



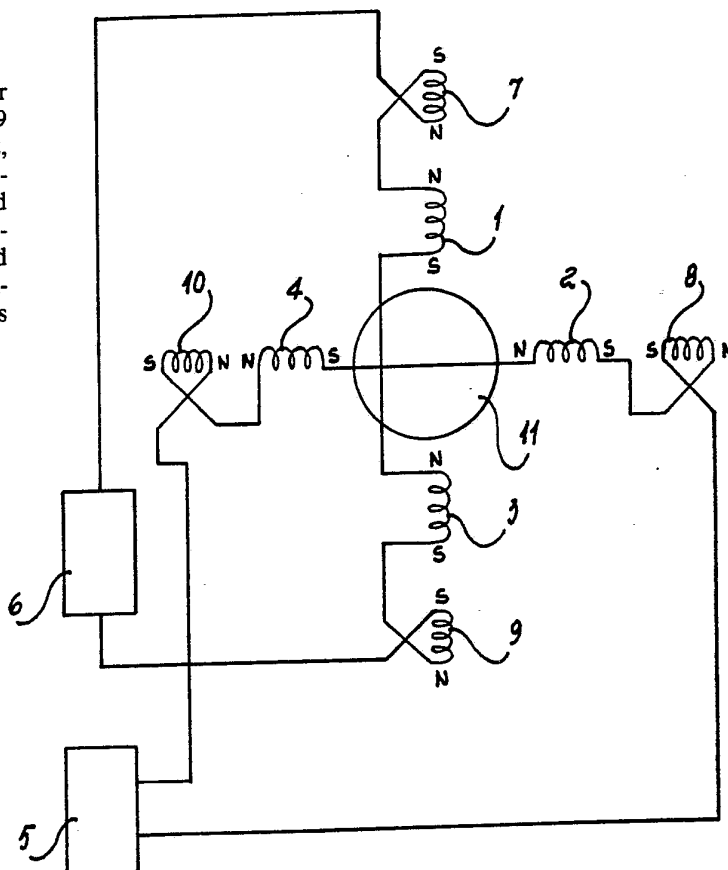
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<p>(21) International Application Number: PCT/IT87/00017 (22) International Filing Date: 19 February 1987 (19.02.87)</p> <p>(71) Applicant (for all designated States except US): HAN-TAREX SPA [IT/IT]; Via Riguccio Galluzzi, 30, I-50123 Florence (IT).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only) : MEONI, Luciano [IT/IT]; Via Garbasso, I-50123 Florence (IT).</p> <p>(74) Agent: SASSATELLI, Franco, INIP; Via Ruggi, 5, I-40137 Bologna (IT).</p> <p>(81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), DK, FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent), SU, US.</p>		<p>Published With international search report.</p>

(54) Title: DEVICE FOR LIMITING THE MAGNETIC EMISSION IN CATHODE RAY TUBE MONITORS

(57) Abstract

The device is foreseen with two or more turns of copper conductor wire (7, 8, 9 and 10), fitted near the deflection yoke (1, 2, 3 and 4), through which the current responsible for the same deflection is running, and their shape is foreseen so as to form a magnetic field configuration as like as possible and contrary to the unwished one. A drastic reduction of the magnetic field issued outwards the device will thus occur.



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Device for limiting the magnetic emission in cathode ray tube monitors.

The invention refers to a proceeding which can be employed with devices using cathodic ray tubes, which enables to theoretically annul  
5 the emission of low frequency magnetic rays, without thus injuring the health of the persons. The invention device carries out an adaptation of an already existing one; consequently, the above form of elaboration is in connection with the shape of the device to which it must be suited and acts on it as a limiting device for the  
10 issue of low frequency magnetic radiations.

Any device using cathodic ray tubes, such as monitors, T.V. receivers, etc..., at present gives out low frequency magnetic radiations. The investigations carried out in this connection have ascertained  
15 that such radiations are noxious to the human body, and particularly to pregnant women. It is well known, moreover, that the harmfulness of the magnetic fields is mostly due to the deflection yoke, which beside giving rise to inside magnetic field essential for the deflection itself, dispels an unwished magnetic radiation outside

20 the monitor.

The invention device allows the solution of this problem through a proper means suited to the present devices in order to create a magnetic field exactly opposite to the disturbing one, thus annulling the noxious radiation. Substantially, the device is foreseen with two or more windings of copper conducting wire fitted near the deflexion yoke through which the current causing the deflection is passing and its shape is such to create a magnetic field configuration as like as possible and opposite to the unwished one. A drastic reduction thus results of the magnetic field issued outwards from the device.

An elementarized scheme of the invention applied to a conventional deflection yoke is schematically illustrated in fig. 1 of table 1.

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The deflexion yoke is schematically consisting of the coils 1, 2, 3 and 4 through which the relevant currents are passing after having been generated by the circuits of the monitor or T.V. receiver. For carrying out the suiting elaborations, according to the invention, the four compensating coils 7, 8, 9 and 10 are foreseen in series connection with the relevant coils 1, 2, 3 and 4, and coiled in such sense and shape to annul the magnetic field outside the cathodic ray pipe 11.

45 For operation, taking for instance the main coils 4 and 2 of the deflexion yoke and supposing that the current running through it gives rise to a magnetic field of the polarity indicated in fig. 1, the compensation coils 8 and 10 in the same instant will produce a magnetic field with the polarity shown in the same figure, which will compensate the magnetic fields produced by the coils 4 and 2, thus annulling, or at least reducing, the magnetic field outside the system itself.

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The invention foresees the change of the compensation reel number; moreover the connexion type of the compensation coils may change  
55 in respect to the main coils, thus determining, for instance, schemes in series, in parallel or others. Moreover, the position in the space of the compensation bobbins may change. The said spools can also be coiled on a support in either iron-magnetic material or not.

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Claims.

- 1) Device for limiting the magnetic emission in monitors with cathodic pipes, characterized by the fact that four compensating bobbins (7, 8, 9 and 10) in copper conducting wire are foreseen in series connection with the relevant main bobbins (1, 2, 3 and 4) coiled in such sense and shape to annul the magnetic field outside the cathodic rays pipe (11).
- 2) Device for limiting the magnetic emission in monitors with cathodic pipes, as per claim 1, characterized by the fact that if for operation two main bobbins (4 and 2) of the deflexion yoke are taken and supposing that the current running through them gives rise to a magnetic field with the polarity as per fig. 1, the compensation bobbins (8 and 10) in the same instant will cause a magnetic field with the polarity shown in the same figure, which will compensate the magnetic fields produced by the main bobbins (4 and 2) thus annulling, or at least reducing, the magnetic field outside the same system.

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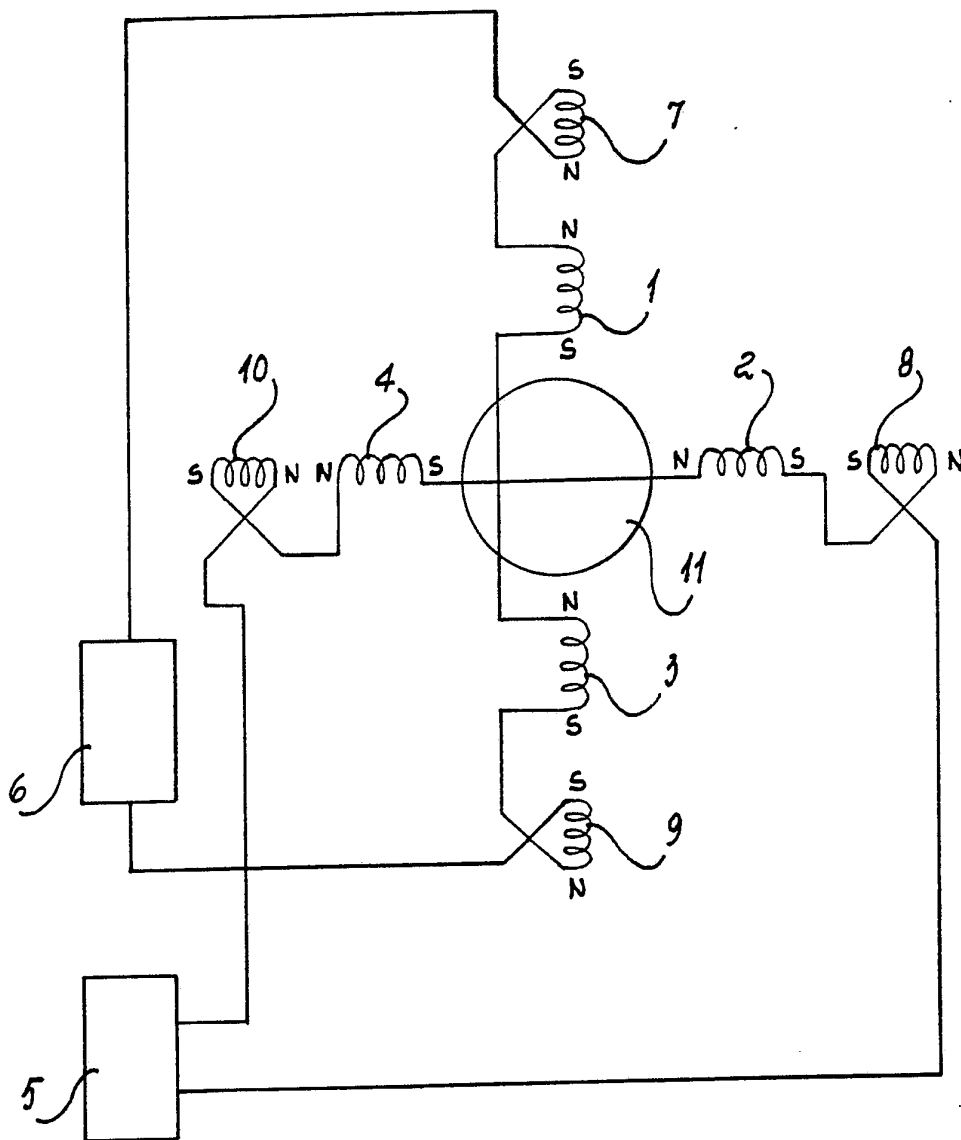



FIG. 1

# INTERNATIONAL SEARCH REPORT

International Application No **PCT/IT 87/00017**

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) * According to International Patent Classification (IPC) or to both National Classification and IPC <b>IPC<sup>4</sup>: H 01 J 29/00; H 01 J 29/76; G 12 B 17/02; H 05 K 9/00</b>				
<b>II. FIELDS SEARCHED</b> Minimum Documentation Searched ?				
Classification System  <b>IPC<sup>4</sup></b>	Classification Symbols <b>H 01 J 29/00; H 04 N 9/00; G 12 B 17/00; H 05 K 9/00</b>			
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched *				
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>8</sup></b>				
<b>Category *</b>	<b>Citation of Document,<sup>11</sup> with Indication, where appropriate, of the relevant passages<sup>12</sup></b>	<b>Relevant to Claim No. <sup>13</sup></b>		
E	WO, A, 87/06054 (ERICSSON) 8 October 1987 see abstract; page 6, lines 15-17; figure 8b --	1,2		
A	DE, A, 3513216 (MITSUBISHI) 28 November 1985 see abstract; page 9, lines 27-30; figures 4,5 --	1		
A	EP, A, 0179298 (BERTHELSEN) 30 April 1986 see abstract; figures 1,2 -----	1		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <ul style="list-style-type: none"> <li>* Special categories of cited documents: <sup>10</sup></li> <li>"A" document defining the general state of the art which is not considered to be of particular relevance</li> <li>"E" earlier document but published on or after the international filing date</li> <li>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</li> <li>"O" document referring to an oral disclosure, use, exhibition or other means</li> <li>"P" document published prior to the international filing date but later than the priority date claimed</li> </ul> </td> <td style="width: 50%; border: none; vertical-align: top;"> <ul style="list-style-type: none"> <li>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</li> <li>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</li> <li>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</li> <li>"A" document member of the same patent family</li> </ul> </td> </tr> </table>			<ul style="list-style-type: none"> <li>* Special categories of cited documents: <sup>10</sup></li> <li>"A" document defining the general state of the art which is not considered to be of particular relevance</li> <li>"E" earlier document but published on or after the international filing date</li> <li>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</li> <li>"O" document referring to an oral disclosure, use, exhibition or other means</li> <li>"P" document published prior to the international filing date but later than the priority date claimed</li> </ul>	<ul style="list-style-type: none"> <li>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</li> <li>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</li> <li>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</li> <li>"A" document member of the same patent family</li> </ul>
<ul style="list-style-type: none"> <li>* Special categories of cited documents: <sup>10</sup></li> <li>"A" document defining the general state of the art which is not considered to be of particular relevance</li> <li>"E" earlier document but published on or after the international filing date</li> <li>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</li> <li>"O" document referring to an oral disclosure, use, exhibition or other means</li> <li>"P" document published prior to the international filing date but later than the priority date claimed</li> </ul>	<ul style="list-style-type: none"> <li>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</li> <li>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</li> <li>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</li> <li>"A" document member of the same patent family</li> </ul>			
<b>IV. CERTIFICATION</b>				
Date of the Actual Completion of the International Search  <b>6th January 1987</b>	Date of Mailing of this International Search Report <div style="text-align: right;"><b>- 3 FEB 1988</b></div>			
International Searching Authority  <b>EUROPEAN PATENT OFFICE</b>	Signature of Authorized Officer <div style="text-align: right;">   <b>P.C.E. VAN DER PUTTEN</b> </div>			

**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.**

IT 8700017  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A- 8706054	08-10-87	SE-A- 8601432	28-09-87
		AU-A- 7202487	20-10-87
DE-A- 3513216	28-11-85	JP-A- 60253135	13-12-85
EP-A- 0179298	30-04-86	JP-A- 61095599	14-05-86