

H. W. JONES.
SPARK PLUG.
APPLICATION FILED DEC. 10, 1909.

988,785.

Patented Apr. 4, 1911.

Fig. 1.

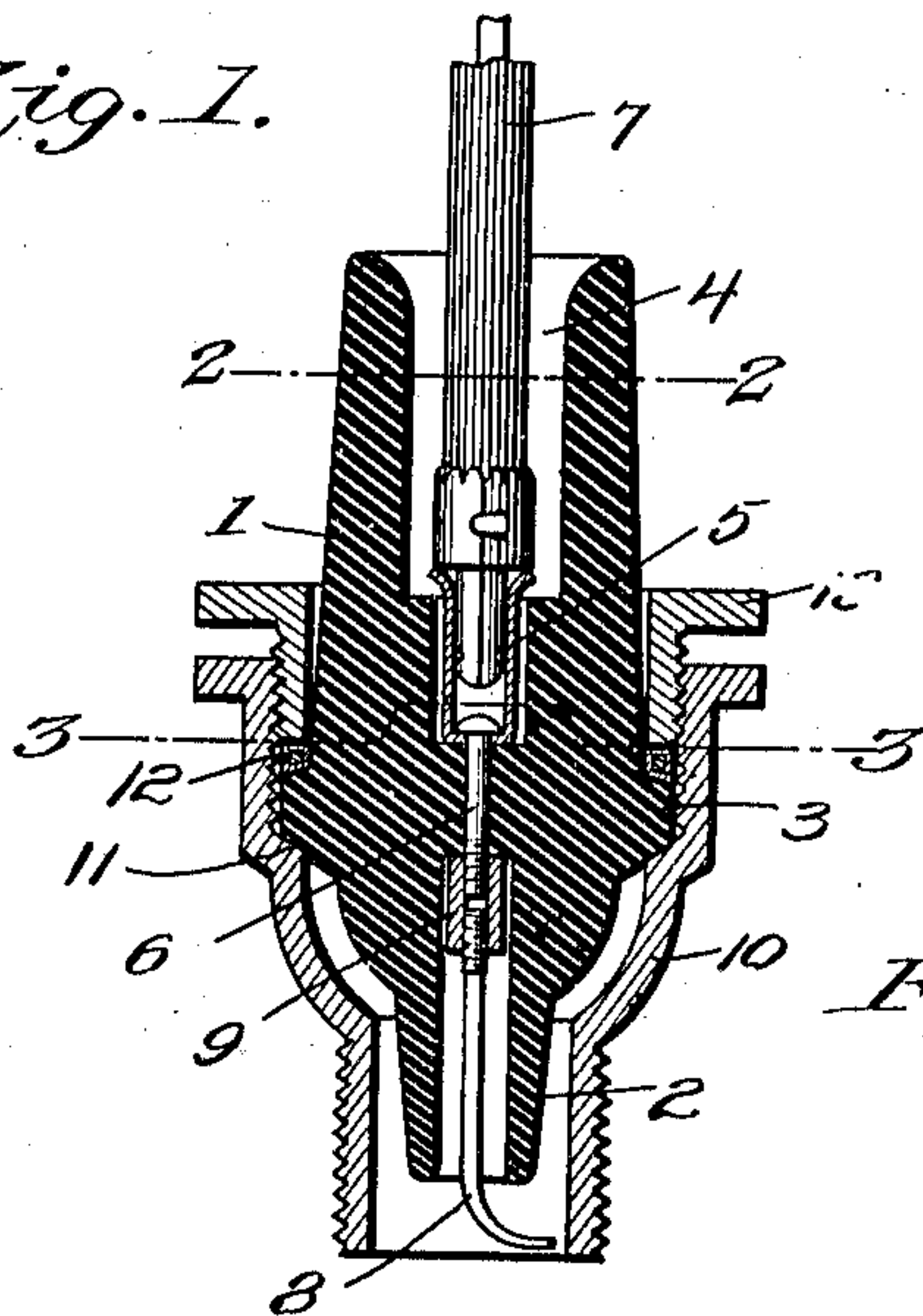


Fig. 2.

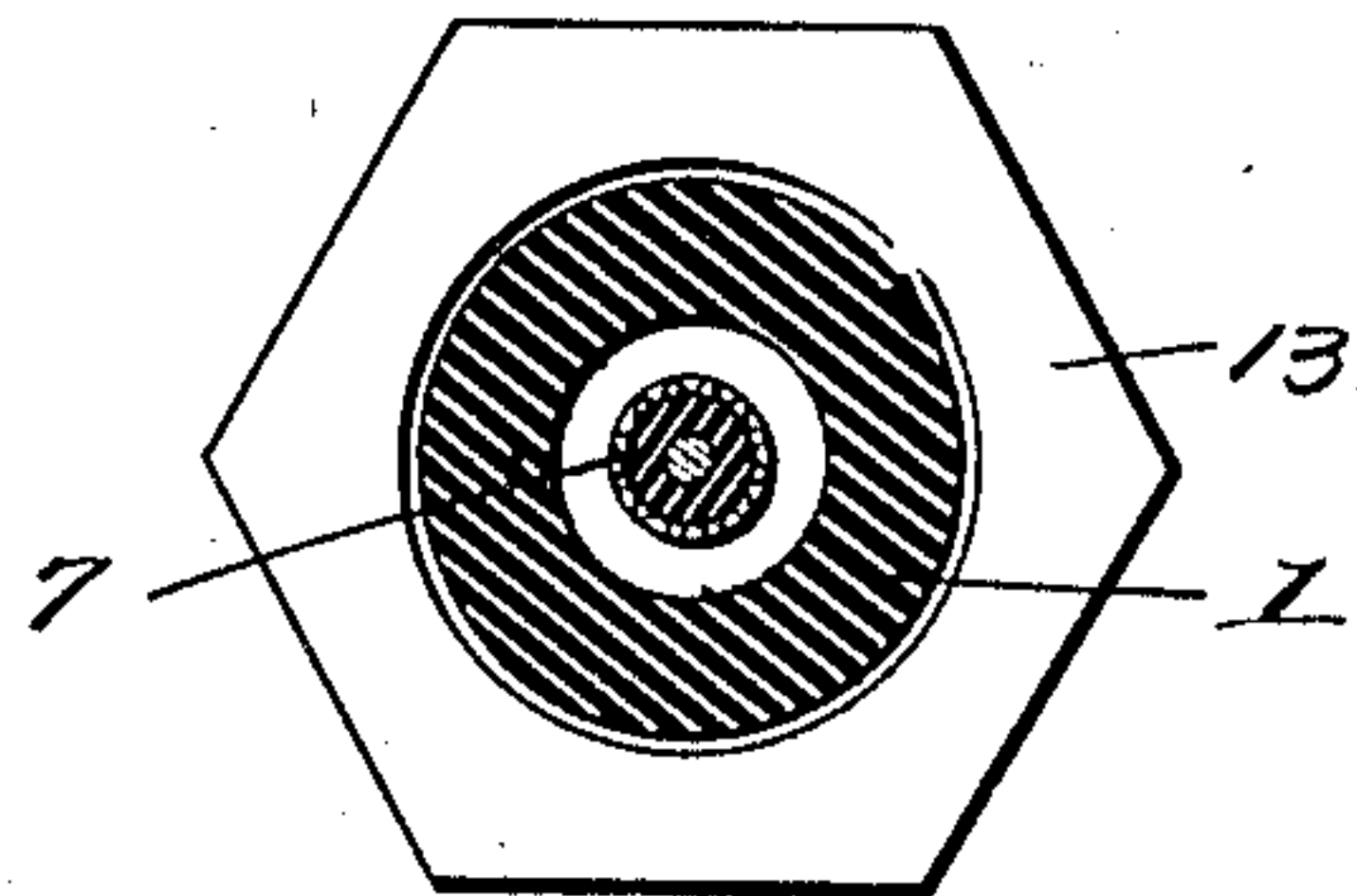


Fig. 3.

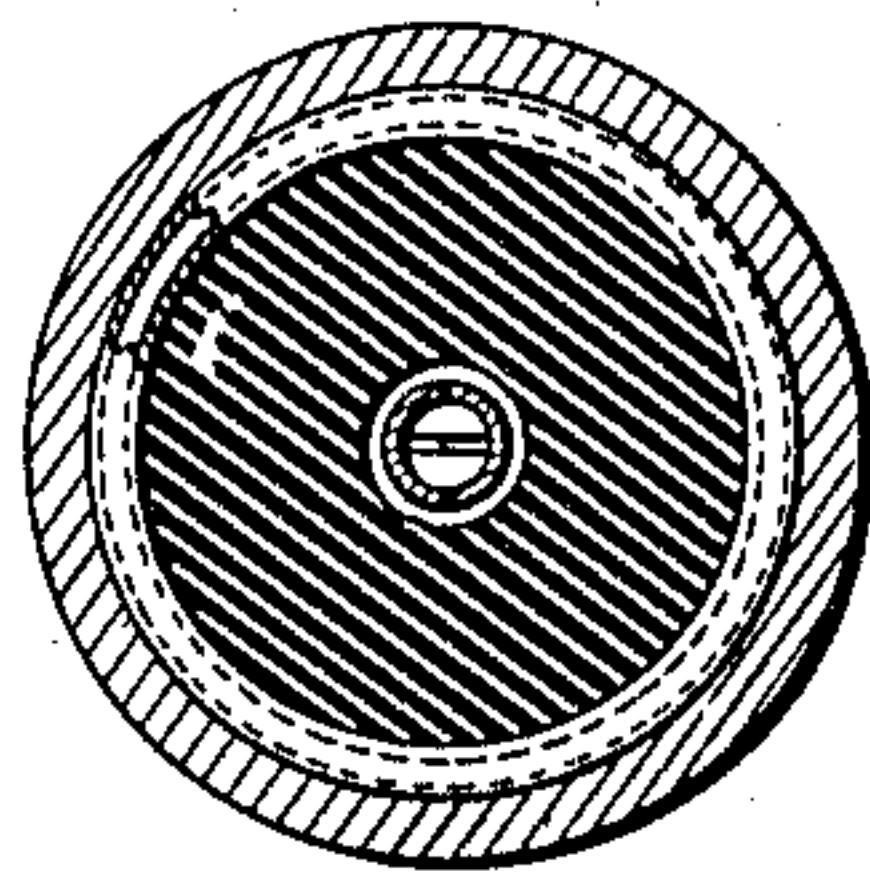


Fig. 4.

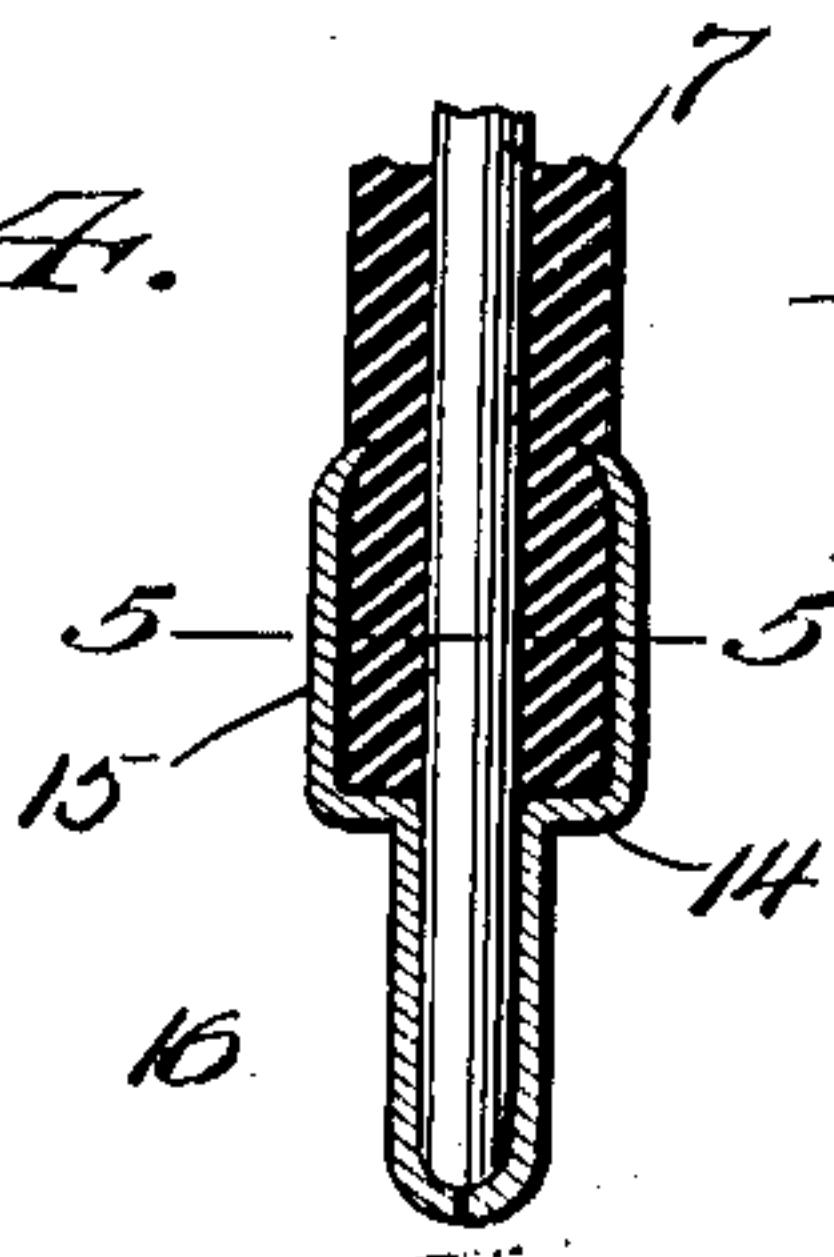


Fig. 5.

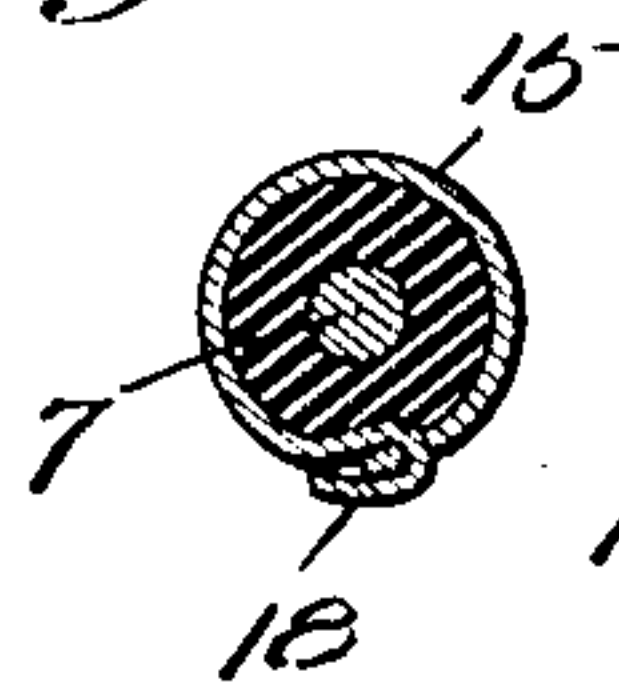


Fig. 6.

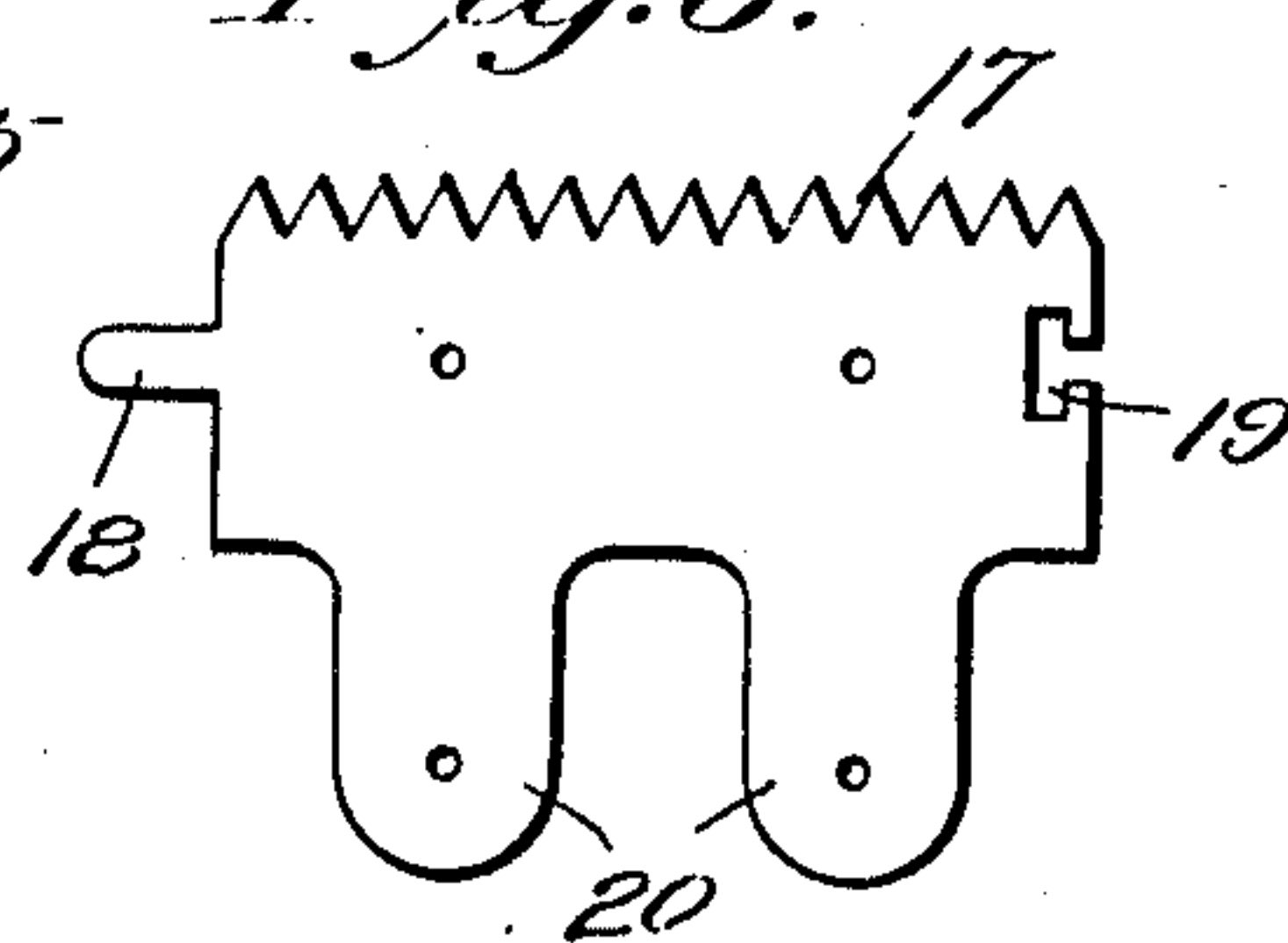
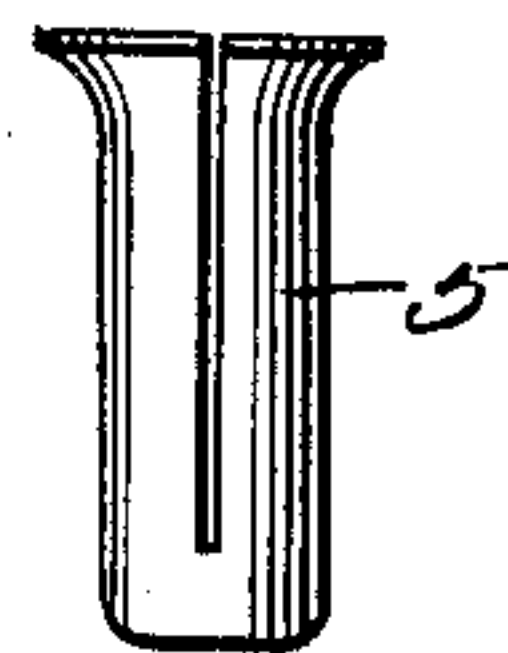


Fig. 7.



Witnesses

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HENERY WILBUR JONES, OF CEDAR RAPIDS, IOWA.

SPARK-PLUG.

988,785.

Specification of Letters Patent.

Patented Apr. 4, 1911.

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To all whom it may concern:

Be it known that I, HENERY WILBUR JONES, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented new and useful Improvements in Spark-Plugs, of which the following is a specification.

The present invention is designed to provide a spark plug for internal combustion engines, which may be cheaply constructed and is both durable and free from subjecting the user to electric shocks in the operation of the engine when bringing the hand in contact with the plug and when placing the conducting wire in place or removing the same from the plug or when performing any work requiring contact of the hand with the plug.

The invention also contemplates a structure enabling the metal parts of the plug to be formed of cold rolled steel or other exceedingly thin metal and the insulating body to be of comparatively large proportions, so as to insure stability and effective insulation, whereby the annoyance experienced from receiving shocks of spark plugs as generally constructed is wholly or in part overcome.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawing, and pointed out in the appended claims.

Referring to the drawing, forming a part of the specification, Figure 1 is a vertical central section of a spark plug embodying the invention, showing the conducting wire in position. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1. Fig. 3 is a horizontal section on the line 3—3 of Fig. 1. Fig. 4 is a sectional view of the insulation and end applied to the terminal of a wire conductor. Fig. 5 is a horizontal section on the line 5—5 of Fig. 4. Fig. 6 is a plan view of the blank from which the metal end applied to the conducting wire and insulation illustrated in Fig. 4 is formed. Fig. 7 is a detail view of the socket secured within the insulating body for reception of the conducting wire.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawing, by the same reference characters.

The spark plug comprises an insulating body 1 formed of any dielectric or refractory material, such as porcelain, hard rubber, earthenware and the like. The body 1 is comparatively large so as to provide ample insulation to prevent the unpleasant shock generally experienced by the hand coming in contact with the usual spark plug. The inner or lower end of the insulating body is made slender, as shown at 2, so as to become heated and consume soot or carbon that may deposit thereon. An annular enlargement 3 is provided midway the ends of the body 1 and forms a supporting shoulder and an abutting shoulder whereby the insulating body is retained within the shell or casing. The upper or outer end of the body 1 has an opening 4, which is contracted at its lower end to receive a socket 5, which is retained in place by a fastening 6. The socket 5 comprises spring portions, which grip opposite sides of the terminal of the wire 7 which leads from a current generator. The opening 4 admits of the terminal of the wire 7 being introduced into the socket 5 without subjecting the operator to a shock, since the projecting part of the body 1 prevents the short circuiting of the current through the hand. The inner or lower end of the body 1 is provided with an opening to receive the sparking terminal 8, which is usually a platinum point and connected to a nut 9 with which the fastening 6 also makes screw thread connection. The construction is such as to admit of ready adjustment or replacement of the sparking terminal.

The insulating body 1 is secured within a shell or casing 10, the upper portion of which is enlarged and the lower portion of which terminates in a threaded shank to be fitted to the engine body in the well known manner. An inner shoulder 11 is provided near the upper end of the shell 10 and receives the annular enlargement 3 of the body 1. A packing 12 is spaced upon the annular enlargement 3 and is confined by means of a gland 13, which is threaded into the upper portion of the shell. The packing 12 may be of any material and consists of a slender ring covered by asbestos. The shell or casing 10 is formed of sheet metal compressed or rolled into the desired shape, steel being preferred and the same being cold rolled with the result that the shell is ex-

ceedingly light, durable, and strong. The gland 13, as well as the socket 5, may likewise be formed of sheet metal pressed or rolled into the desired shape.

5 The conducting wire 7 is protected by insulation and the terminal thereof is provided with a metal end 14, which is constructed of a blank substantially as shown in Fig. 6, and comprises an upper socket 15
10 and a lower socket 16. The socket 15 embraces the insulation, whereas the socket 16 incloses the projecting end of the wire. The upper edge of the blank is toothed, as indicated at 17, and is adapted to be bent in-
15 ward so as to enter the insulation, as indicated most clearly in Fig. 4. A tongue 18 is provided at one end of the blank and an opening 19 at the opposite end of said blank. When the blank is bent around the insulated
20 portion of the wire it is made secure by the teeth 17 entering the insulation and by the tongue 18, which is passed through the opening 19 and clenched, as indicated most clearly in Fig. 5. The body of the blank is
25 formed with spaced extensions 20, which, when brought together and bent, form the sections or parts of the socket 16, as indicated in Fig. 4.

30 From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have
35 described the principle of operation of the invention, together with the device which I now consider to be the embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that
40 such changes may be made when desired as

are within the scope of the claims appended hereto.

Having thus described the invention what is claimed as new, is:—

1. In a spark plug for internal combustion 45 engines, the combination of a metal shell, an insulating body secured within the metal shell and having its lower portion contracted and made slender and having its upper portion projecting beyond the shell to form a 50 guard, said body having an axial opening which is enlarged at its upper and lower ends, the upper opening having its lower portion contracted, a metal socket secured within the lower contracted portion of the 55 upper enlarged opening, leaving the walls of the latter above the metal socket to form the guard, an electrode located within the lower opening of the body, and a metal connector joining the metal socket and electrode. 60

2. A spark plug for internal combustion engines comprising a metal shell, a body of dielectric material secured within the metal shell and having its lower portion contracted and its upper end extended beyond the 65 shell to form a guard, said body having openings in opposite end portions and a central opening connecting the end openings, the upper opening having its lower end contracted, a metal socket fitted within the con- 70 tracted portion of the upper opening, an electrode arranged in the lower opening of the body, and connecting means adjustably connecting the metal socket and electrode.

In testimony whereof I affix my signature 75 in presence of two witnesses.

H. WILBUR JONES.

Witnesses:

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R. W. HOGEMAN