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(54) **ADJUSTABLE FLOOR SUPPORT SYSTEM**

(57) An adjustable floor support system having a set of wooden joists (3) provided with a plurality of through holes (8) and a set of adjustable floor supports including a threaded screw (4) and a screw mount (2) configured to engage the threaded screw. Each joist has indentations aligned with each through hole, and each screw mount has at least one pair of arms extending on either side of the joist, each arm in its distal end provided with

a finger in snap-fit engagement with one of the indentations, so as to secure the screw mount with respect to the joist in the axial direction while allowing a limited axial play. A damping element is sandwiched between the joist and the supporting surface, to allow a dampened compression of the screw mount corresponding to the axial play.

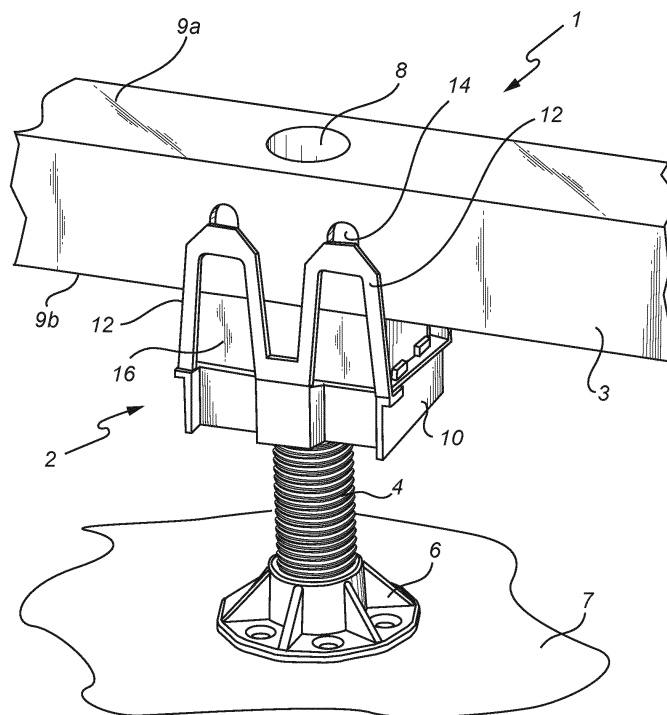


Fig. 1

Description

Field of the invention

[0001] The present invention relates to an adjustable floor support system, comprising a set of wooden joists and a set of adjustable floor supports attached to each joist, wherein each joist is provided with a plurality of through holes extending between first and second opposing sides of the joist, and wherein each adjustable floor supports includes a threaded screw having a foot portion adapted to rest upon a supporting surface, and a screw mount configured to engage the threaded screw, the screw mount being attached to one of the wooden joists, such that an end of the threaded screw is accessible through one of the through holes, thereby allowing adjustment of a relative position between the threaded screw and the screw mount.

Background of the invention

[0002] In construction of buildings, it is sometimes desirable to arrange an interior floors (e.g. wooden floor or tiling) such that a spacing is formed between an the interior floor and an underlying supporting structure (e.g. a concrete structure). Such spacing allows improved ventilation and the possibility of achieving a more horizontally even floor. For this purpose, there exists on the market adjustable floor systems, where floor joists are provided with adjustable supports.

[0003] In the case of multiple story buildings or apartment blocks, such a spacing may further serve to reduce unwanted propagation of vibration and sound. To even further minimize propagation of sound and vibration, an adjustable floor system may be provided with suitable damping between the joist and the supporting structure, thereby more efficiently dissipating mechanical energy.

[0004] One example of an adjustable floor system is shown in WO 97/26424, where adjustable screws are mounted to wooden joists, such that a distance between the joist and the underlying support surface may be adjusted. A floor system like this allows for localized adjustment of height so that any uneven characteristics of the underlying surface does not translate to the floor which is intended for use. The system also includes limited damping, by rubber sealing elements.

[0005] A more effective dampening, suitable for U-section metal joists, is provided by Granab® System 7000. Here, adjustable screws are received in screw mounts, which in turn are attached to the U-section metal joists with damping elements sandwiched therebetween. The metal joist is provided with openings to allow adjustment of the screws.

[0006] In order to provide similar functionality also in wooden joists, the solution disclosed in WO 2021/083520 has been proposed. Here, each screw mount has two parts; a first part is fixed in a hole in the wooden joist, while a second part engages the screw. A damping ele-

ment is arranged between the two parts. In one example, the first part resembles a piece of a U-section metal joist, and the second part resembles the screw mount in Granab® System 7000 mentioned above.

[0007] Although the solution disclosed in WO 2021/083520 is appropriate in many situations, it would be desirable to provide an even simple and cost efficient solution, with fewer components.

General disclosure of the invention

[0008] It is an object of the present invention to provide an adjustable floor support system which is cost efficient and simple to assemble.

[0009] This and other objects is achieved by an adjustable floor support system according to the preamble of claim 1, wherein each joist, on each side bridging the first and second opposing sides, is provided with at least one indentation aligned with each through hole, and wherein each screw mount has a main body with a threaded through hole securing the screw in an axial direction, normal to a supporting surface of the main body, and at least one pair of arms formed on opposite sides of the supporting surface and extending in the axial direction on either side of the joist, each arm in its distal end provided with a finger in snap-fit engagement with one of the indentations, so as to secure the screw mount with respect to the joist in the axial direction while allowing a limited axial play. A damping element is sandwiched between the joist and the supporting surface, to allow a dampened compression of the screw mount corresponding to the axial play.

[0010] With this design, the screw mount comprises only one part, which is attached directly to a wooden joist which has been provided with corresponding indentations. The indentations ensure proper alignment of the floor support with respect to the joist through holes, thereby facilitating the process of mounting the floor supports to the joist.

[0011] The damping element may be formed as one piece with a central through hole to allow passage of the screw. Alternatively, the damping element is formed as two pieces, arranged on opposite sides of the screw.

[0012] The screw mount may have two pairs of arms, i.e. two arms on either side of the joist. By having two pairs of arms, the attachment of the floor support to the joist becomes even more reliable and secure.

Brief description of the drawings

[0013] The present invention will be described in more detail with reference to the appended drawings, showing currently preferred embodiments of the invention.

[0014] Figure 1 shows a perspective view of a wooden joist provided with an adjustable floor support according to an embodiment of the invention.

Figures 2 and 3 show sections of the joist and floor

support in figure 1.

Detailed description of preferred embodiments

[0014] The adjustable floor system 1 in figure 1 includes a screw mount 2, secured to a joist 3, and a threaded screw 4 axially engaged in a hole 5 in the screw mount 2. The screw 4 is provided with a foot portion 6. The foot portion 6 may be releasably attached to the screw 4, or be integrally formed with the screw 4. The foot portion 6 is intended to rest on a supporting surface 7, e.g. a concrete surface.

[0015] The joist 3 is provided with a through hole 8, extending between opposite sides 9a, 9b of the joist 3. The screw mount 2 is arranged such that the head 4a of the screw 4 is accessible through the hole 8. This allows adjustment of the axial position of the screw 4 e.g. by means of a screw driver or an Allen key. By adjusting the axial position of the screw 4, a distance between the joist 3 and the supporting surface 7 may be adjusted.

[0016] The screw mount 2 has a main body 10, with a supporting surface 11 facing the joist 3. The screw mount 2 further has at least one pair of arms, each pair having one arm 12 on each side of the main body 10, extending outside the joist 3. In its distal end, i.e. the end furthest away from the supporting surface 11, each arm 12 is provided with a protruding finger 13, extending into, and engaging, an indentation 14 in the joist 3. The joist 3 thus has a pair of indentations 14 for each pair of arms 12.

[0017] The indentations are formed on the sides 15a, 15b of the joist 3 bridging the opposite sides 9a, 9b, and aligned with respect to the through hole 8. By "aligned" means positioned symmetrically with respect to the hole 8. If there is only one pair of arms (and one pair of indentations) there will be one indentation on each side of the hole 8, positioned at the same longitudinal position along the joist as the hole 8. If there are two pairs of arms (as in the illustrated example), there will be two indentations on each side of the joist 3, positioned symmetrically along the longitudinal direction on either side of the hole 8.

[0018] The indentations further have such a shape that they allow a small axial play of the fingers 13, i.e. the fingers 13 are free to move a limited amount in the axial direction, resulting in relative movement between the screw mount and the joist.

[0019] A dampening element 16 is sandwiched between the underside 9b of the joist 3 and the supporting surface 11 of the screw mount 2. The damping element is formed such that it allows passage of the screw 4. In the illustrated example, the damping element 16 is formed in one piece, with a through hole for the screw 4. In another example (not shown) the damping element can be formed as two pieces, arranged on opposite sides of the screw 4.

[0020] When the joist is subject to a load such that the dampening element 16 is compressed, the joist 3 is allowed to move with respect to the screw mount, thanks to the axial play of the fingers 13 in the indentations 14.

[0021] The person skilled in the art realizes that the present invention by no means is limited to the preferred embodiments described above. On the contrary, many modifications and variations are possible within the scope of the appended claims. For example, the shape and form of the indentations and arms may be different, as long as the intended snap-fit engagement is achieved. In principle, the indentations may equally well be protrusions.

Claims

1. An adjustable floor support system (1) comprising:

a set of wooden joists (3) and a set of adjustable floor supports attached to each joist, wherein each joist (3) is provided with a plurality of through holes (8) extending between first and second opposing sides (9a, 9b) of the joist, and wherein each adjustable floor support includes:

- a threaded screw (4) having a foot portion (6) adapted to rest upon a supporting surface (7),
- a screw mount (2) configured to engage the threaded screw, the screw mount being attached to one of the wooden joists (3), such that an end (4a) of the threaded screw (4) is accessible through one of the through holes (8), thereby allowing adjustment of a relative position between the threaded screw (4) and the screw mount (2),

characterized in that:

each joist (3), on each side (15a, 15b) bridging the first and second opposing sides (9a, 9b), is provided with at least one indentation aligned with each through hole, each screw mount (2) has a main body (10) with a threaded through hole (12) securing the screw in an axial direction, normal to a supporting surface (11) of the main body, and at least one pair of arms (12) formed on opposite sides of the supporting surface and extending in the axial direction on either side of the joist, each arm in its distal end provided with a finger (13) in snap-fit engagement with one of the indentations, so as to secure the screw mount (2) with respect to the joist (3) in the axial direction while allowing a limited axial play, and wherein a damping element (16) is sandwiched between the joist (3) and the supporting surface (11), to allow a dampened compression of the screw mount corresponding to the axial play.

2. The adjustable floor support system of claim 1, wherein the damping element (16) is formed as one piece with a central through hole to allow passage of the screw.

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3. The adjustable floor support system of claim 1, wherein the damping element (16) is formed as two pieces, arranged on opposite sides of the screw.

4. The adjustable floor support system of any one of the preceding claims, wherein the screw mount (2) has two pairs of arms.

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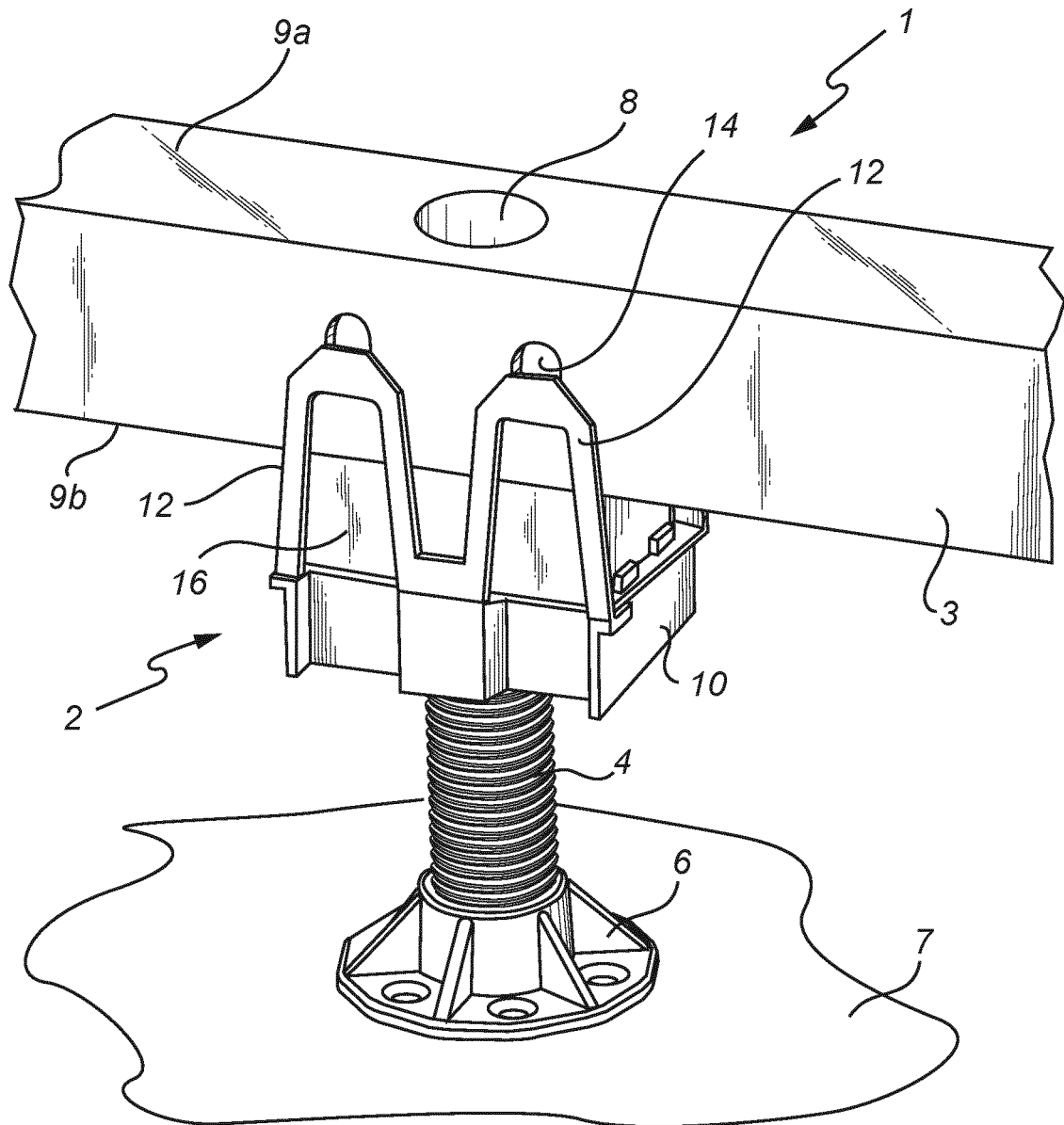
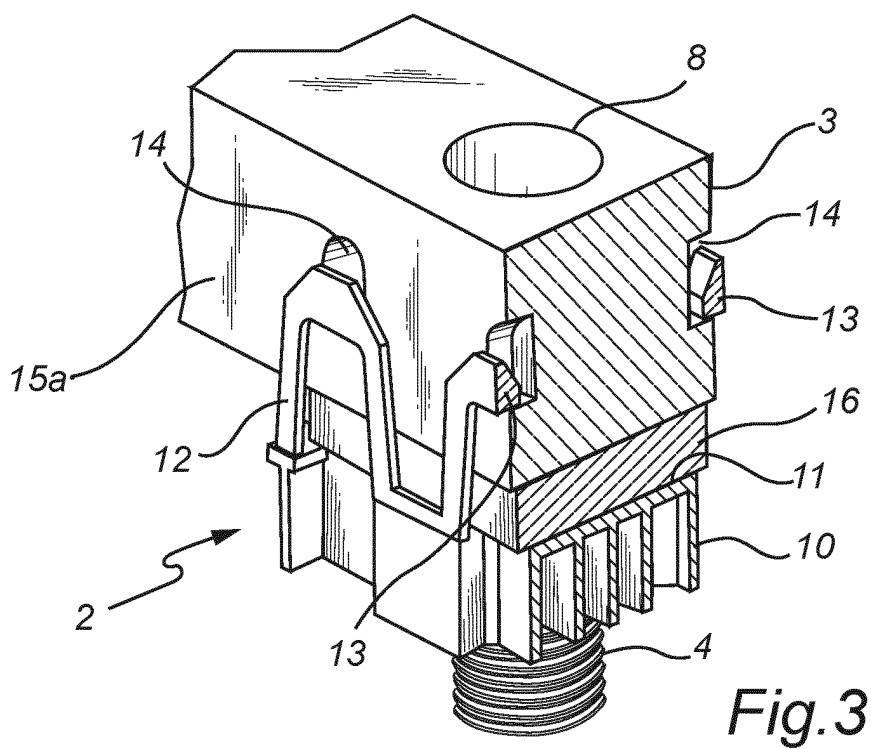
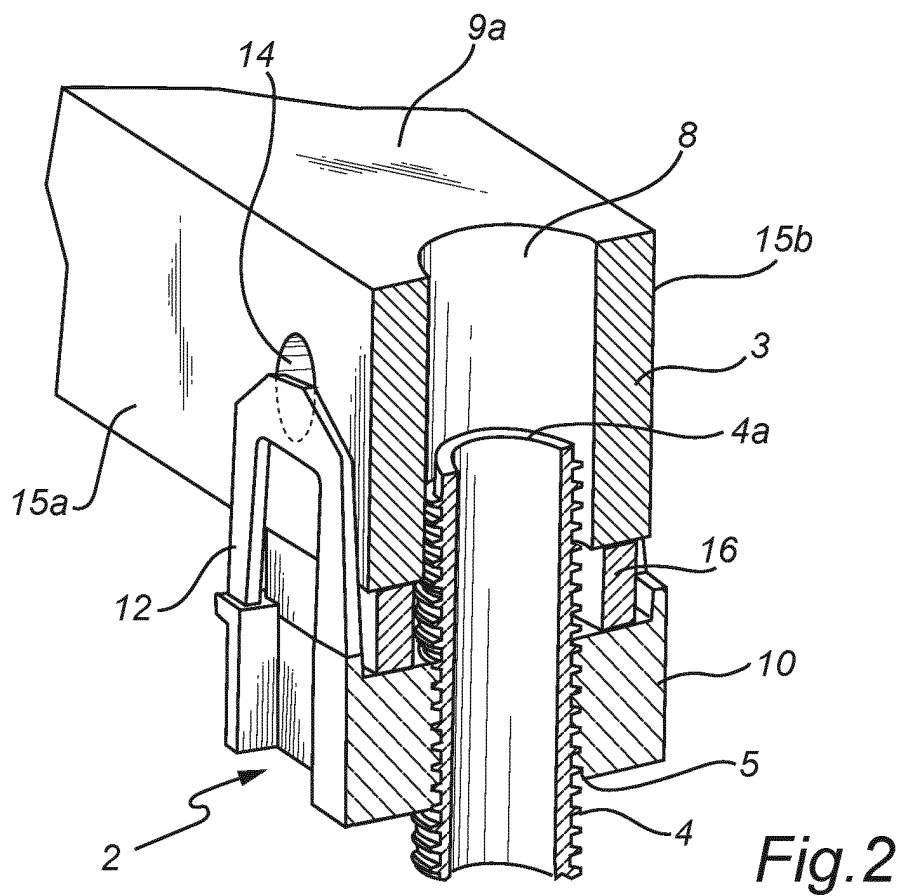


Fig.1





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			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 3 January 2022	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			

**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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