(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 192 307**
A1

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **86200234.2**

(51) Int. Cl.⁴: **H 01 F 3/14**

(22) Date of filing: **18.02.86**

(30) Priority: **19.02.85 NL 8500463**

(43) Date of publication of application:
27.08.86 Bulletin 86/35

(84) Designated Contracting States:
DE FR GB IT

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(54) **Transformer comprising an air gap.**

(57) A transormer or coil comprising a ferromagnetic core (1) with an air gap (7) which is filled with a spacer (9) which is embedded in a cement (11) and which consists of a plate which is made of gauze. The gauze is preferably a type which is customarily used for silk-screening.

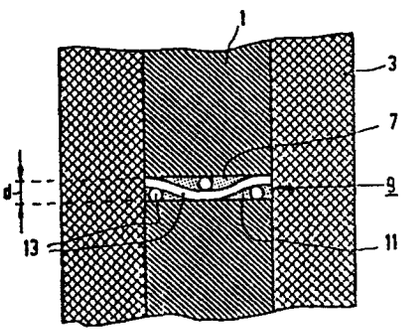

FIG. 2

EP 0 192 307 A1

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Transformer comprising an air gap.

The invention relates to a device comprising a ferromagnetic core in which there is provided at least one air gap which is filled with a non-ferromagnetic material comprising a spacer which is embedded in cement. Such a device is known from GB-A 1, 246,458. The spacer in the known device is formed by a quantity of hard grains, for example of glass, which are mixed with the cement. The diameter of the grains determines the width of the air gap.

It has been found in practice that the manufacture of glass grains having the necessary dimensional precision is comparatively difficult. Moreover, a manufacturer of ferromagnetic cores for transformers or choke coils uses only comparatively small quantities of glass grains, even when large numbers of cores are manufactured. Consequently, the manufacture of glass grains with the necessary precision is not profitable, so that such glass grains are expensive and often difficult to procedure.

It is the object of the invention to propose a device of the kind set forth in which the glass grains are replaced by a spacer which is less expensive and easier to procure. To achieve this, the device in accordance with the invention is characterized in that the spacer consists of a plate made of gauze.

Gauze is usually readily available at an attractive price because it is also manufactured for other purposes. A very suitable gauze is the kind which is customarily used for silk-screening.

The invention will be described in detail hereinafter with reference to the accompanying drawing. Therein:

Figure 1 is a diagrammatic side elevation of an embodiment of a transformer in accordance with the invention, and

Figure 2 is a longitudinal sectional view at an increased scale of the part of the core of the transformer shown in Figure 1 in which the air gap is situated.

Figure 1 shows a transformer comprising a ferromagnetic core 1, for example of ferrite, which consists of two parts, the

transformer further comprising a primary coil 3 and a secondary coil 5. At the area of the primary coil 3 the core 1 is interrupted by an air gap 7 (denoted by broken lines).

Figure 2 is a detailed longitudinal sectional view of the air gap 7 together with the surrounding parts of the primary coil 3 and the core 1. The air gap 7 has a predetermined width d. This width equals the thickness of a gauze plate 9 which is situated in the air gap 7. The gauze is embedded in a layer of cement 11. During the manufacture of the core 1 the plate 9 which is drenched in the cement 11 is arranged between the two parts of the core which are subsequently pressed together and the cement is allowed to set, for example by heating. The diameter of the wires 13 constituting the gauze of the plate 9 then automatically determines the thickness d of the air gap without it being necessary to measure and adjust the spacing of the two part ofs the core during manufacture. The thickness d is slightly smaller than twice the diameter of the wires 13 because the wires 13 are slightly compressed at the points of contact. A very suitable type of gauze is the type which is customarily used for silk-screening, for example Estal Mono PE 275 which is made by Schweizerische Seidengazefabrik A.G., Thal.

CLAIMS

1. A device comprising a ferromagnetic core in which there is provided at least one air gap which is filled with a non-ferromagnetic material comprising a spacer which is embedded in cement, characterized in that the spacer consists of a plate made of gauze.

2. A device as claimed in Claim 1, characterized in that the plate is made of a type of gauze which is customarily used for silk-screening.

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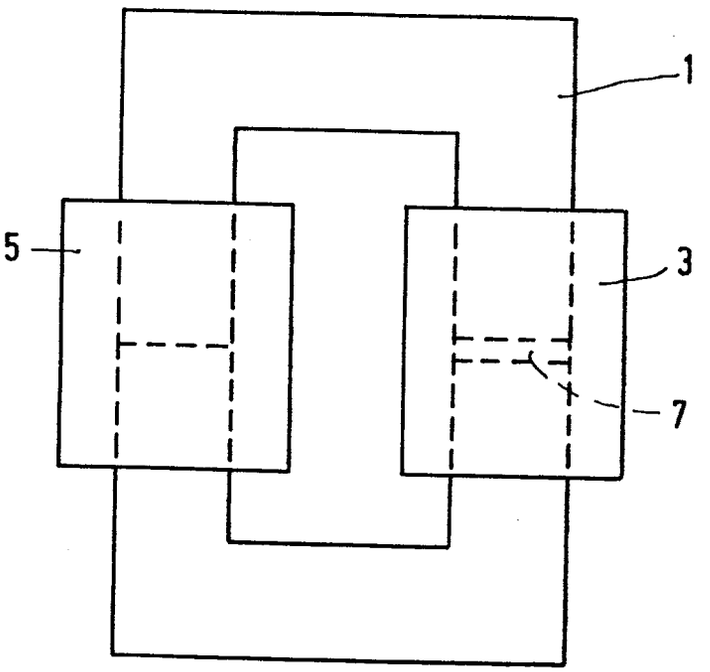

FIG. 1

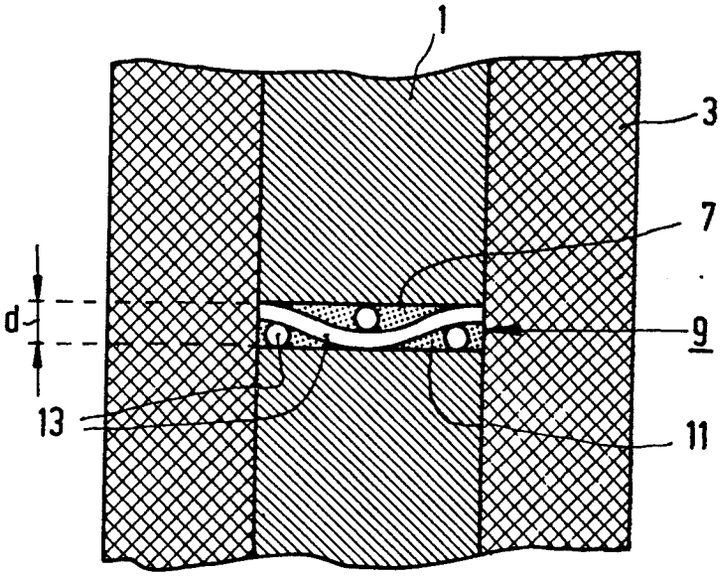

FIG. 2

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EUROPEAN SEARCH REPORT

0192307
Application number

EP 86 20 0234

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl 4)
A	FR-A-2 457 000 (VICTOR CIE OF JAPAN) * Page 9, lines 13-22; figures 5A,B; page 10, lines 18-26; figure 6 *	1	H 01 F 3/14
A	GB-A-2 039 156 (HITACHI)		
A	US-A-2 494 180 (KOUBEK)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

H 01 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15-04-1986	BIJN E.A.

CATEGORY OF CITED DOCUMENTS

X particularly relevant if taken alone
Y particularly relevant if combined with another document of the same category
A technological background
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