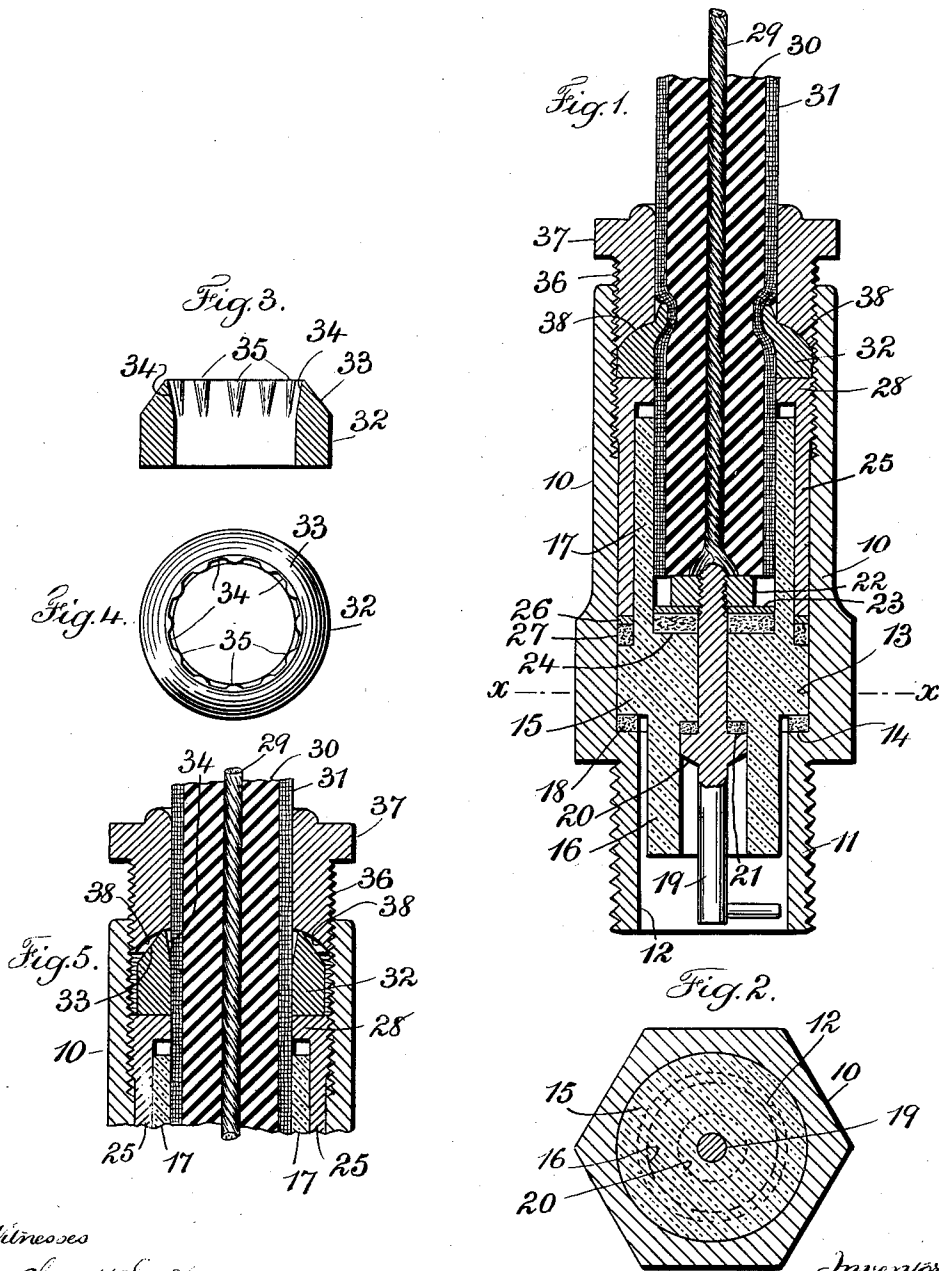


F. H. WEINHAUER.
SPARK PLUG.
APPLICATION FILED MAY 11, 1909.

938,188.

Patented Oct. 26, 1909.



Witnesses

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UNITED STATES PATENT OFFICE.

FRED H. WEINHAUER, OF NEW YORK, N. Y.

SPARK-PLUG.

938,188.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed May 11, 1909. Serial No. 495,251.

To all whom it may concern:

Be it known that I, FRED H. WEINHAUER, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented an Improvement in Spark-Plugs, of which the following is a specification.

My present invention relates to a spark plug and the particular construction thereof is an improvement upon similar devices shown and described in Letters Patent #913,595, granted to me February 23, 1909, and Letters Patent #920,702 granted to me May 4, 1909.

In carrying out my present invention, the spark plug preferably comprises a shell, a shell-electrode, an insulating sleeve having an inner tubular end, means fitting into the shell extending between the same and the said tubular end of the insulating sleeve and securing the said sleeve in position within the shell, a cable which passes through the said means and into the said tubular extension of the insulating sleeve, a collar over the said cable adapted to be received within the said shell and means for forcing the said collar into the cable and against the said means for securing the cable in position within said shell, as will be hereinafter more particularly described.

In the drawing, Figure 1 is a central longitudinal section of a spark plug embodying my present invention. Fig. 2 is a section on line *x, x*, Fig. 1. Fig. 3 is a cross section of the collar employed to clamp the cable in position. Fig. 4 is a plan view of the same, and Fig. 5 is a central longitudinal section of a portion of the spark plug illustrating the position of the parts before the same are clamped together.

Referring particularly to the drawing, the spark plug comprises a shell member 10 which as is ordinarily the case is the ground electrode of the spark plug and at one end is provided with an exteriorly screw-threaded reduced portion 11 adapted to be received in a suitable opening provided therefor in the cylinder head of a gas, oil or other explosive engine. The reduced portion 11 is provided with a bore 12 which latter extends into the shell a distance appreciably beyond the base of the reduced portion 11, and the body of the shell is provided with a bore 13 of some-

what larger diameter than the bore 12, thereby providing a shoulder 14.

15 designates a sleeve which is preferably made of porcelain or other equally good refractory insulating material and at one end this sleeve 15 is provided with a tubular extension 16 and at the opposite end with a tubular extension 17 which latter is of greater diameter both exteriorly and interiorly than the tubular extension 16 at the opposite end of the sleeve. The central diameter of the insulating sleeve 15 is approximately that of the bore of the body of the shell 10 so that the sleeve 15 is adapted to pass into and fit within the said shell.

Between the shoulder 14 and the adjacent portion of the sleeve 15, I employ a ring 18 of asbestos fiber or other similar material. The sleeve 15 is adapted to receive the shell electrode 19 which is provided with a circumferential shoulder 20 adapted to fit within the bore of the tubular extension 16, and between the inner face of the shoulder 20 and the base of the said bore, I also employ a ring 21 of asbestos fiber or similar material.

The shell electrode 19 extends through an aperture provided therefor in the sleeve 15 and the inner end of the shell electrode extends appreciably into the bore of the tubular extension 17 and at its extremity is screw-threaded to receive a nut 22 by means of which with the metal washer 23 and a ring 24 of asbestos or similar material intervening between the nut 22 and the base of the bore 17, the shell electrode 19 is secured in position within the sleeve 15. I also employ a barrel indicated at 25. One end of this barrel 25 is exteriorly screw-threaded and adapted to be screwed down within the shell 10 and to fit between the same and the tubular extension 17 of the sleeve 15. Between the lower end of the barrel 25 and the adjacent shoulder and the end of the sleeve 15 I also employ a metal washer 26 and a ring 27 of asbestos or similar material against which the barrel 25 is screwed down to maintain the sleeve 15 and its shell electrode 19 in position within the shell 10. At the upper end the barrel 25 is provided with an apertured head 28.

29 designates a cable which is preferably made of a plurality of fine wires covered with a layer of insulation 30 which latter

is surrounded by a covering 31 and the cable is passed into the upper end of the shell 10 through the aperture in the head 28 of the barrel 25 and into the tubular extension 17 of the sleeve 15 so that the exposed end of the cable 29 contacts with the inner end of the shell electrode 19.

32 designates a collar which may be made of lead or any other suitable material or composition of material, and at one end this collar 32 is exteriorly tapered as indicated at 33 and interiorly at this end of the collar it is recessed as indicated at 34 so as to provide the spaced apart ribs 35. This collar is passed over the cable and preferably the inner diameter thereof is substantially the same as the outer diameter of the cable so that the collar fits over the cable snugly, and when in position as indicated in the drawing, the collar 32 assumes a position within the shell 10 with its lower face abutting against the outer face of the head 28 of the barrel 25.

36 designates a bushing which is exteriorly screw-threaded and adapted to be screwed down within the shell 10 and this bushing is provided exteriorly of the shell with a flat-sided head 37. At its lower or inner end the bushing 36 is provided with a concave surface as indicated at 38 which when the bushing 36 is turned down from the collar 32 causes the tapering end thereof to be forced from the position shown in Fig. 5 to approximately that shown in Fig. 1, whereby the cable is secured within the shell 10 and the exposed end thereof maintained in electrical contact with the inner end of the shell electrode 19; it being understood that the ribs 35 provided in the collar 32 materially assist in so gripping the cable as to form a tight and substantially unbreakable joint.

I claim as my invention:

1. A spark plug comprising a shell, an insulating sleeve having an inner tubular end, a shell electrode, means passing into the said shell and fitting the space between the same and the said tubular end of the sleeve for securing the said sleeve in position within the shell, a cable passing through the said means and into the said tubular end of the said sleeve and contacting with the said shell electrode, a collar fitting over the said cable and means for forcing a portion of the said collar into the said cable for securing the cable in position within the said shell.

2. A spark plug comprising a shell, an insulating sleeve having an inner tubular end, a shell electrode, a barrel within the said shell filling the space between the same and the said tubular end of the said sleeve for securing the said sleeve in position within the said shell, a cable passing through a portion of the said barrel and into the said

tubular end of the said sleeve and contacting with the said shell electrode, a collar fitting over said cable, and means for forcing the said collar into the said cable and against the end of the said barrel for securing the cable in position within the said shell.

3. A spark plug comprising a shell, an insulating sleeve having an inner tubular end, a shell electrode, means for securing the shell electrode in position within the said insulating sleeve, means passing into the said shell and filling the space between the same and the said tubular end of the sleeve for securing the said sleeve in position within the shell, a cable passing through the said means and into the said tubular end of the said sleeve and contacting with the said shell electrode, a collar fitting over the said cable, and means for forcing a portion of the said collar into the said cable for securing the cable in position within the said shell.

4. A spark plug comprising a shell, an insulating sleeve having an inner tubular end, a shell electrode, means for securing the shell electrode in position within the said insulating sleeve, a barrel within the said shell and filling the space between the same and the said tubular end of the said sleeve for securing the said sleeve in position within the said shell, a cable passing through a portion of the said barrel and into the said tubular end of the said sleeve and contacting with the said shell electrode, a collar fitting over the said cable, and means for forcing the said collar into the said cable and against the end of the said barrel for securing the cable in position within the said shell.

5. A spark plug comprising a shell, an insulating sleeve having an inner tubular end, a shell electrode, means for securing the said shell electrode in position within the said insulating sleeve, a barrel having an apertured head and being exteriorly screw-threaded for a portion of its length so as to be screwed down in the said shell between the same and the tubular end of the said insulating sleeve filling the space between these parts and adapted to maintain the said insulating sleeve in position within the shell, a cable passing through said apertured head of the barrel and into the said inner tubular end of the sleeve and contacting with the said shell electrode, a collar fitting over the said cable within the said shell and a screw-threaded bushing adapted to be screwed down within said shell to force the said collar into the cable to maintain the same in position within the shell.

6. A spark plug comprising a shell, an insulating sleeve having an inner tubular end, a shell electrode, means for securing the said shell electrode in position within the said insulating sleeve, a barrel having an apertured head and being exteriorly screw-

threaded for a portion of its length so as to
be screwed down in the said shell between
the same and the tubular end of the said
insulating sleeve to maintain the said insu-
5 lating sleeve in position within the shell, a
cable passing through said apertured head
of the barrel and into the said inner tubular
end of the sleeve and contacting with the
said shell electrode, a collar adapted to fit
10 over the said cable within the said shell and
being exteriorly tapered at one end and at
the same end provided interiorly with a se-
ries of spaced apart ribs adapted to engage

the said cable, and a screw-threaded bushing
whose inner end is concave and is adapted 15
to be screwed down in the said shell to force
the said tapering end of the collar and the
ribs provided therein into the said cable to
secure the same in position within the said
shell. 20

Signed by me this fifth day of May 1909.

FRED H. WEINHAUER.

Witnesses:

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E. ZACHARIASEN.