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⑤④ CLAMPING RING.

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CH-A- 461 391

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NO-B- 133 832
SE-B- 306 062
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EP 0 383 884 B1

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Description

The present invention relates to a clamping ring for clamping covering materials, preferably floor covering materials against the inner side of a draining gutter, preferably a draining gutter adapted to be mounted in a floor, whereby the clamping ring is split and compressible in radial direction against the action of a spring force which is provided, after mounting the clamping ring in the draining gutter, to dilate said clamping ring in radial direction until it engages the covering material and clamps said material against the inner side of the draining gutter.

Clamping rings of the above type are already known from e.g. patent specification CH-A-461 391. The spring force in this clamping ring is generated while the clamping ring is made of a resilient material permitting it, after radial compression, to dilate or expand with sufficient force for efficient clamping of the covering material against the inner side of the gutter. Since it is the material in the clamping ring which is utilized to generate the spring force, it is necessary to design the clamping ring with varying width if it shall provide the same pressure all around and simultaneously maintain its circular shape.

However, a problem arise if the clamping ring is given varying width, because the tensional force of its narrower portions diminish more rapidly than its thicker portions. This is of course inappropriate since it is important that the clamping ring has the same clamping or tensional force all around also after a few years of use.

A clamping ring with a "resilient slit" is previously known from Patent specification SE-B-306 062 (fig. 8), but this clamping ring is not split but has a folded portion which possibly might serve as a type of clamping portion. Since this portion however, is not as high as the remaining parts of the ring and forms only a very small section of the ring, said ring is either hard to tighten or does not provide sufficient tensional force.

The object of the present invention is to eliminate the problems at clamping rings of the prior art type and provide a clamping ring which is easy to stretch, which provides sufficient tensional force within the required interval for clamping either thin or thick floor covering materials, which excludes the risks for too powerful a dilatation and which ensures as good a sealing around the entire periphery thereof. This is arrived at while the abovementioned clamping ring has been given the characterizing features of subsequent claim 1.

The invention will be described in more detail below with reference to the accompanying drawings, in which

figure 1 is a perspective view of a part of a clamping ring of the invention disposed in the inlet portion of a draining gutter, whereby some portions

of the clamping ring are cut away;

figure 2 is similar to figure 1, but with the clamping ring uncut;

figure 3 is a side view of the clamping ring of figure 1;

figure 4 is a plan view of a portion of the clamping ring of figure 1 in radially compressed condition; figure 5 is similar to figure 4 but with the clamping ring stretched;

figure 6 is a side view of the clamping ring of figure 1 before bringing together its end portions;

figure 7 is a plan view, partly in section, of a portion of an alternatively designed clamping ring;

figure 8 illustrates a portion of the clamping ring of figure 7 seen from the centre of said ring;

figure 9 is a section through the clamping ring of figure 7 when disposed in a drainage gutter; and

figure 10 finally, is a plan view of a portion of a second alternatively designed clamping ring.

The clamping rings 1, 2 and 3 illustrated in the drawings are adapted to be used for clamping a covering material, preferably a floor covering material 4 against the inner side 5 of a drainage gutter, preferably a drainage gutter 6 to be mounted in a floor. The floor covering material 4 is folded down into the inlet portion of the drainage gutter and the purpose with the clamping of the covering material 4 is to prevent damages by water penetrating under the covering material.

The clamping ring 1, 2 or 3 shown, is split at one point and compressible against the action of a spring force which is adapted, after mounting the clamping ring in the drainage gutter 6, to dilate said clamping ring in radial direction until it engages the floor covering material 4 and clamps it against the inner side 5.

In order for the clamping ring 1, 2 or 3 to exert a suitable spring force which is maintained for a long time without being so strong that there is a risk of damage when handling the clamping ring, and which is also able to clamp the floor covering material 4 even if it shrinks when loaded for a time and even if the clamping ring is made of such a plastic material that shrinks after a certain time, the spring force is generated by a spring means, preferably a helical spring 7, which is mounted between two end portions 8, 9 of the clamping ring. This helical spring 7 is stretchable by pressing the end portions 8, 9 peripherically (arrows A in fig. 4) towards each other.

In order for the clamping ring 1, 2 or 3 to engage the floor covering material 4 around its entire periphery, the end portions 8, 9 are designed such that they together form an unbroken outer periphery at the parting area 10 of the clamping ring.

In order to ensure that the end portions 8, 9 are not brought apart so far that the helical spring 7 falls out of its position therebetween, said end portions are provided with lock surfaces 11, 12 which are adapted to engage each other and thereby prevent further

separation.

The helical spring 7 is preferably guided along a part of its length by engaging holes 13, 14 in the end portions 8, 9. The holes 13, 14 extend a distance into the end portions 8, 9 and run therealong in peripheral direction.

The helical spring 7 extends through a space 15 between the end portions 8, 9, which space is closed at least at the upper side 16 of the clamping ring 1, 2 or 3 and at the inner side 17 of said ring in order to prevent impurities from penetrating into said space and counteract the function of the helical spring or give rise to other problems.

The helical spring 7 is preferably made of spring steel and its outer diameter preferably exceeds half the width of the clamping ring 1, 2 or 3. Furthermore, the outer diameter of the helical spring 7 is equivalent to six times its size of wire. A helical spring sized in this manner has been shown to be especially advantageous regarding sufficient tensional force and the required springing distance.

The helical spring 7 is also dimensioned such that it generates sufficient tensional force to efficiently clamp covering material 4 with a thickness of 1,5 - 2,5 mm against the inner side 5 of the draining gutter 6.

The end portions 8, 9 of the clamping ring 1, 2 or 3 preferably include peripherically directed guide portions 18, 19 which are designed to guide each other during compression or dilatation of the clamping ring.

In the clamping ring 1 according to figs. 1-6, the guide portions 18, 19 extend peripherically and one guide portion 19 has a substantially L-shaped profile in order to define an inner shank 20 and an upper shank 21. The inner shank 20 cooperates with an inner guide surface 22 on the other guide portion 18 and defines an inner wall which shields the space 15 from the area 23 radially, within the clamping ring 1. The upper shank 21 cooperates with an upper guide surface 24 on the other guide portion 18 and defines a roof for said space 15.

Down below, the guide portion 18 preferably has a groove 25 and the guide portion 19 a tongue inserted into said groove in order to ensure that the guide portions 18, 19 maintain their cooperation with each other.

In the upper guide surface 24 there may be provided a peripheral longitudinal groove 27 with an end edge that defines the lock surface 12 of one end portion 8, while the lock surface 11 of the other end portion 9 is defined by a claw 28 extending into the groove 27.

The outer side 29 of the clamping ring 1 has an engaging point 30 extending peripherically around the clamping ring and extending unbroken also at the end portions 8, 9 and through which said outer side engages the floor covering material 4.

The holes 13, 14 for the helical spring 7 may be open towards the outer side 29 of the clamping ring 1

such that said spring may reach out through these openings 31, 32. Hereby, the helical spring 7 may directly engage the floor covering material 4 and affect it directly.

The clamping ring 1, 2 or 3 is preferably made such that it - before the helical spring 7 is mounted and the end portions brought in contact with each other - has an original shape wherein the end portions overlap each other to such an extent (measure C in fig. 6) that the clamping ring in its original shape has an outer diameter D lying between the diameter of the draining gutter 6 within the floor covering material 4 if said gutter has a covering material with a certain thickness, and the diameter of the draining gutter within the floor covering material if the gutter is provided with a covering material with a lesser thickness.

The clamping ring 2 shown in figures 7-9 differs from the clamping ring 1 only in a somewhat different shape of the end portions 8, 9. At the clamping ring 2, one of the end portions 9 has a substantially U-shaped profile, while the other end portion 8 has a planar profile and is adapted to engage the firstmentioned end portion 9.

In the clamping ring 3 of figure 10, one of the end portions 9 also has a U-shaped profile, while the other end portion 8 has a planar profile. This clamping ring 3 differs from the clamping ring 2 in that e.g. only the end portion 9 has a peripherically extending hole 14 into which the helical spring 7 protrudes. The other end of the helical spring 7 is here engaging the end surface 33 of the other end portion 8 instead of protruding into a hole also in this end portion 8.

The clamping ring 1, 2 or 3 is mounted preferably by inserting it into the draining gutter 6 in an inclined position until the portion transverse to the end portions 8, 9 engages the floor covering material 4 while one hold on to the end portions 8, 9 above the draining gutter. In this way, one can lean against the draining gutter 6 when one presses the end portions 8, 9 towards each other and thus stretches the helical spring 7. The end portions 8, 9 are pressed towards each other until the outer diameter of the clamping ring 1, 2 or 3 is less than the inner diameter of the draining gutter 6, within the floor covering material 4, whereafter the rest of the clamping ring 1 is brought to the intended position in the draining gutter. Thereafter, the clamping ring 1, 2 or 3 is released, whereby the helical spring 7 will expand said ring until it engages the floor covering material 4 around the entire periphery thereof. The mounting of the clamping ring 1, 2 or 3 is thus finished and it will maintain its pressure against the floor covering material 4 even if it should shrink since then the helical spring 7 will expand or dilate the clamping ring correspondingly.

The invention is not limited to the embodiments described above and shown in the drawings, but may vary within the scope of the following claims. As examples of further, not described alternatives, one

can mention that the clamping ring can be made of plastic or another suitable material and that is preferably is resilient; the clamping ring may be split at more than one location; the helical spring may be of another type of spring means mounted between the end portions; the spring means can be made of spring steel which is preferably stainless or of another suitable material; more than one spring means may be mounted between the end portions; the lock surfaces may be formed in another way than shown; the draining gutter may be adapted to be mounted in floors and include water traps or not, or may be another type of draining gutter and the covering material may be of another type than floor covering material, e.g. roof covering material if the draining gutter is adapted for roofs.

Claims

1. Clamping ring for clamping covering materials, preferably floor covering materials (4) against the inner side (5) of a draining gutter, preferably a draining gutter (6) adapted to be mounted in a floor, whereby the clamping ring (1, 2 or 3) is split and compressible in radial direction against the action of a spring force which is provided, after mounting the clamping ring (1, 2 or 3) in the draining gutter (6), to dilate said clamping ring (1, 2 or 3) in radial direction until it engages the covering material (4) and clamps said material against the inner side (5) of the draining gutter (6), **characterized** in that the spring force dilating or expanding the clamping ring (1, 2 or 3) is generated by at least one spring means (7), preferably a helical spring which is mounted between two end portions (8, 9) of the clamping ring (1, 2 or 3), whereby said spring means (7) is compressible by pressing the end portions (8, 9) towards each other and whereby one end portion (9) has a tongue and the other end portion (8) a groove (25) for receiving said tongue.

2. Clamping ring according to claim 1, **characterized** in that one end portion (9) has a claw (28) and the other end portion (8) a groove (27) for receiving the claw (28), whereby said groove (27) has a lock surface (12) for the claw (28) for preventing the tongue of said one end portion (9) from leaving the groove (25) of the other end portion (8).

3. Clamping ring according to claim 1 or 2, **characterized** in that the end portions (8 and 9) are designed such that they together form an unbroken outer periphery at the parting area (10) of the clamping ring (1, 2 or 3).

4. Clamping ring according to any preceding claim, **characterized** in that at least one of end portions (8, 9) of the clamping ring (1, 2 or 3) has peripherically longitudinal holes (13, 14 and 14 respectively) for said spring means (7).

Patentansprüche

1. Klemmring zum festklemmen von Belägen, insbesondere fussbodenbelägen (4) gegen die Innenseite (5) eines Ablaufs, vorzugsweise eines zur Montage in einem fussboden vorgesehenen Ablaufs (6), wobei der Klemmring (1, 2 oder 3) gespaltet und in radialer Richtung entgegen der Wirkung einer Federkraft kompressibel ist, welche Federkraft nach der Montage des Klemmrings (1, 2 oder 3) im Ablauf (6) zum Ausweiten des Klemmrings (1, 2 oder 3) in radialer Richtung dient, bis der Ring in den Belag (4) eingreift und ihn gegen die Innenseite (5) des Ablaufs (6) festklemmt, dadurch **gekennzeichnet**, dass die den Klemmring (1, 2 oder 3) ausweitende oder expandierende Federkraft durch zumindest ein Federmittel (7), vorzugsweise eine Schraubenfeder, erzeugt wird, die zwischen zwei Endteilen (8, 9) des Klemmrings (1, 2 oder 3) angebracht ist, wobei das Federmittel (7) dadurch kompressibel ist, dass die Endteile (8, 9) aufeinander zu gepresst werden, und wobei der eine Endteil (9) eine Zunge und der andere Endteil (8) eine Nut (25) zur Aufnahme der Zunge aufweist.

2. Klemmring nach Anspruch 1, dadurch **gekennzeichnet**, dass der eine Endteil (9) eine Klaue (28) und der andere Endteil (8) eine Nut (27) zur Aufnahme der Klaue (28) aufweist, wobei die Nut (27) eine Sperrfläche (12) für die Klaue (28) besitzt, um zu verhindern dass die Zunge des einen Endteils (9) aus der Nut (25) des anderen Endteils (8) heraustritt.

3. Klemmring nach Anspruch 1 oder 2, dadurch **gekennzeichnet**, dass die Endteile (8 und 9) derart ausgebildet sind, dass sie zusammen einen ununterbrochenen Aussenumfang im Teilungsbereich (10) des Klemmrings (1, 2 oder 3) bilden.

4. Klemmring nach irgendeinem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, dass zumindest einer der Endteile (8, 9) des Klemmrings (1, 2 oder 3) in der Umfangsrichtung sich erstreckende Langlöcher (13, 14 bzw. 14) für das genannte Federmittel (7) aufweist.

Revendications

1. Anneau de serrage conçu pour serrer des couvertures, surtout des couvertures de plancher (4) contre le côté intérieur (5) d'une décharge, de préférence un écoulement (6) monté dans un plancher, ledit anneau de serrage (1, 2 ou 3) étant fendu et compressible en sens radial contre un effet de ressort qui, après le montage de l'anneau de serrage (1, 2 ou 3) dans l'écoulement (6), est destiné à étendre ledit anneau de serrage (1, 2 ou 3) en sens radial jusqu'à ce que l'anneau soit en prise avec la couverture (4) serrant ladite couverture contre le côté intérieur (5) de l'écoulement (6), **caractérisé** en ce que l'effet de ressort étendant et élargissant l'anneau de serrage (1, 2

ou 3) est produit par au moins un organe de ressort (7), de préférence un ressort de boudin monté entre les deux bouts (8, 9) de l'anneau de serrage (1, 2 ou 3), ledit organe de ressort (7) étant compressible en serrant les deux bouts (8, 9) l'un vers l'autre, et l'un (9) des deux bouts (8, 9) étant muni d'une langue et l'autre bout (8) d'une rainure (25) recevant ladite langue.

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2. Anneau de serrage selon la revendication 1, caractérisé en ce que l'un (9) des deux bouts (8, 9) présente une griffe (28) et l'autre bout (8) une rainure (27) destinée à recevoir la griffe (28), ladite rainure (27) comportant une surface d'arrêt (12) pour la griffe (28) afin d'empêcher que la langue de l'un bout (9) quitte la rainure (25) de l'autre bout (8).

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3. Anneau de serrage selon la revendication 1 ou 2, caractérisé en ce que les deux bouts (8 et 9) sont conçus de telle manière qu'ils forment ensemble une circonférence extérieure continue dans la zone de fendage (10) de l'anneau de serrage (1, 2 ou 3).

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4. Anneau de serrage selon l'une quelconque des revendications précédentes, caractérisé en ce qu'au moins l'un des deux bouts (8, 9) de l'anneau de serrage (1, 2 ou 3) est muni de trous oblongs (13, 14 respectivement 14) s'étendant en sens circonférentiel pour recevoir ledit moyen de ressort (7).

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