

No. 753,795.

PATENTED MAR. 1, 1904.

W. J. HART.
ELECTRIC SPARKING IGNITER FOR EXPLOSIVE ENGINES.

APPLICATION FILED MAY 28, 1903.

NO MODEL.

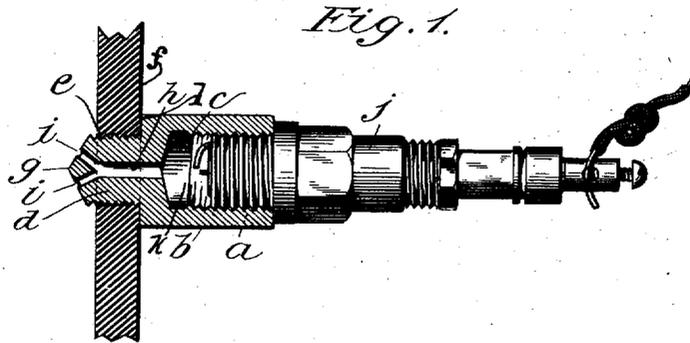


Fig. 2.

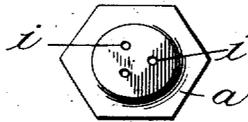
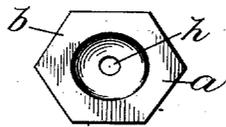


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM J. HART, OF MOUNT VERNON, NEW YORK, ASSIGNOR OF ONE-HALF TO CHARLES F. SPLITDORF, OF NEW YORK, N. Y.

ELECTRIC SPARKING IGNITER FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 753,795, dated March 1, 1904.

Application filed May 28, 1903. Serial No. 159,057. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. HART, a citizen of the United States of America, and a resident of Mount Vernon, in the county of Westchester, in the State of New York, have invented certain new and useful Improvements in Electric Sparking Igniters for Explosive-Engines, of which the following is a specification.

This invention relates to improved means of electric ignition for explosive-engines; and its principal features may be briefly summarized as follows: first, the provision of a separate auxiliary or initial firing-chamber having means for supporting the sparking plug exterior to the wall of the combustion-chamber, whereby the frangible insulation of the plug is removed from the influence of the crushing effects in the expansion of said wall, the seat for said plug also serving as a heat-radiator; second, the interior capacity of said auxiliary igniting-chamber is gaged to permit the residue of the gaseous charge after combustion to be compressed therein, with the succeeding intake, to a point beyond the exposure of the spark-points, enabling the new charge to be ignited; third, in a device forming a separate firing-chamber for an explosive-engine and having a standard external thread for engagement with the usual threaded plug-aperture in the wall of the combustion-chamber, the provision of an interior thread adapted to receive the fitting screw-thread provided on different makes of plugs, as desired, whereby with the aid of said device any make of plug may be used.

In the drawings accompanying this application, Figure 1 is a longitudinal sectional view of my improved coupling and initial firing-chamber device, showing it screwed into the wall of a combustion-chamber. Fig. 2 is a forward plan view of said device, and Fig. 3 is a rear plan view thereof.

Primarily it is the purpose of my invention to provide means, while keeping the insulation of the sparking plug away from the influence of the heat generated within the combustion-chamber, whereby an auxiliary stream of fired gases may be injected into the main gaseous

charge in the combustion-chamber, being caused to traverse entirely the body of said charge in several directions while the latter is at the point of its highest compression.

To this end I provide a thimble or member, as *a*, having the hexagonal or like exterior conformation *b*, permitting the application of a wrench thereto, and being provided interiorly toward its outer end with a thread, as *c*, which may be produced of a caliber to suit the engaging thread on the particular form of plug to be used. Extending from the inner end of member *a* is a cylindrical portion *d*, provided with an external standard thread *e*, capable of screwing into the standard-threaded plug-apertures existing in the wall, as *f*, of the combustion-chambers of explosive-engines. Said portion *d* terminates, preferably, in the cone-like formation *g*, although such form is not arbitrary and may be varied, as is evident. A narrow passage, as *h*, is provided in the portion *d* and communicates at one end with the interior of member *a*, while at its other end it communicates, through narrower branch passages, as *i*, in the end or cone-like formation *g*, with the exterior thereof. In the drawings I have shown three of these branches *i* as deflected radially from the main passage *h*, the purpose whereof being to permit the gases fired within member *a* to shoot into and through the compressed charge within the combustion-chamber in different directions to effect complete combustion of said charge. I have also shown a sparking plug, as *j*, screwed by its usual thread into the member *a* and forming therewith the auxiliary firing-chamber *k*, within which chamber the usual spark-points upon the face of the plug are located to produce between them the igniting-spark. When the plug is screwed into member *a*, the position of its spark-points is thereby adjusted near the inner end of said member adjacent to the entrance to passage *h*, whereby the compression of a new gaseous charge forces the residue of a previous charge against the face of the plug and exposes the spark-points, so that the spark produced therebetween is enabled to ignite said new charge. The portion *d* having a standard thread to fit the

threaded aperture in the combustion-chamber wall may be applied to any cylinder conveniently and securely, while the annular shoulder / seats against the exterior surface of the combustion-chamber wall, thereby permitting the member *a* to be supported entirely outside said wall. Thus the effects of the heat produced within the combustion-chamber are permitted to dissipate by radiation from the wall of member *a* instead of being communicated to the plug, to the injury of the latter. Further, the plug being screwed into member *a* is not subjected to a crushing effect tending to crack the insulation caused by diminution of the threaded aperture in the combustion-chamber wall with the expansion of said wall. Also, further, the plug being screwed into a thread prepared therefor in member *a* is not subjected to a mechanical crushing strain tending to crack the insulation, as is the case when a plug having a certain thread is screwed by main force into a plug-aperture in the cylinder having a different thread.

Thus the device produced by me, besides being possessed of the properties hereinbefore specified, is in the nature of a coupling be-

tween the cylinder and the plug, by the aid of which any make of plug may be fitted to an explosive-engine.

Having now described my invention, I declare that what I claim is -

As a new article of manufacture, a coupling between sparking plugs and explosive-engines, comprising a thimble having an interior thread to receive a sparking plug, and being exteriorly arranged to be turned with a wrench, together with a narrowed, exteriorly-threaded extension adapted to screw into the plug-orifice in a combustion-chamber, said extension terminating in a cone-like formation, and said extension being provided with a central passage communicating at one end with the interior of said thimble, and at its opposite end with a plurality of radiating perforations through its cone-like termination.

Signed at New York this 20th day of May, 1903.

WILLIAM J. HART.

Witnesses:

FREDERICK C. BONNY,
FREDERICK D. DAVIES.

Correction in Letters Patent No. 753,795.

It is hereby certified that in Letters Patent No. 753,795, granted March 1, 1904, upon the application of William J. Hart, of Mount Vernon, New York, for an improvement in "Electric Sparking Igniters for Explosive-Engines," an error appears requiring correction as follows: On the face of the patent it is stated that the inventor, said Hart, "assigned his right, title, and interest in said improvement to Charles F. Splitdorf," whereas it should have stated that he assigned *one-half of his right, title, and interest*, said Splitdorf being assignee of one-half interest only, as shown by the records of this office; and the said Letters Patent should be read with this correction therein to conform thereto.

Signed and sealed this 28th day of June, A. D., 1910.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.

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