



(11)

EP 4 261 361 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
18.10.2023 Bulletin 2023/42

(51) International Patent Classification (IPC):
E04F 15/024 (2006.01)

(21) Application number: **23155794.3**

(52) Cooperative Patent Classification (CPC):
E04F 15/02476; E04F 15/02452; E04F 15/02458

(22) Date of filing: **09.02.2023**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR**

Designated Extension States:

BA

Designated Validation States:

KH MA MD TN

(30) Priority: **11.04.2022 IT 202200007112**

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(54) A SUPPORT FOR RAISED FLOORS

(57) A support for raised floors comprising several feet (2) on which beams (3) rest, each having two hollow longitudinal bodies (4) joined together by a bridge (6). Each of the feet (2) has a regulation portion (2a) accessible to a user. Each beam (3) comprises a plurality of

through holes (7) made on the bridge (6) so as to allow the passage of an instrument for the adjustment of the feet (2), one or more through holes (7) having longitudinal and transverse extensions comparable with the respective extensions of the regulation portion (2a).

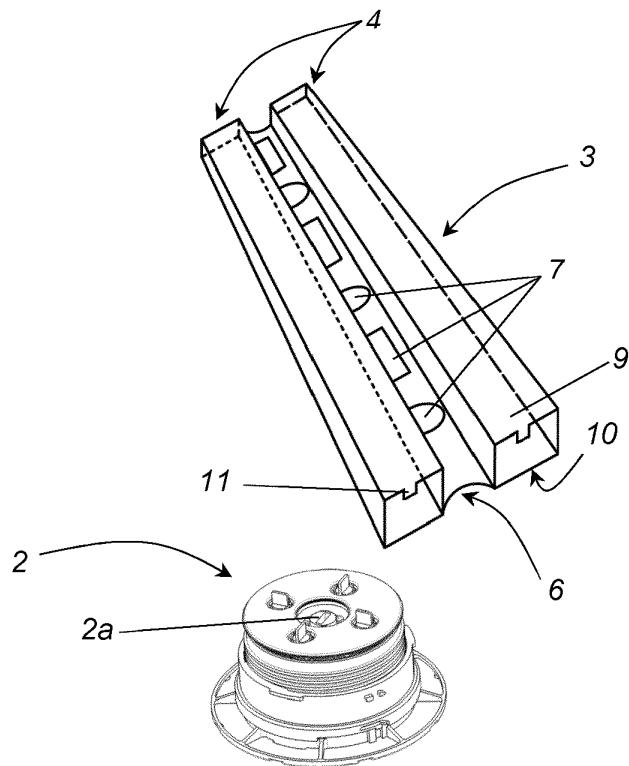


FIG. 2

Description**Field of application**

[0001] The present invention is applicable to the building sector and refers to the construction of raised floors.

[0002] More in detail, the present invention refers to support for raised floors structures.

State of the art

[0003] As is known, special ceilings and floors are used in many environments, especially in work environments such as offices, warehouses or other. This allows to arrange with ease the sub-services and to manage uneven floors or ceilings that would require particularly expensive interventions.

[0004] Another situation in which special floors, often of the raised type, are used is the case of temporary structures such as prefabricated sheds, tensile structures and, in general, structures that must be assembled and disassembled on generally uneven surfaces such as a field or similar.

[0005] Typically, raised floors have a load-bearing structure resting on the ground and above which the floor is arranged. The latter is typically, but not necessarily, made up of tiles.

[0006] The load-bearing structure comprises a plurality of feet on the head of which a beam supporting the edges of adjacent tiles often rests.

[0007] Usually, the support beam is composed of two hollow longitudinal elements arranged parallel and spaced from each other, joined by a bridge placed at about half the height of the two longitudinal elements.

[0008] The bridge thus configured allows achieving the coupling of the beam with fins present on the head of the feet.

[0009] This solution, however, has some acknowledged drawbacks.

[0010] In fact, in this case it is not possible to adjust the angle of the head of the feet once the beam is rested.

[0011] It follows that in case of need to adjust the head of the feet, the user must necessarily first identify the correct inclination of the heads, then lift the beam and fix the heads in place and then rearrange the beam in the correct position.

[0012] It is clear that such manoeuvres, in addition to being cumbersome, involve a certain amount of time.

[0013] It follows that the foregoing will result in higher labour costs being charged to the customer, due to the time taken for the fixing described above.

[0014] Patent document IT 2020 0000 0523 A1 is known which, however, does not solve the drawbacks highlighted above.

Presentation of the invention

[0015] The object of the present invention is to at least

partially overcome the drawbacks highlighted above by providing a support for raised floors that allows the adjustment of the feet even at a time subsequent to the positioning of the beam.

[0016] In particular, an object of the present invention is to provide a support for raised floors that allows a saving of labour times for laying the same with respect to the support structures of the prior art.

[0017] It follows that another object of the present invention is to provide a support for raised floors that allows cost savings for the end user.

[0018] The aforesaid purposes, as well as others that will appear more clearly hereinafter, are achieved by a support for raised floors in accordance with the claims that follow which are to be considered an integral part of this patent.

[0019] In particular, the support for raised floors comprises two or more feet on which at least one beam having at least two longitudinal hollow bodies joined together by at least one bridge rests.

[0020] According to one aspect of the invention, the support comprises a plurality of through holes made on the bridge.

[0021] Advantageously, the presence of the through holes allows the passage of at least one instrument for the adjustment of the underlying feet.

[0022] Moreover, still advantageously, the presence of the through holes allows the positioning of the beam perfectly horizontally even when it is already positioned on the feet. As anticipated, in fact, raised floors can be made on any type of ground that often appears sloping or not perfectly regular. To this end, as is known, on the upper end of the feet there is often a tilting head so as to compensate for the inclination. Similarly, still advantageously, the through holes made on the bridge also allow the height of the foot itself to be adjusted.

[0023] The above adjustments are advantageously facilitated by the fact that, according to another aspect of the invention, at least one of the through holes has longitudinal and transverse extensions at least comparable with the respective extensions of the portion for the adjustment of the height and/or of the inclination of the underlying foot.

[0024] According to another aspect of the invention, the two hollow longitudinal bodies are spaced from each other so as to allow the execution of the through holes by shearing the bridge.

[0025] Advantageously, the shearing allows a considerable saving of time in realizing the support of the invention.

[0026] It follows, again advantageously, that the shearing allows a considerable saving of execution costs.

Brief description of the drawings

[0027] Further characteristics and advantages of the invention will become more apparent in the light of the detailed description of a preferred, but not exclusive, em-

bodiment of a support for raised floors according to the invention, illustrated by way of non-limiting example with the aid of the attached drawing tables in which:

FIG. 1 depicts a support structure of a raised floor according to the invention;

FIG. 2 depicts a detail of the support structure of FIG. 1 in a partially exploded view.

Detailed description of some preferred embodiments

[0028] With reference to the cited figures, a support 1 for raised floors according to the invention is described. In particular, like other supports of the prior art, it comprises several feet 2 on which a beam 3 having two hollow longitudinal bodies 4 joined together by a bridge 6 rests.

[0029] As can be seen in detail in fig. 2, in the embodiment described, the bridge 6 is placed at the base of the beam 3.

[0030] Advantageously, the fact that the bridge 6 rests directly on the feet 2 makes the beam 3 more resistant to impacts and the weight that it must support.

[0031] Moreover, still advantageously, the foregoing allows to increase the rest surface of the beam 3.

[0032] It follows, advantageously, that the foregoing makes the beam 3, and therefore the support 1, more stable than the supports of the prior art.

[0033] However, this characteristic of the arrangement of the bridge 6 with respect to the beam 3 is not to be considered limiting for different embodiments according to which, for example, the bridge is in an intermediate position with respect to the height of the beam exactly as it is the case in the beams of the prior art.

[0034] According to one aspect of the invention, the beam 3 comprises a plurality of through holes 7 made on the bridge 6. In particular, some through holes 7, as can be seen in detail in fig. 2, have a predominantly longitudinal development while others have longitudinal and transverse extensions comparable with the respective extensions of a regulation portion 2a that each foot 2, according to another aspect of the invention, has. In fact, like for other feet of the prior art, the feet 2 of the invention have on the upper part a regulation portion 2a thereof accessible to a user. In fact, as known, since raised floors can be laid on the most varied types of grounds, sometimes even not perfectly regular or sloping, there is a need to make the rest surface of the floor perfectly horizontal. In light of this, the feet 2 of the invention are adjustable in height and/or with reference to the inclination thereof.

[0035] Hence, the presence of the through holes 7 made on the bridge 6 having an extension equal to the extension of the regulation portion 2a of the feet 2 advantageously allows to adjust the positioning thereof even when the beam 3 is already arranged resting on the feet 2 themselves.

[0036] Moreover, still advantageously, this allows an easy passage of an instrument for the adjustment of the

feet 2 without the user being forced to perform particular manoeuvres to perform the aforementioned adjustments as is the case with the supports of the prior art.

[0037] It follows, advantageously, that the foregoing allows a considerable saving of time in laying the floor with respect to the support structures of the prior art.

[0038] Moreover, still advantageously, this entails considerable cost savings for the end customer in terms of the labour employed for laying the floor.

[0039] According to one aspect of the invention, the hollow longitudinal bodies 4 have a distance between them such as to allow the execution of the through holes 7 by shearing the bridge 6.

[0040] Advantageously, the shearing of the bridge 6 allows the through holes 7 to be made quickly and precisely. It is known, in fact, that shearing is much simpler and less onerous than other techniques for drilling laminar bodies.

[0041] Moreover, the realization of the through holes 7 by shearing the bridge 6 is also facilitated by the fact that the bridge 6, in the embodiment described, is arranged on the basis of the beam 3.

[0042] This aspect, however, should not be considered limiting for different embodiments of the invention according to which the through holes are made by means of other techniques such as, by way of example only and not limited to, laser shearing.

[0043] With reference to the through holes 7 with predominantly longitudinal development, they advantageously allow the passage of fins that are present on the head of the feet 2.

[0044] Still advantageously, the foregoing allows coupling the beam 3 with the feet 2.

[0045] Moreover, still advantageously, the presence of the through holes 7 allows the drainage of any water that should penetrate from the raised floor and should accumulate on the beams 3. Think, for example, of raised floors that are made on the courtyards or outdoors that, as such, are exposed to rain.

[0046] Obviously, the presence of the through holes 7 with a predominantly longitudinal development must not be considered a limiting characteristic for different embodiments according to which, by way of example and not exhaustively, on the bridge only through holes are

made with the longitudinal and transverse extension comparable with the extension of the regulation portion and/or the bridge itself is arranged at an intermediate height of the hollow longitudinal bodies. In this case, of course, any fins on the heads of the feet can still get into the through holes or, given the position of the bridge, they can simply be accommodated in the space between the two longitudinal bodies below the bridge.

[0047] According to another aspect of the invention, the support 1 for raised floors comprises anti-slip and/or anti-noise elements 8 stably coupled to a first portion 9 of the beam 3 opposite to a second portion 10 intended to be arranged resting on the feet 2.

[0048] Advantageously, the presence of anti-slip

and/or anti-noise elements 8 allows to avoid the involuntary movement of the floor covering element and, at the same time, allows to reduce the noise deriving from floor vibrations with respect to the support 1 which, in case of absence, would be amplified.

[0049] More in detail, in the particular embodiment of the invention that is described, the anti-slip and/or anti-noise elements 8 are two, one for each hollow longitudinal body 4.

[0050] Moreover, according to a further aspect of the invention, the support 1 comprises a recess 11 obtained on each upper surface of the hollow longitudinal bodies 4, which moreover corresponds to the first portion 9 of the beam 3, as well as a shank emerging from each anti-slip and/or anti-noise element 8 shaped so as to be received in the recesses 11.

[0051] Advantageously, the presence of the recesses 11 allows the coupling of the anti-slip and/or anti-noise elements 8 to the beam 3 without the need to use substantial adhesives.

[0052] However, the presence of the recesses 11 for retaining the anti-slip and/or anti-noise element must not be considered a limiting feature for different embodiments of the invention. In fact, according to an embodiment variant not depicted here, the support for raised floors comprises a plurality of retaining holes obtained on each upper surface of the hollow longitudinal bodies and a plurality of corresponding pegs emerging from the anti-slip and/or anti-noise elements and shaped in such a way as to be received each in a respective one of the retaining holes.

[0053] Obviously, such a feature is not to be considered limiting for the present invention. In fact, it is not excluded that the anti-slip and/or anti-noise elements do not have emerging shanks or pegs and that they can therefore be glued to the upper surface of the hollow tubular bodies. In the same way, it is possible that the latter does not comprise recesses, without leaving the scope of the invention.

[0054] According to another aspect of the invention, although not depicted in the figures, the anti-slip and/or anti-noise element 8 comprises a plurality of groovings made on its surface capable of receiving elements of a raised floor restingly.

[0055] Advantageously, the anti-slip and/or anti-noise elements provided with groovings allow cost savings with respect to the same elements having a smooth surface since they can be made with less noble materials. In fact, the smooth execution of these elements would force them to be made with particularly yielding materials in order to ensure their functionality. However, such materials are typically expensive as they must maintain this characteristic over time.

[0056] Moreover, still advantageously, they allow a greater grip compared to smooth ones. In fact, in the case of smooth anti-slip and/or anti-noise elements on the surface, the possible presence of dust could reduce the ability to avoid slipping.

[0057] The foregoing, however, is not to be considered a limiting characteristic for different embodiments of the invention.

[0058] Operationally, the beam 3 is made through a suitable method for the execution of a support 1 for raised floors. In particular, the method of the invention comprises a step of executing the two longitudinal hollow bodies 4 joined together by the bridge 6. The latter, as mentioned above, is suitably wide.

[0059] According to one aspect of the invention, the method comprises a step of making the through holes 7 on the bridge 6 by shearing which is allowed, precisely, by the spacing between the hollow longitudinal bodies 4.

[0060] Advantageously, the shearing allows a considerable saving of time compared to the techniques for making the holes on the supports of the prior art which, as is known, are carried out by milling.

[0061] Advantageously, this also results in considerable cost savings.

[0062] In light of the foregoing, it is understood that the support for raised floors of the invention achieves all of the intended purposes.

[0063] In particular, the support allows the adjustment of the feet even at a later stage after positioning the beam.

[0064] Moreover, the support of the invention allows a saving of labour times for laying raised floors with respect to the support structures of the prior art.

[0065] As a result, it allows for cost savings for the end user.

[0066] Moreover, the support for raised floors of the invention is obtained by rapid and inexpensive realization techniques compared to what happens for the supports of the prior art.

[0067] The invention is susceptible to numerous modifications and variations, all falling within the appended claims. Moreover, all the details may furthermore be replaced by other technically equivalent elements, and the materials may be different depending on needs, without departing from the protection scope of the invention defined by the appended claims.

Claims

45. 1. A support for raised floors comprising two or more feet (2) on which at least one beam (3) having at least two hollow longitudinal bodies (4) joined together by at least one bridge (6) rests, said two or more feet (2) each having an regulation portion (2a) accessible to a user,
said beam (3) being characterized by comprising a plurality of through holes (7) made on said at least one bridge (6) so as to allow the passage of at least one instrument for the adjustment of said two or more feet (2), at least one of said through holes (7) having longitudinal and transverse extensions at least comparable with the respective extensions of said regulation portion (2a).

2. Support for raised floors according to claim 1, **characterized in that** said at least two hollow longitudinal bodies (4) have a distance between them such as to allow the execution of said through holes (7) by shearing said at least one bridge (6). 5

3. Support for raised floors according to claim 1 or 2, **characterized in that** at least one of said through holes (7) has a predominantly longitudinal development. 10

4. Support for raised floors according to one or more of the preceding claims, **characterized by** comprising at least one anti-slip and/or anti-noise element (8) stably coupled to at least a first portion (9) of said beam (3) opposite to a second portion (10) of said beam (3) intended to be arranged resting on said two or more feet (2). 15

5. Support for raised floors according to claim 4, **characterized by** comprising at least one recess (11) obtained on said at least one first portion (9) of said beam (3) and at least one shank emerging from said at least one anti-slip and/or anti-noise element (8) and shaped so as to be received in said at least one recess (11). 20 25

6. Support for raised floors according to claim 4, **characterized by** comprising a plurality of retaining holes obtained on said at least a first portion of said beam and a plurality of corresponding pegs emerging from said at least one anti-slip and/or anti-noise element and shaped in such a way as to be received each in a respective one of said retaining holes. 30 35

7. Support for raised floors according to any one of claims 4 to 6, **characterized in that** said at least one anti-slip and/or anti-noise element (8) comprises a plurality of grooves made on a surface of said at least one anti-slip and/or anti-noise element (8) capable of receiving elements of a raised floor restingly. 40

8. A method for the execution of a support for raised floors according to one or more of the preceding claims, said method being **characterized by** comprising the following steps: 45

- executing said at least two hollow longitudinal bodies (4) joined together by said at least one bridge (6); 50
- making said through holes (7) on said at least one bridge (6) by shearing.

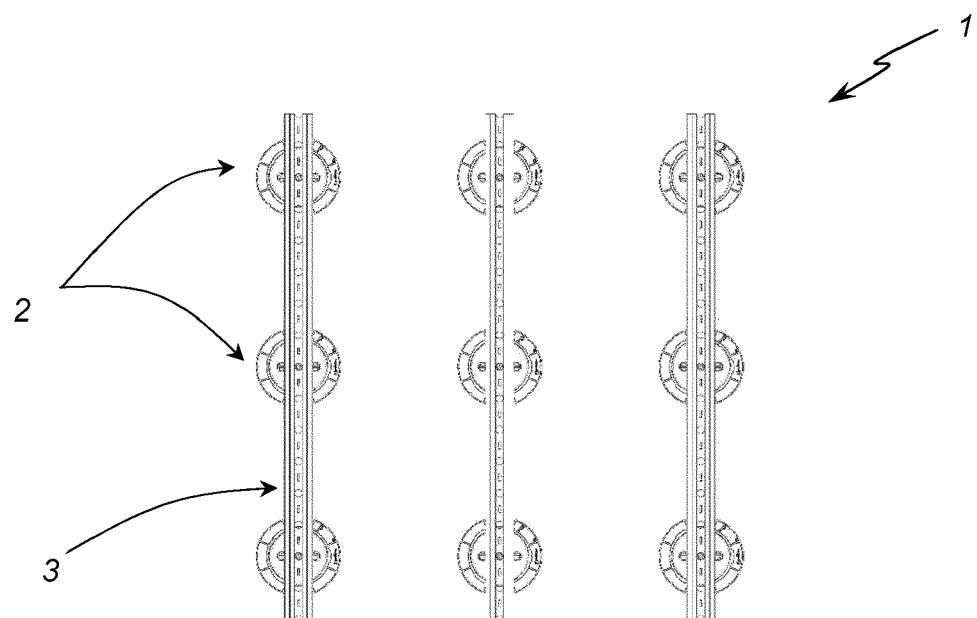


FIG. 1

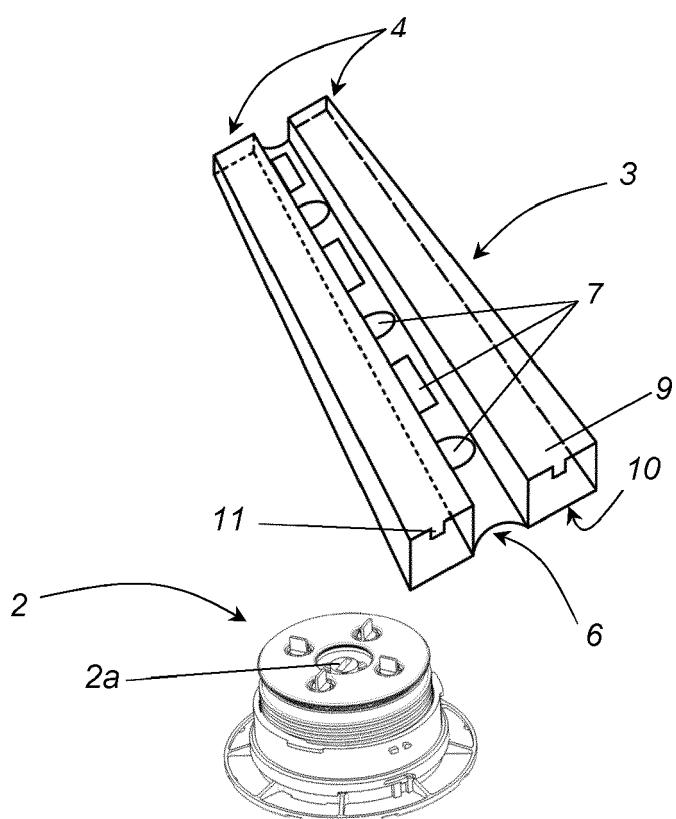


FIG. 2



EUROPEAN SEARCH REPORT

Application Number

EP 23 15 5794

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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)						
10	A IT 2020 0000 0523 A1 (ETERNO IVICA SRL [IT]) 14 July 2021 (2021-07-14) * figures 1 to 6 and relating description * * page 14, line 8 - page 15, line 7 * -----	1-8	INV. E04F15/024						
15	A KR 200 389 801 Y1 (UNKNOWN) 14 July 2005 (2005-07-14) * figures 3, 6, 7 and relating description * -----	1-8							
20	A DE 91 01 717 U1 (RETHEL, BRIGITTE) 19 December 1991 (1991-12-19) * the whole document * -----	1-8							
25									
30			TECHNICAL FIELDS SEARCHED (IPC)						
35			E04F						
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45									
50	The present search report has been drawn up for all claims								
55	<table border="1"> <tr> <td>Place of search</td> <td>Date of completion of the search</td> <td>Examiner</td> </tr> <tr> <td>Munich</td> <td>31 May 2023</td> <td>WARTHMÜLLER, Almut</td> </tr> </table>			Place of search	Date of completion of the search	Examiner	Munich	31 May 2023	WARTHMÜLLER, Almut
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EP 23 15 5794

5 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.

31-05-2023

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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15	KR 200389801	Y1	14-07-2005	NONE
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