

No. 795,459.

PATENTED JULY 25, 1905.

F. A. THURSTON.
SPARK PLUG FOR EXPLOSIVE ENGINES.

APPLICATION FILED FEB. 17, 1904.

Fig. 1.

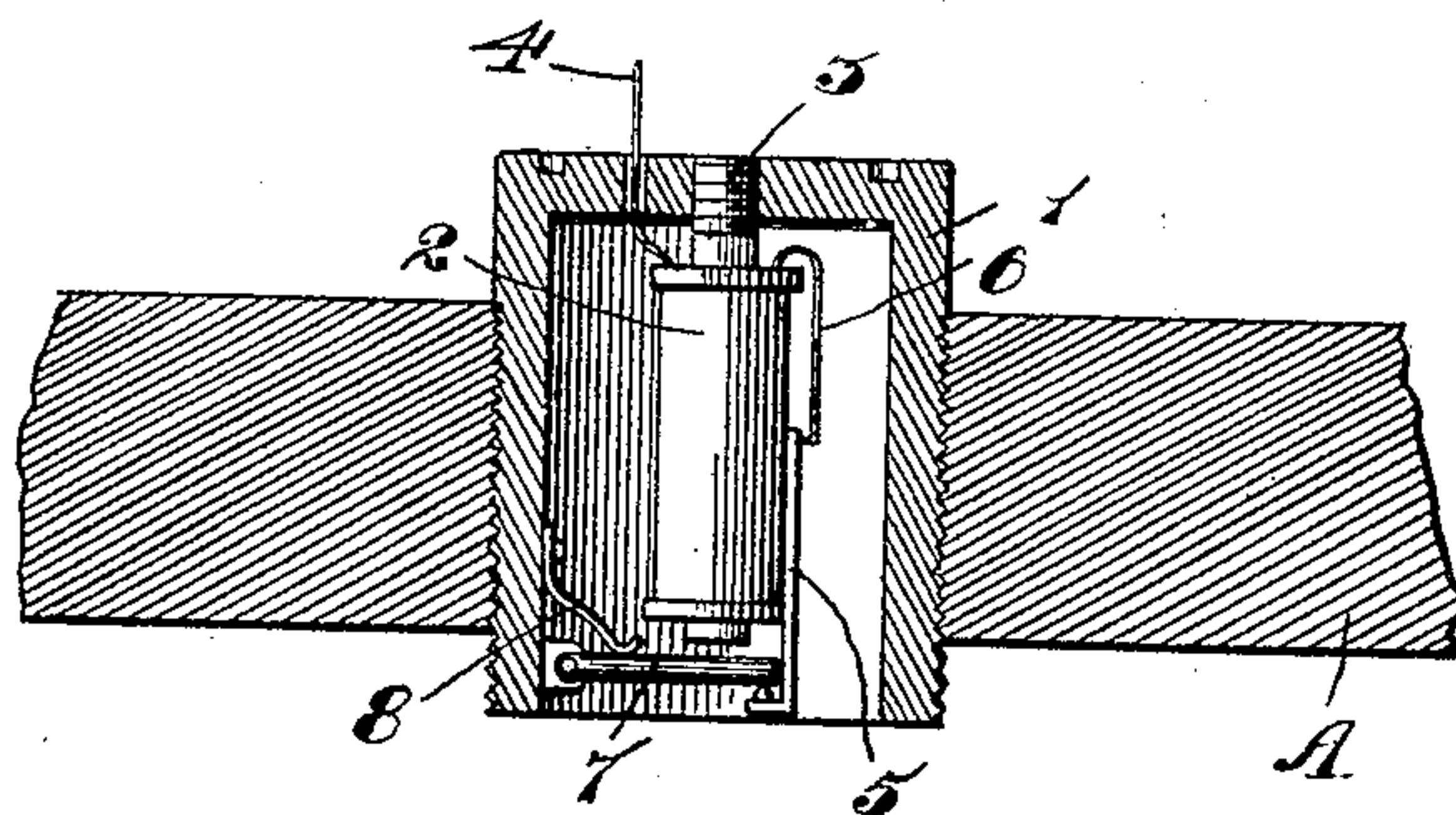


Fig. 2.

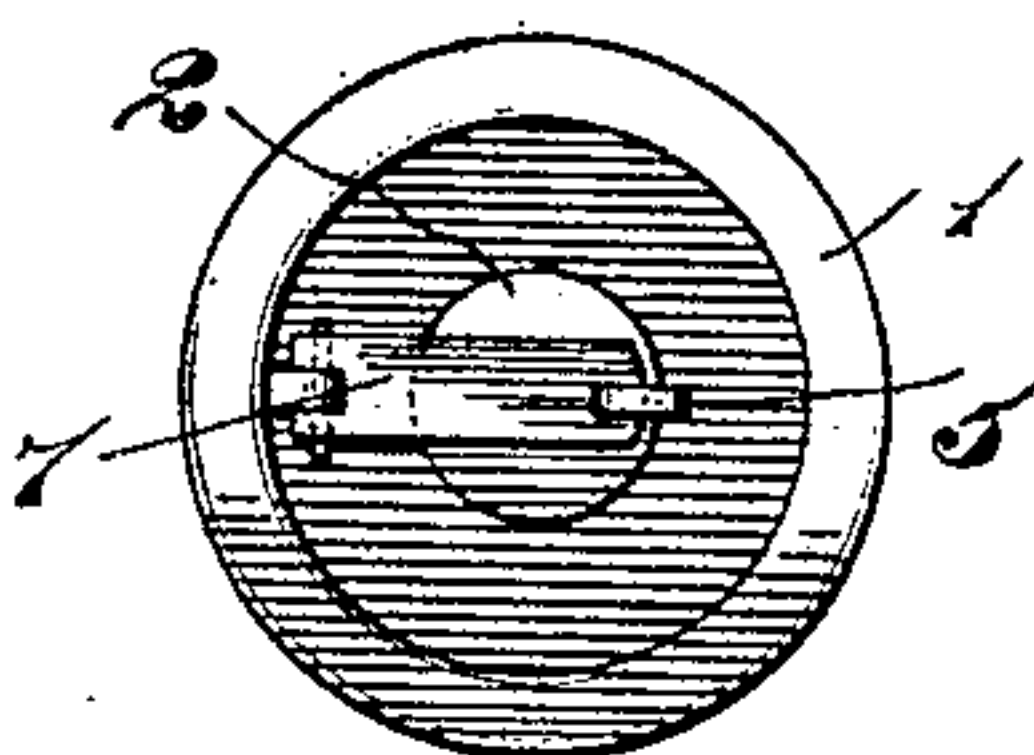


Fig. 3.

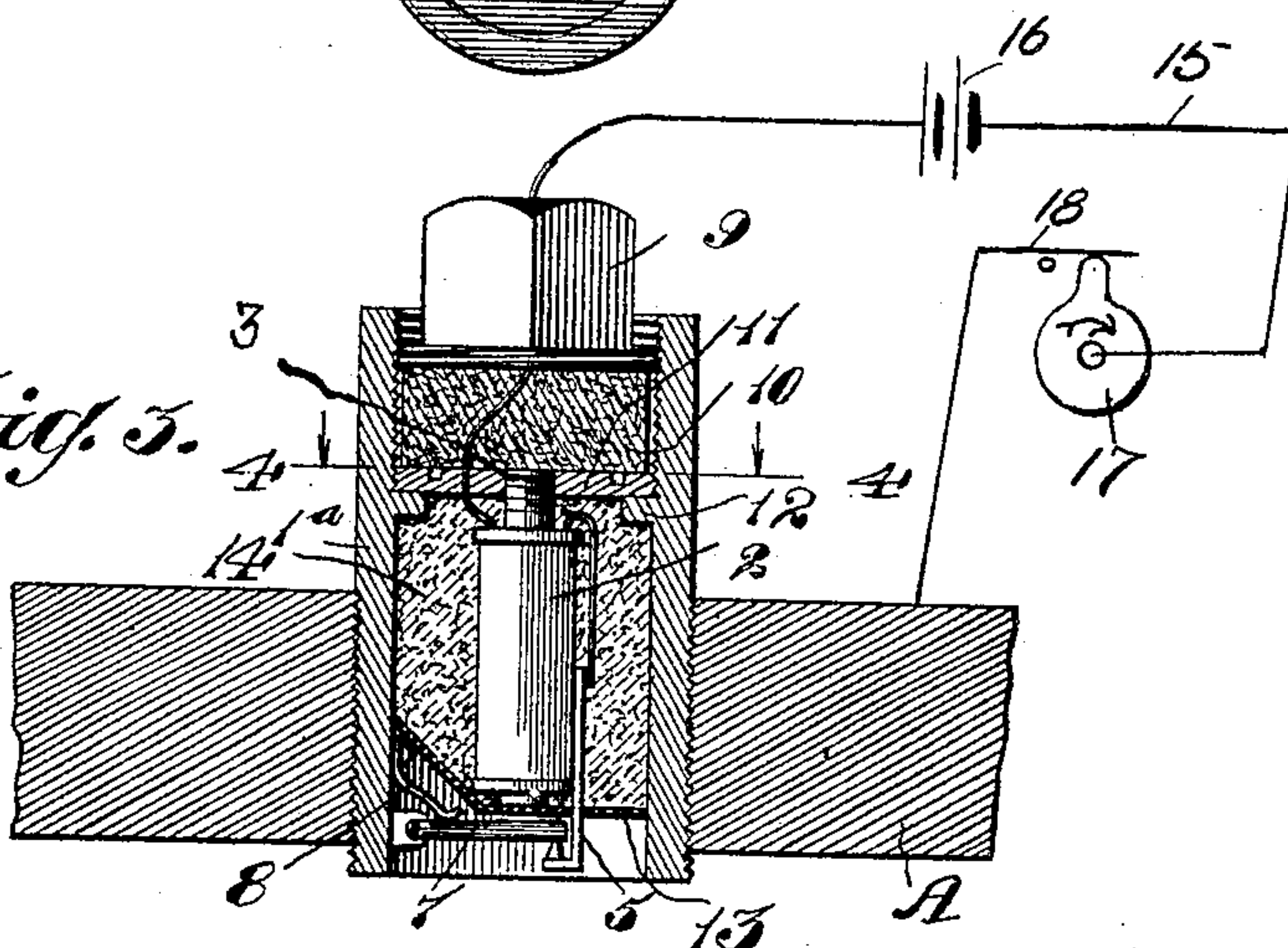
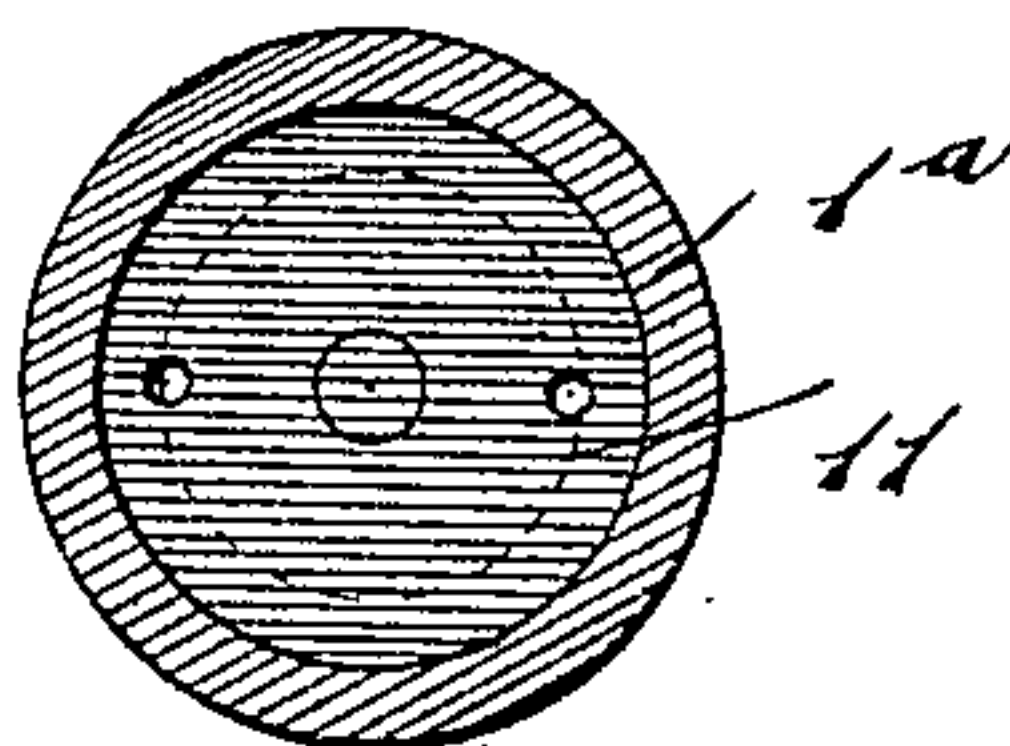


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SPARK-PLUG FOR EXPLOSIVE-ENGINES.

No. 795,459.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed February 17, 1904. Serial No. 194,095.

To all whom it may concern:

Be it known that I, FREDUS A. THURSTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Spark-Plugs for Explosive-Engines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to devices for producing a spark in the cylinder of explosive-engines, such, for example, as gasolene-engines.

The principal object of the invention is to provide a simple, practical, and inexpensive device of the class specified.

In the accompanying drawings, Figure 1 is a section of a portion of a cylinder of an engine and a spark-plug embodying my invention. Fig. 2 is an end view of the same. Fig. 3 is a similar view of a modified form, and Fig. 4 is a section on line 4 4 in Fig. 3.

In the drawings, A represents a portion of the cylinder of the engine to which the device is understood to be applied. The device comprises a shell or thimble 1, made of metal or other suitable substance and exteriorly threaded, so that it can screw into a suitable socket in the cylinder A. An induction or spark coil 2 is arranged within the shell or thimble 1, and its core 3 is screw-threaded into the outer end of the same. An insulated wire 4 is led through the outer end of the shell to the core 3. A metallic strip 5, of brass or other suitable material, is secured to the coil 2 and connected therewith by a wire 6. The armature 7 for the coil 2 is pivoted to one side of the shell 1, and it and the bent end of the contact 5 are provided with platinum points which normally come in contact with one another and complete the circuit from the conductor 4 through the coil and to the thimble 1, and thereby to the cylinder A, which is understood to be connected with the other side of the battery. If desired, a spring 8 may be employed to hold the armature 7 normally against the contact 5, although this is not essential, as the device may be arranged in such position that the armature will be normally held in such position by its own weight.

The operation of the device is as follows: When the current energizes the coil 2, its core attracts the armature 7, and thereby breaks

the circuit between the armature 7 and the contact 5 and creates a spark. Immediately on the break of the circuit the coil 2 is deenergized, whereupon the armature 7 returns to its normal condition and again closes the circuit, with the result that the magnet is again energized and the armature 7 reattracted and the circuit again broken, thus producing a spark in the desired manner.

Fig. 3 shows a modified form of the device in which the shell 1^a is provided with an open end. The end is closed by means of a threaded nut 9, which screws into the interior of the shell 1^a and also by a mass 10 of insulating material, such, for example, as asbestos or cement. A removable disk 11 is also fitted in the shell 1^a and rests against an annular ring 12, projecting into the interior of the shell. Across the lower portion of the shell or casing 1^a is fitted a diaphragm 13, of insulating material, such as mica, which diaphragm is fitted closely against the core 3 to prevent particles of dust and soot from collecting on the end of said core. The space between the diaphragm 13 and ring 12 is preferably filled with cement 14. The operation of this device is the same as that previously described. In this view, Fig. 3, I have shown the working circuit of the spark-producing apparatus, such circuit being indicated at 15. It contains a suitable battery 16 and includes a rotary cam 17, having a contacting brush 18. The cam 17 is rotated by some suitable part of the engine to which the device is applied, so as to make and break the circuit by making and breaking contact with the brush 18.

It will be seen that the device is simple and practical and can be made in very small size and also very cheaply. It will also be seen that changes and modifications can be made in the device without departing from the spirit of my invention. Hence I do not wish to be limited to the precise arrangement herein set forth and described.

What I claim is—

1. A spark-plug comprising a shell or casing, an electromagnetic device confined therein, means actuated by said device for producing a spark, and insulating material inclosing said device but not inclosing the spark-producing mechanism, substantially as described.

2. A spark-plug comprising a shell or casing, an electromagnet confined therein, an

armature for the magnet, contacts whereby the attraction of the armature opens the circuit, and insulating material inclosing the magnet and interposed between the same and the contacts, substantially as described.

3. A spark-plug comprising a shell or casing, an electromagnet confined therein, an armature for the magnet, contacts whereby the attraction of the armature opens the circuit, and insulating material interposed between the armature and the magnet, substantially as described.

4. In a device of the class specified, the combination of a shell or casing, a coil contained therein and secured thereby, a contact carried by said coil, and an armature for the coil, arranged to make contact normally with said contact on the coil, substantially as described.

5. In a device of the class specified, the combination with a shell or casing adapted to fit into the cylinder, of a coil arranged therein and secured thereto, an armature for the coil, a contact carried by the coil and adapted to make connection normally with said armature, and means for causing the ar-

mature to normally make connection with said contact, substantially as described.

6. In a device of the class specified, the combination of a shell or casing adapted to fit into the cylinder, a coil confined therein, an armature for the coil, contacts by which the attraction of the armature causes an opening of the circuit, insulating material outside of the coil, and a plug closing the open end of the shell or casing, substantially as described.

7. In a spark-plug, the combination with an electromagnet and its armature, of means for producing a spark by the armature when actuated by the magnet, and means interposed between the magnet and its armature for protecting the former, substantially as described.

In witness whereof I hereunto subscribe my name this 8th day of February, A. D. 1904.

FREDUS A. THURSTON.

Witnesses:

ISABEL C. LEE,
G. V. DOMARUS.