No. 685,404. Patented Oct. 29, 1901.

A. KRASTIN.

SPARKING IGNITER FOR EXPLOSIVE ENGINES.

(Application filed July 7, 1900.)

(No Model.)

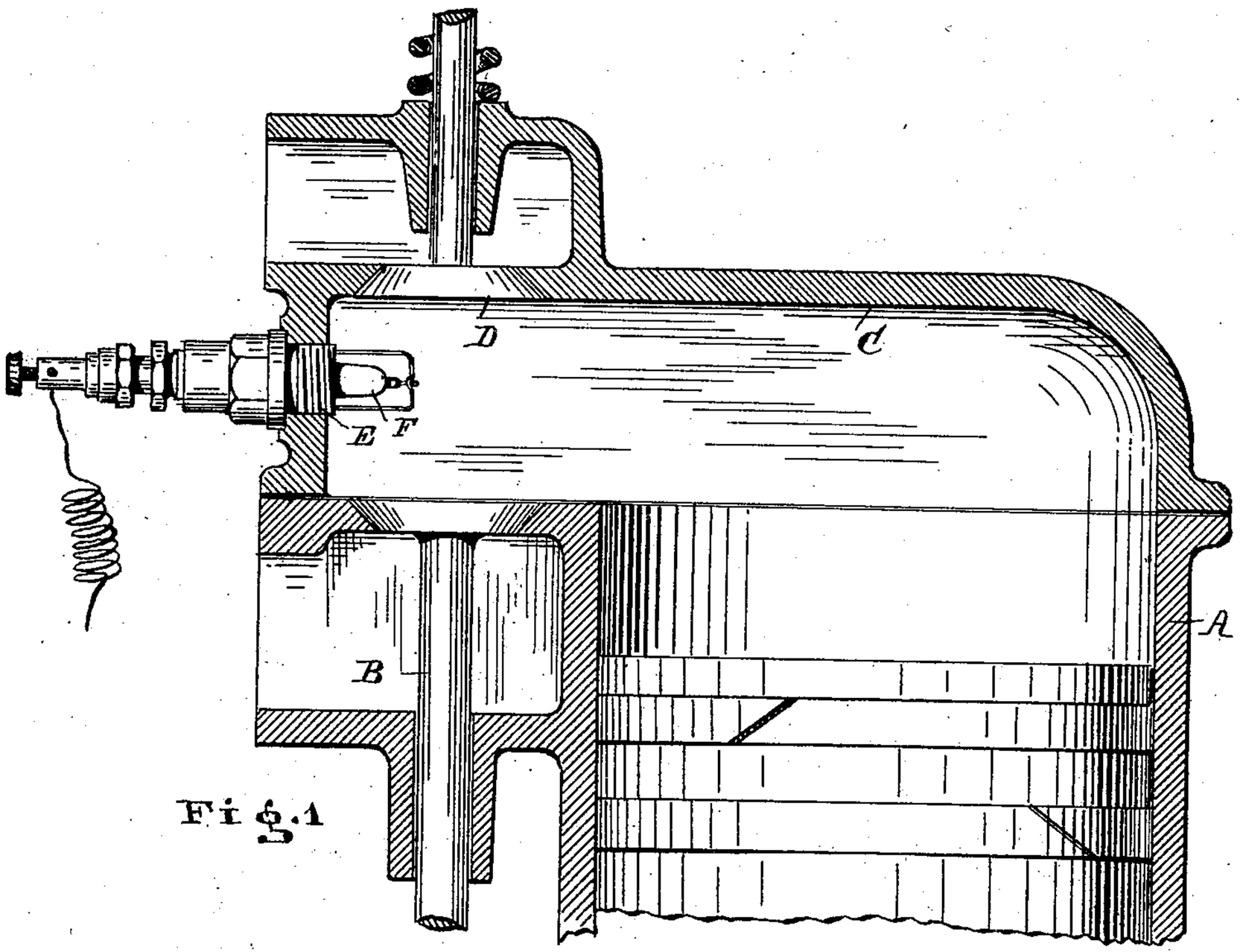

Fig. 1

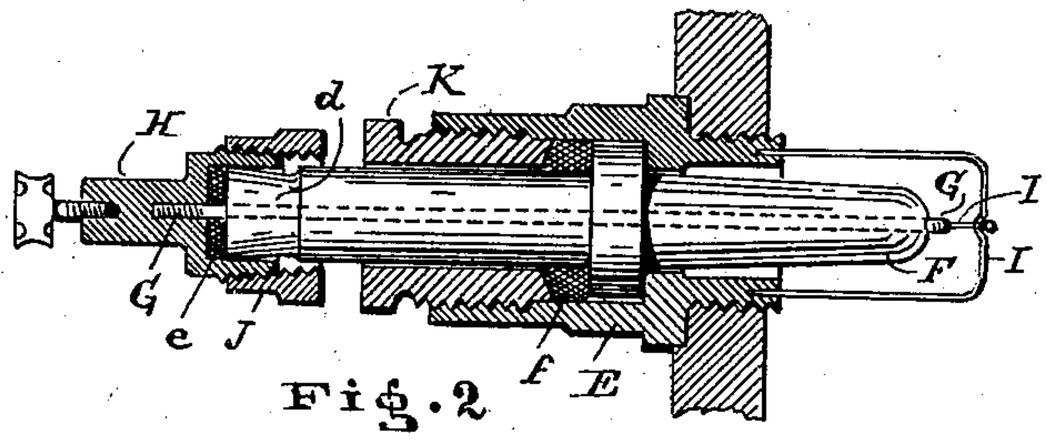

Fig. 2

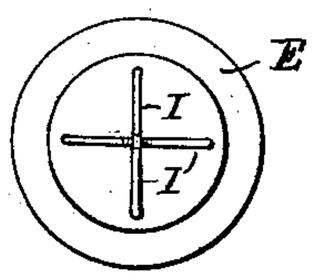

Fig. 3

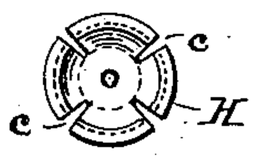

Fig. 4.

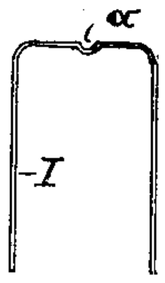

Fig. 5

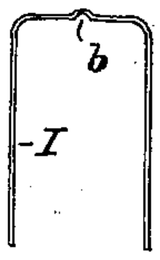

Fig. 6

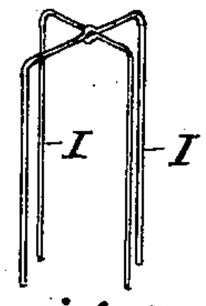

Fig. 7

WITNESSES

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UNITED STATES PATENT OFFICE.

AUGUST KRASTIN, OF CLEVELAND, OHIO.

SPARKING IGNITER FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 685,404, dated October 29, 1901.

Application filed July 7, 1900. Serial No. 22,809. (No model.)

To all whom it may concern:

Be it known that I, AUGUST KRASTIN, a citizen of the United States, residing at No. 50 Portland street, Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Electric Igniters for Explosive-Engines, of which the following is a specification.

My invention relates to improvements in electric igniters for explosive-engines; and the object of my improvement is to enhance the effectiveness and durability of such igniters, and also to provide for a construction which enables the execution of repairs conveniently and readily. I attain these objects in and with an electric igniter constructed substantially as shown in the accompanying drawings, in which—

Figure 1 represents a partial sectional view of an explosive-motor cylinder, its valves, and an improved electric igniter therefor. Fig. 2 represents a longitudinal sectional view of same enlarged. Fig. 3 is an inner face view of same. Fig. 4 is an inner face view of the binding-post for same. Figs. 5 and 6 illustrate detail construction of igniter-plug, and Fig. 7 is a perspective view of said igniter-plug details.

Like letters of reference denote like parts in the drawings and specification.

In so-called "jump-spark" igniters, to which this my present invention appertains, the experience has been that they often become inoperative on account of being covered with soot or when the wires which establish the gap in the circuit become deranged (bent) by the action of the heat within the cylinder. Therefore in order to lessen the chances for accumulation of soot upon such wires they should present the least possible surface—that is, they should be made of very thin material and arranged in such manner that their relative position cannot become changed by the presence or action of heat within the cylinder. Furthermore, they should also be so placed in relation to the inlet-valve of the cylinder that the influx of the charge can and will remove soot deposits from these wires.

In Fig. 1 the cylinder A is shown as provided with an exhaust-valve B, seating in the cylinder-face, and in the head C is located the inlet-valve D. A plug E has screw-threaded connection with the side of the head. Inside the plug is placed a tube F, which is made, preferably, of porcelain or other suitable non-conducting insulating material, and within said plug a wire G is securely connected, whereby the electric current is carried inside the cylinder A, away from parts which might cause "short-circuiting." Attached to the outer end of wire G is the binding-post H. From said post a wire leads to a so-called "induction-coil" having primary and secondary windings, and from such coil a wire extends to any part of the engine or plug itself. Any kind of battery may be employed. Also the primary circuit may be closed by any kind of mechanically-operated contact-maker, whereupon the spark will jump the gap between the wires I and G. In extending the wires G and I a part way into the cylinder, so as to be exposed to the current of the incoming charge, it is possible to keep the wires free from soot. Therefore no leakage or short-circuiting can take place and the current will always jump the gap between the wires G and I I under the phenomena of a spark. By crimping the wires, as at *a* and *b*, a suitable interlocking connection can be established for same, since one wire is supported by the other and prevented from changing its relative position or required distance to or from the wire G. Also in connecting the wires I I substantially as shown they cannot become deranged or bent by the action of the heat within the cylinder. When the wires are kept in clean condition and the size of the gap or distance between the wires cannot be changed, then the electric current must and will always jump between these wires and give a spark for igniting the charge within the cylinder.

At *c c* the band of the binding-post H is slotted for the purpose of becoming contractible upon the inverse conical terminal *d* of the tube F. The contraction of said band is accomplished by means of the tapering nut J. Upon drawing the post unto said tube the packing *e* becomes compressed and establishes a gas-tight joint of and with the wire G and tube F. Likewise does the gland K establish a gas-tight joint between the tube and plug upon compression of the packing *f*.

Therefore neither internally nor externally can gas escape past said tube, yet all parts can readily be detached, examined, and replaced when or if necessary. When the nut and gland are adjusted, then the distance between them is more than ample to make short-circuiting impossible at that part of this electrical appliance, and, finally, it can safely be stated that all parts are so arranged (respectively insulated) that the current can only be established by way of jumping the gap, which gives the necessary spark for igniting the charge in the cylinder.

Obviously the circuit is only closed just when explosion should take place. The contact-maker is therefore so adjusted as to close only when the compression-stroke of the engine has been or is about completed.

What I claim, and desire to secure by Letters Patent, is—

1. In an electric igniting appliance for explosive-engines the combination with a plug thereof, of a set of arched interlocking electric wires projecting from out of said plug, an insulating-tube within said plug and an electric wire extending through said tube within suitable distance of said arched wires so that a spark may jump from one to the others for the purpose of igniting the charges in such engines.

2. In an electric igniting appliance for explosive-engines, the combination with the plug thereof of a set of electric wires projecting in arch form and interlocking condition from out of said plug, an insulating-tube extending through said plug in secure connection therewith, and an electric wire in said tube of which one terminal reaches within suitable distance of the first-mentioned wires so that a spark may jump from one to the others, and the other terminal being secured in gas-tight condition with a binding-post provided at the outer terminal of said tube, all constructed and arranged substantially as and for the purpose set forth.

3. In combination the plug E having an insulating-tube secured thereto by a packing and gland, mutually-engaging arch-shaped electrodes projecting from said plug, an electrode passing through said tube in close proximity to the first-named electrodes, a binding-post for the tube-electrode having a packing-filled contractible screw-threaded band fitting over the inversely-conical terminal of said tube, and a cone-nut for securing said post to said tube, all constructed and arranged substantially as and for the purpose set forth.

4. In explosive-engines the combination with an electrode-carrying plug and an insulated tube containing an electrode and having an inverted cone-terminal, of a binding-post with a contractible externally-threaded band and a cone-nut engaging said band, which establishes connection with said cone-terminal substantially in the manner as and for the purpose set forth.

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

AUGUST KRASTIN.

Witnesses:
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D. GEO. SCHIMER, Sr.