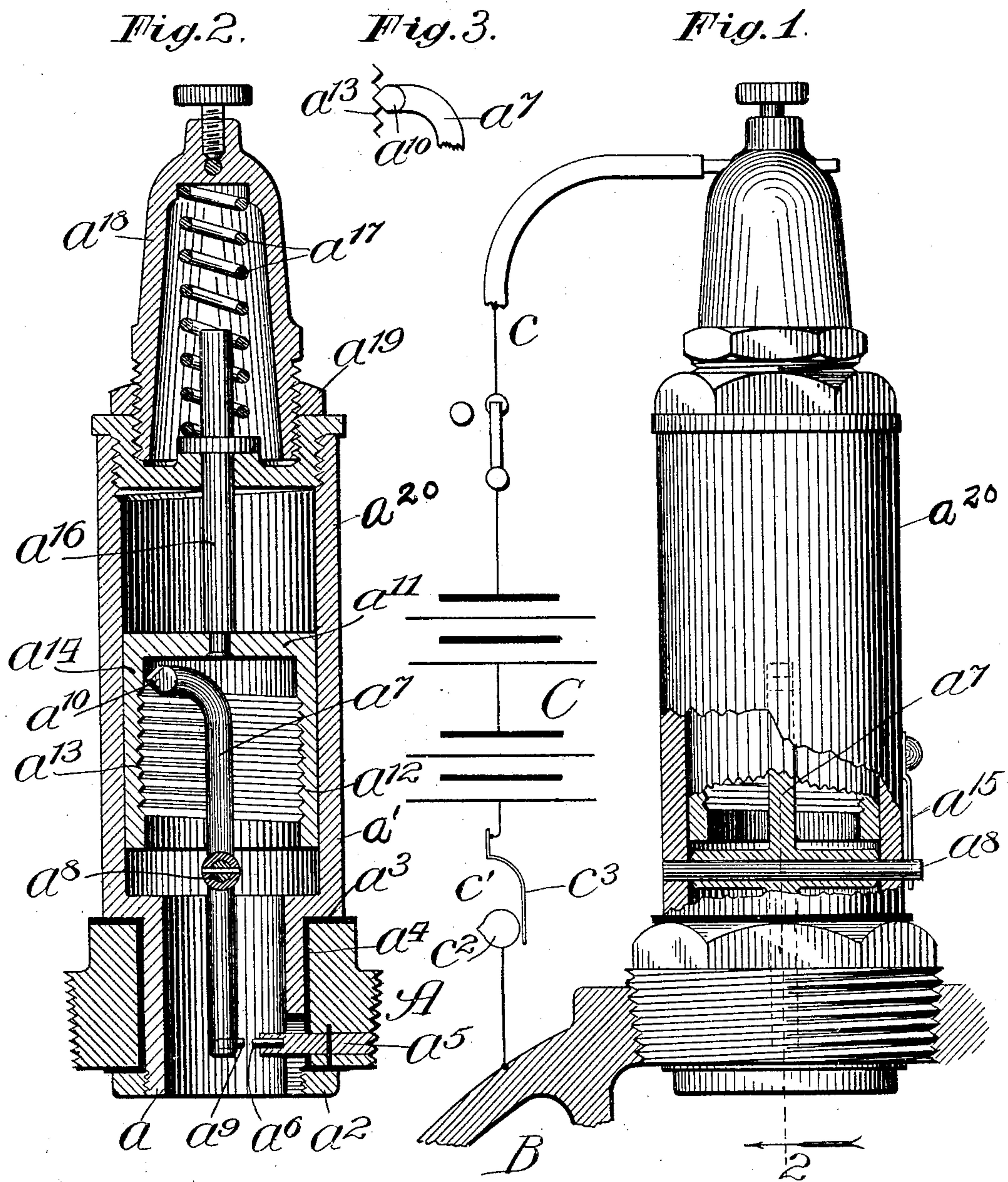


B. G. GILBOUGH.
SPARKING DEVICE.
APPLICATION FILED DEC. 30, 1904.



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UNITED STATES PATENT OFFICE.

BENJAMIN GARTSIDE GILBOUGH, OF CHICAGO, ILLINOIS.

SPARKING DEVICE.

No. 805,790.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BENJAMIN GARTSIDE GILBOUGH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Sparking Devices, of which the following is a specification.

My invention relates particularly to ignition devices for engines; and my primary object is to provide a device of this character having greater quickness and certainty of action and more simple and durable construction than any heretofore known.

The invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Figure 1 is a view, partly in elevation and partly in section, showing my improved ignition device applied to the cylinder of an engine; Fig. 2, a section taken as indicated at line 2 of Fig. 1, and Fig. 3 a broken view illustrating the manner of vibrating a lever to make and break an electric circuit.

In the construction illustrated, A represents a bushing screwed into an opening in the cylinder B of an engine. Through this bushing extends the hollow shank a of a small cylinder a' . The shank is threaded at its inner end and equipped with a nut a^2 , between which and a shoulder a^3 the bushing is clamped. The cylinder a' is electrically separated from the bushing by insulation a^4 . A contact member a^5 projects within the bore of the bushing and bears a platinum tip a^6 , and a companion contact member a^7 in the form of a lever is secured to a pivot a^8 , journaled in the lower end of the cylinder. The lower end of the lever bears a platinum point a^9 , and the upper end is bent and provided with a point a^{10} . Within the cylinder works a piston a^{11} , provided with a downturned flange a^{12} , internally notched or threaded at a^{13} , the upper portion remaining smooth and affording a bearing-surface a^{14} . A spring a^{15} causes the point a^{10} of the lever to follow the indentations of the flange a^{12} as the piston moves, thereby making and breaking the circuit of the battery C. The piston has an upwardly-extending stem a^{16} , upon which bears a spring a^{17} whose upper end is seated in an adjustable cap a^{18} , secured by a lock-nut a^{19} . The cap has screw connection with a perforate removable cylinder end a^{20} . To the cap is secured the conductor c , forming a part of the battery-circuit. In the course of the conductor is interposed a normally open make-and-break device c' . This

may constitute a cam c^2 , operated by the engine-shaft and a contact member c^3 , into engagement with which the high part of the cam may come at each revolution of the shaft. 60

If desired, the make-and-break device may be omitted from the external circuit.

The operation will be readily understood. The piston a^{11} rests normally at the lower or inner end of its traverse, in which position the upper end of the lever bears on the surface a^{14} and holds the point a^9 out of contact with the point a^6 . The tension of the spring a^{17} is preparatorily adjusted, so that when the pressure in the engine-cylinder (during compression of the charge) reaches the proper amount the piston will be forced upward, thereby causing the undulating surface of the flange a^{12} to pass beneath the lever-tip and make and break the circuit at the platinum points. Assuming the external make-and-break device c' to be in use, the external portion of the circuit will be closed at the proper instant to permit current to pass to supply the spark at the exact moment required. Assuming the device c' to be dispensed with, the sparking will occur at the exact moment desired provided the spring a^{17} has been preparatorily delicately adjusted to insure movement of the piston a^{11} at exactly the proper instant. It will be understood, therefore, that the device c' acts as a safety device, insuring passage of current at proper intervals only, and that where the engine operates under conditions where proper adjustment of the spring a^{17} is assured the device c' is unnecessary. It is understood, of course, that when the pressure on the lower or inner side of the piston a^{11} is relieved the piston is depressed by its spring, reestablishing the normal broken condition of the internal portion of the electric circuit. 75 80 85 90 95

It is obvious that the present invention dispenses with secondary circuits and also with electromagnets with their attendant disadvantages. It is evident that the new construction has peculiar advantages when used in connection with high-speed engines. 100

Many changes in details of construction are feasible. Hence no undue limitation should be understood from the foregoing detailed description. 105

It is to be remarked that while in the construction shown the movable inner contact member is actuated wholly by the pressure of the mixture within the engine-cylinder in one direction of movement of the piston and by 110

spring-pressure in the other direction of movement of said piston, still the construction may be varied in this respect, the gas-pressure being utilized in the actuation of the
5 movable contact member in a partial degree only, if desired. The reciprocating motion of the contact member is not essential to the invention. The piston may rotate or be ro-
tated on its axis to bring a fresh bearing-sur-
10 face beneath the lever-tip *a*¹⁰.

What I regard as new, and desire to secure by Letters Patent, is—

1. An ignition device for the purpose set forth, comprising an oscillating contact mem-
15 ber presented to the charge in the engine-cylinder, a gas-actuated member serving to oscillate said contact member, and means for restoring said last-named member to its normal position after the gas-pressure is relieved.

2. An ignition device comprising a cylinder, 20 a gas-actuated spring-retracted piston provided with a part having an undulating surface, and relatively movable contact members, one of which is actuated through the medium of the undulating surface of the piston, for 25 the purpose set forth.

3. An ignition device comprising a bushing, a cylinder insulatively mounted thereon, a contact member carried by the bushing, a contact member pivoted in the cylinder, and a gas- 30 actuated spring-retracted piston having an undulating surface presented to said second-named contact member, for the purpose set forth.

BENJAMIN GARTSIDE GILBOUGH.

In presence of—

L. HEISLAR,

J. H. LANDES.