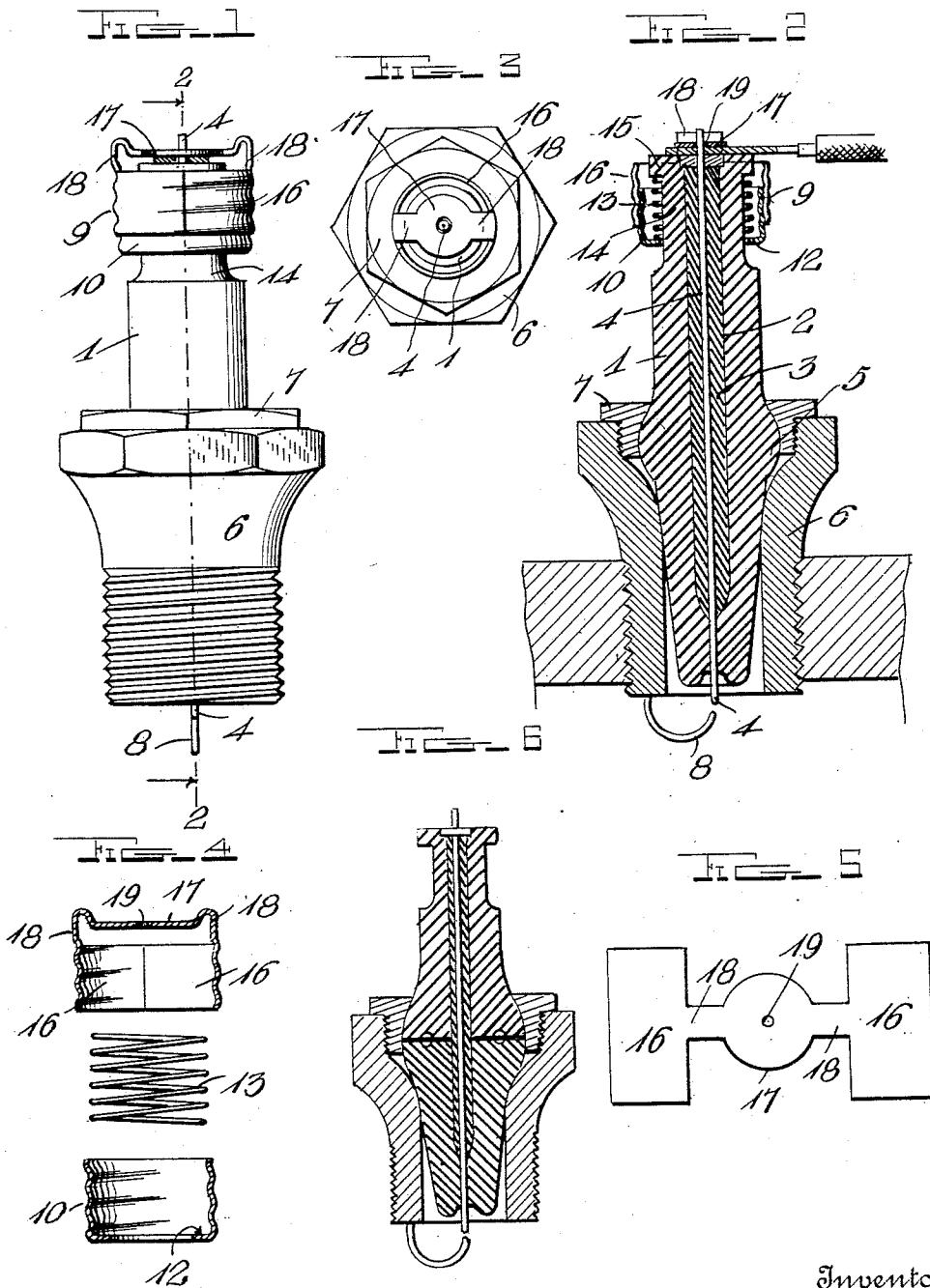


SPARK PLUG.

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Witnesses

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SPARK-PLUG.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, IRWIN FLOYD KEPLER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Spark-Plugs; and I do 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.

This invention relates to improvements in spark plugs.

The object of the invention is to provide a spark plug having means whereby a short circuit will be positively prevented under any circumstances.

A further object is to provide a plug constructed in such manner that the same will not be easily broken by the contraction or expansion of the metallic parts surrounding the plug.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be described and particularly pointed out in the appended claims.

In the accompanying drawing, Figure 1 is a side view of a plug constructed in accordance with my invention, showing an electric terminal connected therewith; Fig. 2 is a longitudinal sectional view of the same showing the plug arranged in place in the side of a cylinder; Fig. 3 is an outer end view of the plug and the terminal attaching cap; Fig. 4 is an enlarged sectional view of the inner and outer sections of the spring-retracted terminal fastening or cap of the plug, showing these parts separated; Fig. 5 is a plan view of the blank from which the outer cap is formed; Fig. 6 is a longitudinal sectional view showing a modified construction of the plug.

Referring more particularly to the drawings, 1 denotes the plug, which is constructed of porcelain or other suitable material and has formed therethrough a centrally disposed bore, 2, in which is arranged an insulating filling, 3, through which, and the ends of the plug, the binding pin, 4, of the electric terminal is arranged.

The plug is provided substantially midway between its ends with an annular enlarged portion, 5, which is adapted to engage the outer enlarged portion of the nipple, 6,

which holds the plug in the side of the cylinder. The enlarged portion of the plug is engaged by a bushing, 7, shaped on its inner side to fit the enlargement and which is adapted to be screwed into the outer end of the nipple, as shown. The inner end of the binding pin, 4, projects beyond the inner end of the plug in position to co-act with the inner terminal 8 of the electric circuit to form the spark for igniting the charge in the cylinder.

On the outer end of the plug is arranged a terminal fastening cap, 9, comprising an inner sleeve or ferrule, 10, having formed thereon screw threads and having its inner edge turned inwardly to provide a bearing, 12, for the inner end of a coiled retracting spring, 13, which is arranged around a reduced neck portion, 14, on the outer end of the plug. The outer end of the spring, 13, bears against the annular shoulder, 15, formed on the outer end of the plug, as shown. The outer portion of the cap comprises a threaded sleeve, 16, adapted to be screwed onto the ferrule, 10, and on the outer edge of the sleeve, 16, is arranged a clamping disk, 17, which is integrally connected to the sleeve, 16, and spaced therefrom by means of connecting tongues or strips, 18, as shown. In the disk, 17, is formed a centrally-disposed aperture, 19, through which the projecting outer end of the terminal pin extends when the cap is in a retracted or operative position. By means of a cap constructed as herein shown and described, the end of the electric terminal may be readily engaged with and disengaged from the projecting end of the binding pin by drawing the cap outwardly against the tension of the spring, 13, until the clamping plate, 17, is beyond the end of the binding pin, at which time the end of the terminal is slipped over the pin and the cap released to permit the spring to retract the same and hold the clamping plate in firm engagement with the terminal.

In forming the cap, the inner portion or sleeve, 10, thereof is preferably formed from a straight strip or blank of metal in which the screw threads are pressed and after which the inner edge is turned in and the blank bent in circular shape to form the ferrule, 10. The outer portion of the cap is also formed from a blank, cut or punched in the shape shown in Fig. 5 of the drawings, which is bent into shape to form the sleeve

portion 16, the clamping plate 17, and connecting tongues, 18. The outer portion of the cap when thus formed is adapted to be screwed onto the inner or sleeve portion of the cap, and by screwing said outer portion onto the sleeve portion to a greater or less degree, the tension of the spring, 13, may be regulated to clamp the disk, 17, into more or less tight engagement with the end of the electric terminal.

From the foregoing description, taken in connection with the accompanying drawing, the construction and operation of the invention may be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters-Patent, is:

1. A spark plug comprising a tubular body portion, an insulated binding pin arranged in said body portion, a terminal fastening cap arranged on the outer end of said plug, said cap comprising inner and outer adjustably connected sections, a clamping plate forming the outer end of said cap, and a spring to hold said clamping plate in engagement with the terminal of an electric conductor whereby said terminal is secured

in electric contact with the end of said binding pin.

2. A spark plug comprising di-electric body, a shoulder formed on the end thereof, a spring surrounding the body below the shoulder, a ferrule overlying said spring, an electric sparking terminal member passing through said body, a cap surrounding the shouldered end of said body and adapted to hold a battery terminal on the sparking terminal and means for adjusting the connection between the cap and ferrule.

3. A sparking plug comprising a body of insulating material, a sparking terminal passing therethrough and having a contacting surface, a shoulder on the end of the insulating body, a spring surrounding the body beneath the shoulder, a ferrule surrounding the body and having an intumed flange adapted to engage one end of the spring, a cap surrounding the shoulder end of the body and having threads to adjustably engage the ferrule and a bridge piece extending across the cap and adapted to press a battery terminal into electrical engagement with enlarged contacting surface of the sparking terminal.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

IRWIN FLOYD KEPLER.

Witnesses:

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