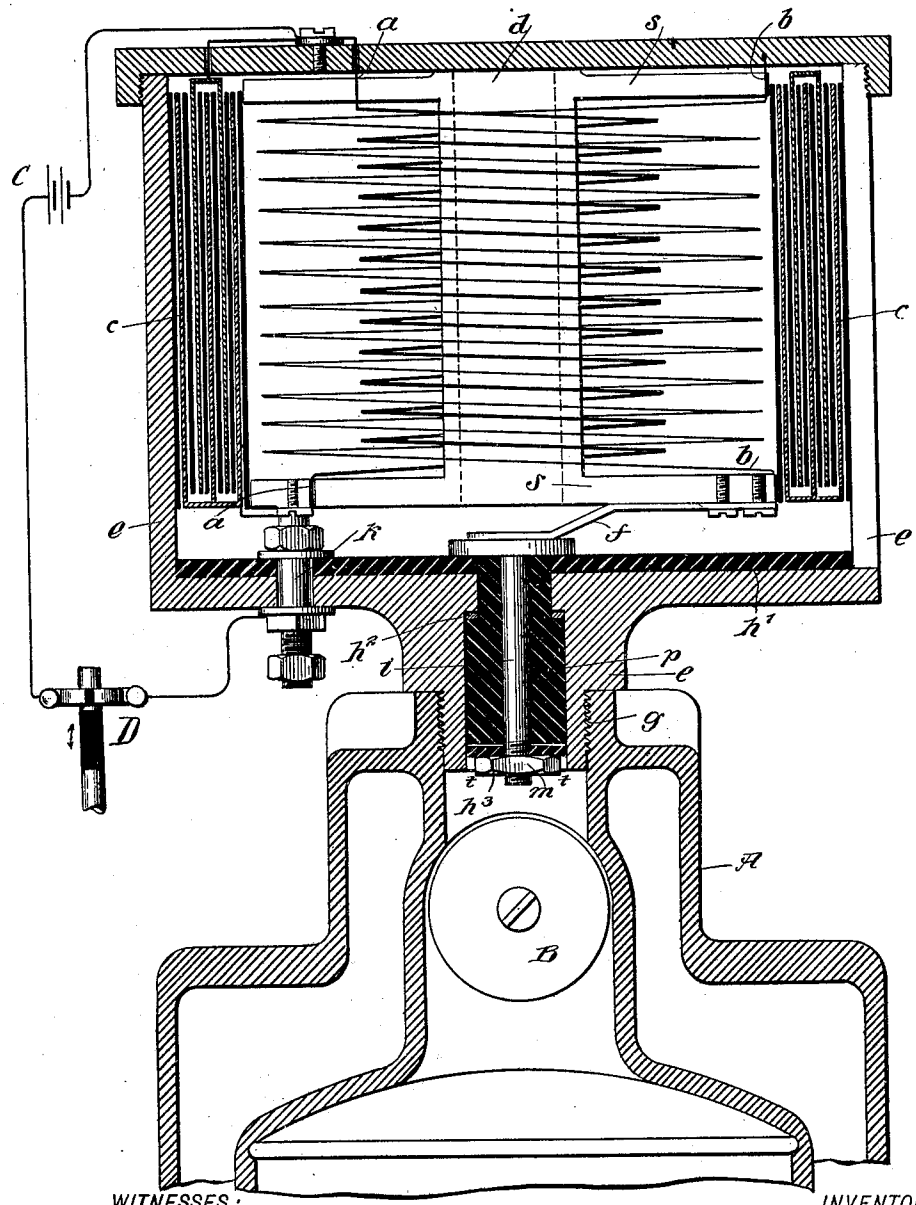
No. 679,651. Patented July 30, 1901.

A. E. VORREITER.

ELECTRICAL IGNITION APPARATUS.

(Application filed Aug. 30, 1899.)

(No Model.)



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ELECTRICAL IGNITION APPARATUS.

SPECIFICATION forming part of Letters Patent No. 679,651, dated July 30, 1901.

Application filed August 30, 1899. Serial No. 729,009. (No model.)

To all whom it may concern:

Be it known that I, ANSBERT EMIL VORREITER, a subject of the King of Prussia, German Emperor, residing at Aix-la-Chapelle, Prussia, Germany, have invented certain new and useful Improvements in Electrical Ignition Apparatus, of which the following is a specification.

This invention relates to an apparatus for igniting explosives or combustible material—such as explosive substances, mixtures of air or oxygen, and combustible gases and vapors—by means of an electric spark produced in the apparatus.

The invention will be fully described hereinafter and the features of novelty pointed out in the sppended claims.

Reference is to be had to the accompanying drawing, which shows my improved igniter in central cross-section.

According to my invention the igniter forms a separate body.

This igniter apparatus is designed to be directly attached, as shown in the drawing, by means of the thread *g* to the chamber or vessel containing the material to be ignited. Thus when used for an explosion-motor it is screwed into the wall or cover of the cylinder A adjacent to the inlet B, through which the fuel or charge is admitted.

This apparatus is an improvement on the forms of igniter hitherto used by reason of its simplicity of construction and consequent certainty of action, for the three principal parts of the inductor-igniters hitherto in use—namely, coils, igniting-leads, and the actual igniter—are reduced to a single apparatus, igniting-leads being eliminated.

The apparatus constructed as shown in the drawing is supplied at the right moment with an electric current from a suitable external source—galvanic or accumulator battery, magnet-inductor, &c.—by a contact-maker, or the current source may be contained in the apparatus itself if the iron casing *e* is made of sufficient dimensions.

The drawing shows a section of one form of the apparatus, in which *a* is a primary coil of stout wire, and *b* a secondary coil of fine wire, both being wound on a bobbin *s*, which is surrounded by the condenser *c*. The bobbin *s* has an iron core *d* and is contained in an iron case *e*, which is split at several places in its periphery in order to avoid Foucault currents. The binding-screw *k*, which forms an electrode, passes through the wall of the casing and is insulated therefrom. To it is attached one end of the primary coil *a*, the other end being fastened to the casing *e*. One end of the secondary coil *b* is also attached to the casing *e*, while the other end is connected directly or, as shown in the drawing, through a spring *f* with a conducting-pin *i*, which passes through a sleeve *p*, made of an insulating material—say porcelain. This sleeve and the pin *i* through it must fit gas-tight in the casing when the apparatus is to be used for an explosion-motor. For this purpose the washers h' h^2 h^3, of asbestos or the like, may be used, the whole being tightened by the nut *m*. This nut has a diameter smaller than that of the bore through the casing *e*, so that the high-tension current in the coil *b* may spark across the gap in its circuit (marked *t* in the drawing.) The spark at this point will ignite any combustible material with which *m* may be surrounded. The nut *m* may be changed for one of different diameter when it is desired to vary the length of the spark.

Any suitable source of electricity and contact-maker or circuit-closer may be employed, the circuit-closer being operated in any approved or well-known manner by the engine itself to produce a spark at the proper time. In the drawing I have indicated a battery diagrammatically at C and a circuit-closer operated by the engine at D, these two parts being connected, respectively, with the casing *e* and with the binding-screw *k*, so as to be in circuit with the primary coil *a*. The condenser *c* is likewise connected with the ends of the primary coil *a*, as shown.

The advantages of this ignition apparatus, in particular when used for an explosion-motor in motor-carriages, are as follows:

First. Igniting-leads being eliminated, the security and certainty of action of the motor-carriages are considerably increased. In the constructions ordinarily employed heavily-insulated wires lead to the igniter proper, and these wires, owing to their weight, are liable to break when jarred. Furthermore, they are exposed and therefore open to accidental

and malicious damage and to the detrimental influence of moisture.

Second. All parts of the igniter are well inclosed and protected.

Third. As the coil is surrounded by an iron casing, its action is very energetic, and a comparatively small and light coil may be used.

I claim—

1. An igniter consisting of a casing of magnetizable material, a stationary induction-coil within said casing, and stationary, permanently-separated igniter-points connected with said coil.

2. An igniter consisting of a metal casing forming an electrode, an induction-coil located within the casing and having its primary and its secondary connected with the casing, another electrode insulated from the casing and connected with the free end of the secondary and a binding-post connected with the free end of the primary.

3. An igniter consisting of an induction-coil having a primary and a secondary, igniter-points connected with the secondary, and a condenser surrounding the coil and connected with the primary thereof.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ANSBERT EMIL VORREITER.

Witnesses:

PAUL GILLER,

G. SCOTT.