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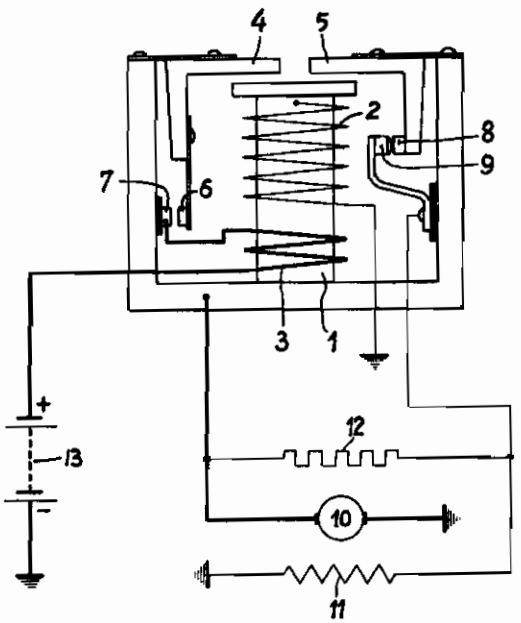

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CONTROL DEVICE FOR ELECTRICAL LIGHTING INSTALLATIONS ON VEHICLES

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The present invention relates to regulators or the like control devices for electrical lighting and charging systems, particularly for use on vehicles.

Generally the coils of electromagnetic regulator switches of lighting or charging dynamos, installed in vehicles, are made of copper wire. The resistance of copper wire increases rapidly during use, as the wire becomes warm, by virtue of the comparatively high temperature co-efficient of copper, which is approximately $4 \cdot 10^{-3}$, and as the regulating switch should always function at a uniform voltage it is known for the copper coils to be combined with a compensating coil of nickelin wire.

Nickelin has a very small temperature co-efficient and consequently the compensating coil keeps the operating voltage comparatively independent of the temperature of the magnet winding, so that the voltage varies only within narrow limits.

A combined copper and nickelin coil however has the disadvantage that it cannot be wound automatically. In manufacturing such coils, the copper coil is wound first and the copper wire is then soldered to the nickelin wire, and finally the nickelin coil is wound.

This difficulty is avoided according to the present invention in that the coil is composed of a material which, whilst having a sufficiently high electrical conductivity, has also a small temperature co-efficient. A coil of such material requires no compensation in order to keep the regulator or switch sufficiently independent of temperature.

As an example, the coil of a voltage regulator or loading switch according to the present invention may have a winding of tombac wire, one generally manufactured form of which has a temperature co-efficient of $0.7 \cdot 10^{-3}$. A winding made from wire of this type would only produce a voltage variation of approximately 4% at a working temperature of 80° C. This value is considerably less than that of 10% which is produced by the known form of construction having a compensating coil of nickelin. Since tombac has an electrical conductivity of 20, a winding of this material is sufficiently small to be housed within the space usually provided for the windings of regulator and control devices, and it may require even less space.

Instead of tombac, other suitable material having a small temperature co-efficient in combination with the necessary electric conductivity may be used. The temperature co-efficient of such a wire should however not exceed $+2 \times 10^{-3}$ and generally should amount to $+1 \cdot 10^{-3}$ at the most. Suitable materials are, for example, alloys of copper with zinc or aluminium alloys.

The invention is further described with reference to the accompanying drawing which shows, by way of example, one form of construction of regulator switch diagrammatically.

In the drawing an electromagnetic core **1** of a regulator switch carries a voltage coil **2** of tombac, and a current coil **3**. Two armatures **4** and **5** are arranged above the core **1** and operate contacts **6**, **7** and **8**, **9**. The armature of a lighting dynamo is shown at **10**, said armature having a field winding **11** and a shunt resistance **12**. A battery is shown at **13**.

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