

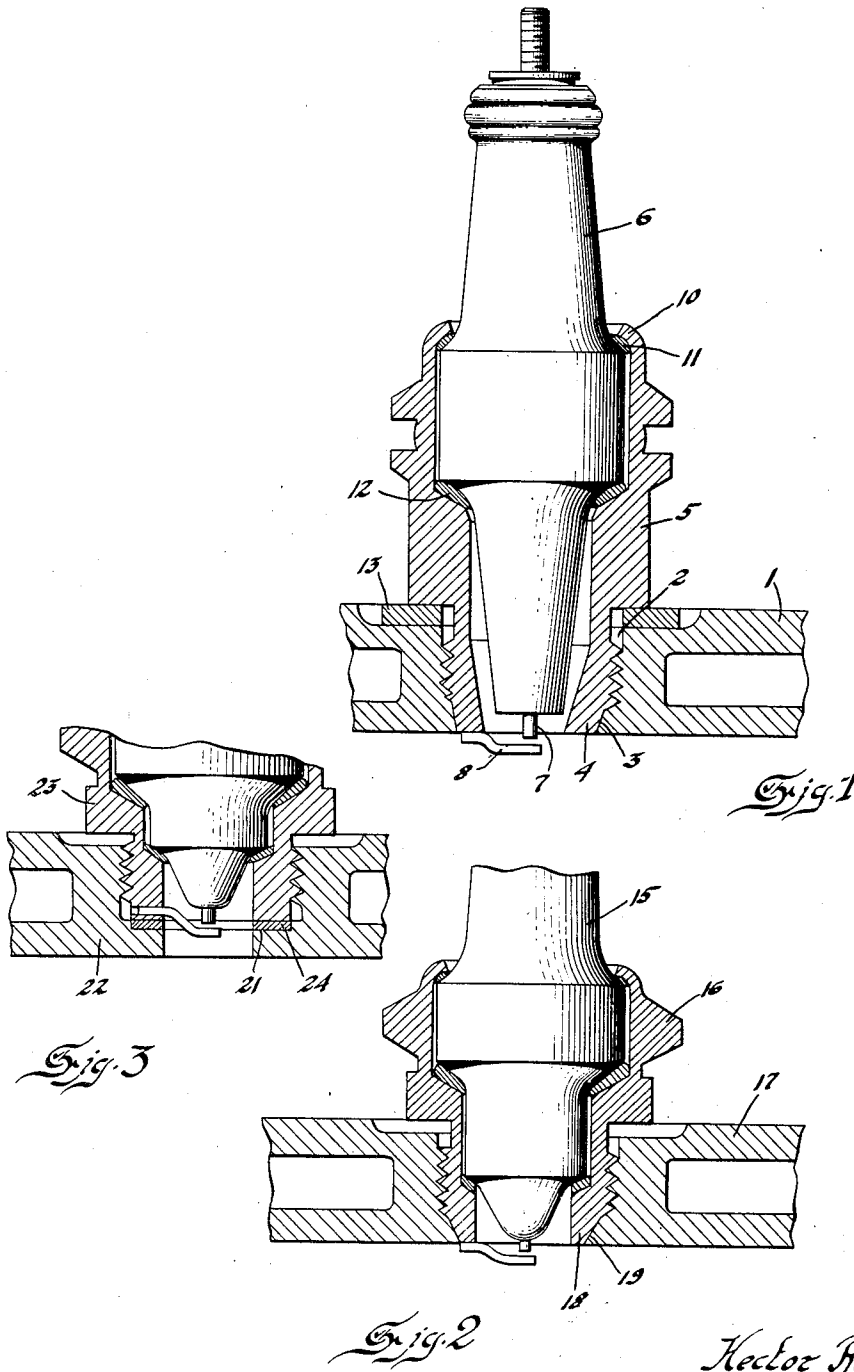
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SPARK PLUG

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SPARK PLUG

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This invention relates to spark plugs such as are used on internal combustion engines.

Ordinarily the spark plugs are simply threaded into an opening in the engine cylinder head to position the spaced firing points or spark gap thereof in the combustion chamber. Because the inter-engaging screw threads of the plug seldom make tight contact, especially if the threads are worn, the heat of combustion absorbed by the lower end of the plug in a hot running engine is not always dissipated or transferred by conduction to the water or air cooled head sufficiently to maintain the plug at an ideal temperature, and, consequently, the plug becomes intensely hot, which results in pre-ignition as well as deterioration of the parts and other undesirable defects.

To overcome the troubles and meet the conditions experienced by reason of the poor contact between the threads in a simple and inexpensive fashion is one of the primary objects of the present invention. To this end there is contemplated as a preferred embodiment the provision of a screw threaded opening having a seat at its inner end beyond the threads into tight engagement with which, a portion at the lower end of the plug is moved when the plug is threaded into place. Thus dependence is not placed on the fit of the threads, but a positive tight contact between corresponding parts of the plug and cylinder head is afforded to insure the transference of heat, and which, in addition, serves as a seal against compression losses.

The invention will best be understood upon reference to the accompanying drawings, in which Figure 1 is a vertical sectional view of a spark plug secured in a cylinder head in accordance with the invention. Figure 2 is a similar sectional view of another type of plug embodying the invention, and Figure 3 is a fragmentary sectional view illustrating a modification.

In the drawings, the reference numeral 1 indicates a cylinder head provided with a jacket for the circulation of cooling fluid. Instead of being water-cooled, the head may well be one of the air-cooled type. The head is provided with a screw threaded opening 2

to receive the spark plug, the threads of which do not extend entirely through the opening but end a short distance from the inner side of the head. Between the termination of the screw threads and the inner end of the opening there is provided a tapered or conical seat or shoulder 3 for engagement with a similarly tapered or conical end portion 4 at the lower end of the spark plug shell 5 and below the screw threaded portion that engages with the threads of the opening 2. Within the shell 5 is the customary insulator core 6 enclosing the central electrode 7 that terminates at its lower end in spaced relation with the terminal of the electrode or wire 8 carried by the shell, the insulator being secured in the shell by a bent over flange 10 at the upper end of the shell with suitable sealing gaskets or rings 11 and 12 interposed between cooperating shoulders of the core and shell. If desired, a ring or gasket 13 may be interposed between the shell and the top side of the head 1, although this may be omitted and reliance placed entirely upon the tight contact of the portions 3 and 4 to prevent leakage. The gasket 13 should be of copper or other suitable ductile material so that it will not interfere with the tight seating of the lower end of the plug.

For certain types of engines the plug shown in Figure 2 has been adopted. The only difference between this plug and that previously described is that the insulator core 15 is seated on the shell 16 closer to the bottom of the plug to reduce the path of travel of the heat taken up by the insulator tip to the water jacket. The lower portion of the shell 16 is threaded for engagement in the spark plug opening of the cylinder head 17 and provided with a tapered portion 18 below the threads for tight seating contact with the correspondingly tapered shoulder 19. This figure also illustrates the omission of a gasket between the upper side of the head and the spark plug shell which was heretofore referred to.

It will be understood that the cooperating seating portions of the plug and shell need not necessarily be tapered. This is illustrated in the modified arrangement of Figure 3

where a flat shoulder 21 is provided adjacent the inner end of the spark plug opening in the head 22 below the screw threads that receive the spark plug shell 23. In this case the bottom of the spark plug which is also flat seats against the shoulder upon the adjustment of the plug in its opening. If desired, a gasket 24 of suitable ductile material may be interposed between the seating portions of the plug and head. In this connection, it may be stated that it might be desirable in some instances to interpose a sealing gasket between the contacting portions of the plug and head illustrated in Figure 1.

With the arrangement as above described, it will be apparent that a tight contact between cooperating portions of the plug and head is insured and that, as a result, a more uniform distribution of heat and a higher rate of conduction is insured than is to be had where reliance is placed solely upon fit of screw threads, as has been the case heretofore.

I claim:

In an internal combustion engine, means to facilitate heat transference between a spark plug and engine block, including an engine block having a spark plug receiving opening therein, whose wall consists of a screw threaded portion extending from its outer end to a point ending short of its inner end and a smooth conical seat portion immediately adjacent its inner end and between said inner end and the screw threaded portion, and a spark plug having a shell provided with a skirt carrying screw threads for engagement in the screw threaded portion of said opening and terminating in a smooth conical tip which is adapted to be held under pressure by screw thread engagement in tight seating contact with the conical endmost portion of the opening, whereby to permit unhindered heat flow from the lower end of the shell into the engine block.

In testimony whereof I affix my signature.
HECTOR RABEZZANA.