

1,415,581.

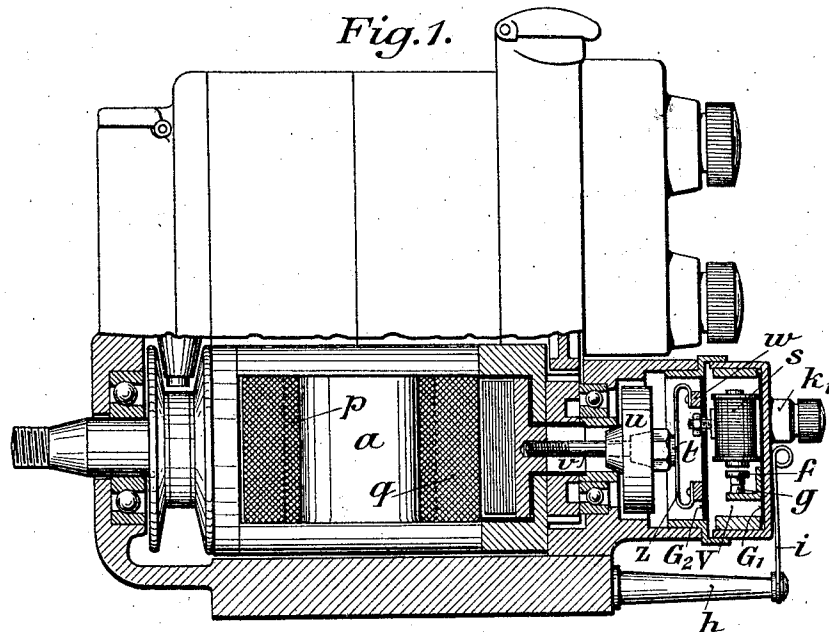


Fig.1.

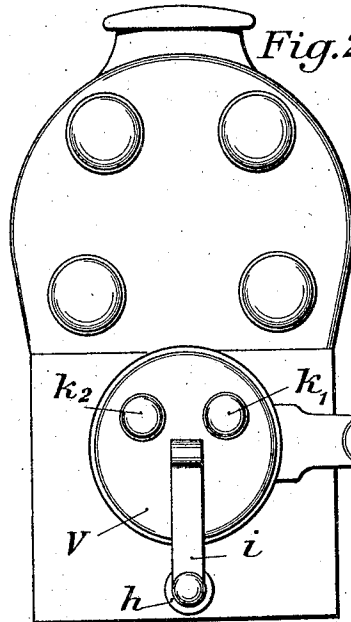


Fig. 2.

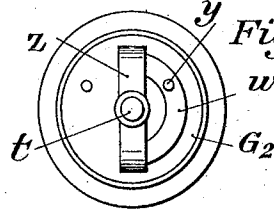


Fig. 4.

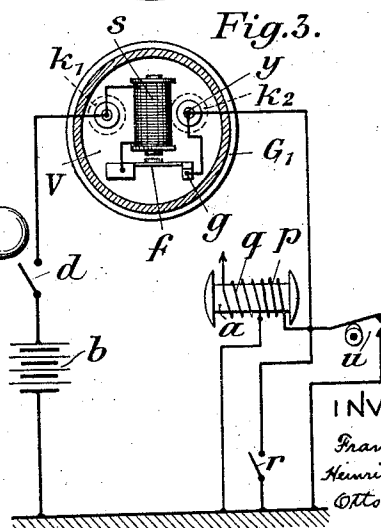


Fig.3.

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UNITED STATES PATENT OFFICE.

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IGNITION APPARATUS FOR INTERNAL-COMBUSTION ENGINES.

1,415,581.

Specification of Letters Patent.

Patented May 9, 1922.

Application filed March 31, 1920. Serial No. 370,361.

To all whom it may concern:

Be it known that we, FRANZ KRATZ, HEINRICH STARKER, and OTTO SELLING, all citizens of the German Republic, and residents of Stuttgart, Germany, have invented certain new and useful Improvements in Ignition Apparatus for Internal-Combustion Engines, (for which we have filed application in Germany March 15, 1919;) and we 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.

In magneto electric ignition devices for internal combustion engines, an auxiliary or reinforcing ignition apparatus is often provided in order to supply sparks of sufficient strength when the apparatus is rotating slowly while the engine is starting. The auxiliary ignition apparatus is a buzzer which receives current from a battery and sends interrupted currents in rapid sequence into the primary winding of the ignition apparatus and induces high tension currents in the secondary winding of the latter.

Formerly, the auxiliary apparatus was usually placed at the dashboard of the car or under the bonnet, and always formed a distinct apparatus.

The invention consists in arranging the auxiliary device as part of the ignition apparatus. For this purpose, preferably, the auxiliary apparatus casing serves at the same time as a removable cover for the interrupter of the magneto apparatus.

The invention, therefore, has the advantage that the number of the separate parts of the ignition arrangement is lessened, so that the general arrangement of the whole apparatus is improved. Also, the mounting and the lay out of the leads are simplified. The last-named advantage is of particular importance.

A construction according to the invention is shown in the accompanying drawing, in which Fig. 1 is a side view partly in longitudinal section, and Fig. 2 is a front view. Fig. 3 is a view of the interior of the auxiliary apparatus and shows also diagrammatically the circuit arrangements of the ignition device. Fig. 4 shows the base of the auxiliary casing as seen from the interrupter.

As shown in Fig. 3, on closing the switch *d* the following circuit is established; from ground over battery *b*, switch *d*, terminal *k*₁, a buzzer coil *s*, armature spring *f*, closed contact *g*, terminal *k*₂ and the primary winding *p* of the armature *a* of the magneto apparatus, back to ground. In this circuit the buzzer *s*, *f*, *g* forming the auxiliary apparatus *V* operates in known manner and gives rise to intermittent direct currents which induce in the secondary winding *q* of the magneto apparatus high tension alternating currents. During the time at which the magneto apparatus is revolving slowly during the starting of the internal combustion engine, these currents cause powerful sparks to pass to the sparking plugs. *r* is a switch by means of which the primary winding *p* of the magneto apparatus is short circuited and the magneto ignition is out of action.

The arrangement of the auxiliary apparatus *V* is shown in Figs. 1 and 2. The whole buzzer device *s*, *f*, *g* is disposed in a two-part cylindrical casing *G*₁, *G*₂ which instead of the usual single cover with a short circuiting terminal closes from the outside the interrupter *u* of the magneto apparatus. The base *G*₂ of the auxiliary casing carries on the side turned towards the interrupter *u* a spring *z* which presses a carbon contact *t* against the head of a screw *v* which establishes a conducting connection with the primary winding *p* of the magneto apparatus and also serves for securing the interrupter *u* in its position. The spring *z* is connected over a metallic arc-shaped strip *w* and a screw *y* with the terminal *k*₂ which is in connection with mass over the key *r*. The terminals *k*₁ and *k*₂ are arranged on the outside of the part *G*₁ of the casing carrying the buzzer device *s*, *f*, *g*.

The whole auxiliary casing *G*₁, *G*₂ is held against the magneto apparatus by a leaf spring *i* pivoted about a support *h*. When the spring *i* is turned to one side the auxiliary apparatus *V* can be withdrawn from the magneto apparatus and the interrupter *u* is released.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Magneto electric ignition apparatus for

internal combustion engines comprising a magneto armature having primary and secondary windings, an interrupter, a housing for said interrupter, a buzzer for amplifying the ignition current, and a housing for said buzzer adapted to be attached to said interrupter housing. 15

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10 2. Magneto electric ignition apparatus for internal combustion engines comprising a magneto armature having primary and secondary windings, an interrupter, a housing for said interrupter, a buzzer for amplifying

the ignition current and a housing for said buzzer associated with the interrupter housing and forming a removable cover therefor.

In testimony whereof we affix our signatures, in presence of two witnesses.

FRANZ KRATZ.
HEINRICH STARKER.
OTTO SELLING.

Witnesses:

MAX LEBHERTZ,
MARK W. MEYER.