Feb. 22, 1949. A. A. PIERSON 2,462,334

RADIO SHIELDING SEALING GASKET

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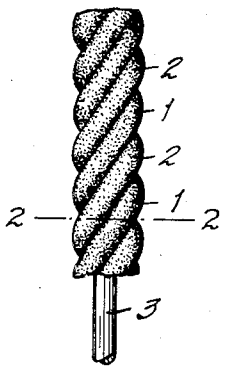



FIG. 1

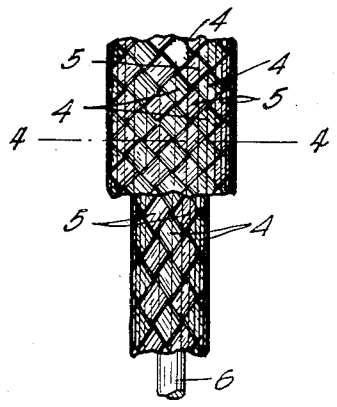



FIG. 3

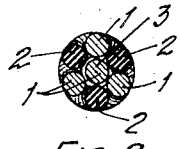



FIG. 2

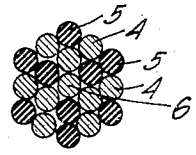



FIG. 4

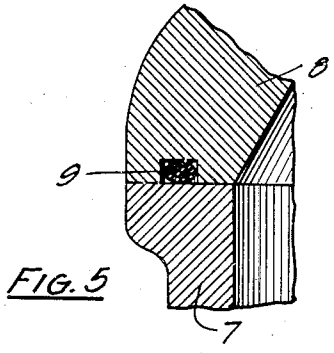



FIG. 5

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## RADIO SHIELDING SEALING GASKET

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2 Claims. (Cl. 174—35)

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In the ignition system of internal combustion engines used in airplanes, motor vehicles and the like high tension current passes within the distributor in the form of a spark between a central or main terminal and a terminal for each cylinder in the engine. These terminals are enclosed in the distributor body by a cap which fits thereover and, in the case of airplanes, both the body and cap are of metal. To prevent interference with the radio with which such vehicles are equipped it is necessary to prevent the waves generated by these sparks from passing outside of the distributor. Furthermore, it is not only essential that entrance of water between the cap and body of the distributor be prevented but also air leakage from the interior of the distributor, because the air pressure within the distributor used in planes that rise to high altitudes must be maintained substantially higher, by supercharging, than the pressure of the circumambient air.

To place between the body and the cover of the ignition distributor a gasket of the ordinary type formed of non-electrical conducting material and which is firmly compressed between the cap and the body will prevent the entrance of moisture or the leakage of air from the inside of the distributor but, because the cap and body of the distributor are slightly separated by the non-conducting gasket therebetween, or at least not in good electrical contact, waves which readily pass through such material interfere with the operation of the radio equipment. Hence, in order to prevent the entrance of moisture or the loss of the air under pressure from the inside of the distributor as well as to prevent interference with the radio equipment it is necessary to provide not only a gasket which can be compressed between the body and cap of the distributor so as to form an air and water tight seal therebetween but also one which will provide a good and substantially continuous electrical connection between said body and cap.

It has heretofore been proposed to form such a gasket by applying a close helical wrapping or winding of wire about a single strand of natural or artificial rubber, or like substance, which is molded about a wire core. Such gaskets are comparatively expensive because of production costs and hence the principal object of my invention is to provide an improved gasket of this general type, or a material from which such a gasket can be produced at much lower cost, as, for example by machines now ordinarily employed for wrapping insulation about a wire core.

I accomplish this and other objects by forming

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my gasket or material in the manner described below and illustrated in the accompanying drawings in which—

Fig. 1 is a fragmentary elevation view of one form of gasket or gasket forming material drawn to a greatly magnified scale;

Fig. 2 is a transverse section of Fig. 1 in the plane 2—2;

Fig. 3 is a fragmentary elevation view of a modified type of construction drawn to a greatly magnified scale;

Fig. 4 is a transverse section of Fig. 3 in the plane 4—4; and

Fig. 5 is a fragmentary vertical section of a cap and casing of a distributor employed in the ignition system of an internal combustion engine.

Referring first to Figs. 1 and 2, I have here shown a gasket formed by merely twisting together a plurality of strands 1 of wire, preferably a corrosion resistant wire such as aluminum, and a plurality of strands 2 of a yieldable, and preferably resilient, oil and waterproof substance such, for example, as rubber, "neoprene" or even oil proofed silk, linen, cotton or any other material having like attributes. Strands 1 and 2 are shown as twisted about a core strand 3 which is obviously not a necessary element of the gasket. While I have shown only a few strands twisted together it is to be understood that any number of strands necessary to produce a gasket of the desired diameter may be employed.

In Figs. 3 and 4 I have illustrated a gasket in which a plurality of separate strands 4 of wire with strands 5 of yieldable, and preferably resilient, material of the character mentioned above are combined by braiding them together to form a cable-like structure either with or without a core 6. Such a structure may be formed to any desired diameter by braiding one layer over another as shown in Fig. 3.

It is to be understood that, as stated above in the short description of the drawings, the illustrations are drawn to a magnified size. The strands of wire and other material employed would be comparatively fine and the completed structure, in most instances, would not exceed ⅛" in diameter.

From the foregoing it will be apparent that, since many of the total number of strands are formed of yielding, and preferably resilient material and the wire strands are of fine gauge, say, for example No. 35, when combined they will form a compact but somewhat compressible structure which when placed between two elements 7 and 8, as shown at 9 in Fig. 5, will not

only form an air and water tight seal between said elements but also a substantially continuous electrical connection between the two and thus form a barrier against the passage of air, water and electrical waves.

It is to be understood that my gasket must be so designed as to function in a manner quite different from ordinary electrical conductors all of which are intended to conduct current in a direction axially thereof. As distinguished from such conductors, my gasket, although it is only part metal, must be so fabricated that, at least when compressed, it will conduct electricity transversely of itself substantially from any point on one side thereof to a point substantially diametrically opposite said first point. If large gaps exist between points or zones of direct transverse conductivity it will not function properly as an electromagnetic wave barrier.

What I claim is—

1. A gasket adapted to be interposed between the body and cover of the ignition distributor of an internal combustion engine to prevent the passage of electromagnetic waves, air, and water therebetween; said gasket comprising a plurality of strands of bare wire and a plurality of strands of an air and water impervious resilient material closely interwoven together to form a compact, but transversely compressible, cable like structure; said wire strands being in electrical contact with each other, and closely spaced portions of both said wire strands and said strands of resilient material being exposed on the outer surface of said gasket and forming a gasket structure having transverse electrical conductivity between substantially all diametrically disposed points on the surface thereof; whereby said gasket when compressed between two, separate, metallic elements will form a substantially continuous barrier to the passage of electromagnetic waves between said elements, and said resilient strands will cooperate with said wire strands and with said metallic elements to seal the space between said elements against the passage of air and water.



2. The structure set forth in claim 1 in which said wire strands and said strands of resilient material are interwoven together in a plurality of separate layers.

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