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SPARK PLUG SHIELD AND COOLER

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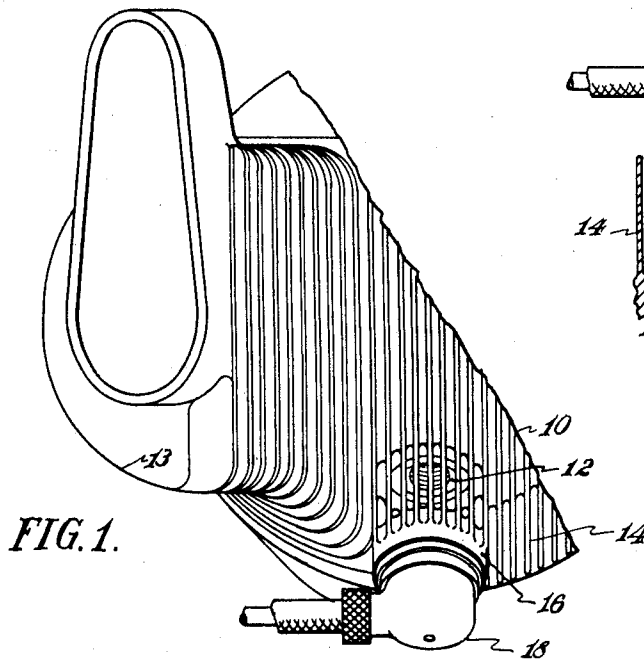
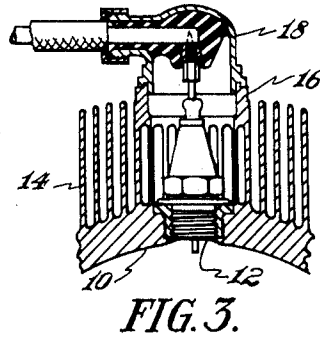
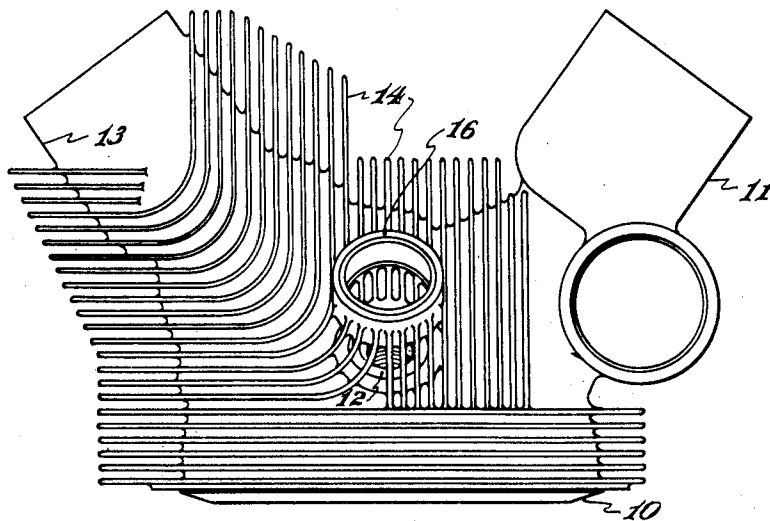


FIG. 2

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SPARK PLUG SHIELD AND COOLER

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Application June 9, 1934, Serial No. 729,774

5 Claims. (Cl. 123—171)

This invention relates to the electrical shielding of internal combustion engine spark plugs against radio interference and provides improved means for cooling the spark plug and the adjacent cylinder wall, particularly in relation to air-cooled finned cylinders.

Patents Nos. 1,914,940 and 1,910,951 (screwed-in spark plug cooler and integral spark plug cooler) disclose a finned cylindrical extension of the cylinder surrounding the spark plug.

While these inventions have gone into extensive use, further experimentation has shown that, with certain types of spark plugs, ventilation whereby air is allowed to impinge on the plug will further reduce its temperature and that, if the ventilation openings be surrounded by extended metallic walls, the shielding effect is still adequate.

According to the provisions of this invention, the cylinder head fins themselves comprise shielding whereby well grounded metal walls extend outwardly from each spark plug opening.

In the drawing:

Fig. 1 is a fragmentary plan view of a cylinder head incorporating the provisions of this invention;

Fig. 2 is an elevation; and

Fig. 3 is a fragmentary sectional view.

In these figures, 10 designates a cylinder head from which a substantially unfinned intake rocker box 11 extends, and 12 is the usual spark plug bushing which is screwed in the head. On the opposite side of the head, a well finned exhaust rocker box 13 projects. The head is provided with fins 14, part of which carry, preferably integrally, a ring 16 coaxial with the plug bushing 12, on which a spark plug shielding cap 18 may be seated. Beneath this ring the fins 14 are interrupted for the minimum amount necessary for the insertion of the spark plug bushing 12 and the plug so that a maximum number of high fins are effective close to the plug. The fins are preferably rather closely spaced and are of substantial depth whereby a considerable number of fins embrace the spark plug and extend outwardly along a considerable portion of the plug length.

By the disposition disclosed it may be seen that in addition to their normal function of cooling the general surface of the head, the fins act as air conduits which conduct the air flow over the head so that it impinges upon and cools the spark plug.

Due to the relatively great amount of metal comprised in the fins which extend from the cylinder around each spark plug opening, radio in-

terference is suppressed, the effectiveness in this connection being enhanced by the perfect "grounding" of each fin to the head by virtue of the preferred integral construction of the head and fins.

The drawing shows the use of the detachable cap 18, as disclosed in a copending application, Serial No. 472,040, whereby the exposed terminal of a normal spark plug is adequately shielded. However, if it is desired to use plugs wherein the shielding is incorporated integrally, the cap 18 may be deleted and the ignition wire attached directly to the shielded plug.

It will be seen that by the provisions of this invention adequate ventilation of the plug is combined with effective radio shielding, while at the same time a large and effective fin area is provided in close proximity to the plug in order to take care of the high rate of heat generation within the cylinder at this point.

While we have described our invention in detail in its present preferred embodiment, it will be obvious to those skilled in the art, after understanding our invention, that various changes and modifications may be made therein without departing from the spirit or scope thereof. We aim in the appended claims to cover all such modifications and changes.

What is claimed is:

1. The combination with an engine cylinder of a spark plug secured in the wall of the cylinder, a plurality of integral cooling fins terminating adjacent the plug and a ring surrounding the plug at the top only of said fins, the fins, ring and cylinder wall defining a plurality of ventilation slots for said plug, said plug being electrically shielded by said fins.

2. The combination with a cylinder head having a spark plug extending therefrom, of cooling fins, a ring embracing the upper end only of said plug carried by certain of said fins, forming ducts between said fins for conducting cooling air to said plug and further comprising means for electrically shielding said plug.

3. The combination in a finned air-cooled cylinder having a spark plug opening therein, of a ring of less depth than the depth of said fins integral with the outer edges of certain of said fins, said ring being coaxial with the plug opening, the continuity of said fins within the embrace of said ring being interrupted to permit the insertion of a spark plug within said opening.

4. The combination with an engine cylinder head, of a plurality of substantially parallel cooling fins extending from the head, certain of said

- 5 fins being interrupted to provide a spark plug well, said cylinder having a plug opening coaxial with said well, and a relatively narrow reinforcing ring integral with said interrupted fins at the outer edges thereof only, whereby air conducting ducts are formed between said fins and below said ring to permit the impingement of cooling air on a plug inserted within said cylinder opening.
- 10 5. The combination with a cylinder head having a spark plug extending therefrom, of a plurality of cylinder cooling fins integral with said cylinder, certain of said fins being interrupted adjacent said spark plug, the interrupted ends of said fins together defining a substantially cylindrical well within which said plug may be withdrawn and inserted, the inter-fin spaces at the interrupted fin ends providing a plurality of air ducts for directing cooling air over the plug, and a metallic ring joining said interrupted fin ends toward the outer part only of said well.

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