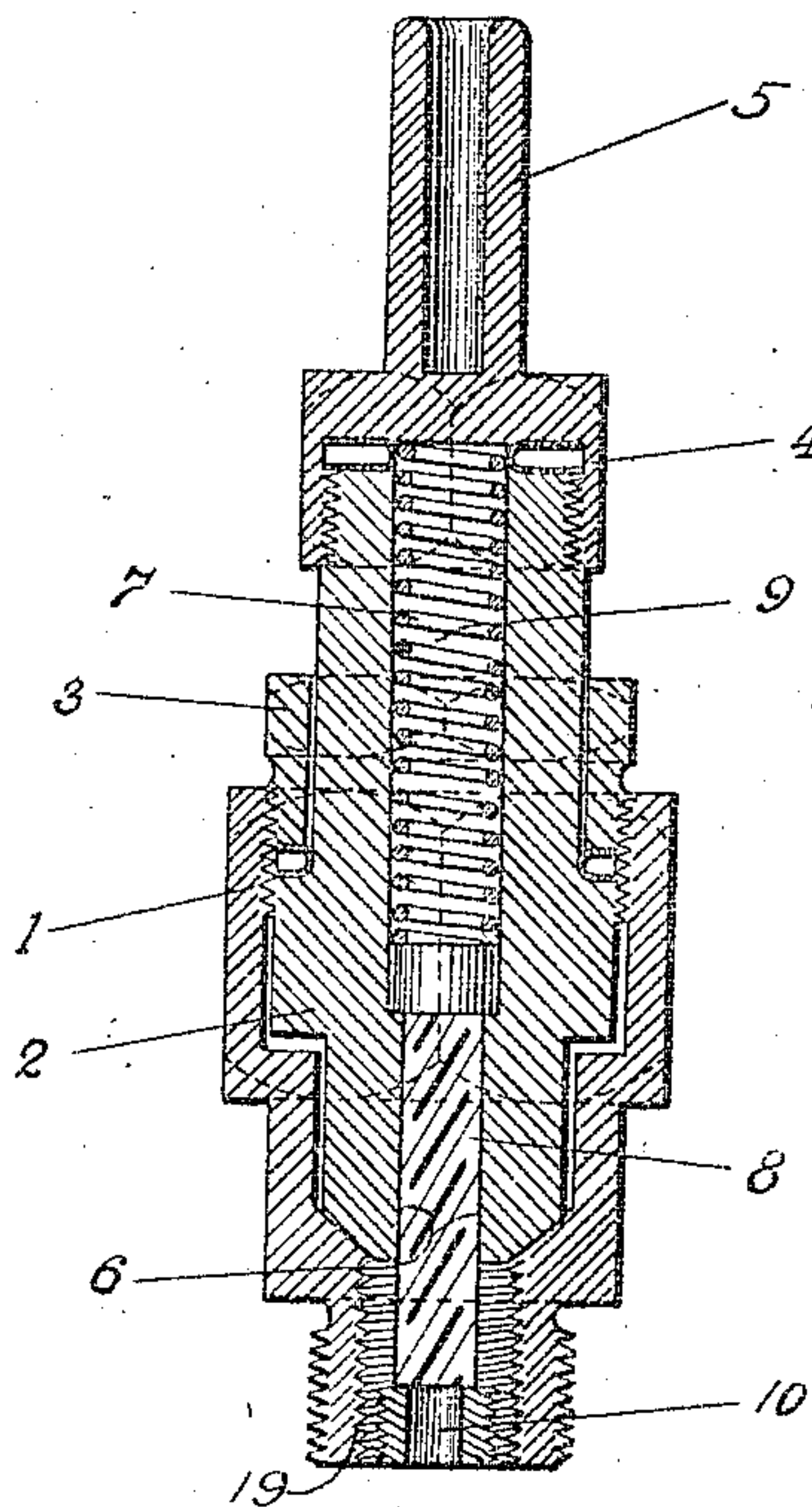


Fig. 2.

Witnesses
A. P. Connor
C. J. Dulin

Inventor
Emil Kuhn.
By B. Singer
Attorney

UNITED STATES PATENT OFFICE.

EMIL KUHN, OF STÄFA, SWITZERLAND.

SPARKING PLUG.

995,543.

Specification of Letters Patent. Patented June 20, 1911.

Original application filed May 21, 1910, Serial No. 562,686. Divided and this application filed November 22, 1910. Serial No. 593,659.

To all whom it may concern:

Be it known that I, EMIL KUHN, electrical engineer, of Stäfa, Canton of Zurich, Switzerland, have invented new and useful Improvements in Sparking Plugs, of which the following is a specification.

The present invention relates to sparking-plugs adapted for all high tension ignition, and is a divisional application from my application for Letters Patent filed May 21, 1910, Serial No. 562,686.

The object of the invention is to improve the sparking-plugs in such a manner that the plug is unaffected by oil or soot, even when heavy oils are used as fuel and that the plug will spark when accidentally submerged in oil, even while the engine is running. I obtain this object by making one electrode of the sparking-plug movable in its axial direction and placing the same under the action of a spring. The strength of the spring is such that the axial displacement will only occur by the explosion of the charge.

In the accompanying drawings two forms of construction of my invention are shown by way of example.

Figure 1 shows a sparking-plug half in longitudinal section and half in an elevational view. Fig. 2 shows another mode of construction in longitudinal section.

The sparking-plug shown in Fig. 1 comprises a steel body which fits the standard sparking-plug threads. In the steel body 1 a porcelain insulator 2 is fixed by means of the gland 3. The steel body 1 is provided at 19 with internal screw threads. The insulator 2 has a bore 6 which has an enlarged part 9. In the bore of the insulator 2 an electrode 8 is movably arranged, and a spring 7 is arranged in the larger part 9 of the bore in such a manner as to act upon the electrode 8 as will be clearly understood upon reference to the drawing. The spring 7 abuts against a cap 4 which is screwed upon the upper end of the insulator 2. The cap 4 is provided with a wire terminal 5 of known construction. The electrode 8 is provided with a head 10 which head is formed with external screw threads which are adjacent to the internal screw threads 19 of the steel body 1. The distance of the threads is constant until ignition takes place. Under the high explosion

pressure the spring 7 is compressed and the threads of the head of the electrode and the steel body 1 pass each other whereby soot and the like are removed.

The description above given of the parts of the structure shown in Fig. 1 applies equally to the parts shown in Fig. 2, except that in Fig. 2 the shaft 8 of the electrode is provided with one or more step screw threads, as shown in said figure. From this construction it follows that if the electrode is moved in its axial direction by the explosion pressure said electrode will also be rotated. As soon as the pressure in the combustion chamber falls the spring 7 will act upon the electrode and restore it to its original position.

I wish it to be clearly understood that I do not limit my invention to the particular construction shown, as various details may be altered without departing from the spirit of the invention.

I claim:

1. In a sparking-plug the combination of a steel body provided with external and internal screw threads, an insulator connected with said steel body said insulator having a central bore, an electrode movably arranged in said insulator, a head on said electrode provided with threads adjacent the internal threads of the steel body, a cap screwed on said insulator, a spring abutting against said cap and said electrode, and a wire terminal connected electrically with said electrode.

2. In a sparking-plug the combination of a steel body provided with external and internal screw threads, an insulator mounted within said steel body, an electrode arranged within said insulator and being axially displaceable therein, a head on said electrode provided with threads adjacent the internal threads of the steel body, a spring acting on said electrode, and a wire terminal connected electrically with said electrode.

3. In a sparking-plug the combination of a steel body provided with external and internal screw threads, an insulator connected with said steel body, an electrode arranged within said insulator and being axially displaceable therein, a head on said electrode provided with threads adjacent the internal threads of the steel body, means acting on said electrode and tending to force said elec-

trode outwardly from said insulator, and a wire terminal connected electrically with said electrode.

4. A sparking-plug comprising a steel body adapted to be screwed into the cylinder walls of a motor, said steel body being provided with external and internal screw threads, an insulator mounted within said steel body, an electrode arranged within said insulator and being axially displaceable therein, a head on said electrode provided with threads adjacent the internal threads of the steel body, a cap screwed on said insulator, a spring arranged within said insulator and abutting against said cap and said electrode, and a wire terminal connected electrically with said electrode.

5. A sparking-plug comprising a steel body adapted to be screwed into the cylinder walls of a motor, said steel body being provided with external and internal screw threads, an insulator mounted within said steel body said insulator having a central bore, an electrode movably arranged in the bore of said insulator, a head arranged on one end of said electrode said head being provided with screw threads adjacent the internal threads of the steel body, a cap screwed on said insulator, a spring arranged within the said central bore of said insulator and abutting against said cap and said electrode, and a wire terminal connected electrically with said electrode.

6. A sparking-plug comprising a steel body adapted to be screwed into the cylinder walls of a motor, said steel body being provided adjacent one end with a screw threaded bore, an insulator mounted within said steel body said insulator having a central bore, an electrode arranged within said bore and being axially displaceable therein, a head arranged on said electrode said head being provided with external screw threads adjacent the threads of the bore of said steel body, a spring arranged within said bore of said insulator acting on said electrode, and a wire terminal connected electrically with said electrode.

7. In a sparking-plug the combination of a steel body provided with external and internal screw threads, an insulator mounted within said steel body said insulator being provided with a central bore said bore being enlarged throughout a portion of its length, an electrode mounted within the smaller portion of said bore said electrode being axially displaceable therein, a head arranged on said electrode said head being provided with external screw threads adjacent the internal screw threads of said steel body, a cap screwed on said insulator, a spring ar-

ranged within the larger portion of said bore said spring abutting against said cap and said electrode, and a wire terminal connected electrically with said electrode.

8. In a sparking-plug the combination of a steel body provided with an external screw threaded portion at its lower end and being provided with an internal screw threaded bore near its lower end, an insulator mounted within said steel body, a gland to fix said insulator in said steel body, said insulator being provided with a central bore said bore being enlarged throughout a portion of its length, an electrode movably arranged in the smaller portion of said bore, a head arranged on said electrode provided with external screw threads adjacent the threads on the internal bore of said steel body, a cap screwed on said insulator, a spring arranged within the enlarged part of said bore of said insulator said spring abutting against said cap and said electrode, and a wire terminal connected electrically with said electrode, substantially as described.

9. In a sparking-plug, the combination of a steel body provided with external and internal screw threads, an insulator mounted within said steel body said insulator having a central bore, a screw threaded electrode movably arranged within said bore of said insulator, a head arranged on said electrode said head being provided with threads adjacent the internal threads of the said steel body, a cap screwed on said insulator, a spring abutting against said cap and said electrode, and a wire terminal connected electrically with said electrode.

10. In a sparking-plug, the combination of a steel body provided with external and internal screw threads, an insulator mounted within said steel body said insulator being provided with a central bore enlarged throughout a portion of its length, a screw threaded electrode movably arranged within the smaller portion of said central bore, a head arranged on said electrode said head being provided with external screw threads adjacent the internal screw threads of the steel body, a cap screwed on said insulator, a spring arranged within the enlarged portion of said central bore said spring abutting against said cap and said electrode, and a wire terminal connected electrically with said electrode, substantially as described.

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

EMIL KUHN.

Witnesses:

ARTHUR J. BUNDY,
CARL GUBLER.