June 5, 1934. A. KEGRESSE 1,962,079

SPARKING PLUG FOR INTERNAL COMBUSTION ENGINES

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Fig. 1.

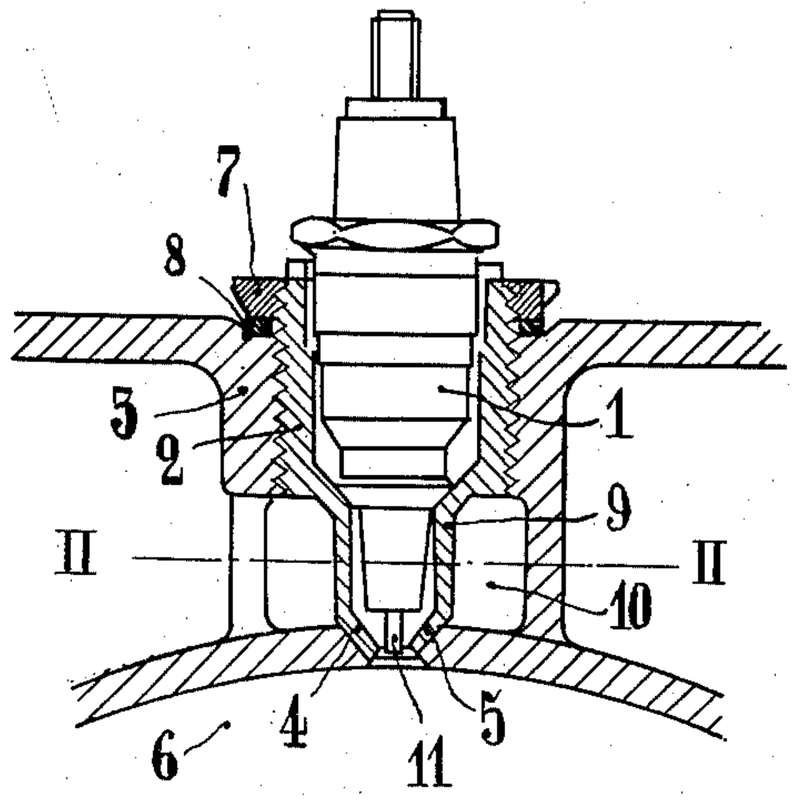

Fig. 2.

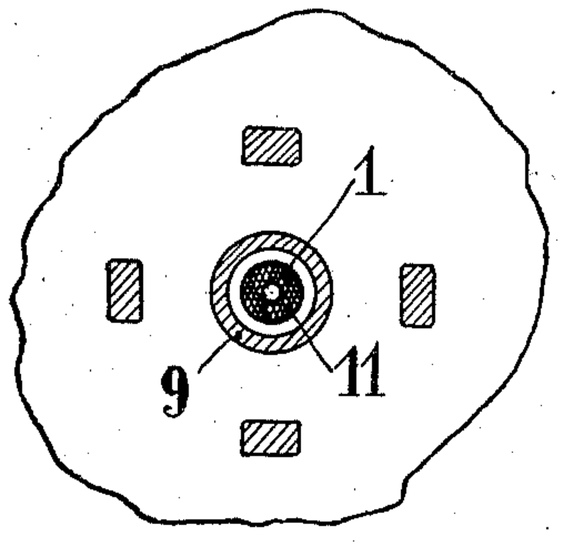

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Fig.3

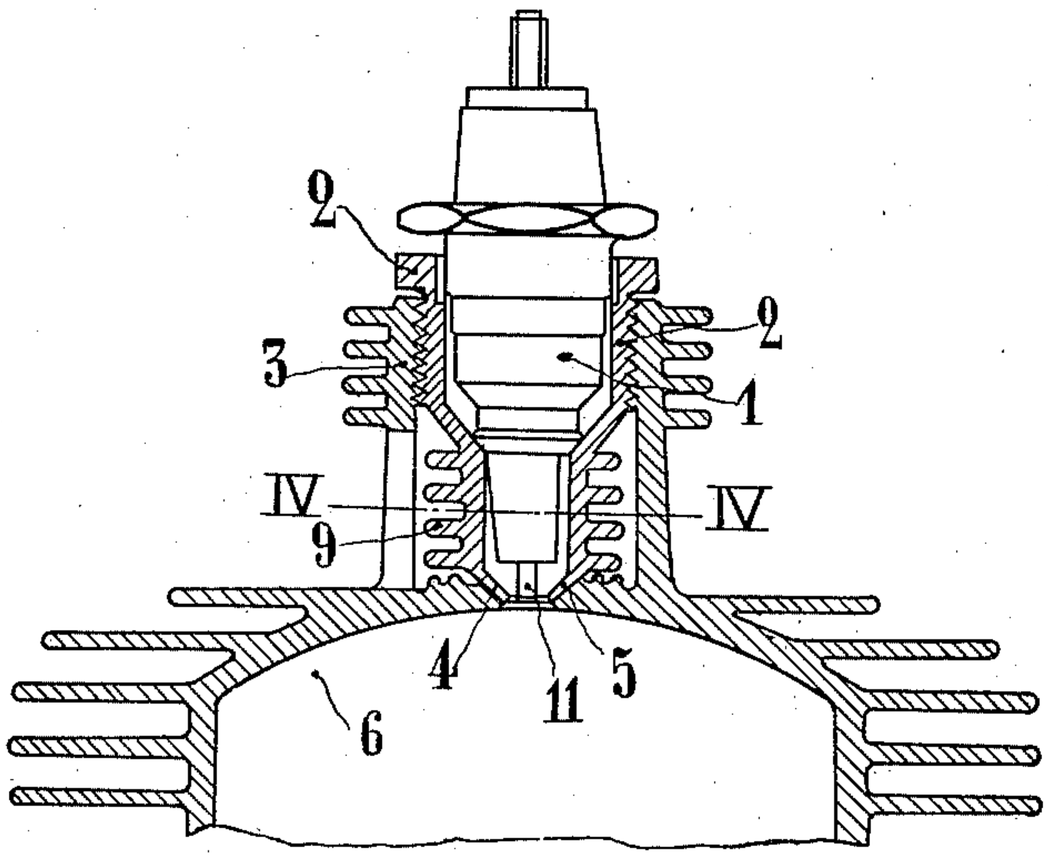
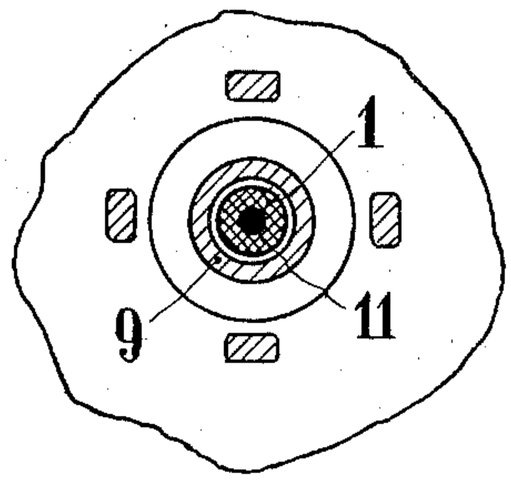


Fig.4



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Patented June 5, 1934 1,962,079

UNITED STATES PATENT OFFICE

1,962,079

SPARKING PLUG FOR INTERNAL COMBUSTION ENGINES

Adolphe Kegresse, Courbevoie, France

Application December 4, 1931, Serial No. 579,086
In France December 6, 1930

5 Claims. (Cl. 123—169)

This invention relates to improvements in and relating to the spark plug described in the application for an American patent number U. S. A. 476,391 of August 19th 1930 and has for its object, on the one hand, materially to increase the continuity of the wall surface in the explosion chamber, such a condition being necessary for reducing the possibility of ignition troubles and, on the other hand, to reduce the space required for the insertion of said spark plug.

In the appended drawings

Figure 1 is an elevational view of a sparking plug for a water-cooled motor, said spark plug being designed according to the present addition.

Figure 2 is a sectional view of said spark plug through the line II—II of Figure 1.

Figure 3 is an elevational view of the same spark plug for an air-cooled motor.

Figure 4 is a sectional view through the line IV—IV of Figure 3.

In all the figures, 1 is the insulating material of the spark plug. Said insulating material is located in a hollow body 2 of suitable form (Figures 1 and 2).

Said hollow body 2 is threaded in its upper part into the outer wall 3 of the cylinder head (Figures 1 and 2) and on the other side it rests in its lower part 4 (which is shown here as a truncated point) against the inner wall 5 of the explosion chamber 6.

Said hollow body 2 is locked onto the outer wall 3 of the cylinder head through a lock nut 7 working onto a joint 8 (Figure 1).

Between the lower part 4 of the hollow body 2 and the upper part of the same is provided a middle part 9 which is entirely immersed into the water of the chamber 10 of the cylinder head (Figure 1).

In air-cooled motors the middle part 9, which is provided with ribs, is cooled by the surrounding air playing about said ribs.

The lower part 4 of the hollow body is provided with a small opening through which the electrode 11 of the spark plug passes, leaving between itself and the opening the necessary interval for the jumping of the sparks.

As will be easily seen, the space required by the new form of spark plug is comparatively small, which is an appreciable advantage in many cases, thus allowing of the opening to be provided in the combustion chamber for the spark plug being extremely smaller than the opening required for ordinary spark plugs.

The cooling of the spark plug is ensured, since the middle part of the hollow body containing the insulating material is provided with thin walls and directly immersed into the cooling fluid.

What I claim is:

1. In an internal combustion engine, a combustion chamber the wall of which is provided with an opening into which extend the electrodes of a spark plug, said spark plug comprising a thin-walled tubular casing through which extends an insulated central electrode, the end of said casing entering into the opening of the wall of the combustion chamber being tapered inwardly to form a frusto-conical section on the end of the casing, the portion of the frusto-conical section of smallest diameter surrounding the end of the central electrode and spaced therefrom a distance equal to the desired spark gap, the opening in the wall of the combustion chamber being conically formed to receive the frusto-conical end of the spark plug and of a size sufficiently small to expose only the end face of the frusto-conical end of the casing of the spark plug and the central electrode.

2. In an internal combustion engine, a combustion chamber the wall of which is provided with an opening into which extend the electrodes of a spark plug, said spark plug comprising a thin-walled tubular casing through which extends an insulated central electrode, the end of said casing entering into the opening of the wall of the combustion chamber being tapered inwardly to form a frusto-conical section on the end of the casing, the portion of the frusto-conical section of smallest diameter surrounding the end of the central electrode and spaced therefrom a distance equal to the desired spark gap, the opening in the wall of the combustion chamber being conically formed to receive the frusto-conical end of the spark plug and of a size sufficiently small to expose only the end face of the frusto-conical end of the casing of the spark plug and the central electrode, and means for directly contacting a cooling medium with the thin-walled casing of the spark plug exteriorly of the combustion chamber.

3. In an internal combustion engine, a combustion chamber the wall of which is provided with an opening into which extend the electrodes of a spark plug, said spark plug comprising a thin-walled tubular casing through which extends an insulated central electrode, the end of said casing entering into the opening of the wall of the combustion chamber being tapered inwardly to form a frusto-conical section on the end of the casing, the portion of the

frusto-conical section of smallest diameter surrounding the end of the central electrode and spaced therefrom a distance equal to the desired spark gap, the opening in the wall of the combustion chamber being conically formed to receive the frusto-conical end of the spark plug and of a size sufficiently small to expose only the end face of the frusto-conical end of the casing of the spark plug and the central electrode, a cooling medium jacket surrounding the combustion chamber and the spark plug casing in such a manner that a cooling medium in said jacket will contact directly with the exterior of the thin-walled casing of said spark plug.

4. In an internal combustion engine, a combustion chamber the wall of which is provided with an opening into which extend the electrodes of a spark plug, said spark plug comprising a thin-walled tubular casing through which extends an insulated central electrode, the end of said casing entering into the opening of the wall of the combustion chamber being tapered inwardly to form a frusto-conical section on the end of the casing, the portion of the frusto-conical section of smallest diameter surrounding the end of the central electrode and spaced therefrom a distance equal to the desired spark gap, the opening in the wall of the combustion chamber being conically formed to receive the frusto-conical end of the spark plug and of a size sufficiently small to expose only the end face of the frusto-conical end of the casing of the spark plug and the central electrode, and air cooling fins on the exterior of the spark plug casing to dissipate heat into the surrounding atmosphere.

5. In an internal combustion engine, a combustion chamber, a wall surrounding the combustion chamber to provide a cooling jacket for the combustion chamber, said cooling jacket wall and the wall of the combustion chamber having aligned openings, a spark plug comprising a hollow body with thin walls screwed into the opening in the wall of the jacket and extending through the jacket into the opening in the wall of the combustion chamber, so that the exterior thereof will be directly exposed to a cooling medium in the jacket, the opening in the wall of the combustion chamber being in the form of a conical valve seat and the end of the thin-walled hollow body of the spark plug being conically tapered inwardly so as to provide a restricted opening therein and adapted to be received on the conical seat, and an insulated electrode extending axially through the thin-walled hollow body and terminating at the restricted portion thereof, said restricted portion being of a diameter to provide a spark gap between it and the electrode.

ADOLPHE KEGRESSE.