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(54) **A device for reducing movements of a roof underlay of a roof structure**

Vorrichtung zur Verringerung der Bewegungen von einer Dachunterspannbahn der Dachstruktur

Dispositif pour réduire les mouvements d'une membrane de sous-toiture d'une structure de toit

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Description**FIELD OF THE INVENTION**

[0001] The invention relates to elements for use in the building industry, particularly components used for reducing movements of a roof underlay in a roof structure.

BACKGROUND OF THE INVENTION

[0002] Roof structures often have structural elements such as rafters of wood as the carrying structural elements onto which battens are fixed that carry the outer roof. A roof underlay is often arranged between the rafters and the battens. The roof underlay serves as a vapour barrier and a wind stopper. In case the roof underlay is a flexible sheet material wind may cause the roof underlay to move and flutter which may generate noise and eventually also wear or tear the roof underlay. For that purpose motion damping devices are attached to battens or other structural elements of the roof structure and in contact with the roof underlay so as to reduce movements of the roof underlay. Such known devices are attached to a batten either using a nail or a piece of string or wire such as a metal wire. This is time consuming. WO 95/21974 discloses an example of such a vibration damper for a roof underlay that is attached by means of a nail.

SUMMARY OF THE INVENTION

[0003] The invention provides a device for reducing movements of a roof underlay of a roof structure which device has attachment means for attaching the device to a batten of the roof structure, a contacting element for contacting the roof underlay, and an interconnecting element interconnecting the attachment means and the contacting element. According to the invention the attachment means comprises resilient members dimensioned to span the batten, and snapping ridges on the resilient members for interacting with edges of the batten so as to allow the device to be attached to the batten by a snapping action of the resilient members and the snapping ridges. The user can simply snap the device onto the batten which will only take a few seconds and no tools are needed. If desirable the device may be removed or moved also without the use of tools.

[0004] Preferably, the interconnecting element is resilient whereby the device can adapt to the distance between the batten and the roof underlay and exert a mild force on the roof underlay. Advantageously the length of the interconnecting element can be adjusted according to the distance between the batten and the roofing underlay, preferably by having one or more sections that can be broken off by the user to make is shorter.

[0005] In order to prevent water to accumulate between the attachment means and the batten, the surfaces of the attachment means facing the batten have protrusions for contacting the batten so as to provide a space

between the attachment means and the batten.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006]

Figure 1 is a schematical section through a roof structure seen in the direction of the arrows I-I in figure 2;

Figure 2 is a schematical section through the roof structure in figure 1 seen in the direction of the arrows II-II in figure 1;

Figure 3A shows a device according to the invention attached to a batten;

Figure 3B shows a section through the device in figure 3A taken along the line 3B-3B in figure 3A;

Figure 3C shows three sections through the device in figures 3A and 3B taken along the lines A-A, B-B and C-C, respectively in figure 3B; and

Figures 4, 5, 6 and 7 show alternative embodiments of the device of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0007] In figures 1 and 2 is shown an exemplary roof structure. Rafters 10 support the remaining roof structure including a roof underlay 11, counter battens or spacers 12, battens 13 and an outer roof 14 e.g. roof tiles. The elements of the roof structure are shown slightly exploded but will be fixed to each other to form a stable roof structure. EP 1209298 B1 discloses a laminate, especially for use as roof underlay. In figure 1 a device 20 of the invention is attached to the batten 13 by means of attachment means 21. A footplate 22 is in contact with the roof underlay 11 and a spring element 23 interconnects the attachment means 21 and the footplate 22 and the device will reduce movements of the roof underlay 11.

[0008] Figures 3A and 3B show a device 30 in an embodiment of the invention. The device 30 has attachment means 31a and 31b each having a protruding snapping ridge or hook 31a', 31b' at its end by means of which it is attached to a batten 13 of a roof structure e.g. the roof structure in figures 1 and 2. A footplate 32 is in contact with a roof underlay 11, and an interconnecting element 33 interconnects the attachment means 31 and the footplate 32. The interconnecting element 33 is S-shaped and resilient. The entire device 30 is moulded in one piece of a mouldable material, preferably a durable and resilient thermoplastic material such as thermoplastic vulcanisates (TPV), propylene based elastomers and thermoplastic elastomers such as SEBS, and thermoplastic TPU. The material may also contain polypropylene.

[0009] When the device 30 is to be attached to the batten 13 the user may first place one of the attachment

means 31a or 31b with the corresponding protruding snapping ridge 31a' or 31b' on the batten 13 so that the snapping ridge grips over an edge of the batten. Then the user will flex the attachment means 31a, 31b apart so as to snap the other one of the protruding snapping ridge 31a' or 31b' grips over the diagonally opposite edge of the batten. The surfaces the attachment means 31a and 31b facing the batten 13 have protruding ribs or beads 34 that provide a space between the attachment means and the batten which ensures that air has access to the space to prevent accumulation of moisture between the attachment means and the batten.

[0010] When attached to a batten as shown in figures 1, 3A and 3B the footplate 22, 32 is preferably in contact with the roof underlay 11 which in itself reduces any transverse movements of the roof underlay, i.e. movements transverse to the plane of the roof underlay. The interconnecting element 23, 33 is preferably resilient whereby some movement of the roof underlay is possible and dynamic forces between the footplate and the roof underlay are reduced. This reduces the risk of tearing the roof underlay.

[0011] Alternative embodiments are shown in figures 4 to 7 when attached to a batten like in figure 3B. The attachment means for attaching the devices 40, 50, 60 and 70 to a batten 13 corresponds to what is described above in connection with figures 3A and 3B. In figures 4 to 7 the interconnecting element has different configurations that allow its properties to be varied and optimised for the purpose. Thus e.g. the device can be manufactured with different length and dynamic properties such as resilience and stroke length. In each of the embodiments in figures 4 to 7 the interconnecting element has three footplates 42a-c, 52a-c, 62a-c and 72a-c, respectively at different distances from the batten. If a shortening of the interconnecting element is desired due to the actual distance between the batten and the roof underlay, one or two of the lower footplates can be broken off. For this purpose there is a weakening of the material in the form of a notch or indentation that allows a footplate and its associated connector to be broken off leaving the remaining footplate without protruding edges that might otherwise damage the roof underlay.

Claims

1. A device (20, 30, 40, 50, 60, 70) for reducing movements of a roof underlay (11) of a roof structure, the device (20,30,40,50,60,70) comprising
 - attachment means (31) for attaching the device (20,30,40,50,60,70) to a batten (13) of the roof structure;
 - a contacting element (32) for contacting the roof underlay (11); and
 - an interconnecting element (33) interconnecting the attachment means (31) and the contact-

ing element (32);

characterized in that the attachment means (31) comprises resilient members (31a, 31b) dimensioned to span the batten (13), and snapping ridges (31a', 31b') on the resilient members (31a, 31b) for interacting with edges of the batten (13) so as to allow the device (20,30,40,50,60,70) to be attached to the batten (13) by a snapping action of the resilient members (31a, 31b) and the snapping ridges (31a', 31b').

2. A device (20,30,40,50,60,70) according to claim 1 wherein the interconnecting element (33) is resilient.
3. A device (20,30,40,50,60,70) according to any one of the preceding claims wherein the interconnecting element (33) has a length that can be adjusted according to the distance between the batten (13) and the roofing underlay (11).
4. A device (20,30,40,50,60,70) according to claim 3 wherein the interconnecting element (33) has a weakening allowing a portion (42a, 42b, 52a, 52b, 62a, 62b, 72a, 72b) thereof to be broken off.
5. A device (20,30,40,50,60,70) according to any one of the preceding claims wherein surfaces of the attachment means (31a, 31b) facing the batten (13) have protrusions (34) for contacting the batten (13) so as to provide a space between the attachment means (31a, 31b) and the batten (13).
6. A device (20,30,40,50,60,70) according to any one of the preceding claims being of a mouldable material and moulded in one piece.

Patentansprüche

1. Vorrichtung (20, 30, 40, 50, 60, 70) zum Senken der Bewegungen einer Unterdeckbahn (11) einer Dachkonstruktion, wobei die Vorrichtung (20, 30, 40, 50, 60, 70) umfasst
 - Befestigungsmittel (31) zum Befestigen der Vorrichtung (20, 30, 40, 50, 60, 70) an einer Latte (13) der Dachkonstruktion;
 - ein Berührungselement (32) zum Berühren der Unterdeckbahn (11); und
 - ein Verbindungselement (33) zum Verbinden des Befestigungsmittels (31) und des Berührungselements (32);

dadurch gekennzeichnet, dass das Befestigungsmittel (31) elastische Teile (31a, 31b) umfasst, die derart bemessen sind, dass sie die Latte (13) überspannen, und Einschnapprippen (31a', 31b') an den

elastischen Teilen (31a, 31b) zum Wechselwirken mit den Kanten der Latte (13), um so das Befestigen der Vorrichtung (20, 30, 40, 50, 60, 70) an der Latte (13) durch eine Einschnappwirkung der elastischen Teile (31a, 31b) und der Einschnapprippen (31a', 31b') zu ermöglichen.

2. Vorrichtung (20, 30, 40, 50, 60, 70) nach Anspruch 1, wobei das Verbindungselement (33) elastisch ist. 5
3. Vorrichtung (20, 30, 40, 50, 60, 70) nach einem der vorhergehenden Ansprüche, wobei das Verbindungselement (33) eine Länge hat, die entsprechend dem Abstand zwischen der Latte (13) und der Unterdeckbahn (11) einstellbar ist. 10
4. Vorrichtung (20, 30, 40, 50, 60, 70) nach Anspruch 3, wobei das Verbindungselement (33) eine Schwächung hat, die das Abbrechen eines Abschnitts (42a, 42b, 52a, 52b, 62a, 62b, 72a, 72b) davon ermöglicht. 15
5. Vorrichtung (20, 30, 40, 50, 60, 70) nach einem der vorhergehenden Ansprüche, wobei die Flächen des Befestigungsmittels (31a, 31b) gegenüber der Latte (13) Vorsprünge (34) zum Berühren der Latte (13) aufweisen, um so einen Raum zwischen dem Befestigungsmittel (31a, 31b) und der Latte (13) bereitzustellen. 20
6. Vorrichtung (20, 30, 40, 50, 60, 70) nach einem der vorhergehenden Ansprüche aus einem formbaren Material und einstückig geformt. 25

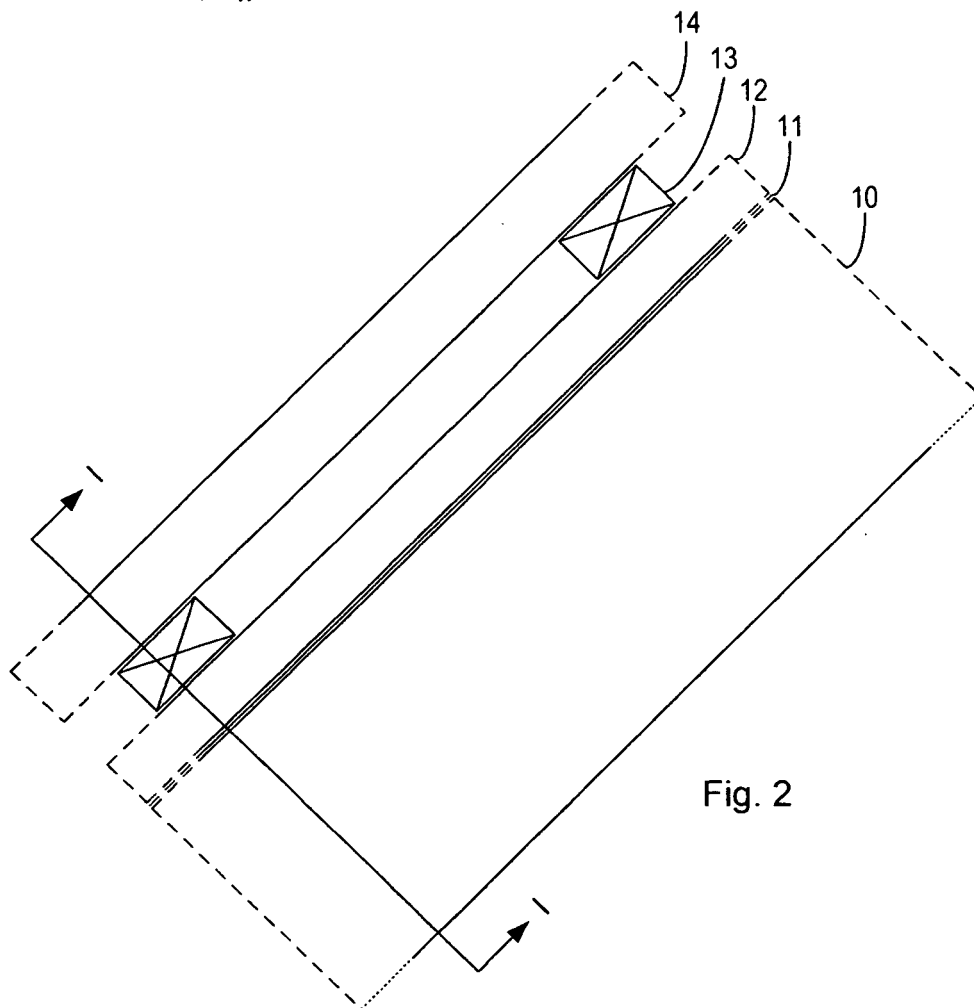
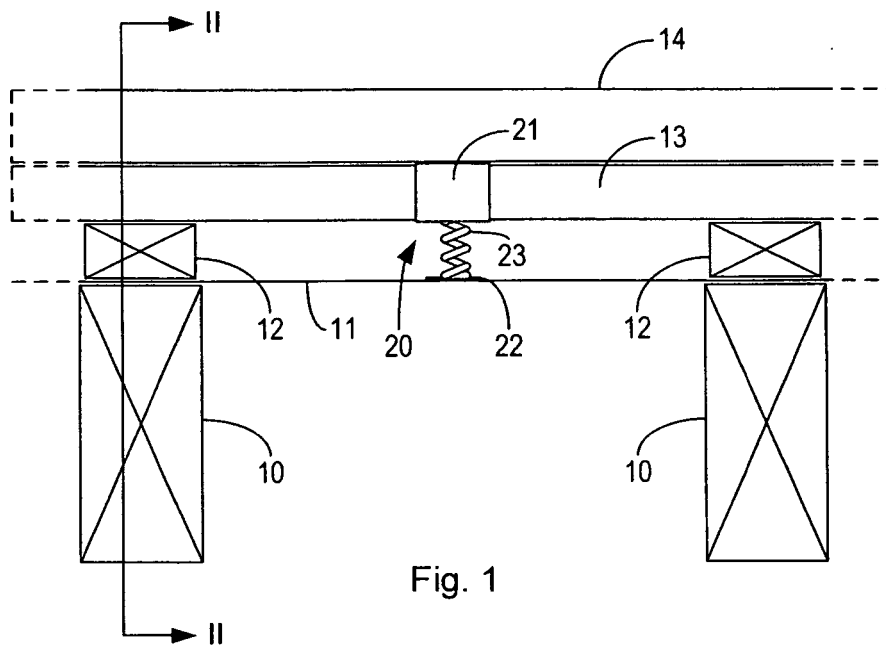
Revendications 35

1. Dispositif (20, 30, 40, 50, 60, 70) destiné à réduire les mouvements d'une sous-couche de toiture (11) d'une structure de toiture, le dispositif (20, 30, 40, 50, 60, 70) comprenant 40
 - un moyen de fixation (31) pour fixer le dispositif (20, 30, 40, 50, 60, 70) sur une latte (13) de la structure de toiture ;
 - un élément de contact (32) pour assurer un contact avec la sous-couche de toiture (11) ; et
 - un élément de raccordement (33) raccordant le moyen de fixation (31) à l'élément de contact (32) ; 45

caractérisé en ce que le moyen de fixation (31) comprend des éléments résilients (31a, 31b) dimensionnés pour enjamber la latte (13), et des arêtes à enclenchement (31a', 31b') situées sur les éléments résilients (31a, 31b) pour interagir avec les bords de la latte (13) de manière à permettre la fixation du dispositif (20, 30, 40, 50, 60, 70) sur la latte (13) par enclenchement des éléments résilients (31a, 31b) 50

et des arêtes à enclenchement (31a', 31b').

2. Dispositif (20, 30, 40, 50, 60, 70) selon la revendication 1 dans lequel l'élément de raccordement (33) est résilient.
3. Dispositif (20, 30, 40, 50, 60, 70) selon l'une quelconque des revendications précédentes dans lequel l'élément de raccordement (33) possède une longueur pouvant être ajustée selon la distance entre la latte (13) et la sous-couche de toiture (11).
4. Dispositif (20, 30, 40, 50, 60, 70) selon la revendication 3 dans lequel l'élément de raccordement (33) présente une faiblesse permettant de rompre une portion (42a, 42b, 52a, 52b, 62a, 62b, 72a, 72b) de celui-ci.
5. Dispositif (20, 30, 40, 50, 60, 70) selon l'une quelconque des revendications précédentes dans lequel des surfaces du moyen de fixation (31a, 31b) situées face à la latte (13) présentent des protubérances (34) pour entrer en contact avec la latte (13) de manière à former un espace entre le moyen de fixation (31a, 31b) et la latte (13).
6. Dispositif (20, 30, 40, 50, 60, 70) selon l'une quelconque des revendications précédentes qui est constitué d'un matériau moulable et moulé en une pièce.



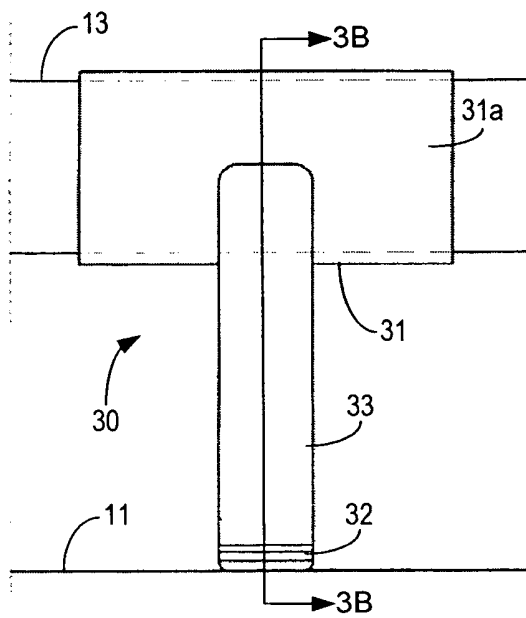


Fig. 3A

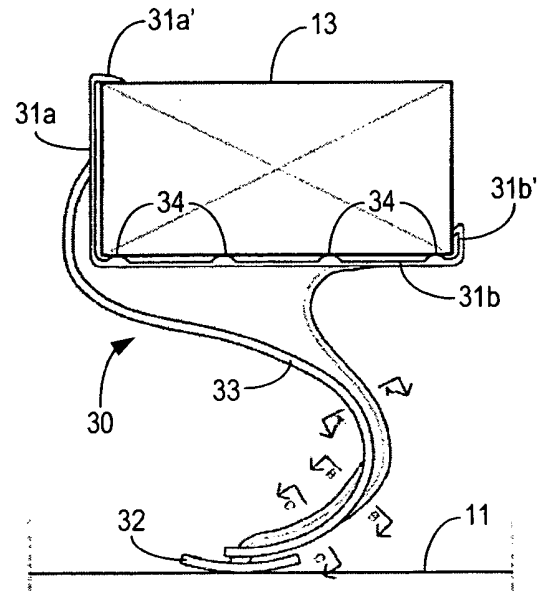


Fig. 3B

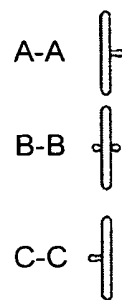


Fig. 3C

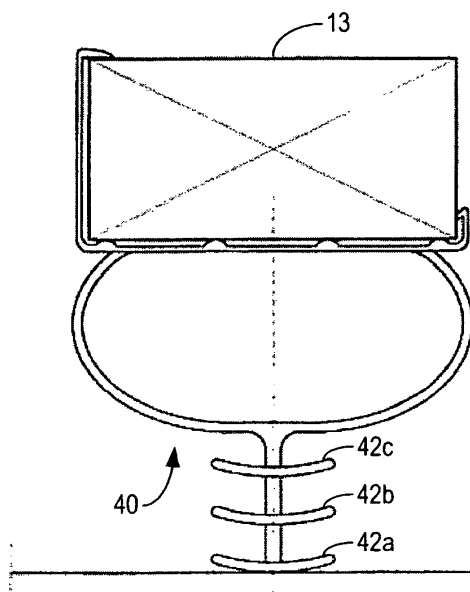


Fig. 4

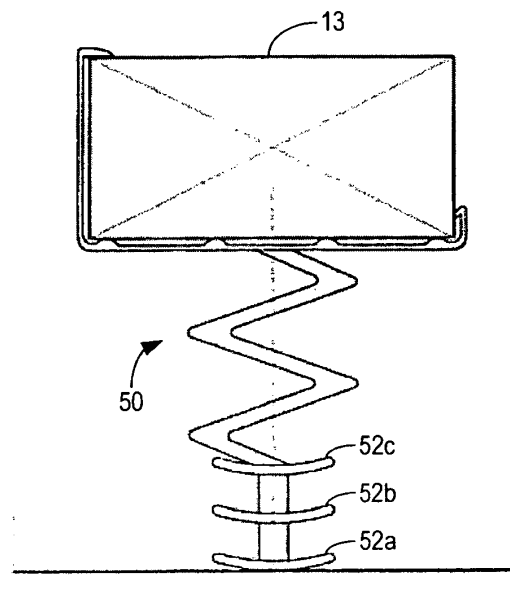


Fig. 5

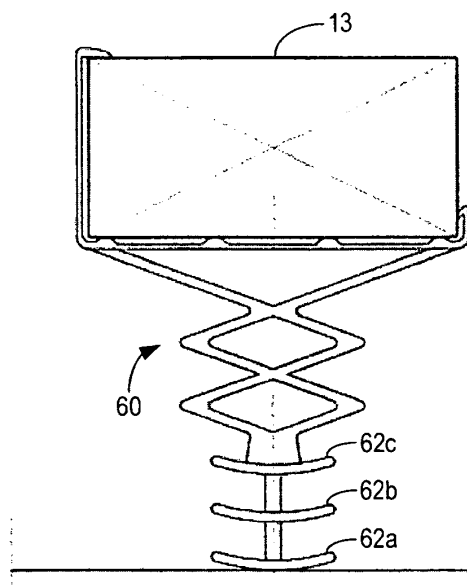


Fig. 6

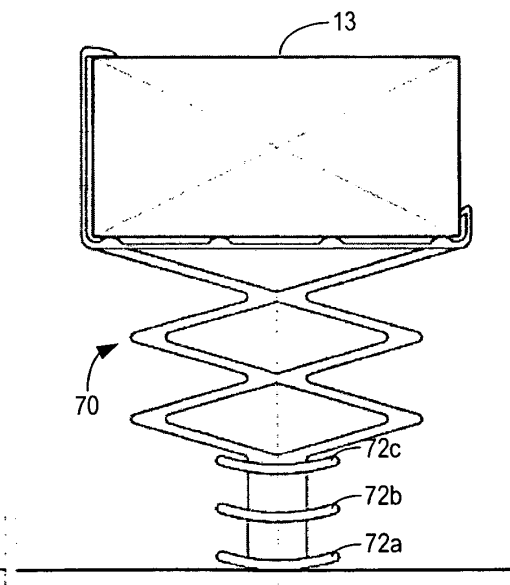


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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