Jan. 5, 1954

R. E. DU BOIS

2,665,357

RESISTOR MOUNTING

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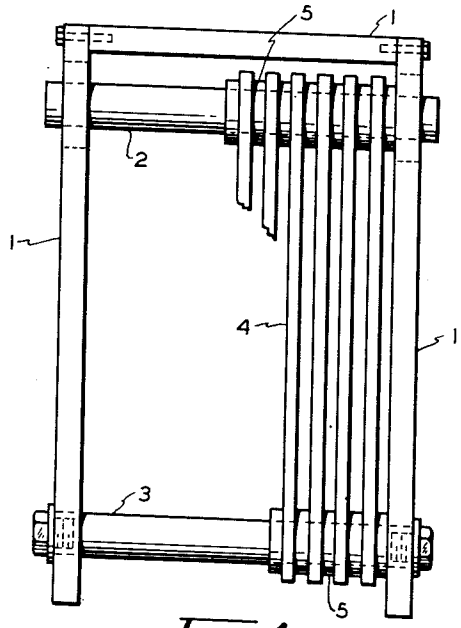

FIG. 1

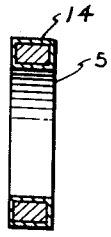

FIG. 6

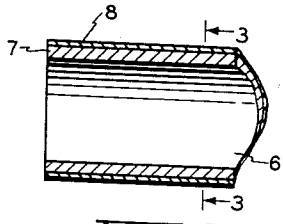

FIG. 2

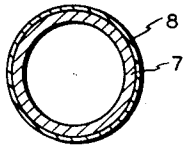

FIG. 3

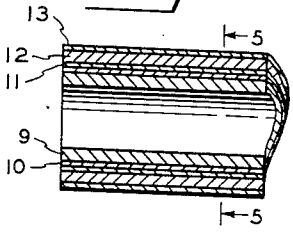

FIG. 4

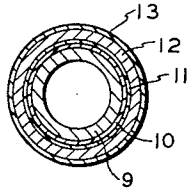

FIG. 5

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RESISTOR MOUNTING

Robert E. Du Bois, Hammond, Ind.

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3 Claims. (Cl. 201—63)

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This invention relates generally to resistor structures and more particularly to the mounting structure for a plurality of flat resistor grids secured together in spaced face-to-face relationship.

The primary object of this invention is to provide an improved supporting structure for resistor grids which precludes the necessity of ceramic and other types of insulators.

Another object of this invention is to provide an improved supporting structure for resistor grids in which the supporting elements are coated with a material having good insulating properties.

A more specific object of this invention is to provide an improved supporting structure for resistor grids in which the supporting elements are anodized, thereby providing a coating of good insulating properties.

With the foregoing and other objects in view the invention resides in the following specification and appended claims, certain embodiments and details of construction of which are shown in the accompanying drawing in which:

Figure 1 is a partial view in end elevation of a typical resistor structure to which this invention may be applied;

Figure 2 is a partial view in section of a supporting rod for the resistors of Figure 1;

Figure 3 is a full cross sectional view of the supporting rod, taken along the lines 3—3 of Figure 2;

Figure 4 is a partial view, in section, of a modified form of the invention;

Figure 5 is a full cross sectional view of the modified supporting rod taken along the lines 5—5 of Figure 4; and

Figure 6 is a cross sectional view of the spacing washers for the resistors of Figure 1.

A resistor structure of the prior art to which this invention is readily applicable, is shown in Patent No. 1,455,903 to W. G. Clark. These structures find application in electric railways for motor control purposes, in locomotives of the diesel-electric type for dynamic braking purposes, and in many other applications where it is necessary to provide a dissipating means for electrical energy.

In the past it has been a constant maintenence problem to repair resistor structures of this nature, when through heavy usage the ceramic mounting sleeves and the ceramic spacers are cracked or broken. Such breakage has led to considerable loss of operating time by the motive vehicle which carried such resistor structures.

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This invention resolves the problem by making it unnecessary to use such ceramic or other insulating materials in such resistance structures.

Referring to Figure 1, a frame 1 is shown supporting resistor carrying rods 2 and 3. A plurality of resistor grids 4 are supported at either end on the rods 2 and 3, each grid being provided with perforations through which the rods extend. Between adjacent grids are located insulating spacers 5 which keep the grids out of electrical contact with each other. Various connecting means are normally provided for placing these resistors in an electrical circuit, but such means are not important to the invention and are not shown here.

Referring to Figures 2 and 3, a portion of a rod 6 is shown which would be suitable for use as the rods 2 and 3 of Figure 1. The rod 6 comprises a piece of tubular metal 7 to which a coating 8 of insulating material has been added. This rod 6 is preferably tubular for manufacturing purposes, but may be of any desirable cross section. The coating 8 is shown substantially greater in depth than is actually the case, for purposes of the drawing. Such a coating material may be suitably chosen from a variety of synthetic resinous materials, and may be applied by dipping, painting or spraying. When it is desired to use aluminum as the material for the tubular base element 7, however, it is highly desirable and preferable, to make the coating 8 an anodic coating of aluminum oxide through a suitable anodizing process. Such an anodic coating is more intimate with the base to which it is applied and is less subject to wear and breakdown than coatings of synthetic resinous material would be.

The modification of Figures 4 and 5 was designed for use with heavy grid installations and comprises an inner metal tubular member 9 having an outer coating of insulating material 10. Surrounding member 9, and in concentric relationship therewith, is a metal tubular member 12 having an inner coating 11 of insulating material and an outer coating 13 of insulating material. Coatings 10 and 11 contact each other. The coatings 10, 11 and 13 may be applied as was the coating 8, but preferably is of the anodic type, being produced by a suitable anodizing process.

The depth of the various coatings is determined by the dielectric constant of the material used in any given installation with specific regard to the current loads to which the resistor grids 4 will be placed.

Figure 6 shows a sectional view of a spacing washer 5 with an insulating coating 14 applied thereto over all of its surface area.

Thus it is seen that by utilizing the coated supporting and spacing elements of Figures 2, 4 and 6 for the resistor 4 of Figure 1, a resistor structure results in which the likelihood of insulator breakage prevalent in prior structures is obviated, while the required insulation between grids and between the grids and frame 1 is maintained.

The invention is not intended to be limited in scope to the structure shown in the various figures, although a very practical application is that type of resistor structure shown in Figure 1. The invention may be applied in any resistor or conductor structural formation where an insulator support or covering is necessary.

I claim:

1. A resistance structure comprising a plurality of spaced resistor grids, a plurality of aluminum supporting elements extending through and supporting said grids in a frame, aluminum spacers carried on said elements between said grids, said elements and spacers having an anodic coating of aluminum oxide thereon to prevent current leakage between the various parts of the structure.

2. A resistor grid mount comprising a first supporting tube having an outer surface coating of insulating material, and a second supporting tube concentric with said first tube having an inner surface coating of insulating material contacting the outer coating of the first tube and having an outer surface coating of insulating material.

3. A resistor grid mount comprising a first supporting aluminum tube and a second supporting aluminum tube concentric with and surrounding the first tube, said first tube having an outer surface anodic coating and said second tube having an inner and outer anodic coating.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
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2,360,265	Osterheld	Oct. 10, 1944
2,453,550	Statham	Nov. 9, 1948