



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 973 144 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.01.2000 Bulletin 2000/03

(51) Int. Cl.⁷: **G09F 19/22**

(21) Application number: **98201987.9**

(22) Date of filing: **12.06.1998**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor:
**The designation of the inventor has not yet been
filed**

(71) Applicants:
• **Kuperus, Louis**
2133 CX Hoofddorp (NL)
• **Gherels, Willem**
2141 EB Vijfhuizen (NL)

(74) Representative:
Smulders, Theodorus A.H.J., Ir. et al
Vereenigde Octrooibureaux
Nieuwe Parklaan 97
2587 BN 's-Gravenhage (NL)

(54) **Device with a visually perceptible image in a position incorporated into a floor**

(57) A device with a visually perceptible image in a position incorporated into a floor, and comprising a relatively rigid insert (1) composed of a plate part (4), an image support (3) provided thereon and a transparent layer (2) covering this image support, as well as a fastening part (6) to be connected to the insert, which fastening part can be secured in a floor, the arrangement being such that the transparent layer has a top face

aligning with the floor surface, the connection of the insert and the fastening part being effected by magnetic means (5) and magnetically attractable means (7), the magnetic means forming part of one part and the magnetically attractable means forming part of the other part, and the insert and the fastening part lying in face-to-face engagement in the connected condition.

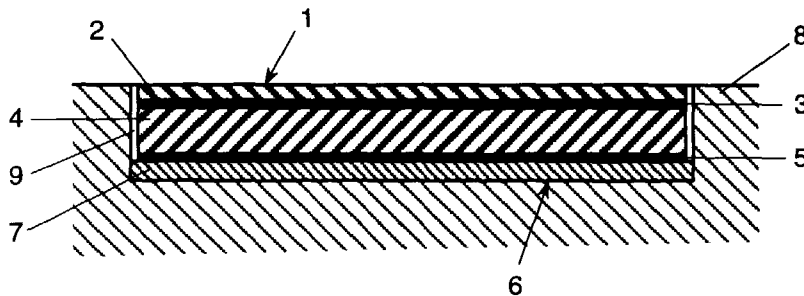


Fig. 1

EP 0 973 144 A1

Description

[0001] The invention relates to a device with a visually perceptible image in a position incorporated into a floor, and comprising a relatively rigid insert composed of a plate part, an image support provided thereon and a transparent layer covering this image support, as well as a fastening part to be connected to the insert, which fastening part can be secured in a floor, the arrangement being such that the transparent layer has a top face aligning with the floor surface.

[0002] Such device is known from non-published European patent application 97200032, also in applicant's name. In that patent application, there is described on the one hand a device in which the insert is resiliently mounted to be able to handle relatively heavy pressure loads without any problems, and on the other a nonresilient construction intended for less heavy loads. On the one hand, these devices have a construction such that they are relatively expensive, while on the other, they are not readily replaceable, for instance to enable changing the visually perceptible image.

[0003] The object of the invention is to enable such device to be manufactured in a relatively simple and inexpensive manner and to be readily replaced, while retaining a sturdy construction.

[0004] According to the invention, this object is realized in a device of the type described in the preamble, in that the connection of the insert and the fastening part is effected by magnetic means and magnetically attractable means, the magnetic means forming part of one part and the magnetically attractable means forming part of the other part. Owing to these features, an insert having a completely rigid and sturdy sandwich construction can quickly, simply and reliably be connected to the fastening part through magnetic action, whereby on the one hand a reliable connection is obtained, which, however, can on the other hand also be quickly undone again. Further, the construction of the device is inexpensive, partly in view of the parts that are easy to manufacture and interconnect.

[0005] It is observed that WO 94/094469 discloses a device in which use is made of magnetic connecting means for mounting a device having a transparent top layer and a changeable image support in a floor. In this known construction, the changeable image support has to be positioned in a framework and covered with a flexible transparent layer, the framework and the edges of the flexible transparent layer comprising magnetic connecting means. This construction is relatively complicated and expensive, while the fitting of an image support under an upwardly bent transparent layer requires utmost care to provide that the image support has and retains the desired position when the flexible transparent layer is shut again. That proper positioning is of particular importance, because the image support shows an advertising message, and a careless positioning under the transparent layer gives a negative impres-

sion, rather than the desired positive one. Further, the sturdiness of this known device also leaves much to be desired, in view of the flexible transparent layer which can only be secured over a limited edge area and involves the risk of an upwardly bending circumferential edge if the image support is thinner than the framework surrounding this image support.

[0006] In accordance with a further embodiment of the invention, it is preferred that the magnetic means form part of the insert and the magnetically attractable means comprise at least one metal plate, belonging to the fastening part. The least sensitive part of the connecting means, viz. the part manufactured from metal plate, then forms part of the fastening part which is to be permanently connected to a floor and which can be manufactured in a particularly simple manner if it consists of a metal plate mounted in the floor in a suitable manner, for instance by casting in, gluing or screwing.

[0007] The magnetic means may be one or a number of magnets mounted in or on the plate part or the fastening part. However, in accordance with a further embodiment of the invention, it is preferred that the magnetic means consist of a flexible magnetic sheet. This flexible magnetic sheet can readily be applied and offers the possibility of making the entire connecting surface of one of the parts of the device magnetic, so that a maximal contact area can be created or the other part needs to be provided with magnetically attractable means at only one or a number of random places.

[0008] To enable the device to be readily incorporated and mounted in existing floors, it is further preferred that at least the insert has the form of a circular disk. In that case, a recess having a sharply defined edge can be milled in an existing floor, which is generally not possible without any problems in the case of a rectangular recess.

[0009] For manufacturing the insert forming one whole in the rigid sandwich construction, use can be made of a transparent layer consisting of a disk of plastic, for instance polycarbonate, while the image support may be a separate support with print, but also an image directly printed onto that disk.

[0010] The device according to the invention will presently be specified with reference to the exemplary embodiments shown in the accompanying drawings. In these drawings:

Fig. 1 shows, in section, a first embodiment mounted in a floor;

Fig. 2 shows, in section, a second embodiment in a non-mounted condition;

Fig. 3 is a half bottom view of the insert according to Fig. 2;

Fig. 4 shows, in section, a third embodiment with lifted insert; and

Fig. 5 is a half bottom view of the insert according to Fig. 4.

[0011] The device shown in Fig. 1 comprises an insert 1 consisting of a transparent layer 2, an image support 3, a plate part 4 and a flexible magnetic sheet 5. Further, the device is formed by a fastening part 6 in the form of a metal plate 7. The device is mounted in a floor 8, for which purpose the floor is provided with a recess 9.

[0012] In the mounted condition of the device, the metal plate 7, covering the entire bottom surface of the recess 9 and fixedly connected to the bottom of the recess in a manner not further shown, supports the insert 1, which fits in the recess 9 with a slight play and has a height such that in the mounted condition of the insert 1, the top side of the transparent layer 2 aligns with the top surface of the floor 8. The transparent layer 2 may consist of a disk of polycarbonate whose thickness is adjusted to the intended place of use. The top surface of the transparent layer 2 may comprise a wear-resistant layer which is optionally non-reflecting and provided with a nonskid coating. The bottom side of the transparent layer 2 may be printed with the image support 3. Depending on the selected manufacturing technique or for other reasons, the image support 3 may also be a separate part bonded on one side to the transparent layer 2 and on the other to the top face of the plate part 4, which may be manufactured from a rigid foam plastic plate or a plate of waterproof plywood and whose bottom face mounts a flexible magnetic sheet 5, fixedly connected therewith over its entire surface. In this manner, the insert 1 is a rigid, stiff and strong sandwich construction which forms one piece and which, in the mounted condition, is tightly connected, by means of the magnetic sheet 5, to the fastening part 6 in the form of the metal plate 7.

[0013] The mounting of such insert 1 is effected simply by lowering it into the recess. Its removal from the recess 1 can be realized by locally pulling at the insert 1 adjacent a lateral edge thereof, for instance by means of a suction cup.

[0014] It will be appreciated that the surface configuration of the recess 9 and the insert 1 will be similar in form, so that, after the mounting of the insert 1 in the recess 9, only a narrow to very narrow gap will be visible between the insert 1 and the rest of the surface of the floor 8.

[0015] The surface configuration of the insert 1 may have any desired shape, for instance rectangular, square, hexagonal, oval, etc. However, a circular shape is preferred, because the recess required for such insert is easiest to produce, for instance by milling. A device of such design is shown in Figs. 2 and 3.

[0016] That device comprises an insert 11 and a fastening part 16. The insert 11 is a stiff sandwich construction composed of a transparent layer 12, an image support 13, a plate part 14 and a ring part 17. The fastening part 16 is composed of a magnetic sheet 15 mounted on a plate part 18. For the construction of the transparent plate 12, the image support 13 and the

plate part 14 and their mutual connection, reference is made to what is stated in respect of those parts in the discussion of Fig. 1. Different is the ring part 17, which can be manufactured from magnetically attractable metal and which is incorporated into the plate part 14 such that its bottom face aligns with that of the plate part 14. For mounting the insert 11, this ring part 17 can cooperate with the magnetic sheet 15 on the plate part 18, which can be manufactured from any suitable material and can be secured in a floor recess in a manner not further shown, for instance by casting in, gluing or screwing.

[0017] A third embodiment of the device is shown in Figs. 4 and 5. In those Figures, an insert 21 and a fastening part 26 are present. The insert 21 is provided in the above-described manner with a transparent layer 22, an image support 23 and a plate part 24. The insert 21 further comprises a number of magnets 25 incorporated into the plate part 24 such that their bottom faces align with that of the plate part 24. The fastening part 26 has the shape of a sheet-metal tray 27 with a raised edge having a height such that after mounting in a floor 28, the free top edge of the sheet-metal tray 27 is flush with the top face of the floor 28, as a result of which the edge of a recess 29 provided in the floor 28 is of a strong and smoothly finished design. The bond between the insert 21 and the fastening part 26 is effected by the magnetic attraction between the magnets 25 and the sheet-metal tray 27.

[0018] It is readily understood that within the framework of the invention as laid down in the appended claims, still many modifications and variants are possible. For instance, the plate part 14 with the ring part 17 could be replaced by a metal plate. In that case, the device could remain extremely thin, although it will usually be preferred that the device extend through finishing layers into the actual floor. Further, when a ring part 17 is used, a part of the magnetic sheet 18, for instance the central part thereof, could also be left out. Also, instead of a continuous ring part 17, a number of parts that do not contact one another could be used. Of course, it is also possible to work with a fastening part having magnets incorporated therein. Although for cooperation with the magnetic means, a metal plate has each time been referred to, any other magnetically attractable material may be selected therefor as well.

Claims

1. A device with a visually perceptible image in a position incorporated into a floor, and comprising a relatively rigid insert (1; 11; 21) composed of a plate part (4; 14; 24), an image support (3; 13; 23) provided thereon and a transparent layer (2; 12; 22) covering said image support, as well as a fastening part (6; 16; 26) to be connected to the insert, which fastening part can be secured in a floor, the arrangement being such that the transparent layer

has a top face aligning with the floor surface, **characterized in that** the connection of the insert and the fastening part is effected by magnetic means (5; 15; 25) and magnetically attractable means (7; 17; 27), the magnetic means forming part of one part and the magnetically attractable means forming part of the other part, and the insert and the fastening part lying in face-to-face engagement in the connected condition.

5

10

2. A device according to claim 1, characterized in that the magnetic means (5; 25) form part of the insert (1; 21) and the magnetically attractable means (7; 27) comprise at least one metal plate belonging to the fastening part (6; 26). 15
3. A device according to claim 1 or 2, characterized in that the fastening part (6; 26) consists of a metal plate (7; 27). 20
4. A device according to any one of the preceding claims, characterized in that the magnetic means consist of a flexible magnetic sheet (5; 15).
5. A device according to any one of the preceding claims, characterized in that at least the insert (1; 11; 21) has the shape of a circular disk. 25
6. A device according to any one of the preceding claims, characterized in that the transparent layer (2; 21; 22) consists of a disk of plastic, for instance polycarbonate, and the image support (3; 13; 23) is an image printed on said disk, and the disk is bonded to the plate part (4; 14; 24) by the side on which the image is provided. 30
35
7. A device according to any one of claims 1-5, characterized in that the transparent layer (2; 12; 22) consists of a disk of plastic, for instance polycarbonate, and the image support (3; 13; 23) is a support with imprint, which support is attached on one side to the transparent layer (2; 12; 22) and on the other to the plate part (4; 14; 24). 40
8. A device according to any one of the preceding claims, characterized in that the plate part (4; 14; 24) is a foam plastic disk. 45
9. A device according to any one of claims 1-7, characterized in that the plate part (4; 14; 24) is manufactured from a waterproof plywood. 50

55

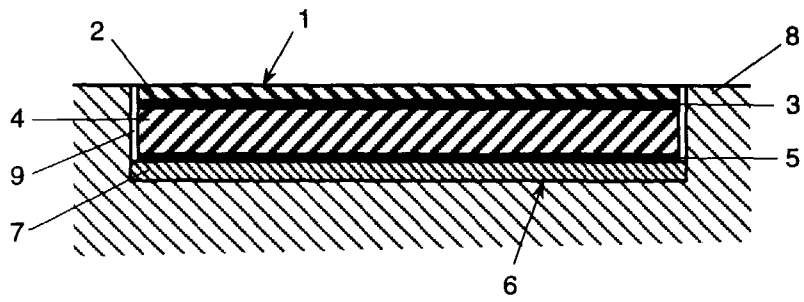


Fig. 1

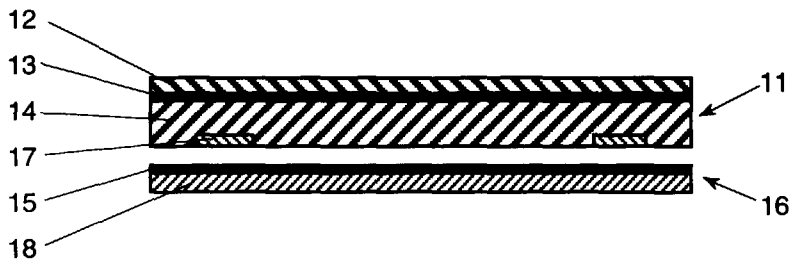


Fig. 2

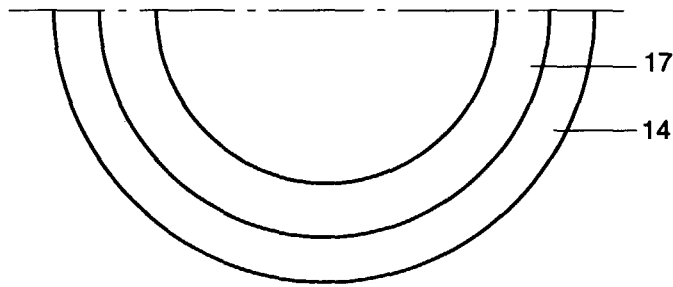


Fig. 3

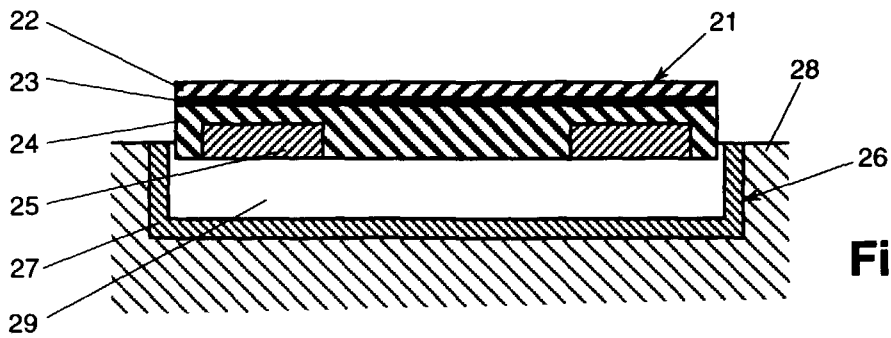


Fig. 4

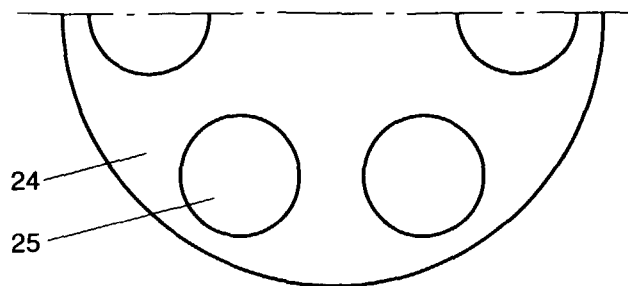


Fig. 5



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 20 1987

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.6)
X	US 5 271 200 A (A. WITT) 21 December 1993 * the whole document *	1-8	G09F19/22
D,A	WO 94 09469 A (M. JERMYN) 28 April 1994		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G09F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		2 September 1998	Gallo, G
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 O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

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

EP 98 20 1987

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02-09-1998

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5271200 A	21-12-1993	NONE	
WO 9409469 A	28-04-1994	US 5353535 A	11-10-1994
		AU 5360594 A	09-05-1994
		AU 5443094 A	09-05-1994
		AU 5443494 A	09-05-1994
		CA 2147135 A	28-04-1994
		CA 2147136 A	28-04-1994
		CA 2147146 A	28-04-1994
		WO 9409470 A	28-04-1994
		WO 9409471 A	28-04-1994
		US 5524373 A	11-06-1996
		US 5363579 A	15-11-1994
		US 5303493 A	19-04-1994