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Description

[0001] The present invention relates to a pedestal for supported floor constructions, a supported floor construction comprising a plurality of pedestals, and a method for assembling a supported floor construction according to the respective independent claims.

[0002] Pedestals are known to be used for supported floor constructions. Such supported floor constructions are used to make the resulting hollow space under the supported floor construction usable for building service installations. However, this involves a potential fire hazard. In the event of a fire, high temperature can damage the pedestals to such an extent that the supported floor construction becomes unstable and collapses. That is tremendously dangerous when a firefighter enters a room with a supported floor construction in a burning building.

[0003] In conventional constructions, it is known to jacket the service installations in a fire-resistant way. This has the disadvantage of using much more of the hollow space so that column grid is adversely affected. Another known option is to partition or encapsulate parts of the hollow space below the supported floor, preferably in that positions that mark specific rooms on top of the supported floor. However, these marks are not always known when installing the supported floor. Further, it is known to provide a chimney-like firewall around the pedestals in order to increase the stability in case of exposure to fire. Such firewalls typically consist of gypsum or aerated concrete, which are arranged to form a closed space around each pedestal. The firewall is formed in such a way to extend in between the raw floor and the building panel on which the floor surface is arranged. A disadvantage related to known firewalls is that they occupy a considerable amount of space and are cumbersome to install.

[0004] Hence, it is the object of the invention to provide a pedestal for a supported floor construction, a supported floor construction comprising a plurality of pedestals, and a method for assembling a supported floor construction in which the pedestals overcome or greatly reduces the disadvantages known in the prior art and are compact and easy to install. It is a further object of the invention to provide a pedestal for a supported floor construction, a supported floor construction comprising a plurality of pedestals, and a method for assembling a supported floor construction in which the pedestals achieved an extended bearing capacity for a longer time in the case of fire, preferably for the weight of a firefighter for over 90 minutes of fire.

[0005] These objects are overcome by the subject matter of the respective independent claims. Advantageous aspects form the subject matter of the dependent claims.

[0006] The invention comprises a pedestal for supported floor constructions, the pedestal being arranged to form a grid of pedestals capable of supporting floor elements arranged thereon. The pedestal comprises a rod element having attached at respective opposite ends a top end plate and a base end plate. The pedestal com-

prises a (flexible) mineral fibre element circumferentially encasing the rod element and having a length corresponding to the distance in between the top end plate and the base end plate. The pedestal with mineral fibre element is formed compact and easy to install. Supported floor constructions comprise hollow floor constructions and raised access floor constructions. The rod element can be formed from a set of bar elements, preferably two bar elements, optionally including a nut, which are formed in such a way that they can be height adjustable plugged or screwed together. A corresponding length of the (flexible) mineral fibre element in the context of the present invention is given if the length is the full distance in between the top end plate and the base end plate when mounted. That includes that the length of the mineral fibre element is up to 2.5 cm less than the full distance in between the top end plate and the base end plate. However, the mineral fibre element may also be built up of (two) shorter parts of the mineral fibre element. In this case, these shorter parts may be butt-jointed. This has the advantage that no parts of e.g. pre-fabricated mineral fibre elements have to be discarded.

[0007] The mineral fibre element can circumferentially encase the rod element such that a gap remains between the rod element and the mineral fibre element or such that the mineral fibre element is fitted to be in contact with the rod element.

[0008] The mineral fibre element can be ductile so that it can be adapted to the size and shape of the rod element in the assembled state.

[0009] According to a preferred aspect of the pedestal, the mineral fibre element has a thickness d in the range from 10 mm to 60 mm, preferably from 20 mm to 40 mm. The thickness d can be constant or vary over the length of the mineral fibre element.

[0010] According to another preferred aspect of the pedestal, the mineral fibre element is a mineral wool pipe section, preferably an aluminium laminated mineral wool pipe section. The afore-mentioned sections can be pre-fabricated.

[0011] According to a particularly preferred aspect of the pedestal, the mineral fibre element comprises an adhesive capable of attaching the mineral fibre element to the rod element. The adhesive can be provided as an adhesive layer.

[0012] According to an advantageous aspect of the pedestal, the mineral fibre element has an inner circumferential diameter i corresponding to an outer circumferential diameter o of the rod element. In case that the outer circumferential diameter o of the rod element varies over the length of the rod element, the inner circumferential diameter i of the mineral fibre element can be shaped accordingly. The outer circumferential diameter o may be in the range from 10 mm to 40 mm, preferably from 12 mm to 30 mm.

[0013] The invention relates to a supported floor construction comprising a plurality of pedestals (as described herein) having arranged thereon at least one floor ele-

ment comprising at least one building panel. Supported floor constructions may comprise hollow floor constructions and/or raised access floor constructions with a single layer or multiple layers of building panels.

[0014] According to a preferred aspect of the supported floor construction, the floor element comprises a single layer or multiple layers of building panels having an overall thickness in the range in between of 18 mm to 80 mm, in particular in the range in between of 38 mm to 60 mm. The single layers and the multiple layers of building panels may be attached to each other by use of an adhesive.

[0015] According to another preferred aspect of the supported floor construction, the supported floor construction comprises two or more building panels having an edge portion aligned to each other. The edge portions of the building panels to be aligned with each other can be formed e.g. in pairs of corresponding tongue and groove edge portions.

[0016] According to a particularly preferred aspect of the supported floor construction, the building panel is a mineral-based building panel, preferably a cement-based building panel, a silicate-based building panel, a mineral-based composite panel or a gypsum-based building panel, most preferably a gypsum-based building panel.

[0017] According to an advantageous aspect of the supported floor construction, the gypsum-based building panel is a gypsum fibre building panel, preferably a gypsum fibre building panel having a portion of less than 10 wt.-% of fibres.

[0018] According to another advantageous aspect of the supported floor construction, the gypsum-based building panel is a gypsum fibre building panel comprising synthetic fibres and/or natural fibres, preferably cellulose fibres, paper fibres, cardboard fibres and/or glass fibres, more preferably paper fibres and/or cardboard fibres.

[0019] Another preferred aspect of the invention relates to a method for assembling a supported floor construction comprising the steps of:

- arranging pedestals on a ground surface; (thereafter)
- adjusting the height of the pedestals for arranging at least one building panel thereon; (thereafter)
- attaching a mineral fibre element to each pedestal; and (thereafter)
- arranging building panels on the pedestals to provide the floor construction.

[0020] The mineral fibre element can be ductile so that it can be adapted to the size and shape of the rod element and attached to each pedestal in the assembled state.

[0021] According to a preferred aspect of the method for assembling a supported floor construction, the mineral fibre element is cut to a length after the height of the pedestal has been adjusted.

[0022] The error tolerance when cutting to a length after the height of the pedestal has been adjusted can be up to 2.5 cm, as the mineral fibre element can be ductile to such an extent that the resulting deviation is negligible.

[0023] According to another preferred aspect of the method for assembling a supported floor construction, the mineral fibre element is attached to the pedestal by use of an adhesive and/or wire. The adhesive can be provided by removing a foil from an adhesive layer. The wire can be wound around the mineral fibre element.

[0024] A very preferred embodiment of the present invention relates to a method as described before, wherein the supported floor construction is a supported floor construction as described above.

[0025] In the following, the invention is illustrated in more detail by means of the examples shown in the attached drawings, in which:

Fig. 1 shows a schematic drawing of a pedestal;

Fig. 2 shows a schematic drawing of a supported floor construction with inventive pedestals.

[0026] **Fig. 1** shows a schematic drawing of a pedestal 1 for a supported floor construction 100, which is capable of supporting floor elements 10 arranged thereon.

[0027] For the assembly of the supported floor construction 100 the pedestals 1 are arranged on a ground surface 110, the height of the pedestals 1 is being adjusted for arranging at least one building panel 10 thereon. The mineral fibre element 3 is attached to each pedestal 1 and the building panels 10 are being arranged on the pedestals 1 to provide the floor construction 100. The building panels 10 have an edge portion 11 formed as tongue or groove edge portion 11 such that two building panels 10 can be aligned to each other. Here, a single layer of building panels 10 is shown.

[0028] The pedestal 1 comprises a rod element 21 having attached at respective opposite ends a top end plate 22 and a base end plate 23.

[0029] In the example shown, the rod element 21 is formed from a set of bar elements, of which a first bar element 21a comprises an external thread portion and a second bar element 21b is hollow to an extent which allows to incorporate at least a part of the bar element 21a. Further, the rod element 21 comprises a nut 21c, the nut 21c and the external thread portion of the second bar element 21b being formed in such a way that they can be screwed together.

[0030] The pedestal 1 comprises a mineral fibre element 3 circumferentially encasing the rod element 21. The mineral fibre element has a length corresponding to the distance between the top end plate 22 and the base end plate 23. The corresponding length of the rod element 21 shown in the drawing is given as the full distance in between the top end plate 22 and the base end plate 23.

[0031] The mineral fibre element 3 with a thickness d in the present example of 20 mm circumferentially en-

cases the rod element 21 such that a small gap remains between the rod element 21 and the mineral fibre element 3.

[0032] The mineral fibre element 3 has an inner circumferential diameter i corresponding to an outer circumferential diameter o of the rod element 21. The mineral fibre element 3 may be a pre-fabricated aluminium laminated mineral wool pipe section. The mineral fibre element 3 in the example shown is installed by use of two shorter parts of mineral fibre elements, which are butt-joined (4) to result in the corresponding length.

[0033] The mineral fibre element 3 comprises an adhesive. In the example shown the adhesive is capable of attaching the mineral fibre element 3 to the rod element 21.

[0034] **Fig. 2** shows a schematic drawing of a supported floor construction 100, specifically a hollow floor construction, comprising a plurality of pedestals 1. On top of the pedestals 1 a plurality of floor elements 10 is arranged.

[0035] In this example, the rod element 21 is formed from a set of bar elements, of which a first bar element 21a comprises an external thread portion and a second bar element 21b comprises an internal thread portion, the internal and external thread portions being formed in such a way that they can be screwed together. However, a rod element 21 as shown in **Fig. 1** can be used here in the same way.

[0036] For the assembly of the supported floor construction 100 the pedestals 1 are arranged on a ground surface 110 (shown in **Fig. 1**), the height of the pedestals 1 is being adjusted for arranging at least one building panel 10 thereon. The mineral fibre elements 3 are attached to each pedestal 1 and the building panels 10 are being arranged on the pedestals 1 to provide the floor construction 100.

[0037] The shown supported floor construction 100 comprises a single layer of building panels 10 having an overall thickness of 38 mm to 55 mm. The building panels 10 are gypsum-based building panels. In the example shown the gypsum-based building panels 10 are gypsum fibre building panels having a portion of c. 10 wt.-% of fibres. The fibres may comprise a variety of fibres from different sources.

[0038] The building panels 10 have an edge portion 11 (shown in **Fig. 1**) aligned to each other. The edge portions 11 (shown in **Fig. 1**) of the building panels 10 to be aligned with each other are formed in pairs of corresponding tongue and groove edge portions 11 (shown in **Fig. 1**).

[0039] The here described supported floor construction 100 has bearing capacity for the weight of a firefighter over 90 minutes in case of fire below the supported floor.

Claims

1. Pedestal (1) for supported floor constructions (100), the pedestal (1) being arranged to form a grid of ped-

estals (1) capable of supporting floor elements (10) arranged thereon, the pedestal (1) comprising a rod element (21) having attached at respective opposite ends a top end plate (22) and a base end plate (23), wherein the pedestal (1) comprises a mineral fibre element (3) circumferentially encasing the rod element (21) and having a length corresponding to the distance in between the top end plate (22) and the base end plate (23).

2. Pedestal (1) according to claim 1, wherein the mineral fibre element (3) has a thickness (d) in the range from 10 mm to 60 mm, preferably from 20 mm to 40 mm.
3. Pedestal (1) according to claim 1 or 2, wherein the mineral fibre element (3) is a mineral wool pipe section, preferably an aluminium laminated mineral wool pipe section.
4. Pedestal (1) according to any one of the preceding claims, wherein the mineral fibre element (3) comprises an adhesive capable of attaching the mineral fibre element (3) to the rod element (21).
5. Pedestal (1) according to any one of the preceding claims, wherein the mineral fibre element (3) has an inner circumferential diameter (i) corresponding to an outer circumferential diameter (o) of the rod element (21).
6. Supported floor construction (100) comprising a plurality of pedestals (1) according to any one of the preceding claims having arranged thereon at least one floor element (10) comprising at least one building panel (10).
7. Supported floor construction (100) according to claim 6, wherein the floor element (10) comprises a single layer or multiple layers of building panels (10) having an overall thickness in the range in between of 18 mm to 80 mm, in particular in the range in between of 38 mm to 60 mm.
8. Supported floor construction (100) according to claim 6 or 7, comprising two or more building panels (10) having an edge portion (11) aligned to each other.
9. Supported floor construction (100) according to any one of the claims 6 to 8, wherein the building panel (10) is a mineral-based building panel (10), preferably a cement-based building panel, a silicate-based building panel, a mineral-based composite panel or a gypsum-based building panel, most preferably a gypsum-based building panel.
10. Supported floor construction (100) according to

claim 9, wherein the gypsum-based building panel (10) is a gypsum fibre building panel, preferably a gypsum fibre building panel having a portion of less than 10 wt.-% of fibres.

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11. Supported floor construction (100) according to claim 9 or 10, wherein the gypsum-based building panel (10) is a gypsum fibre building panel comprising synthetic fibres and/or natural fibres, preferably cellulose fibres, paper fibres, cardboard fibres and/or glass fibres.

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12. Method for assembling a supported floor construction (100) comprising the steps of:

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- arranging pedestals (1) on a ground surface (110);
- adjusting the height of the pedestals (1) for arranging at least one building panel (10) thereon;
- attaching a mineral fibre element (3) to each pedestal (1); and
- arranging building panels (10) on the pedestals (1) to provide the floor construction (100).

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13. Method according to claim 12, wherein the mineral fibre element (3) is cut to a length after the height of the pedestal (1) has been adjusted.

14. Method according to claim 12 or 13, wherein the mineral fibre element (3) is attached to the pedestal by use of an adhesive and/or wire.

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15. Method according to any one of the claims 12 to 14, wherein the supported floor construction (100) comprises a supported floor construction according to any one of the claims 6 to 11.

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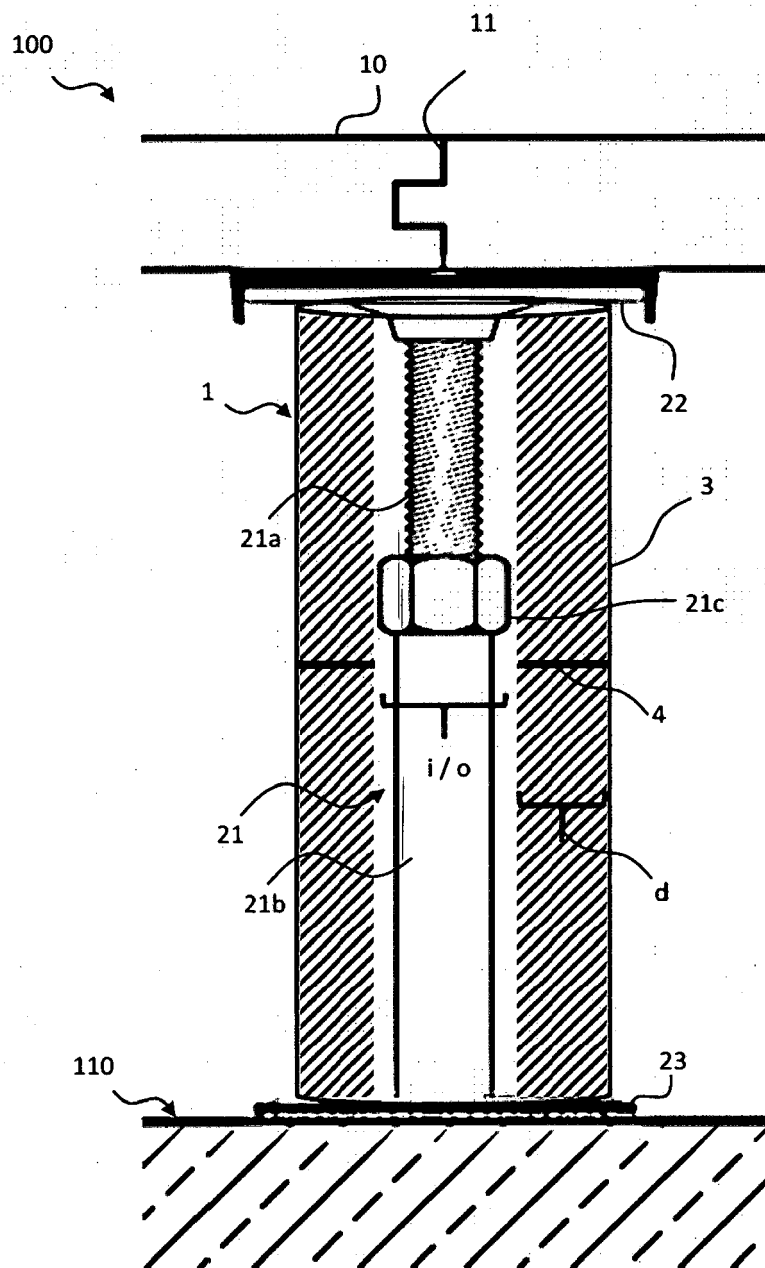


Fig. 1

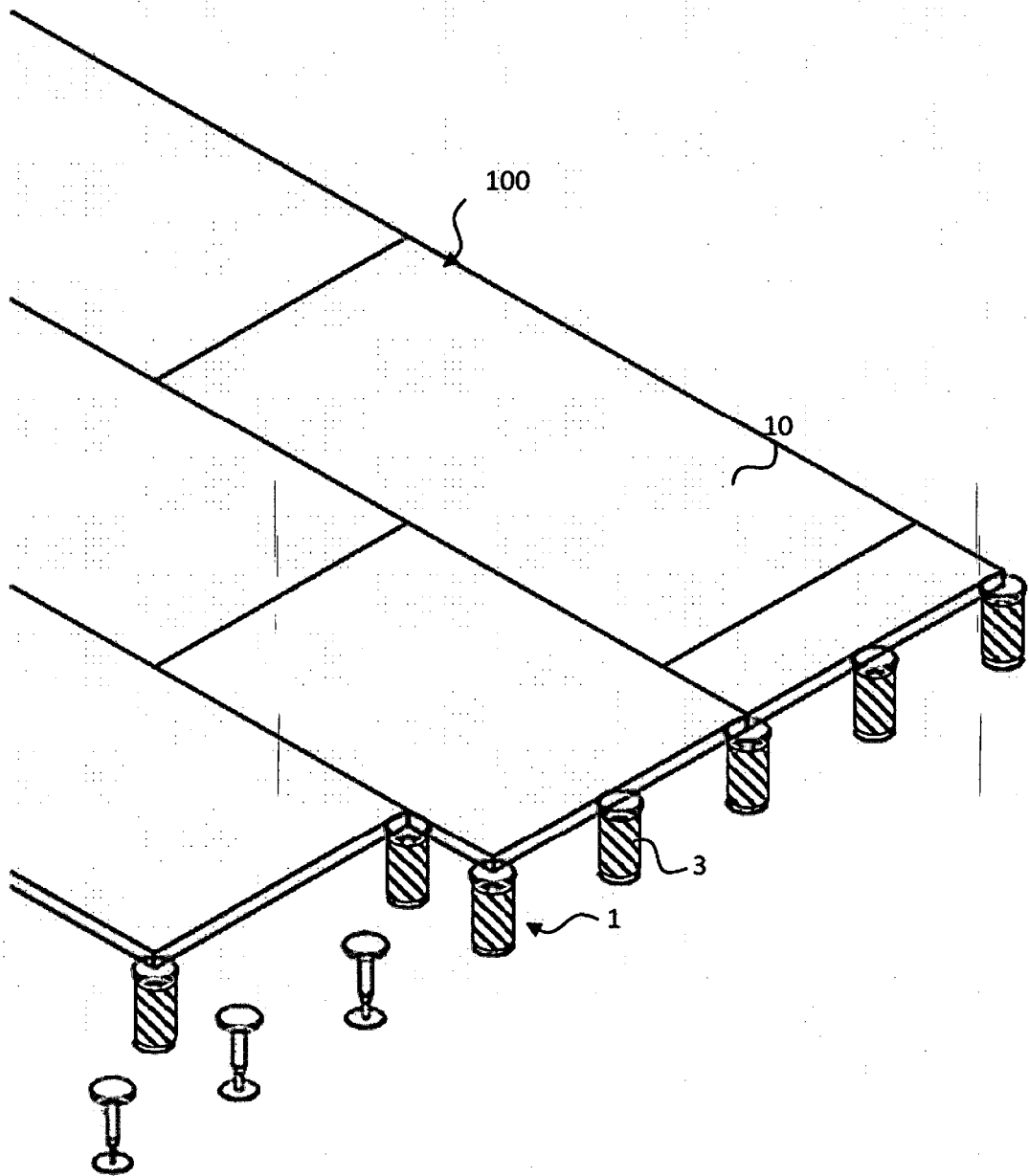


Fig. 2



EUROPEAN SEARCH REPORT

Application Number
EP 20 00 0179

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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	DE 202 02 759 U1 (WEISS AUSBAUSYSTEME GMBH [DE]) 16 May 2002 (2002-05-16)	1-6, 12-15	INV. E04F15/024
Y	* claims 1, 16-17; figures 1, 6, 8, 10 * * page 6, line 20 - line 33 * * page 13, line 32 - page 14, line 9 * * page 16, line 5 - line 9 * * page 18, line 10 - line 19 *	7-11	E04F15/18 E04F15/10 E04F15/02
Y	DE 10 2005 045043 A1 (LINDNER AG [DE]) 30 March 2006 (2006-03-30) * figures 9-10 * * paragraph [0021] - paragraph [0039] *	7-11	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 October 2020	Examiner Estorgues, Marlène
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 20 00 0179

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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
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19-10-2020

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DE 20202759 U1	16-05-2002	NONE	
DE 102005045043 A1	30-03-2006	NONE	

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82