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(54) **SUPPORTING STRUCTURE FOR AN ACCESS FLOOR**

(57) The invention relates to a supporting structure for an access floor, including a plurality of fillets intended to be screwed in parallel to the floor slab and threaded rods which can be coupled to said fillets. A peripheral neck is provided close to the lower end of each rod and said neck is coupled to the narrowed opening of the fillets in the limit position in which the end of the rod engages with the base of the fillets. The upper end of each threaded rod receives a bearing nut for the sections forming the supporting grid of the tiles. The upper end of each threaded rod is provided with a groove or another suitable configuration enabling same to be actuated with a screwdriver by means of the supporting nut, such that the height of the access floor can be adjusted by rotating the threaded rod.

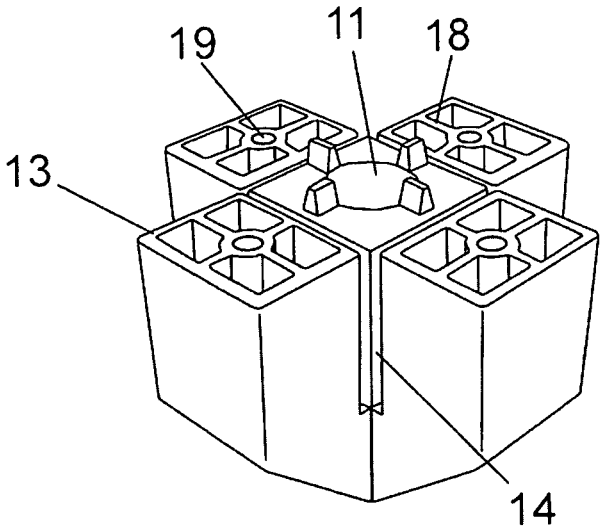

FIG. 5

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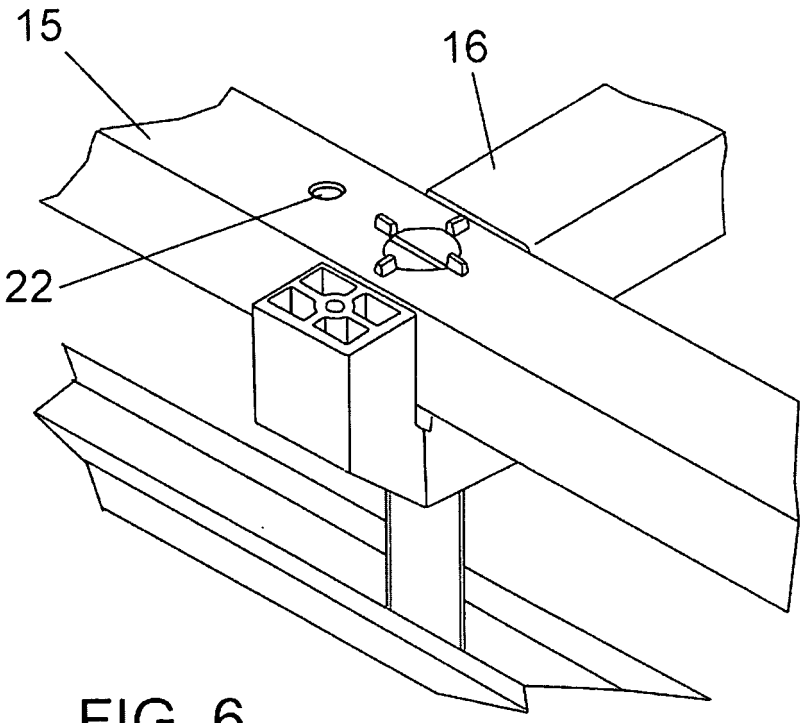

FIG. 6

Description

OBJECT OF THE INVENTION

[0001] This invention refers to a structure that is especially designed to constitute the support for the floor tiles that form an access floor, understanding this to be a flooring that is elevated above the floor slabs or the original floor of a building, with the purpose of creating a space to hold and hide the large number of cables which are normally present in computer rooms, such as telephone, computer and power cables, etc.

[0002] The object of the invention is to create a structure that is extremely fast, simple and convenient to install, and which is fully reliable in terms of the levelling of the access floor, i.e., of the floor tiles that form the same access or raised floor.

BACKGROUND OF THE INVENTION

[0003] In office buildings and other rooms, the large number of cables connecting different workstations and the latter with the outside, has led to the generalised use of what are known as "access floors", which are formed by a reticular structure of longitudinal beams and crossbeams, usually metal ones, to form the means of support for the floor tiles of the floor itself, while at the points at which the said beams intersect there are pedestals that keep them at a correct distance from the floor, creating a sufficiently high space between the latter and the floor tiles to hold all of the above-mentioned cables.

[0004] Logically, when the project for a building includes its possible use as an office or workplace using advanced computer technology, the floor slabs of the building are not surfaced using conventional techniques, given that they are to be surfaced with raised floor.

[0005] There are usually irregularities and variations in the surface of the floor slabs, so that the pedestals of the raised flooring have to be adjustable in height, to ensure the perfect levelling of the definitive raised or access floor, while also making it possible to install the said access floor at the desired height in each case.

[0006] Conventionally these pedestals are formed by a supporting base that is screwed to the floor slab, emerging from said base a threaded rod on which a nut turns, this being the actual support for the beams on which the floor tiles rest, so that, to attain levelling, it is the said support-nut that has to be moved, which causes problems that basically centre on two aspects. On the one hand the manipulation of the support-nuts is slow and inconvenient, and on the other hand they cannot be adjusted in height with the exactitude that would be desirable, because, finally, said support-nut has to be turned at such an angle for its grooves to hold the longitudinal beams and crossbeams that affects the turning range of said support-nut.

DESCRIPTION OF THE INVENTION

[0007] The supporting structure for raised flooring proposed by this invention resolves the above-mentioned problems in a fully satisfactory way, while also making it possible to install the same extremely quickly, simply and effectively, as was pointed out above.

[0008] To this end and more specifically the proposed structure involves, as basic elements, a series of fillets intended to be affixed to the floor slab in the places where the longitudinal beams to support the floor tiles are to be placed.

[0009] These fillets have narrowed openings which function as grips that hold threaded rods, which in turn are placed in correspondence to the crossbeams that go with the said longitudinal beams, to which end the threaded rods have a peripheral neck to allow them to fit in the narrowed opening of the fillets, all in such a way that the threaded rods may move freely along the fillets, and also may turn freely over them.

[0010] At their upper end the said threaded rods have a groove across their diameter, or any other configuration that is suitable to allow them to be turned using a screwdriver or similar tool.

[0011] Support-nuts are fitted onto these threaded rods, the former having a core with a threaded hole to fit the corresponding rod that is also threaded, and with grooves at the level of the beginning of its arms which permit the longitudinal beams and crossbeams to be connected, these being an inverted "U" in shape, i.e., with their opening pointing downwards, in such a way that their side walls penetrate the grooves of the said cross, while their upper middle wall rests on its arms.

[0012] Each arm of the support-nut includes a blind axial hole that is vertical and open at the top, making it possible to affix the corresponding longitudinal beam or crossbeam, when necessary, by using a tap bolt and plastic expansion plugs, the same as those used to affix the fillets to the floor slab.

[0013] According to the described structure, since the threaded rods are the components that are moved to adjust the level of the support-nuts, the latter may remain stable in the angular or turning direction, being raised or lowered by means of the turning of the rod until a perfect levelling is attained, for example by using a laser beam for a level of this type.

[0014] Otherwise and as already known, the fillets as well as the longitudinal beams and crossbeams of the structure will be arranged in a way that they keep a suitable distance for the formation of cells or rectangular frames which make it possible to support the perimeters of the floor tiles of which the flooring itself is composed.

DESCRIPTION OF THE DRAWINGS

[0015] As a complement to the description and with the aim of helping to attain a better comprehension of the characteristics of the invention, according to a pre-

ferred embodiment of the practical execution of same, a set of drawings is attached as an integral part of the said description, these being illustrative and not restrictive, and they show the following:

Figure 1.- This shows, according to a diagrammatic exploded side view, the support structure of a raised floor executed according to this invention, at the level of one of the threaded rods and the complementary support-nut.

Figure 2.- This shows an enlarged detail of the lower end of the threaded rod shown in figure 1, duly affixed to the floor slab through its corresponding footing piece.

Figure 3.- This shows a top view of one of the complementary support-nuts of the said threaded rods.

Figure 4.- This shows a lateral elevation of a cross-section of the support-nut of figure 3, along the AA dividing line in the said figure.

Figure 5.- This shows a detailed view of the parts in figures 3 and 4.

Figure 6.- This shows the set of figure 1 duly assembled in a perspective view.

Figure 7.- This shows, finally, a section of access floor in which, to make its structure clearer, one of the floor tiles that make up the access floor itself is also shown.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0016] In the abovementioned figures it may be seen that the structure corresponding to the invention is formed by a plurality of fillets (1), which are to be affixed in a parallel arrangement to the floor slab (2), using tap bolts (3) and expansion plugs (4), the said fillets (1) being grooved in shape, the grooves having preferentially an isosceles trapezoid configuration diverging towards its opening, the latter presenting a narrowing (5), through which threaded rods (6) are inserted, these having a neck with a deeper groove (7) into which fits the said narrowed opening (5) of the footing piece (1), at the position where the threaded rod (6) rests on the floor slab (2) through the base of the fillets (1).

[0017] Each threaded rod (6) has a groove across its top, or another similar configuration that allows it to be turned using a screwdriver, and it is fitted with a support-nut (9) on its upper end, as shown in detail in figure 5. This nut (9) includes a central core (10) with a vertical hole (11), a broad section of its lower end being provided with a thread (12) to fit the rod (6), while four arms (13) protrude from the said central core (1) adopting as a whole the shape of a cross, as may be observed most especially in figure 3; between the core (10) and the arms (13) there are grooves (14) designed to hold the longitudinal beams (15) and crossbeams (16) of a reticular structure that supports the floor tiles (17), as may be observed most especially in figure 7.

[0018] For these purposes the longitudinal beams (15) and the crossbeams (16) are inverted "U" shaped, so that their side walls penetrate the grooves (14), while their upper surface rests on the upper end (18) of the arms (13) of the support-nut (9).

[0019] Additionally the arms (13) of the support-nut include axial orifices that are blind and open at the top (19), for reception of the tap bolts (20) and their complementary expansion plugs (21) which pass through holes (22) operationally executed in the longitudinal beams and/or crossbeams (15-16), when it is wished to affix these beams in addition to let them resting on the support-nuts.

[0020] Evidently and as may be observed in figure 7, when placing a floor tile (17) on a frame (23) of the reticular structure, said floor tile leaves free half of the upper surface of each longitudinal beam (15) and crossbeam (16), so that each one of these elements takes part in supporting two adjacent floor tiles.

Claims

1. A supporting structure for an access floor which takes the form of a framework formed by longitudinal beams and crossbeams to support the floor tiles which form the floor surface itself, said longitudinal beams and crossbeams being equipped at the points where they cross with pedestals that hold them distant from the floor slab, with means for adjusting their height, **characterised in that** a plurality of fillets are used to be fixed by bolting to the floor slab, in a parallel arrangement, said fillets being executed in the form of grooved profiles with a narrowed opening, and designed to be joined to threaded rods that have, close to their lower end, a peripheral neck to fit the narrowed opening of the fillets, at the limiting position in which said rods rest with their lower end on the bottom of the fillets, while the upper end of each threaded rod receives a support-nut for the beams that form the frame that supports the floor tiles, while the top of each threaded rod includes a groove or any other configuration that makes suitable the use of a screwdriver through the support-nut itself, in such a way that height adjustment takes place by turning the threaded rod, while keeping the support-nut in question stable in an angular direction.

2. A supporting structure for an access floor, according to claim 1, **characterised in that** each support-nut includes a central core with an axial orifice provided with a lower threaded section that makes it a nut, its thread being suitable for the corresponding rod, while four arms protrude from said central core, in

the shape of a "cross", with the particular circumstance that between the core and each one of the arms there is a deep groove to hold the edges of the profiles that form the longitudinal beams and crossbeams, to which end these profiles have a cross-section of an inverted "U", so that each one of their side walls is inserted in the corresponding groove of the support-nut, while their upper central wall rests on the upper surface of the corresponding arm of the cross.

3. A supporting structure for an access floor, according to the previous claims, **characterised in that** each arm of the support-nut includes a blind orifice that is open at the top, for the insertion of a fixing bolt for the corresponding longitudinal beam or crossbeam of the upper reticular structure, at the positions at which this is considered to be suitable.

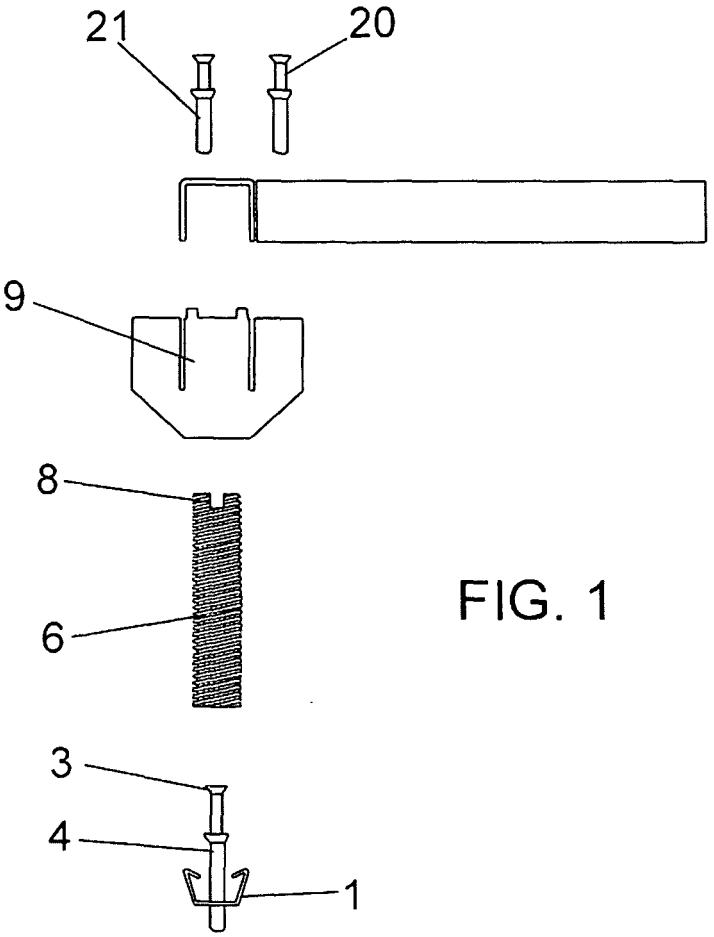

FIG. 1

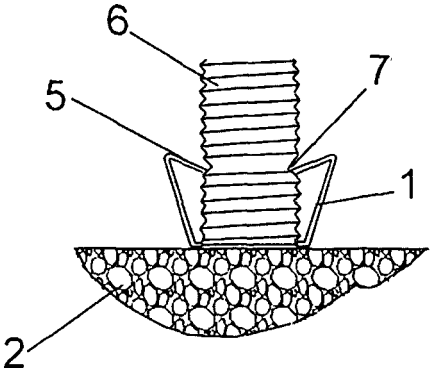

FIG. 2

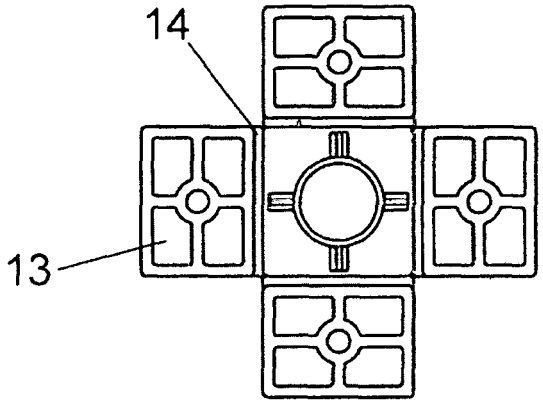

FIG. 3

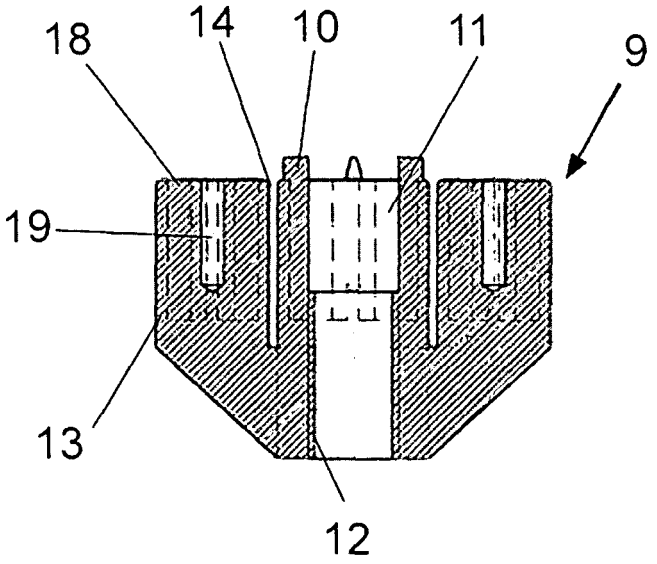

FIG. 4

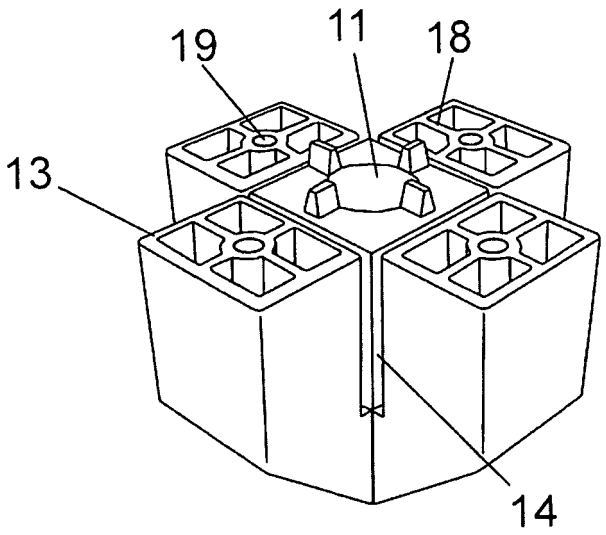

FIG. 5

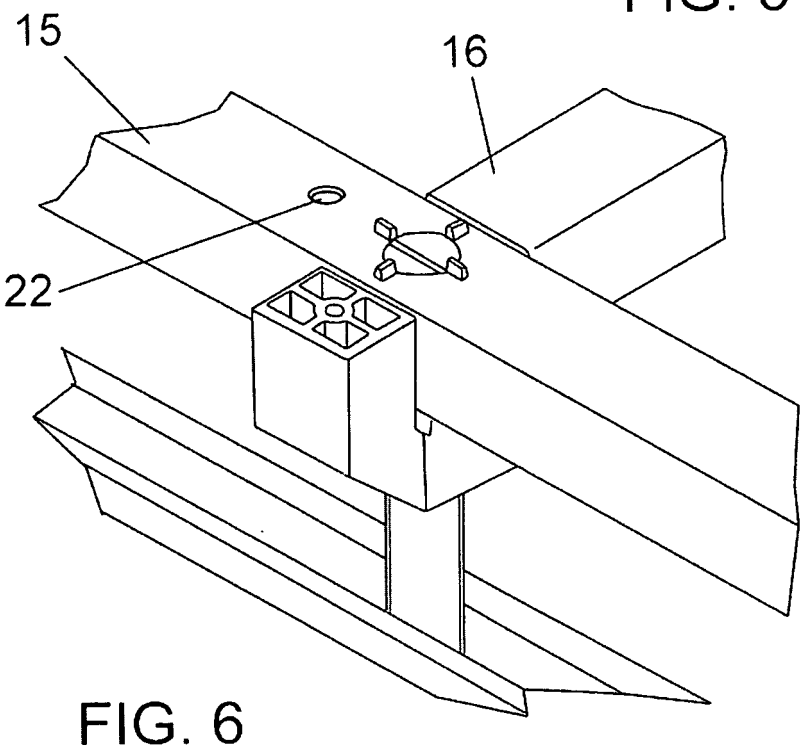

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2008/000428

A. CLASSIFICATION OF SUBJECT MATTER

E04F 15/024 (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E04F15/024

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIBEPAT,EPODOC,GUIDE, RAIL, FOOT, ROD

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	ES 1063345 U (INSCA INTERNACIONAL) 29.06.2006, the whole document.	1
A	CA 1266957 A (DONN CANADA LTD) 27.03.1990, the whole document.	1-3
A	WO 2006085294 A (KINGSPAN HOLDINGS IRL LTD) 17.08.2006, the whole document.	1-3
A	DE 1683491 A1 (SUTTON BRUCE) 06.05.1970, abstract; figures.	1,2
A	DE 4233175 A1 (KREUSEL MAGDA) 07.04.1994, abstract; figures.	1
A	EP 1167652 A1 (MILANA) 02.01.2002, the whole document.	1

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
01.October.2008 (01.10.2008)	(10-11-2008)
Name and mailing address of the ISA/ O.E.P.M. Paseo de la Castellana, 75 28071 Madrid, España. Facsimile No. 34 91 3495304	Authorized officer B. Hernández Agustí Telephone No. +34 91 349 55 53

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 2008/000428

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Form PCT/ISA/210 (continuation of second sheet) (April 2007)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/ ES 2008/000428

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