

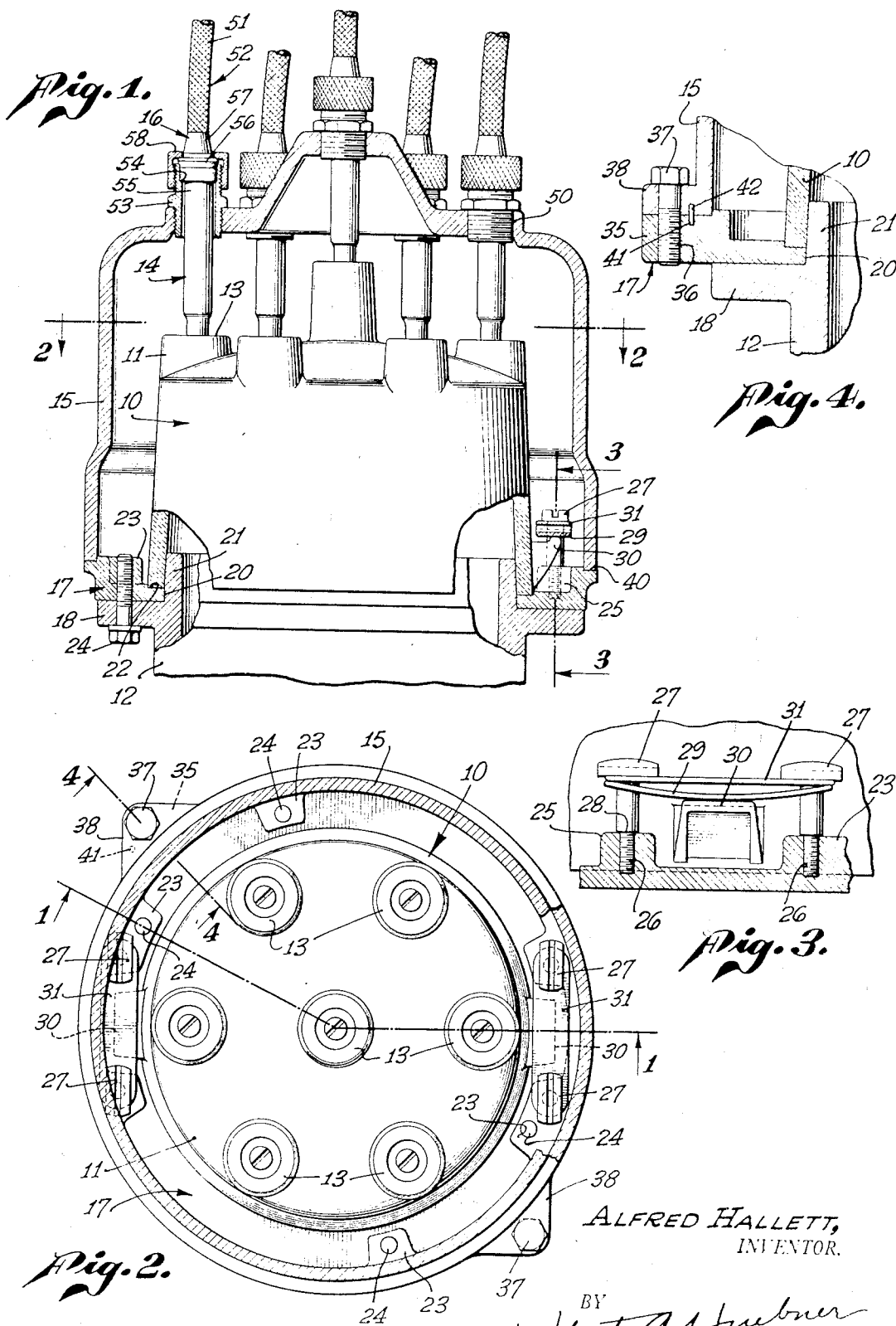
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DISTRIBUTOR SHIELD ASSEMBLY

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DISTRIBUTOR SHIELD ASSEMBLY

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4 Claims. (Cl. 200—19)

This invention relates to the shielding and protection of electrical systems for internal combustion engines.

Free electrical radiations from ignition systems of internal combustion engines used in proximity to radio receiving apparatus are picked up in such apparatus and interfere with reception. This is a serious factor in the operation of airplanes, motorboats, submarines, military land vehicles, and all other types of mobile transportation, as well as in stationary installations, employing radio equipment.

Certain forms of shielding have heretofore been employed for the purpose of grounding electrical radiations but so far as I am aware no attempt has been made previous to my present invention to provide a shielding for the distributor assembly of an ignition system which is one of the most active sources of interfering radiation.

Moreover, it has been found in practice that if the distributor assembly of an ignition system is exposed to the elements, particularly when under heavy duty and adverse weather or operating conditions, moisture, water, oil and gas may be deposited on the distributor and the terminals connecting therewith unless protected by moisture-proof and water-proof enclosures. Inasmuch as cables must lead to such distributor assembly the protective means should include the regions where the cables enter the protective housing.

It is therefore an object of my invention to provide an electrical shielding for a distributor assembly which combines the function of physical protection to the elements of the assembly against weather and other adverse operating conditions which normally contribute to failure of the distributor, deterioration of insulation, connections, etc.

It is a further and more specific object of my invention to provide a metallic shielding for the distributor assembly of an ignition system which completely encloses and grounds the same, avoiding openings or cracks through which electrical radiations might escape, effecting improved electrical connections at the terminals, and physical protection of the system against external conditions described.

A still further object of my invention is to provide a distributor shield assembly of the character described which is adaptable to the conventional distributor installation and may be combined therewith with a minimum, if any, alteration.

These and other objects of my invention will be made more apparent from a consideration of the full description and drawing.

This application is a continuation in part of my copending application Serial No. 427,621, filed

January 21, 1942, for Shielding for electrical systems.

In the drawings:

Figure 1 is a vertical sectional view of my shielding applied to a conventional distributor. The line 1—1 in Figure 2 illustrates the section upon which Figure 1 is taken.

Figure 2 is a cross-sectional view of the same taken on the line 2—2 of Figure 1.

Figure 3 is a fragmentary vertical section taken on the line 3—3 of Figure 1.

Figure 4 is a fragmentary enlarged vertical section taken on the line 4—4 of Figure 2.

My distributor shield assembly comprises essentially a standard distributor 10 having a head 11 centered upon a standard flanged base 12 and including terminal posts 13 for electrical connections 14. The details of the distributor itself except as hereinafter described are not part of my invention.

The distributor is mounted within an inverted substantially cup-shaped metallic housing 15 through which terminals 16 pass and which terminals are a part of the connections 14.

The housing 15 is seated upon a metallic mounting ring 17 which in turn is bolted upon a horizontal flange 18 of the base 12. The base 12 is metal and grounded by any conventional means of mounting to the engine or frame not illustrated.

The housing 15 and ring 17 are of sufficiently high conductive metal, to ground any electrical radiations.

The ring 17 is of particularly novel configuration. The inner diameter 20 of said ring is adapted to snugly encircle the upstanding cylindrical flange 21 of the base 12, and is formed with a shallow annular seat 22 upon which the distributor head 11 is adapted to rest. The ring is also formed with a plurality of bosses 23 which are tapped and threaded to accommodate cap screws 24 by which the ring 17 is securely bolted upon the flange 18 of the base 12. Additional bosses 25 are formed on the ring at suitable spacing from oppositely disposed bosses 23, and the bosses 25 and their companion bosses 23 are tapped and threaded as at 26 to accommodate set screws 27. These screws are formed with shoulders 28 enabling the screws to be tightened down upon the bosses 23 and 25; and the clamping screws 27 are adapted to retain bow springs 29 which engage bosses 30 of conventional design formed on the distributor head 11 for retaining the head in correct position. Auxiliary flat bars 31 may be superimposed upon the springs 29 as a safeguard in the event a spring should break. The screws 27 are preferably formed with flat sided elongated heads whereby the screws may be tightened down before the housing 15 is installed and the

latter when in place prevents the screws from turning to loosen.

The ring 17 is also provided with outwardly extending bosses 35 tapped and threaded as at 36 to accommodate cap screws or bolts 37 which pass through corresponding lugs 38 extending from the housing 15, thus to secure the housing upon the ring 17.

The ring is formed with a recessed seat 40 in its outer upper face whereby the housing 15 is concentrically seated upon the ring. A pin 41 may be secured in the ring 17 to register with a hole 42 in the boss 38 of the ring 17 in order that the housing 15 and the ring 17 may be correctly registered.

The top of the housing 15 is tapped and threaded as at 50 to accommodate the terminals 16. Ordinarily the central terminal leads from an ignition coil not shown and the concentrically disposed terminals lead to spark plugs not shown. Each terminal should be located directly over (opposite) its respective post 13. If the central post is elevated as shown, the housing should follow the general contour of the head in such respect. These terminals may be of any suitable form and type but are preferably made in accordance with the disclosure of my aforesaid copending application Serial No. 427,621. It is desirable that they be water-proof and moisture-proof and that they ground the metal shielding 51 of cables 52 to the metallic housing 15.

In general each terminal comprises a collar 53 threaded into the opening 50. The collar is provided with an annular ledge 54 upon which seats the shoulder of an insulator 55. The cable passes through a gland 56 and the insulator. A metal bushing 57 which may be crimped upon the cable shielding 51 or be otherwise secured upon it has a flanged portion resting upon the upper face of the gland 56 and is forced down by a metal cap 58 threaded upon the upper extension of the collar 53. The lower end of the cable 52 is provided with any suitable form of electrical connection (not illustrated) by which connection is made with the post 13 of the distributor head. It should be noted that the collar 53 is metallic whereby a complete grounding of the metal cable shielding 51 is effected with the housing 15 and in turn with the metallic rings 17 and the metal base 12.

The shielding on the cables illustrated here is in the form of woven metal sheathing, but a tubular enclosure or other equivalent shielding may be employed.

The terminals are thus locked securely to the housing, insuring an efficient and satisfactory connection with the distributor, and providing a moisture-proof and water-proof entry of the cable into the housing as well as a complete grounding of the metal cable shielding to the housing.

Thus I have achieved a distributor shield assembly completely enclosed in a structural sense as a protection against water, oil, and dirt and completely shielded electrically by a housing which has high conductive properties and which is positively connected with the cable shielding serving to dissipate into the ground all electrical radiation occurring in the unit.

Although I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed

herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent structures.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A combination comprising: a distributor including a grounded flanged base and a distributor head adapted to be supported concentrically thereon, a mounting ring of high conductive properties secured upon the base, means upon the mounting ring adapted to clamp the distributor head upon the said ring, said means including a bow spring engaging a standard boss on the side of the distributor head, and set screws supporting and tensioning said spring, an inverted cup-shaped housing of high conductive properties secured upon the mounting ring with its walls spaced from the distributor head, and cable terminals leading through said housing to the distributor head and establishing an electrical connection between metal shielding on said cables and said housing.

2. A combination comprising: a distributor including a grounded flanged base and a distributor head adapted to be supported concentrically thereon, a mounting ring of high conductive properties secured upon said base, means upon said mounting ring adapted to clamp the distributor head upon said ring, an inverted cup-shaped housing of high conductive properties secured upon the mounting ring with its walls spaced from the distributor head, said mounting ring embodying concentric recesses for centering the distributor head and housing respectively, and cable terminals leading through said housing to the distributor head and establishing an electrical connection between metal shielding on said cables and said housing.

3. A combination comprising: a distributor including a grounded flanged base and a distributor head adapted to be supported concentrically thereon, a mounting ring of high conductive properties secured upon the base, means upon the mounting ring adapted to clamp the distributor head upon the said ring, said means including a bow spring engaging a standard boss on the side of the distributor head, and set screws supporting and tensioning said spring, an inverted cup-shaped housing of high conductive properties secured upon the mounting ring with its walls spaced from the distributor head, said set screws being formed with flat-sided, elongated heads which are prevented from turning to unscrew by confinement of the housing wall, and cable terminals leading through said housing to the distributor head and establishing an electrical connection between metal shielding on said cables and said housing.

4. A combination comprising: a distributor including a grounded flanged base and a distributor head adapted to be supported concentrically thereon, a mounting ring of high conductive properties secured upon the base, means upon the mounting ring adapted to releasably clamp the distributor head upon the said ring, an inverted cup-shaped housing of high conductive properties secured upon the mounting ring with its wall spaced from the distributor head, and cable terminals leading through said housing to the distributor head and establishing an electrical connection between metal shielding on said cables and said housing.

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