

J. C. ANDERSON.
METHOD OF MANUFACTURING SPARK PLUGS.
APPLICATION FILED AUG. 5, 1909.

966,784.

Patented Aug. 9, 1910.

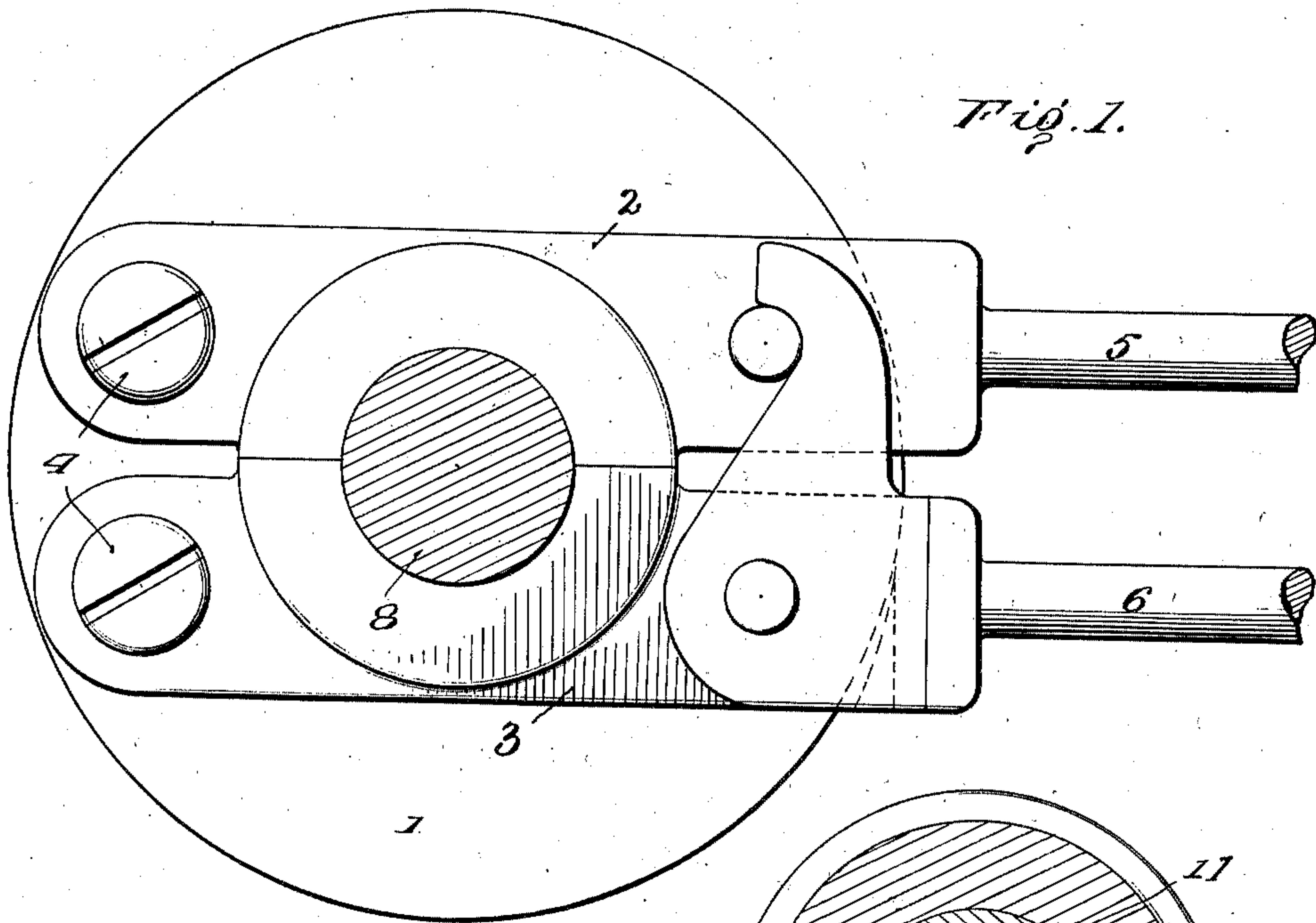


Fig. 1.

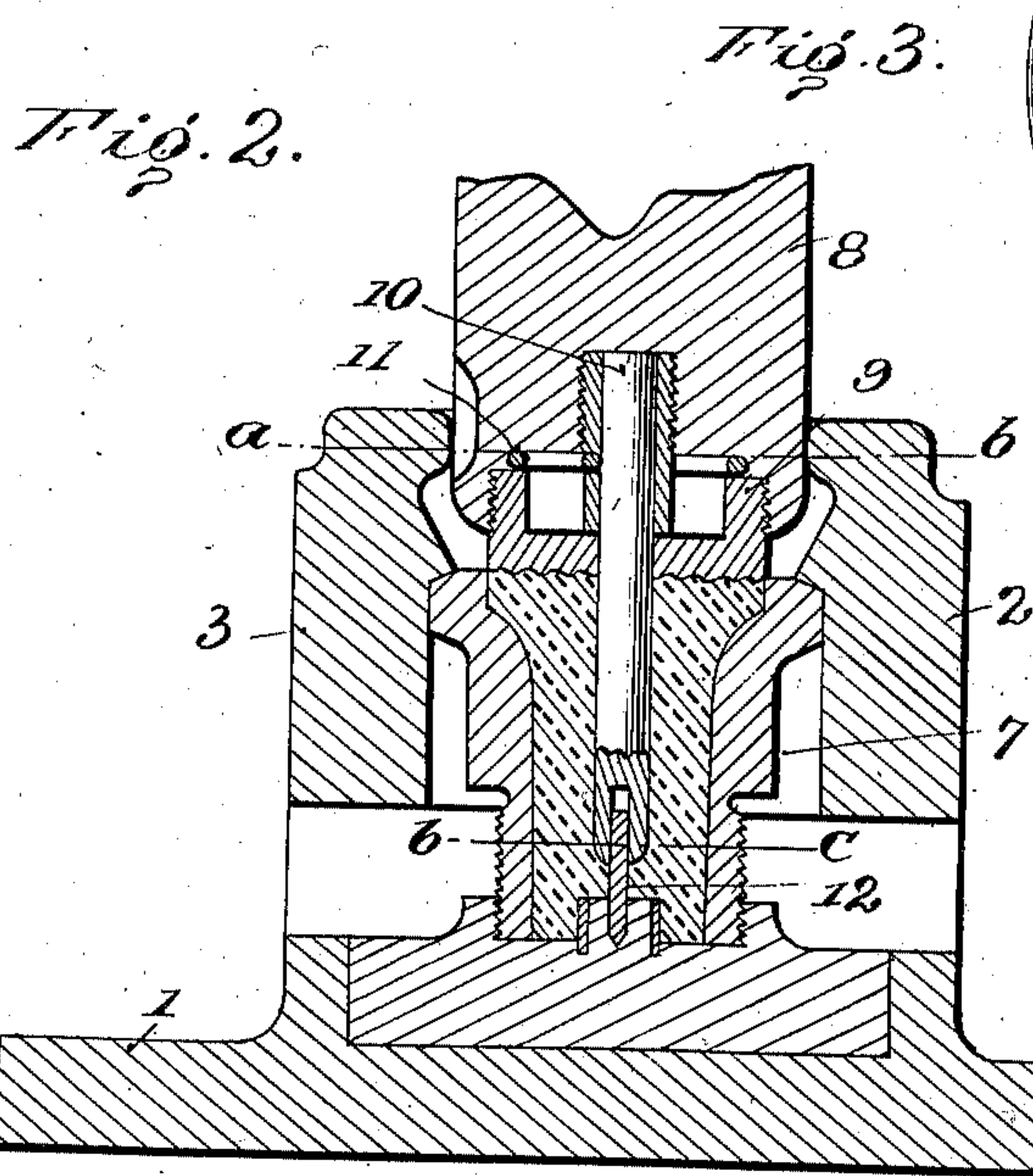


Fig. 2.

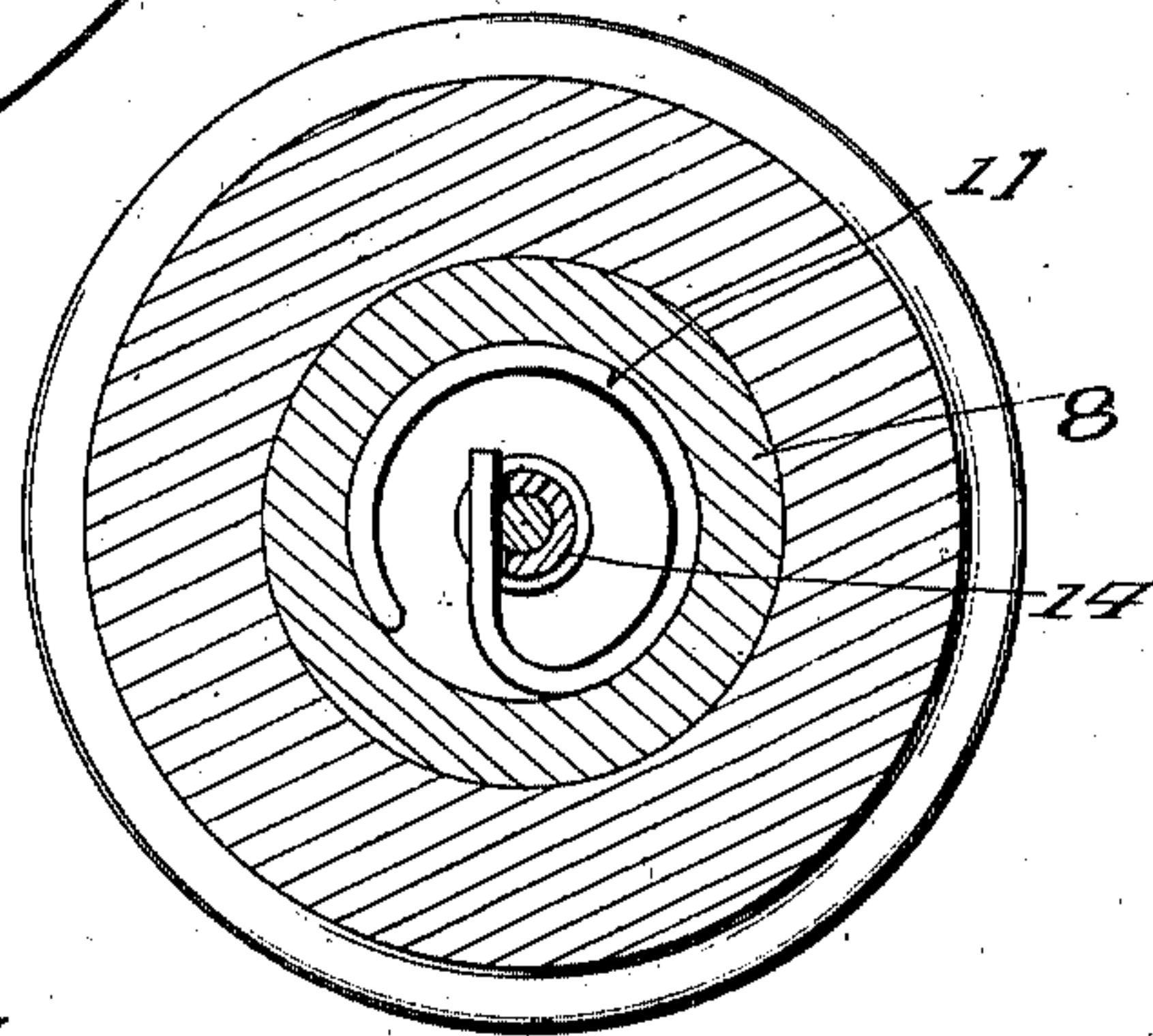


Fig. 3.

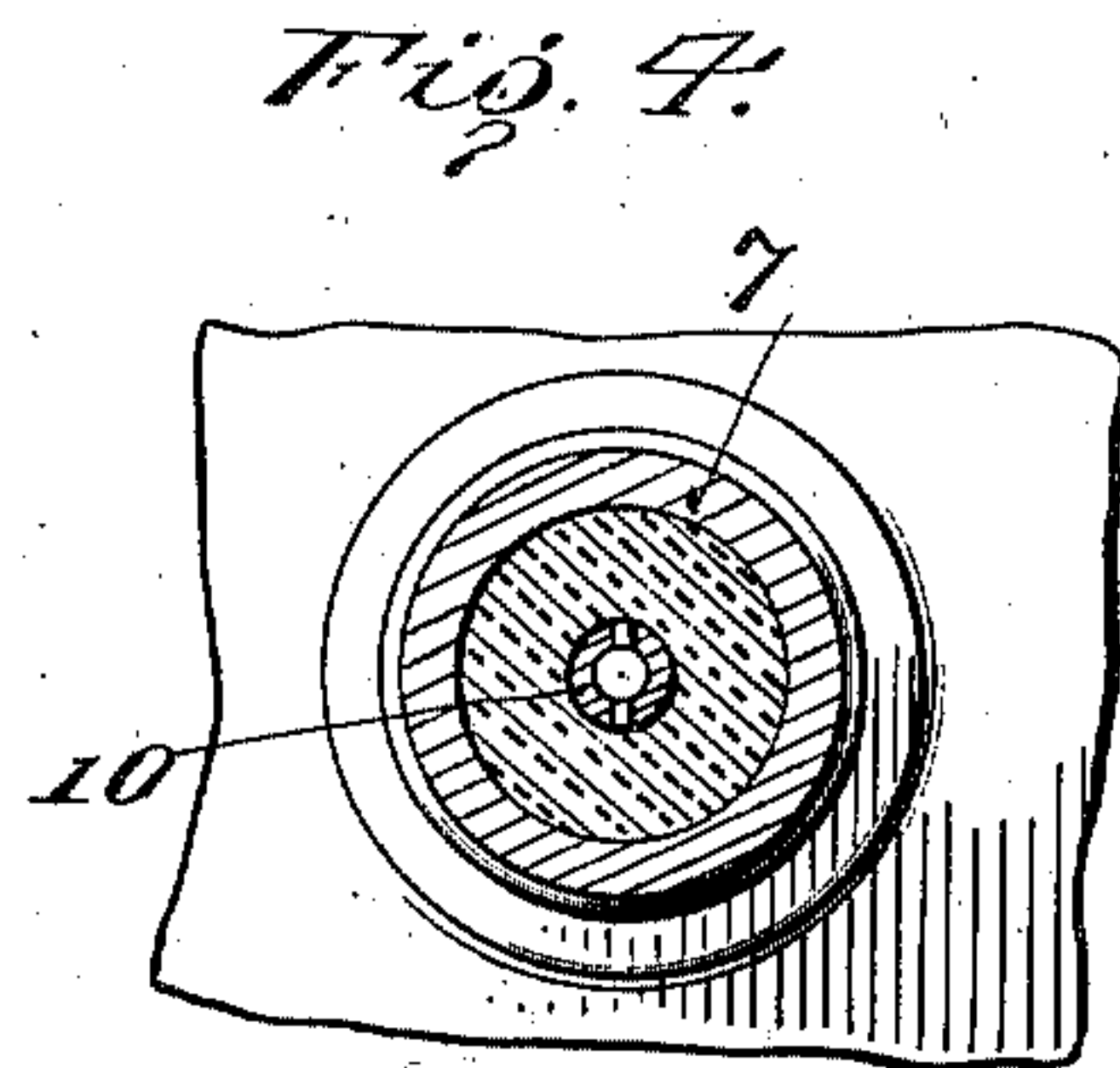


Fig. 4.

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METHOD OF MANUFACTURING SPARK-PLUGS.

966,784.

Specification of Letters Patent.

Patented Aug. 9, 1910.

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To all whom it may concern:

Be it known that I, JAMES C. ANDERSON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Methods of Manufacturing Spark-Plugs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a new and useful method of manufacturing spark-plugs, having the generic features described and claimed in Letters Patent granted to me July 7, 1903, No. 732,812, and particularly of such construction as is illustrated as being produced by a novel construction of molds shown and described in another application filed by me on even date herewith, Serial No. 511,408, and in which the central electrode terminates in a chamber in the inner end of the insulating glass.

For the purpose of making clear my improved method, I shall refer to the accompanying drawing which is a reproduction of the drawing constituting a part of the application hereinbefore referred to.

Figure 1 is a top or plan view of the mold in which the spark plug is made. Fig. 2 is a central vertical section of the same. Fig. 3 is a horizontal section on the line *a-b* of Fig. 2; and Fig. 4 is a similar section on the line *b-c* of Fig. 2.

Similar reference numerals indicate like parts in the several figures of the drawing.

Before referring particularly to the mold which I employ in carrying out my improved method, I deem it important to call attention to the fact that while the principal feature of my invention consists in molding the insulating glass between the metallic parts of the spark plug and welding it therewith, it differs essentially from the ordinary method of molding glass in the fact that instead of compressing the glass within a non-heated mold from which it is subsequently removed, I deposit the molten glass within the spark plug shell confined within the mold, and that such shell, as well as the electrode, are heated to such temperature that when the molten glass between the two is subjected to compression, it is welded with the shell and the electrode.

In the drawings, 1 is the base of the mold

to which the members 2 and 3 are pivoted at 4, which are operated by handles 5 and 6, and which embrace the shell 7 of a spark plug, and 8, is a plunger to the lower extremity of which is secured a die 9, and within which die and plunger is a seat adapted to receive one end of an electrode 10, held by friction of a spring 11, all as fully described in the application hereinbefore referred to.

With a mold substantially such as shown, I first locate within the base of the mold an attenuated terminal 12 for the electrode; I then heat to a proper degree a shell 7, and locate the same upon or within a seat in the base part of the mold; an electrode 10, is then heated and seated within the end of the compressing plunger; a sufficient quantity of molten glass is then deposited within the shell 7; and the plunger is caused to descend, which carries the electrode through the body of glass within the shell, and in the particular form shown in the drawing, causes the lower extremity to seat itself upon the attenuated terminal 12, while at the same time the extremity of the plunger 8, or a die secured thereto, contacts with and compresses the molten glass within the shell 7, and owing to the temperature of the shell, electrode, and glass, produces a perfect weld between the glass, and the metallic parts of the spark plug.

While in the drawings I have shown the electrode as seated by friction within the end of the plunger and designed to be forced within and through the body of molten glass within the shell, the electrode may be seated and supported within the base of the mold and the plunger formed with a recess or chamber adapted to receive the exposed end of the electrode, as described in the application hereinbefore referred to.

I do not wish to be confined to any particular manner of assembling the shell and electrode with reference to the body of molten glass deposited within the shell, as the genus of my improved method resides in supporting the shell within the mold, locating the electrode within the shell, the shell and electrode being previously heated to a proper degree, then depositing within the shell a suitable quantity of molten glass, and finally subjecting the glass to pressure to complete the method.

Having described the method of manufac-

turing spark plugs of the character described, what I claim as new and desire to secure by Letters Patent is:—

1. The method of manufacturing spark
5 plugs which consists in heating the shell and
confining it within a mold, locating a heated
electrode within the shell and supporting
it in fixed relations therewith, flowing molten
glass between the shell and the electrode,
10 and finally subjecting the body of molten
glass to pressure whereby the same is welded
to the metallic members of the plug, substantially
as herein before set forth.

2. The method herein described, of manu-
15 facturing spark plugs which consists in locating
within the base of a mold a heated shell, and
confining the same in fixed position therein by
embracing it with the pivoted members of the
mold; seating within the
20 lower extremity of a compressing plunger a
heated electrode; depositing a suitable quantity
of molten glass within the shell; and finally
causing the plunger to descend to carry the
electrode through the body of
25 molten glass and to weld the latter with the
electrode and shell.

3. The method herein described of manu-
facturing spark plugs which consists in sup-
porting the attenuated and highly conduc-
30 tive terminal of the electrode within the
base of a mold; heating a shell and support-

ing it upon the base of the mold, and con-
fining it within pivoted members of the
mold; heating an electrode having a bifur-
cated seat at its lower extremity for the re- 35
ception of the attenuated terminal; separably
connecting the upper extremity of the elec-
trode with the lower extremity of a compres-
sion plunger; depositing a body of molten
glass within the shell; and finally causing 40
the plunger to descend to unite the electrode
with its attenuated terminal and to weld
the glass with the electrode and shell.

4. The method herein described of manu-
facturing spark plugs, which consists in sup- 45
porting and embracing the heated shell with-
in a mold; heating an electrode and friction-
ally supporting it within the lower extrem-
ity of a compressing plunger; depositing a
body of molten glass within the shell; and 50
automatically locating the electrode with
reference to the shell and welding the glass
with the shell and electrode by causing the
plunger to descend within the mold and upon
the molten glass within the shell. 55

In testimony whereof, I have signed my
name to this specification in the presence of
two subscribing witnesses.

JAMES C. ANDERSON.

Witnesses:

D. G. STUART,

HENRY C. HAZARD.