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(54) **Attachment device with acoustic isolation for use in building constructions**

Befestigungsvorrichtung mit akustischer Isolierung zur Verwendung im Hochbau

Dispositif de fixation doté d'isolation acoustique pour le bâtiment

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Description

Field of the invention

[0001] The present invention is related to the field of construction, in particular to the acoustic isolation of the connection between members of a double-leaf structure, said members being a supporting structure and a wall or panel facing said structure (e.g. an exterior wall, interior wall or ceiling panel), and to an attachment device for realising such a connection.

State of the art

[0002] The problem of acoustics in buildings, caused by the transmission of vibrations in structures are well known in the field of construction. In particular, an internal or external wall or panel located in front of, i.e. facing a supporting structure, must be attached, for reasons of stability, to the supporting structure by attachment devices. These devices are however liable to transmit vibrations from the facing wall or panel to the structure, and thereby transmit noise to the rest of the building. A known solution to this problem is the use of special devices comprising a less rigid damping material, which is arranged to prohibit the transmission of vibration, whilst the device maintains its function of taking up tensile and compressive forces, to thereby ensure the stability of the wall.

[0003] A first known device is shown in figure 1. It concerns an attachment device divided in two parts 2 and 3, wherein the continuity is ensured by a damping material 1, in which the outer ends of the two parts are embedded. Functionally, this device is quite effective, but it is difficult and expensive to realise the connection between the two parts and the damping material during production of the device.

[0004] One way of obviating the abovenamed problem is to realise the device by an assembling technique. Figure 2 shows an example. The damping material is divided in two parts 1a and 1b, which are mechanically attached to a support bracket 4, by the hook 5, which is equipped with assembling means 6. Even though this device is less complex, installation of this device is time consuming and difficult.

[0005] A further known device is disclosed in EP1 548 201 A2.

Aims of the invention

[0006] The present invention aims to provide an attachment device which is simple, while offering the required characteristics in terms of mechanical and acoustical performance, without necessitating a complex installation, and without representing an important production cost.

Summary of the invention

[0007] The invention is related to devices as described in the appended claims. Various embodiments are described in the dependent claims. The characteristic elements of the invention are the following : it concerns an attachment device equipped with an acoustic isolation, arranged to interconnect the members of a double leaf structure in a building, said members being a supporting structure and a wall or panel facing said supporting structure, the attachment device being composed of several elements which are assembled by fitting the elements together, and without using further mechanical connection means. The invention is not limited by any form or shape of the constituting elements of the attachment device.

[0008] In particular, the device comprises three elements, the first being attachable to the supporting structure, the second being a damping element, and the third being attachable to the facing wall or panel. The damping element is formed of a resilient material, and is arranged to connect the other two elements without said two elements making direct contact, so that an acoustic and vibrational decoupling is obtained. In each embodiment, the first element is shaped so as to form an area for receiving the second element by inserting the second element into said area, without necessitating further mechanical attachment means. Likewise, the damping element comprises a receiving area (preferably a hole), for receiving the third element without the help of further mechanical attachment means.

Brief description of the drawings

[0009]

Figures 1 and 2 illustrate attachment devices as known in the art.

Figure 3 illustrates an attachment device according to a first embodiment of the invention.

Figure 4 illustrates an alternative for one particular component of the device of the invention.

Detailed description of the invention

[0010] The attachment device of the invention is realised by three different elements, the first one being a support bracket which is to be fixed to the supporting structure, the second one being an element formed of a damping material, and the third one being preferably a hook or flat profile, to be fixed to the facing wall or panel. The basic characteristic of the invention lies in the fact of being able to realise the assembled device with the help of constituting elements, especially designed to be assembled without difficulty, by simply fitting elements together. This characteristic allows a considerable cost reduction.

[0011] Figure 3 shows the constituting elements of a

device according to the invention. The first element (bracket 10) is provided with an opening 11, so that the damping element 12 may be fitted into said opening (from the left as seen on the drawing). The bracket 10 is arranged to be fixed to the supporting structure and automatically blocks the damping element. Bracket 10 is preferably produced as a plate-shaped element, which is bent at an essentially right angle, to obtain a flat sub-part 13 and an upright sub-part 14. A hole 15 may be provided in the upright sub-part, for attaching the element to the supporting structure. The central opening 11 comprises a first portion 16 situated in the flat subpart 13 and a second portion 17 in the up-right sub-part 14. The width of portion 16 is smaller than the width of portion 17. The damping element 12 is provided as a cylindrical element with a central section 18 having a reduced diameter. The difference in width between the opening portions 16 and 17 in bracket 10 is such that the damping element may be inserted through the up-right opening portion 17, so that the section 18 with reduced diameter fits over the sides of the flat opening portion 16, and is thereby secured. No other mechanical connection is required between the bracket 10 and the damping element 12. The damping element 12 is provided with a central hole 19, which is arranged to receive an outer end 21 of the hook element 20 without a direct contact occurring between the hook 20 and the bracket 10. The second outer end 22 of the hook 20 is fixed to, e.g. embedded in, the facing wall (not shown). Alternatively, as illustrated in Figure 4, the third element of the attachment device may be a flat profile 37, provided with a pin 38, which can be fitted into the hole 19 of the damping element 12.

Claims

1. Attachment device for interconnecting a supporting structure of a building and a wall or panel facing said supporting structure, said device comprising three elements :

   - a first element (10) arranged to be fixed to said supporting structure,
   - a second element (12) formed of a vibration damping material, the second element being attached to the first element,
   - a third element (20) arranged to be fixed to said facing wall or panel, the third element being attached to the second element,
   - the second element being arranged so that no direct contact occurs between the first and third element,

   wherein the first element is provided with an area (11) for receiving therein the second element by insertion of the second element into said area, without using any further mechanical attachment means to secure the second element to the first element, and wherein the second element is provided with an area (19) for receiving therein the third element, without making use of any further mechanical attachment means to secure the third element to the second element, **characterized in that** the first element is a bracket (10) formed of a plate-shaped material bent at an essentially right angle to form a flat part (13) and an upright part (14), and having a central opening (11), a first portion (16) of said opening being situated in the flat part (13), and a second portion (17) of said opening being situated in the upright part (14), the width of the first portion (16) being smaller than the width of the second portion (17), and wherein the second element (12) is provided with a central section (18) with reduced diameter, said central section being arranged to fit between the edges of the first portion (16) of the opening (11), and wherein the second element (12) further comprises a hole (19) for receiving the third element (20) therein.

2. Attachment device according to claim 1, wherein said second element (12) is a cylinder-shaped element and wherein said hole (19) is placed centrally along the axis of said cylinder-shaped element.

3. Attachment device according to claim 1 or 2, wherein said third element is a hook-shaped element (20), wherein a first end (21) of said hook-shaped element is inserted in said receiving area of the second element.

4. Attachment device according to claim 1 or 2, wherein said third element is a flat profile (37), comprising a pin (38), said pin being inserted in the receiving area of the second element.

Patentansprüche

1. Befestigungsvorrichtung zum Verbinden einer Tragestruktur eines Gebäudes und einer Wand oder eines Paneels, die der Tragestruktur gegenüber liegt, wobei die Vorrichtung drei Elemente aufweist:

   - ein erstes Element (10), das angeordnet ist, um an der Tragestruktur befestigt zu sein,
   - ein zweites Element (12), das aus einem Vibrationsdämpfungsmaterial gebildet ist, wobei das zweite Element auf das erste Element befestigt ist,
   - ein drittes Element (20), das angeordnet ist, um auf der/dem gegenüber liegenden Wand oder Paneel befestigt zu sein, wobei das dritte Element auf das zweite Element befestigt ist,
   - wobei das zweite Element derart angeordnet ist, dass es zu keinem direkten Kontakt zwischen dem ersten und dem dritten Element kommt,

wobei das erste Element mit einem Bereich (11) ausgestattet ist, um darin das zweite Element durch Einfügen des zweiten Elements in den Bereich aufzunehmen, ohne weitere mechanische Befestigungsmittel zu verwenden, um das zweite Element an das erste Element zu sichern, und wobei das zweite Element mit einem Bereich (19) ausgestattet ist, um darin das dritte Element aufzunehmen, ohne weitere mechanische Befestigungsmittel zu verwenden, um das dritte Element an das zweite Element zu sichern, **dadurch gekennzeichnet, dass** das erste Element eine Klammer (10) ist, die aus einem plattenförmigen Material gebildet ist, das in einem im Wesentlichen rechten Winkel gebogen ist, um einen flachen Teil (13) und einen aufrechten Teil (14) zu bilden, und umfassend eine zentrale Öffnung (11), wobei sich ein erster Abschnitt (16) der Öffnung im flachen Teil (13) befindet und sich ein zweiter Abschnitt (17) der Öffnung im aufrechten Teil (14) befindet, wobei die Breite des ersten Abschnitts (16) kleiner ist als die Breite des zweiten Abschnitts (17) ist, und wobei das zweite Element (12) mit einer zentralen Sektion (18) mit reduziertem Durchmesser ausgestattet ist, wobei die zentrale Sektion angeordnet ist, um zwischen die Kanten des ersten Abschnitts (16) der Öffnung (11) zu passen, und wobei das zweite Element (12) weiter ein Loch (19) umfasst, um das dritte Element (20) darin aufzunehmen.

2. Befestigungsvorrichtung nach Anspruch 1, wobei das zweite Element (12) ein zylinderförmiges Element ist, und wobei das Loch (19) zentral entlang der Achse des zylinderförmigen Elements angeordnet ist.

3. Befestigungsvorrichtung nach Anspruch 1 oder 2, wobei das dritte Element ein hakenförmiges Element (20) ist, wobei ein erstes Ende (21) des hakenförmigen Elements in den Aufnahmebereich des zweiten Elements eingeführt ist.

4. Befestigungsvorrichtung nach Anspruch 1 oder 2, wobei das dritte Element ein flaches Profil (37) ist, umfassend einen Stift (38), wobei der Stift in den Aufnahmebereich des zweiten Elements eingeführt ist.

Revendications

1. Dispositif de fixation destiné à relier une structure de support d'un immeuble et un mur ou un panneau qui fait face à ladite structure de support, ledit dispositif comprenant trois éléments :

- un premier élément (10) prévu pour être fixé sur ladite structure de support,
- un second élément (12) formé d'un matériau amortissant les vibrations, le second élément étant relié au premier élément,
- un troisième élément (20) prévu pour être fixé sur ledit mur ou ledit panneau qui fait face, le troisième élément étant relié au second élément,
- le second élément étant prévu de sorte qu'aucun contact direct n'ait lieu entre le premier et le troisième éléments,

dans lequel le premier élément est muni d'une zone (11) destinée à recevoir le second élément par l'insertion du second élément dans ladite zone, sans utiliser aucun autre moyen de fixation mécanique pour fixer le second élément sur le premier élément, et dans lequel le second élément est muni d'une zone (19) destinée à recevoir le troisième élément, sans utiliser aucun autre moyen de fixation mécanique pour fixer le troisième élément sur le second élément, **caractérisé en ce que** le premier élément est une patte de fixation (10) formée d'un matériau en forme de plaque courbé à un angle essentiellement droit afin de former une partie plate (13) et une partie verticale (14), et qui possède une ouverture centrale (11), une première partie (16) de ladite ouverture étant située dans la partie plate (13), et une seconde partie (17) de ladite ouverture étant située dans la partie verticale (14), la largeur de la première partie (16) étant inférieure à la largeur de la seconde partie (17), et dans lequel le second élément (12) est muni d'une section centrale (18) à diamètre réduit, ladite section centrale étant agencée pour se placer entre les bords de la première partie (16) de l'ouverture (11), et dans lequel le second élément (12) comprend en outre un orifice (19) destiné à recevoir le troisième élément (20) .

2. Dispositif de fixation selon la revendication 1, dans lequel ledit second élément (12) est un élément en forme de cylindre, et dans lequel ledit orifice (19) est placé centralement le long de l'axe dudit élément en forme de cylindre.

3. Dispositif de fixation selon la revendication 1 ou 2, dans lequel ledit troisième élément est un élément en forme de crochet (20), dans lequel une première extrémité (21) dudit élément en forme de crochet est insérée dans ladite zone de réception du second élément.

4. Dispositif de fixation selon la revendication 1 ou 2, dans lequel ledit troisième élément est un profilé plat (37), qui comprend une broche (38), ladite broche étant insérée dans la zone de réception du second élément.

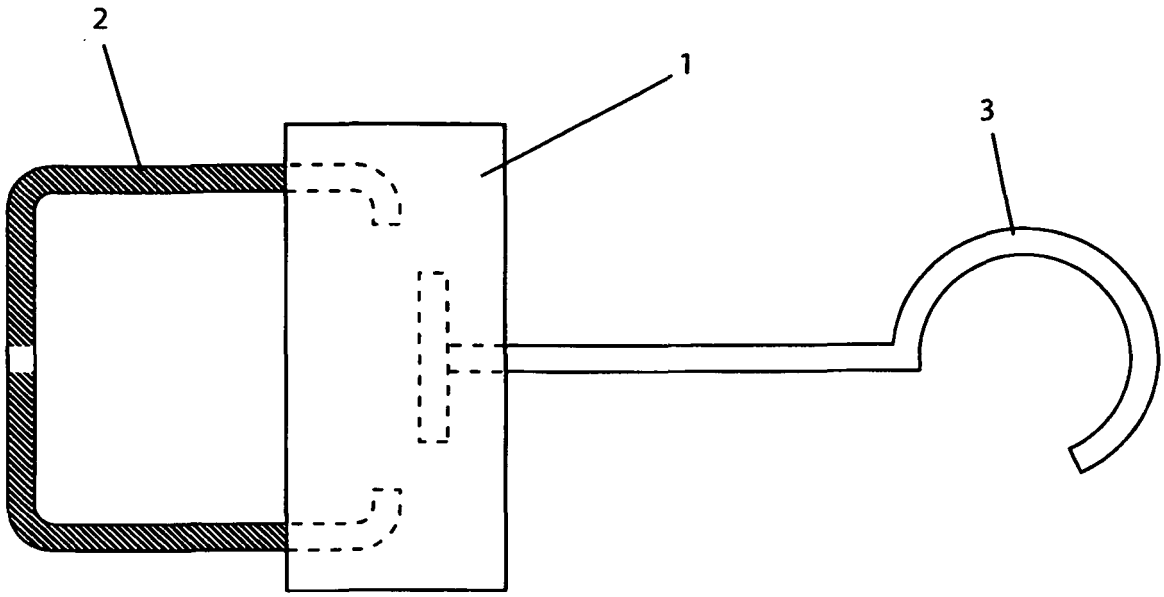

Fig. 1

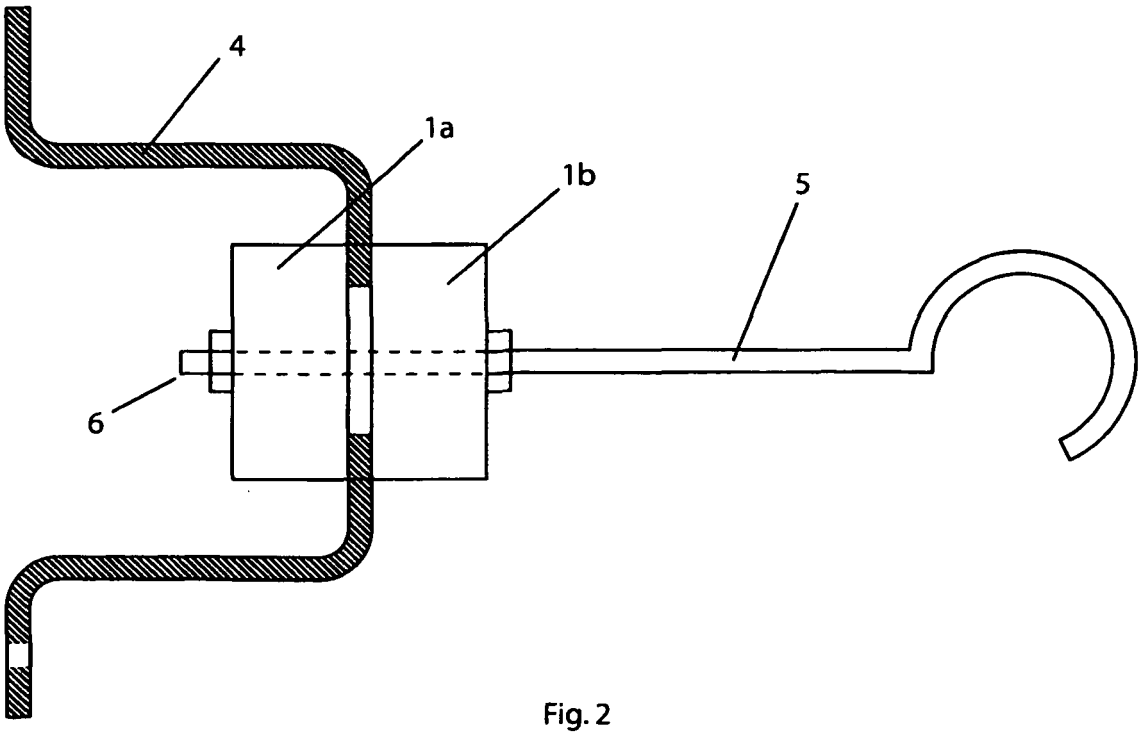

Fig. 2

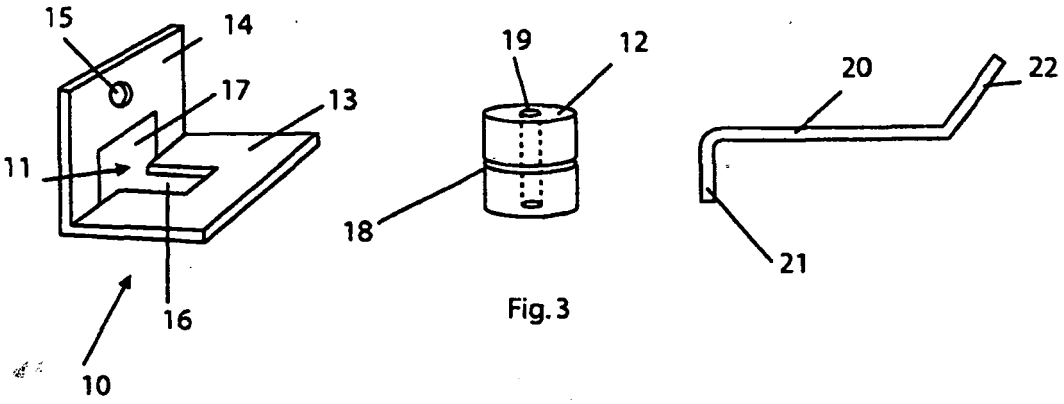

Fig. 3

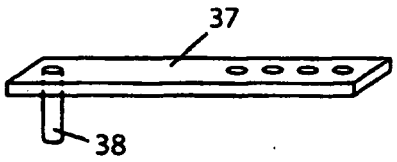

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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