Dec. 23, 1941. C. SMITH 2,266,999

SPARK PLUG

Filed Sept. 20, 1940

FIG. 1

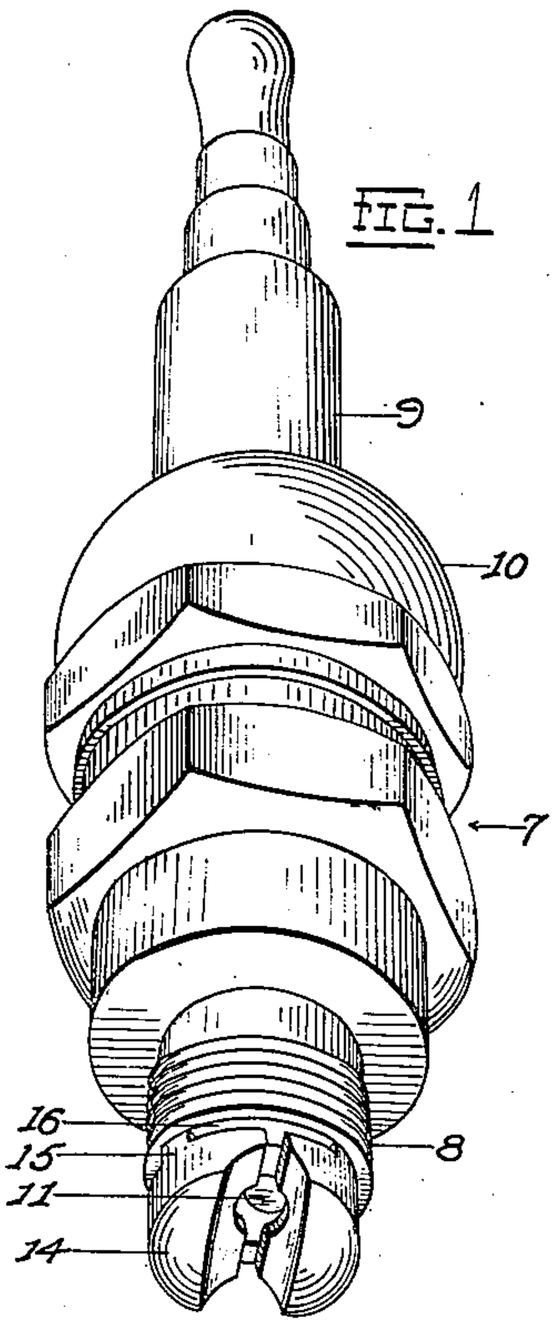


FIG. 2.

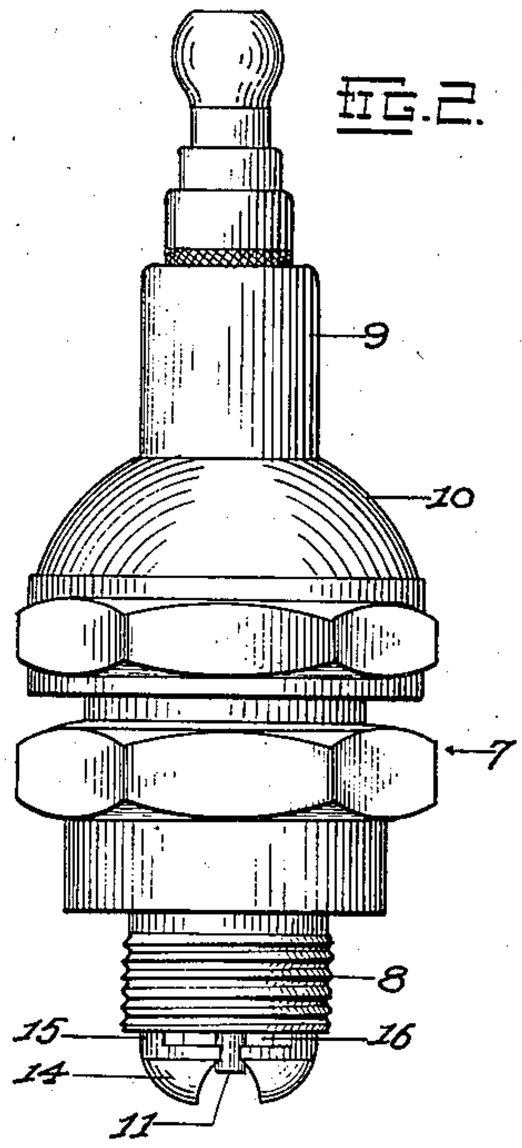


FIG. 3.

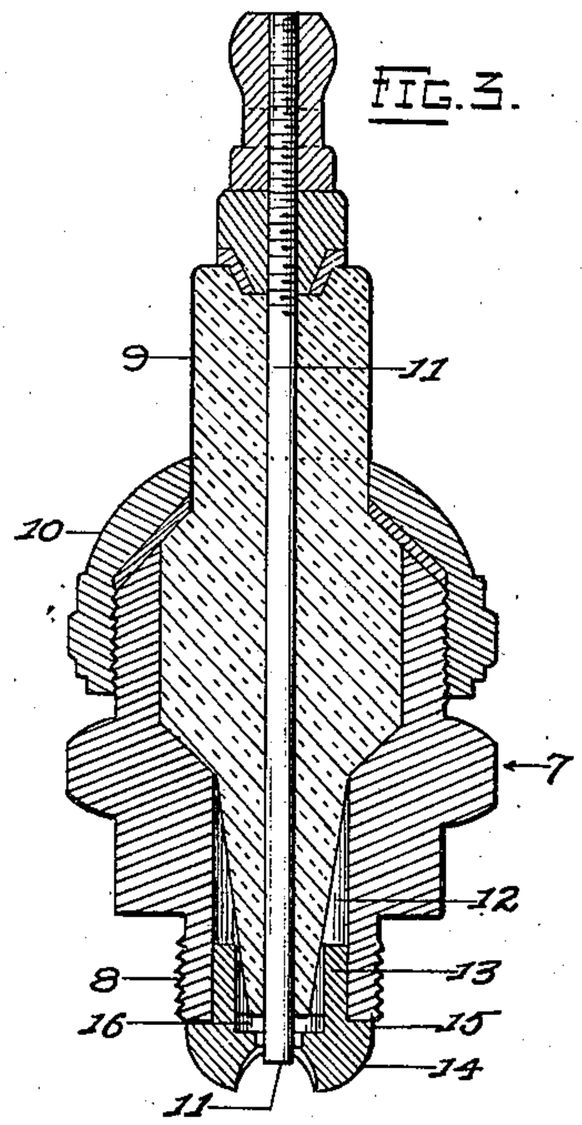
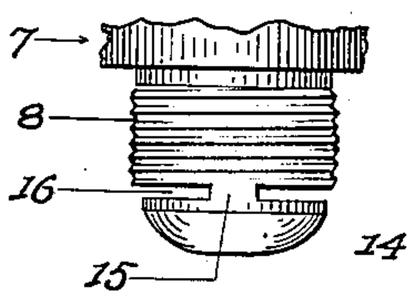


FIG. 4.

FIG. 5.



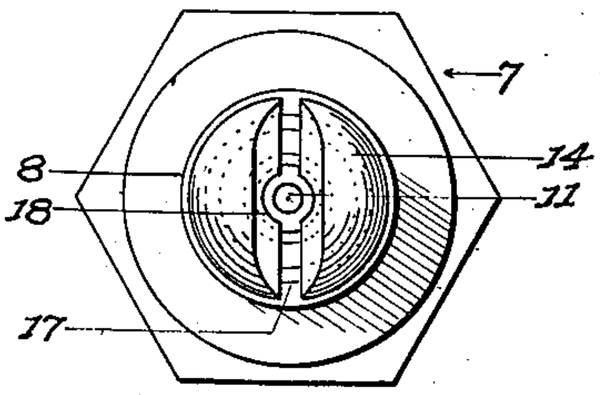


FIG. 6.

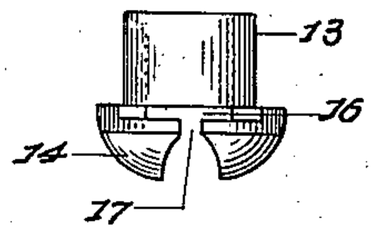
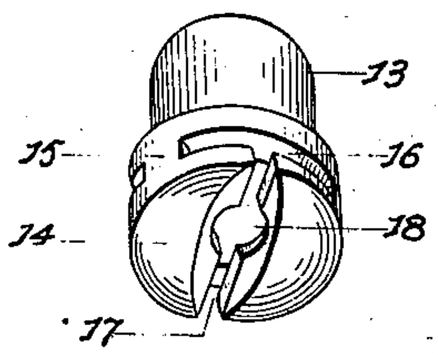


FIG. 7.



Inventor.

Charles. Smith

Patented Dec. 23, 1941

2,266,999

UNITED STATES PATENT OFFICE

2,266,999

SPARK PLUG

Charles Smith, St. Louis, Mo.

Application September 20, 1940, Serial No. 357,575

3 Claims. (Cl. 123—169)

This invention relates to improvements in spark plugs and has for its object a firing head arranged to automatically regulate and adjust its firing gap located between the head and central electrode.

Another object of the invention is that the head may be formed either integral with the plug proper, or it may be made separate and inserted in the base of any ordinary plug now in use by pressing in or otherwise inserting the head in the plug cavity, but it has been found most preferable to insert the head in the cavity under pressure.

In applying the head to a standard spark plug, it is necessary to first clip off the hooked firing electrode or electrodes formed on and carried by the rim of the plug, then inserting the head so that its shoulder is flush with the base of the screwthreaded insertion end of the plug by which the plug is inserted into the engine or motor block.

The essential feature of the invention is the head comprising a shank to fit into the plug cavity, and a head carried by the shank by means of supporting members spacing the head a reasonable distance from the base of the plug, the head being provided with a cross slit dividing the head into halves with a central opening through which the central electrode of the plug projects and forming between it and the head the firing gap. In other words, the head in this construction forms one of the electrodes which is necessary to create a spark between it and the central electrode.

Another object is the general arrangement, construction and combination of parts or elements necessary to accomplish the result and necessary to produce an automatically adjustable firing point which adjustment is regulated by the expansion and contraction caused by the heat created by the explosion taking place in the cylinders.

Figure 1 is a perspective view of my complete invention.

Figure 2 is a side elevation of my improved plug.

Figure 3 is a central vertical sectional view of the same.

Figure 4 is a bottom plan view of the plug..

Figure 5 is a detail side view of the lower end of the plug turned one quarter around from the position shown in Figure 2.

Figure 6 is a side view of the head detached from the plug.

Figure 7 is a detail perspective view of the head.

In the general construction of my invention I provide a spark plug consisting of a base member 7 having a screwthreaded extension 8 by which the plug is inserted in the motor block. In this member is positioned an insulating core 9 held in position by a cap or cover 10 by contacting screwthreads as found most preferable.

In this insulating core 9 is formed a bore in which is positioned and firmly held an electrode 11.

In the cavity 12 of the screwthreaded extension 8 is inserted and firmly held my improved head, it consists of a shank 13 and a head 14 connected by integral spacing members 15 and forming between the head and the shank elongated gaps 16, the spacing members 15 being made as narrow as possible yet rigid enough to support the head.

The lower part of the head is made globular in form as shown, and is provided with a cross slit or gap 17 the inner walls forming the gap being curvilinear in form as shown and in the center is formed a circular opening 18 through which extends the central electrode 11 which has the necessary gap between it and the periphery of the central opening 18.

This formation of head or thimble as it may be termed is designed to be inserted in the bottom end of any spark plug, but when constructing a plug such as the spark plug invented by and a patent issued to Charles Smith November 14, 1939, and numbered 2,179,801 of which Charles Smith the applicant herein is the inventor and patentee, this head may be made integral or separate as found most desirable.

Applicant herein Charles Smith has obtained Letters Patent on spark plugs, one issued to him January 3, 1939, Number 2,142,383 and on as above referred to Number 2,179,801 and on which former patents this invention and improvement is of vital importance.

By this construction the material of which the head is formed will automatically adjust itself by expansion and contraction caused by the heat produced by the explosions taking place in the cylinders to keep the firing gap between the electrodes properly spaced, and further, should at any time the head become broken or inoperative, the same can be removed and a new head or thimble replaced without purchasing an entirely new plug.

Some and other changes may be made in the construction and arrangement of the invention above set forth without departing from the real spirit and purpose thereof; and it is my intention

to cover by the following claims equivalents which may be reasonably included within their scope.

I claim:

1. A spark plug of the character described comprising a thimble having a shank portion by which it is inserted into a standard plug, a head provided at the lower end of the shank, said head being slit and spaced from the end of the plug to provide for expansion and contraction, and provided with a cross slit dividing the head into halves, and provided with a firing gap to automatically function with the central electrode of the plug proper.

2. A spark plug comprising a firing head formed on the bottom end of the plug proper, said head spaced from the plug by means of slits, said head provided with a cross slit dividing the head into halves, and a central opening surrounding the central standard electrode of the plug forming a firing gap.

3. A spark plug constructed of nonmagnetic material, a head formed at the lower end, the same being partially separated from the base of the plug by slits, said head being split and provided with a central opening, the construction of said head providing for automatic expansion and contraction caused by the varying temperatures, and by which the firing gap will automatically adjust itself according to temperatures.

CHARLES SMITH.