Sept. 17, 1940. H. BRINKMANN 2,214,898

FERROMAGNETIC DEVICE

Filed Sept. 22, 1938

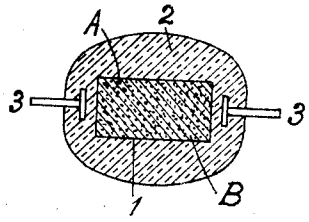


FIG. 1

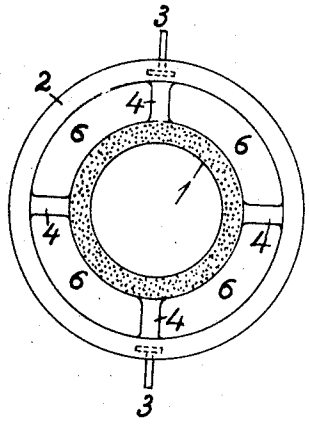


FIG. 2

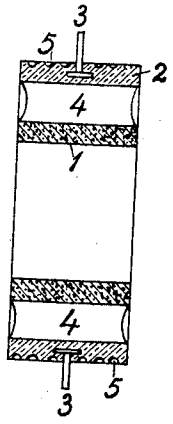


FIG. 3

Inventor:
Hans Brinkmann

by E. D. Kinney
Atty

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FERROMAGNETIC DEVICE

Hans Brinkmann, Berlin, Germany, assignor to C. Lorenz Aktiengesellschaft, Berlin-Tempelhof, Germany, a company

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5 Claims. (Cl. 175—21)

In the manufacture of compressed metal powder cores for electromagnets or for high frequency purposes and the like the metal powder is mixed with an insulating material and this mixture is compressed to assume the desired shape. The ferromagnetic bodies so obtained must be fitted with supporting means made of insulating material, for instance, namely, supporting means that shall enable the cores to be mounted in the respective devices and in a manner to be variable in position, as is required in most cases.

It is well known to interconnect such cores and supporting means by screw threads provided in the two. The ferromagnetic material however is found to be so brittle that the crests of the threads are liable to breaking, whereby in addition to the decrease in mechanical strength the magnetic properties of the cores are varied.

Furthermore it is customary to fix the cores to supports formed as a screw, for instance. In this case however the bore provided in the core and in which such supporting means is seated easily breaks away. Also, connections made with the aid of adhesive means have proved to be of little durability.

The invention proposes to press a suitable insulating material around the ferromagnetic material, namely an insulating material the softening point of which is lower than that of the binding agent of the ferromagnetic material, that is, the agent in which the metal particles are embedded.

The invention will be understood from the following description, reference being had to the accompanying drawing in which

Fig. 1 is a sectional view representing a variometer core as provided by the invention, Fig. 2 is an end view of another form of such a variometer core, Fig. 3 shows a section taken at right angles to Fig. 2.

The variometer core illustrated in Fig. 1 comprises a ferromagnetic compressed body 1 whose metal particles A are held together by a binding agent B that may be a hardened alkaline-condensed phenol-formaldehyde product, for example. Pressed around body 1 is a body 2 made of an artificial material, which may be a condensation product of the class to which the binding agent B belongs, but is of lower softening point than this. Body 2 has trunnions 3 alining with each other in order to constitute an axis necessary in the variometer. These trunnions may be secured in body 2 by the same moulding operation by which body 2 is pressed around body 1.

The body 2 when allowed to cool down after the pressing operation will shrink on body 1 and thereby firmly enclose this.

The material of which body 2 is made is a bad conductor of heat. Therefore, in order to improve the arrangement shown in Fig. 1 clearances may be provided between the bodies 1, 2 in the manner, for instance, illustrated in Figs. 2, 3. The device here represented has the core 1 formed as a hollow cylinder. Body 2 is so pressed around body 1 that there are clearances 6 between the two bodies, these being interconnected by spoke members 4 which may be formed integral with either body 1 or body 2 or may be integral in part with body 1 and in part with body 2. In the case shown by way of example body 2 is a hollow cylinder and like the body 2 represented in Fig. 1 is fitted with trunnions 3. Body 2 is provided with a groove 5 or several such grooves intended to receive the variometer coil.

An arrangement of the kind shown in Figs. 2, 3 will effectually lead away the heat which arises in body 1 in consequence of the losses occuring in the high frequency field.

What is claimed is:

1. A ferromagnetic device comprising a first moulded body composed of finely divided ferromagnetic material and a binding agent, a second body of insulating material having a thermal softening point lower than that of said binding agent moulded around said first body and out of contact therewith, and supporting members between said first and second bodies and moulded thereto, said members contacting said first body over only a small portion of the surface thereof.

2. A device as defined in claim 1, having spoke members interconnecting the two said bodies and formed integral with the ferromagnetic body.

3. A device according to claim 1, having spoke members interconnecting the two said bodies and formed integral with said insulating body.

4. A device as defined in claim 1, having spokes interconnecting the two said bodies and formed integral in part with one of these bodies and in part with the other body.

5. A device according to claim 1, wherein the two said bodies are substantially cylindrical, the insulating body having grooves for positioning windings.

HANS BRINKMANN.