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Remarks:
Amended claims in accordance with Rule 86 (2) EPC.

(54) **Flooring system with removable magnetic flooring modules for constructing the raised floor of a computer room**

(57) A modular, removable magnetic flooring system for the construction of a raised computer floor in an industrial or habitable building, said floor comprising a support consisting of a number of support panels (1) successively laid out one after the other, adjacent by their various sides and covering the underfloor (3) of said building, said support panels (1) being located at a pre-determined distance from the underfloor (3) by means of separator elements (2) associated with the corners of

each of the said panels (1), said flooring system being characterised in that it consists of a number of finish flooring modules adapted to be positioned on top of said support panels (1) and removably secured to the latter by means of magnetic attraction, each finish flooring module consisting of an upper layer (4) of finish material, such as carpeting, PVC, linoleum, caoutchouc, rubber, cork, wood, rock materials, laminates or the like, securely fixed to a lower layer (5) of magnetic material, having equivalent dimensions to the upper layer (4).

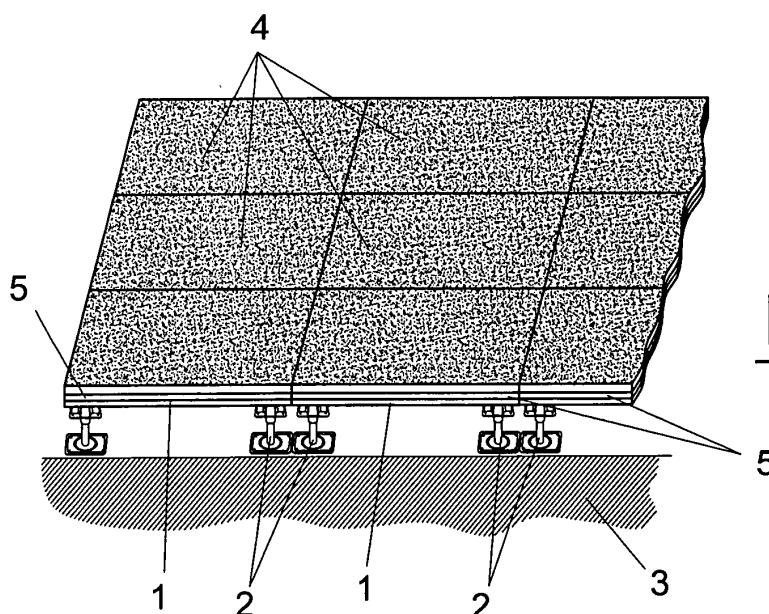


FIG. 3

Description

Purpose of the invention

[0001] This invention refers to separable modular magnetic flooring system for the manufacture of computer floors. More specifically, the invention proposes the development of a system by which it is possible to provide modules that can be incorporated in a separable manner into computer floors, both for the purpose of fast, easy assembly or disassembly as well as for eventual replacement of all or part of the ornamental surface, with comprehensive maintenance of the entire support making up the computer floor.

[0002] The field of application of the invention consist of the industrial sector involved in the construction of floors for habitable or industrial buildings in general, which are known specifically as computer floors.

Invention background and summary

[0003] The use of what are termed computer floors has been well-known in general by all for many years, which provide flooring suitable mainly for industrial buildings, but, in certain circumstances habitable ones also. Because of the increase in technological possibilities that are on daily offer to all kinds of users, both personal and industrial, computer floors constitute an important application by providing a space under the floor plane for all types of conductions that can be easily changed, modified, add to or eliminated, for various types of applications or supplies, such as water pipes, electrical, informatics or data, telephone or fax installations, air conditioning units, together with a large etcetera that includes any supply possibility that is applicable to the various solutions required by the users. Computer floors have the great advantage that such changes, alterations, additions or eliminations can be carried out without any need for works, which are always expensive and difficult with respect to the usual works that are carried out at the installation site, and in virtue of the modularity adopted by normal computer floors.

[0004] However, in spite of the fact that the use of this type of floor involved, as already stated, a large number of advantages with respect to more conventional ones, it is also certain that it is not completely free of inconveniences.

[0005] In fact, the use of computer floors usually consists of modular panels, the upper surfaces (the visible surface) of which incorporate ornamental elements in order to endow them with the various finishes required in function of the different applications. Thus, the modules are usually finished with carpeting or rubber tiles and PVC, but always with the self-limitation in that these types of products usually have only a reduced range of qualities and colours, due also to being fixed with glue or bonding product to the supports, normally being terminated in fabric. This means that when the decorative part deteriorates

through use or any other circumstance, the whole product is considered deteriorated. Therefore, repairs or replacements can be costly, both the economic point of view as well as that of the time investment, For which reason it would be desirable to have some flooring system available that would provide effective solutions to this type of practical problem.

This is precisely the objective of the system proposed by this invention, which is intended to provide an elevated type of flooring system that permits the installation, replacement and changing of the various floor models in a simple, fast, convenient and economic manner at any time. The described objective is fully achieved by the flooring system proposed by this invention, the main characteristics of which are described in the characterising part of attached claim 1.

[0006] In accordance with the invention, the flooring system affects the decorative part that is placed over the computer floor and consists of providing a number of modules to be magnetically attached to the support provided by the said computer flooring. To this end, the system allows for the formation of modules from the material that is to provide the decorative finish for the floor, for example, carpeting, PVC, linoleum, caoutchouc, rubber, wood, rock materials, laminates or any other, together with their provision of a magnetic sheet on the side to be placed on the raised metal support forming the computer floor. With the modules thus formed, when the magnetic sheet comes into contact with the metal computer floor panels, the upper or ornamental modules that form the flooring are magnetically retained, preventing any unwanted sliding and with absolute safety. The manufacturing capacity for modules of various sizes means that the system is perfectly applicable to any surface configuration.

[0007] As will be understood, with a solution such as that proposed by the invention, it provides a flexible system that allows for any expansion or modification in the various installations inherent in each industry workplace (addition or redistribution of computer terminals, telephone and fax lines and light points etc), in favour of endowing companies with the necessary flexibility that allows them to execute these changes at any time in accordance with their requirements.

A brief description of the drawings

[0008] These and other characteristics and advantages of the invention will be made clearer by the following detailed description of a preferred embodiment example that is given as an illustrative, non-limiting example, with reference to the accompanying drawings, in which:

Figure 1 is schematic representation of a perspective view from above, of a conventional embodiment example of a raised support for the construction of a computer floor;

Figure 2 is schematic perspective view of a separable flooring module of the type proposed by this invention; and

Figure 3 is schematic illustration of a finished computer floor, obtained from a support, such as that of Figure 1, to which a number of separable independent modules, such as that of Figure 2, have been added.

Description of a preferred embodiment example

[0009] Just as previously described, the detailed description of the invention system is provided below with the assistance of the drawings, in which the same reference numbers will be employed to designate equal or similar parts. Thus, first referring to figure 1, the installation of a conventional support, of the type used in industrial computer floors, with this installation consisting of a number of panels 1, successively laid out one after the other, adjacent by their various sides and each one of the panels associated by its corners to respective separating elements 2, that maintain them at a certain distance from the floor 3, in order to provide the necessary space for the various utilities and supplies that have to be installed in function of the requirements of each activity.

[0010] This form of construction is already known and provides the support surface which, unlike the usual technique in which, as has already been stated, each panel 1 is finished on the upper surface with a finishing material that is firmly attached by gluing or other similar method, in the case of this invention the finishing elements will be simply supported and held in place by magnetic attraction.

[0011] To this end, the invention takes into account the production of individual modular elements as shown in Figure 2, with the possibility of dimensionally designing them to the various requirements and each of these modules consists of a layer of finishing material, designated by number 4 that will occupy the upper position and a lower layer, with equivalent dimensions, indicated by number 5, made of a magnetic material. The two layers 4, and 5 are firmly joined together by gluing or similar so that both layers 4 and 5 are firmly held together over the entire contact surface.

[0012] As will be understood, a module constructed in this way, is now prepared to be employed in the flooring of the computer floor, with the material used to make layer 4 that one that provides the visible characteristics of the finished floor.

This finished floor situation is shown in Figure 3, in which a portion of the computer floor equivalent to the portion of Figure 1, but now covered with a number of modules, such as that of Figure 2, respectively laid out over the same panels 1 of the support surface. As will be understood, the positioning is made by simply placing them on the said support panels 1, with the magnetic attraction force produced by the lower layer 5 of each finishing mod-

ule acting on the ferric material of the support panels 1, that maintain the union between the modules and panels and prevents them from moving or rising up. Obviously, since it is a magnetic link, it is only necessary to exercise sufficient pulling force on any module to lift it up and separate it from the support panel 1.

[0013] It should also be noted that in the Figures, the finishing modules have been chosen that are dimensionally equal to the panels 1 that make up the support surface and computer floor support. This embodiment form, although preferred, should not be taken as limiting, since there is no practical requirement that demands such dimensioning.

[0014] From the above, it can be seen that the system of this invention provides a number of obvious, evident advantages, which a summarised below:

- It provides flexible solution because of the wide range of products available on the market that can be used to produce the finishing modules, and with the modular dimensions as required by the customer and degrees of finish that cover any needs, including the thickness of the various modules.
- The modular flooring system of the invention is independent of the computer floor, so that when it is decided to completely or partially change the floor, it is only necessary to change the usage or decorative modules, always maintaining the original computer floor supports.
- There is usually a part in all installations that, in practice, affects approximately 20% of the installation surface, over which most of the activities are developed (according to practical data, in approximately 80% of the activities), which means that this area of surface is subject to much greater wear or deterioration than the rest of the surface; with this invention it becomes necessary to only replace the upper modules of the most deteriorated surface, with the others being maintained if so desired and, obviously retaining the original computer floor as previously stated.
- The system of the invention provides greater versatility to the designer when choosing between the various modulation or colour ranges, together with floor customisation.
- Also, in the case of access to the office hire market, it is usual for the tenant to want a different type of decoration than the existing one and it is perfectly feasible to change it with the system of the invention in a simple, fast manner with little cost, and when there is a change in tenant, any deteriorated portions of the floor can also be replaced.
- The system of the invention enables the constructor of an industrial building to install the computer floor

and leave the finish, with the upper ornamentation modules to the end of the works, thus preventing any damage during the construction phase.

- The self-standing characteristic of the floor means that any deterioration to the computer floor and the final finishing panels is minimum.

[0015] Summing up, these are some of the most important advantages provided by the system of the invention due to the differentiated characteristics that can be given independently to the computer floor and the final finish modules, together with the simple operation with respect to module separation and replacement, maintaining the computer floor support for life.

[0016] It is not considered necessary to extend this description any further so that an expert in the material can understand its scope and the advantages deriving from the invention, together with developing and putting into practice the objective of the same. However, it must be understood that the invention has been described in accordance with a preferred embodiment example of the same and that it can therefore be modified within its scope of application, as defined by the attached claims.

Claims

1. A modular, separable magnetic flooring system for the construction of computer floors, in particular, computer floors of the type that incorporate a support consisting of a number of panels (1) successfully laid out one after the other, adjacent by their various sides, covering the surface of the industrial or habitable building in question, with the said support panels located at a predetermined distance from the floor of the building works by means of separator elements (2) associated with the corners of each of the said panels (1) that is **characterised in that** it the provision consists of a number of finishing modules, designed for positioning on top of the mentioned support panels (1), and separable securing to the latter by means of magnetic attraction, with each of the said finish modules consisting of an upper layer (4) of any usual finish material securely fixed to a lower layer (5), having equivalent dimensions to the upper and consisting of a magnetic material.
2. A system in accordance with claim 1, which is **characterised in that** the union between each upper finish layer (4) and each lower magnetic material layer (5) is glued.
3. A system in accordance with claims 1 and 2, which is **characterised in that** each finish module is dimensioned in concordance with the computer floor support surface panels (1).

4. A system in accordance with claims 1 and 2, which is **characterised in that** each finish module has different dimensions to those of each panel (1) of the computer floor support surface.

5. A system in accordance with one or more of claims 1 to 4, which is **characterised in that** the material making up the upper layer (4) of each finish module is chosen from the group consisting of carpeting, PVC, linoleum, caoutchouc, rubber, cork, wood, rock materials, laminates or any other with equivalent characteristics.

15 Amended claims in accordance with Rule 86(2) EPC.

1. A modular flooring system for the construction of a computer floor in an industrial or habitable building, said system comprising support panels (1) and separator elements (2), said support panels (1) being adapted to be successively laid out one after the other, adjacent by their various sides, covering the underfloor (3) of the building, said support panels (1) being adapted to be located at a predetermined distance from the underfloor (3) by means of said separator elements (2) associated with the corners of each of the said support panels (1), said system being **characterised in that** it comprises finish flooring modules, adapted to be positioned on top of the said support panels (1) and removably secured to the latter by means of magnetic attraction, with each finish flooring module consisting of an upper layer (4) of finish material securely fixed to a lower layer (5) of a magnetic material, having equivalent dimensions to the upper layer (4).

2. A system as defined in claim 1, **characterised in that** in each module, the upper finish layer (4) is fixed onto the lower layer (5) by means of glue.

3. A system as defined in claims 1 and 2, **characterised in that** each module is dimensioned in concordance with the support panels (1).

4. A system as defined in claims 1 and 2, **characterised in that** each module has different dimensions to those of each support panel (1).

5. A system as defined in one or more of claims 1 to 4, **characterised in that** the upper layer (4) of each module is chosen from the group consisting of carpeting, PVC, linoleum, caoutchouc, rubber, cork, wood, rock materials, laminates or the like.

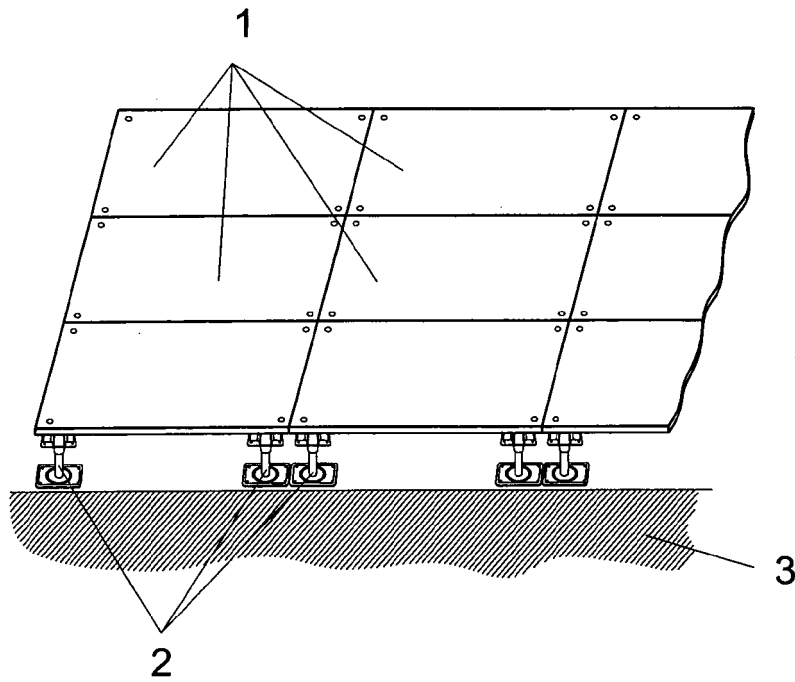


FIG. 1

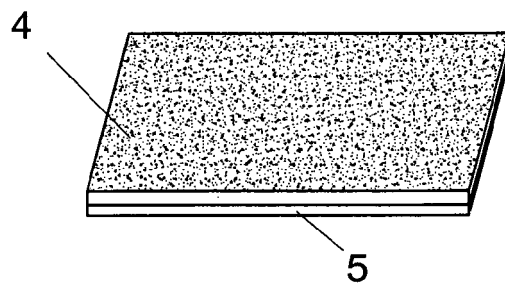


FIG. 2

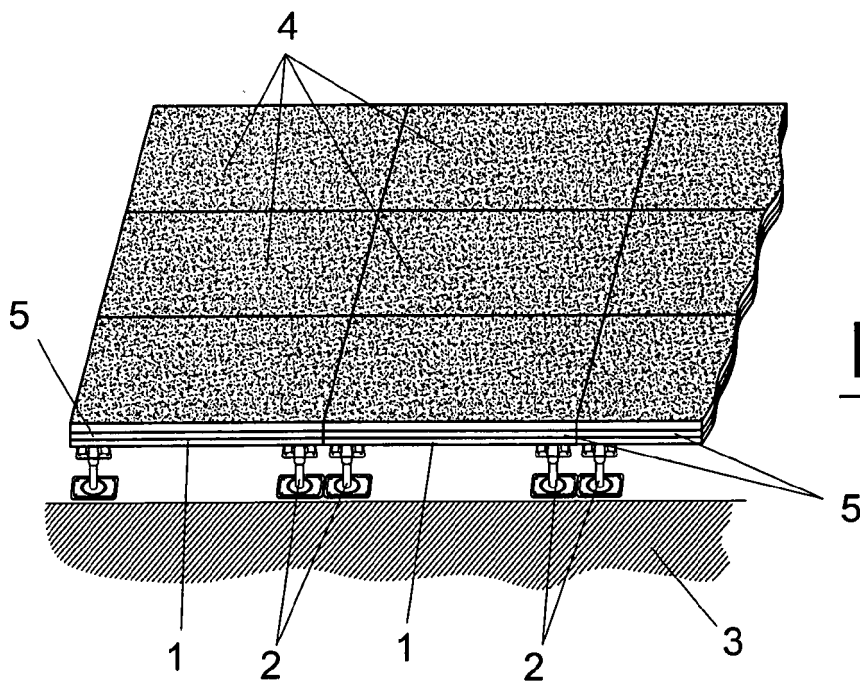


FIG. 3



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 06 38 0042

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 752 357 A (PILLER ET AL) 19 May 1998 (1998-05-19) * column 3, line 40 - column 4, line 25 * * figures *	1-5	INV. E04F15/024 A47G27/04
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X	US 3 341 996 A (JONES WILLIAM H ET AL) 19 September 1967 (1967-09-19) * column 4, line 19 - line 24 * * figure 5 *	1-5	
			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 July 2006	Examiner Bouyssy, V
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			

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

EP 06 38 0042

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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20-07-2006

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