

April 12, 1938.

T. HISCOCK
SPARK PLUG SHIELDING
Filed Jan. 6, 1930

2,113,590

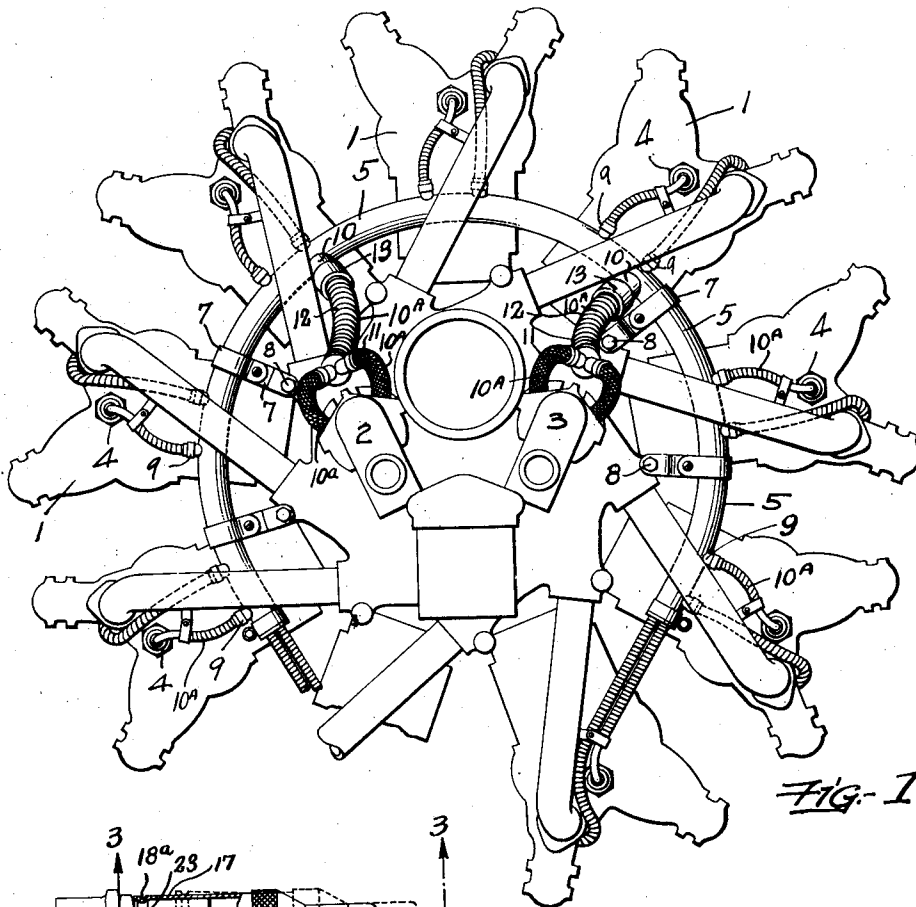


Fig. 1

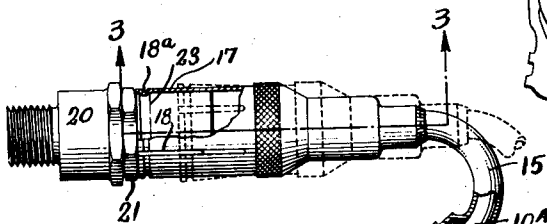


Fig. 2

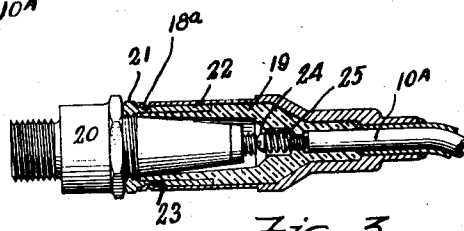
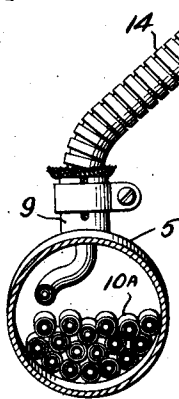


Fig. 3



INVENTOR
Thorpe H. H. H. H.

ATTORNEY

UNITED STATES PATENT OFFICE

2,113,590

SPARK PLUG SHIELDING

Thorp Hiscock, Seattle, Wash., assignor, by means
assignments, to United Aircraft Corporation, a
corporation of Delaware

Application January 6, 1930, Serial No. 418,958

5 Claims. (Cl. 123-169)

This invention relates to improvements in shielding apparatus for spark plugs and ignition systems as used in internal combustion engines.

The principal object of the invention is to provide a means for suppressing interference with radio reception in a vehicle caused by the spark plugs and electrical systems during operation of the radio receiving apparatus while the engine is running.

This and other objects will appear as my invention is more fully hereinafter described in the following specification, illustrated in the accompanying drawing and finally pointed out in the appended claims.

Figure 1 is a rear elevation of a radial, air-cooled aircraft engine, showing the embodiment of my improved form of shielding apparatus.

Figure 2 is an enlarged sectional detail view of a detachable spark plug shield.

Figure 3 is a sectional view taken on the line 3-3 of Figure 2.

Referring now more particularly to the drawing:

Reference numeral 1 indicates an internal combustion engine of the radial air-cooled type, having two magnetos 2 and 3, and spark plugs 4. There are two spark plugs in each cylinder. This arrangement is known as a double ignition system.

The shielding apparatus consists of a circular conduit 5 which is secured to the back of the engine by any suitable means, such for instance, as brackets 7 and bolts 8. Outlets 9 are formed around the outer periphery of the conduit. Inlets 10 are formed on the inner periphery of the conduit to receive nine wires, indicated at 10a, from each of the magnetos. The wires are divided into two groups of four and five. Each group coming from the magneto is shielded or covered with wire mesh as indicated at 11, up to the point where they come together and extend through a hollow flexible tube 12 which is secured to the inlet by a clamp 13. In like manner the outlets 9 are provided with hollow flexible tubes 14 which are internally lined with wire mesh as shown in Figure 2. Their outermost ends connect with a hollow and rigid tube 15 by means of a clamp or the like, as indicated at 16. The opposite end of the tube 15 is made integral with a metallic spring cap 17 which consists of a hollow cylindrical body member which is enlarged as shown and slotted in the direction of its length, as indicated at 18. At its outermost end, the cap is formed with an annular groove 18a, which makes an internally projecting rib adapted to

fit within a groove 23. This construction constitutes a quick-detachable connection in the sense that no member need be unscrewed to remove the cap 17 or disconnect the spark plug wire, and no member need be screwed up when replacing the cap or again connecting the ignition wire to the spark plug. The interior of the cap is partly filled with insulating material 19 to prevent the spark plug from grounding with the cap. 20 indicates a spark plug of conventional design except for a nut 21 with an outwardly extending tubular sleeve 22 which is formed with an annular groove 23, adapted to co-operate with the internal rib made by the groove 18a in the body member when the cap is firmly mounted in place on the plug.

The wires 10a coming from the magnetos extend through the conduit and branch out in pairs, as shown, to connect with the spark plugs. The connection with the plug is made in any approved manner, as for example, by means of a screw 24 which is embedded in the wire and backed by a coil spring 25 to form contact with the plug under spring tension.

While I have shown a particular form of embodiment I am aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is:—

1. In a radio shielding means for motor ignition devices, in combination with a metallic shield encasing a conductor, a metallic cap secured to an end of said shield, a sleeve adapted to project outwardly from the outer end of a spark plug body, and the cap and sleeve having an interengaging circumferential groove and rib whereby the cap may be retained upon a spark plug, and grounded thereto.

2. In a radio shielding means for motor ignition devices, in combination with a conducting wire, a metallic shield insulated from and encasing said conductor, a metallic cap secured to an end of said shield, a sleeve adapted to project outwardly from the outer end of a spark plug body, means interengageable by longitudinal movement of the cap relative to the sleeve for detachably retaining the cap upon and grounding it to the sleeve, and a spring-urged contact point received in the end of the conductor, and having limited longitudinal movement within the cap, to contact with the electrode of a spark plug upon which the cap is secured.

3. In a radio shielding means for motor ignition devices, in combination with a conducting wire, a metallic shield insulated from and encasing said conductor, a metallic cap secured to an end of said shield, a sleeve adapted to project outwardly from the outer end of a spark plug body, an insulator received within the cap, and internally recessed to receive the spark plug outwardly of said sleeve, and shouldered outwardly thereof, a contact within the recess and connected through the insulator with the end of the conductor, to connect the two electrically and to prevent separation of the insulator and the cap, a spring seated upon said shoulder of the insulator to press the contact into engagement with the end of the spark plug electrode, and means interengageable between the cap and sleeve by relative axial movement to retain the cap, insulator, and contact upon the sleeve.
4. In combination, a spark plug comprising an insulator, and a metal supporting shell, a metallic sleeve of smaller external diameter than said shell attached to said shell and extending outwardly therefrom, a solid dielectric located be-

tween said insulator and said sleeve and extending outwardly beyond said insulator, a metallic cap encircling said dielectric and said sleeve and having spring pressed means coacting with said sleeve for holding said cap and said dielectric in position.

5. In a radio shielding means for motor ignition devices, in combination with a conducting wire, a metallic shield insulated from and encasing said conductor, a metallic cap secured to an end of said shield, a sleeve adapted to project outwardly from the outer end of a spark plug body, means interengageable by longitudinal movement of the cap relative to the sleeve for detachably retaining the cap upon and grounding it to the sleeve, a solid dielectric seated in said cap and located inside said sleeve when the cap and sleeve are in assembled relation, and a spring urged contact point received in the end of the conductor, and having a limited longitudinal movement within the cap, to contact with the electrode of a spark plug upon which the cap is secured.

THORP HISCOCK.