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(54) A SPACER ELEMENT FOR COVERING ELEMENTS

(57) A spacer element (1; 1') for a positioning system (100; 100'; 200) for covering elements (3, 4) comprises a base (5; 5') intended to be made to bear on a fixing adhesive for the covering elements (3, 4) and to receive and support a portion of a rear surface (3b, 4b) of two adjacent covering elements (3, 4), a plate (7; 7') extending transversely along a longitudinal axis (X) of the spacer element (1; 1'), the base (5) being intended to be interposed, in use, between facing edges (3c, 4c) of the two covering elements (3, 4), an intended breaking line (10; 10') being formed between the plate (7) and the base (5), comprising a threaded shaft (8) attached to the plate (7) on the side opposite the base (5), and an insertion aperture (11; 11') formed in the plate (7; 7') and adapted to allow the slidable insertion of a wedge (101).

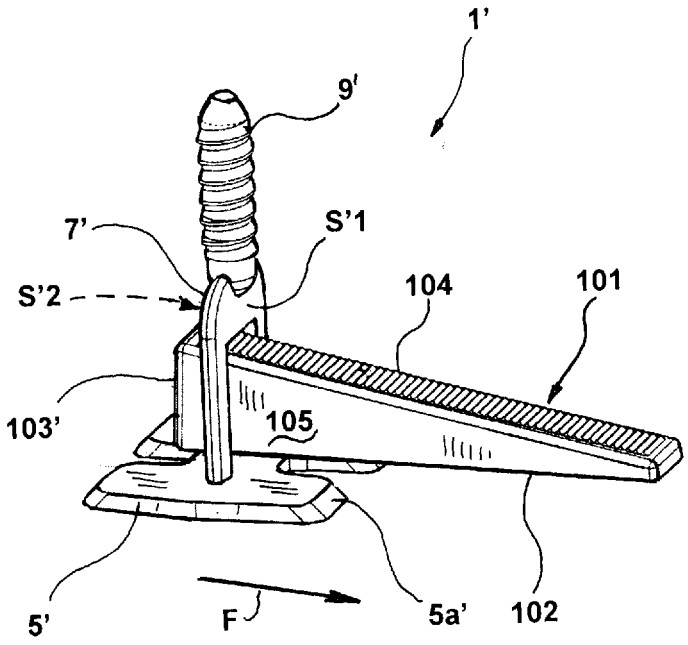

FIG.8

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Description

[0001] The invention concerns a spacer element for covering elements, such as tiles or similar, for floors or walls.

[0002] In particular, the invention concerns a spacer element capable of being inserted between two covering elements to be fitted to form a covering for a floor or a wall.

[0003] The spacer element is suitable to be used with a positioning system for covering elements, in such a way that at least two adjacent covering elements can be aligned with each other and suitably spaced, so as to obtain a floor or wall with regular upper surfaces, i.e. free from steps, and with gaps of a predetermined dimension.

[0004] Usually, in order to fit a floor, a layer of mortar, adhesive or cement is first created on the screed, on to which the fitter subsequently fits the various covering elements.

[0005] In positioning the covering element, the fitter must ensure that said covering element is coplanar with the adjacent element or elements, in order to avoid creating a floor with an irregular surface or steps between two adjacent covering elements.

[0006] The fitter must also pay attention to the dimension of the gaps, i.e. the spacing between two adjacent covering elements, so as to create a floor or wall with gaps of virtually constant dimensions.

[0007] With the aim of helping the fitter and allowing greater precision and speed in the fitting of a floor, certain aligning devices have been developed, such as that described in EP2549030.

[0008] The device described in EP2549030 comprises a spacer element provided with a base intended to support the bases of two adjacent tiles and a stem extending from the base in a direction perpendicular to the same and intended to be positioned between two adjacent tiles. The stem is provided with a threaded shaft and a plate interposed between the base and the threaded shaft and intended to be inserted in use between the facing edges of two adjacent tiles.

[0009] The plate is connected at its opposite longitudinal ends respectively to the base and to the threaded shaft, and is intended to be inserted, in use, between the facing edges of two adjacent tiles.

[0010] Between the base and the plate, i.e. on the opposite side with respect to the threaded shaft, is defined, at the taper of the plate, a weakened area intended to serve as a breaking line for the spacer element.

[0011] The aligning device also comprises a knob having an internally hollow body provided with a threaded hole intended to be screwed on to the threaded shaft and a flange intended to engage, in use, with the upper surfaces of two adjacent tiles in order to level them.

[0012] To fit a floor using the aligning device of EP2549030, the fitter prepares and spreads the mortar or adhesive on the screed, positions a tile on the adhesive, places the base of a spacer element on the adhesive beneath the tile, in such a way that the plate bears against a free edge of the tile. The fitter then fits a second tile on the adhesive in such a way that on its free edge it bears against the free wall of the plate, so that the plate is thus interposed between the two adjacent tiles.

[0013] The fitter then screws the knob on to the threaded shaft, bringing the flange to bear against the upper surface of the two adjacent tiles and, by continuing to screw, subsequently generates a pulling force on the spacer element, in such a way as to progressively grip the two adjacent tiles between the flange of the knob and the base of the spacer.

[0014] Once the gripping is completed, the device is maintained in position for a sufficient time for the setting of the adhesive, after which the fitter unscrews the knob from the threaded shaft, thus separating it from the spacer element, and by oscillating the stem of the spacer element with respect to the base of the same, causes the spacer element to break along the intended breaking line and thus extracts the stem from the gap.

[0015] A drawback of the system described above is that the breaking of the spacer element can be problematic.

[0016] The spacers of EP2549030 require a high degree of moulding precision, especially for the formation of the intended breaking line provided between the taper of the plate and the base.

[0017] There is therefore a considerable risk of producing defective spacer elements, in which the breaking line is too weak and accidental detachments occur or, on the contrary, the intended breaking line is insufficiently weak.

[0018] A further positioning system for covering elements is described in MO2010A000089. This system comprises a spacer element provided with a base intended to support the bases of two adjacent tiles and a pair of uprights extending from the base in a direction perpendicular to the same, suitably spaced from each other and joined, at the end opposite the base, by a cross-piece.

[0019] Between the base and the uprights, i.e. on the side opposite the cross-piece, is defined a weakened area intended to serve as a breaking line for the spacer element.

[0020] The system of MO2010A000089 also comprises a spacer of predetermined thickness intended to be fitted on to the spacer element in such a way as to be interposed between the base and the cross-piece so as to define, together with the uprights and cross-piece of the spacer element, a slot for the insertion of a levelling wedge.

[0021] During fitting, the fitter prepares and spreads the adhesive on the screed, positions a tile on the adhesive, then places the base of a spacer element on the adhesive beneath the tile, in such a way that the uprights are bearing against a free edge of the tile. The fitter then fits a second tile on the adhesive in such a way that on its free edge it is bearing against the free wall of the uprights, so that the uprights are thus interposed between

the two adjacent tiles.

[0022] The fitter then inserts the spacer on to the spacer element and, possibly with the aid of pliers, inserts the levelling wedge inside the slot, causing the wedge to slide in such a way as to progressively increase the longitudinal obstruction of the wedge in the slot until the wedge is fitted into said slot. By continuing to push, the fitter grips the wedge in the slot and subsequently generates a pulling force on the spacer element, in such a way as to grip the two adjacent tiles between the base of the spacer element and the spacer.

[0023] Once the gripping is completed, the device is maintained in position for a sufficient time for the setting of the adhesive, after which the fitter removes the wedge from the cavity and the spacer from the spacer element, and by oscillating the uprights of the spacer element with respect to the base of the same, causes it to break along the intended breaking line.

[0024] A drawback of this system is that it does not allow a precise coupling to be obtained between the wedge and the spacer element.

[0025] In addition, the system of MO2010A000089 requires complicated moulding operations, and its structure entails the production of a high number of defective parts.

[0026] A drawback common to the known positioning systems is that they are not versatile.

[0027] An aim of the invention is to provide a spacer element that makes it possible to overcome the drawbacks mentioned above with reference to the cited known art.

[0028] A further aim is to provide a spacer element that allows floor or wall fitting operations to be carried out more quickly, while also ensuring the creation of a floor with regular upper surfaces, essentially free from steps and with gaps of a determined width between the various adjacent covering elements.

[0029] A further aim is to provide a spacer element whose production process is simple but also precise, so that the number of defective spacer elements produced is minimal.

[0030] A further aim is to provide a spacing element that breaks simply and precisely.

[0031] These and other aims that will become more apparent below are achieved by a spacer element created in accordance with the claims that follow.

[0032] The features and advantages of the invention will become more apparent from the detailed description that follows of some of its preferred forms of implementation, illustrated by way of non-limitative example with reference to the annexed drawings in which:

- Figure 1 is a perspective view of a first embodiment of the spacer element according to the invention;
- Figures 2, 3, 4 and 6 are respectively bottom, side, front and front cross-section perspective views of the spacer element of Figure 1;
- Figure 5 is a perspective view from above of a second embodiment of the spacer element of the invention;
- Figure 7 is a view from below of the spacer element of the invention;
- Figure 8 is a perspective view of a positioning system for covering elements that uses the spacer element of Figure 5;
- Figure 9 is a side view of a positioning system for covering elements that uses the spacer element of Figure 1;
- Figure 10 is a view of a second positioning system for covering elements that uses the spacer element of Figure 1;
- Figure 11 is a view from below of a variant of the base of the spacer element of Figure 5.

[0033] Figures 1-4, 6 and 7 show a first embodiment of the spacer element 1 for covering elements according to the invention, while Figure 5 shows a second embodiment of the spacer element 1' according to the invention. The embodiments of the spacer element 1, 1' shown are similar, and therefore the corresponding parts will be indicated with corresponding numerical references, and for the sake of brevity only one of them will be described.

[0034] Both of the embodiments shown are suitable to be used with positioning systems for covering elements, for example those shown in Figures 8 to 10, for positioning two or more adjacent covering elements in such a way that the respective upper surfaces are essentially coplanar and a floor or wall is created with regular upper surfaces and with gaps of a determined width, as described more fully below.

[0035] Figures 8 and 9 show a first positioning system 100 and 100', comprising a spacer element according to the first or the second embodiment 1, 1' and a levelling wedge 101 intended to be coupled, in use, with the spacer element, as explained more fully below.

[0036] The levelling wedge 101 has the form of a triangular-section prism delimited by a base wall 102 having a length "L" of between 6 mm and 10 mm, preferably approximately 8 mm, a levelling wall 104 arranged obliquely to the base surface 102 at a variable distance from the same in the length "L" of the levelling wedge 101, a pair of side walls 105 arranged orthogonally to the base surface 102 having a variable height in the length "L", and a rear wall 103 having a height "H" considered along the longitudinal axis X of between 10 mm and 25 mm, preferably approximately 15 mm, arranged orthogonally to the base wall 102.

[0037] The base wall 102 is intended to be placed, in use, on the upper surface 3a, 4a of two covering elements 3, 4 to be fitted in order to level the same.

[0038] The height "h" of the levelling wedge 101 varies along the length L and is greatest at the rear wall 103.

[0039] The levelling wall 104 is provided with a plurality of grooves 104a alternated with a plurality of ridges 104b for improving the coupling of the levelling wedge 101 with a spacer element 1 or 1' in order to improve the fitting of the covering elements, as explained more fully below.

Figure 10 shows a second positioning system 200 comprising a spacer element 1 and a fastening knob 201 intended to be screwed, in use, on to the spacer element 1, as explained more fully below. Although not shown in the drawings, the second version of the spacer element may also be used in the positioning system of Figure 10.

[0040] The fastening knob 201 comprises a body essentially frusto-conical in shape, internally hollow and contained by a lateral surface 24 delimited by a first edge 25 and a second edge 26 arranged opposite each other with respect to a longitudinal axis X of the body 22 and respectively delimiting a first base aperture 25a and a second base aperture 26a having a larger cross-section with respect to the first base aperture 5a. The first base aperture 25a has a diameter D1 generally between 25 mm and 35 mm, preferably approximately 28-30 mm, while the second base aperture 26a has a diameter D2 generally between 27 mm and 40 mm, preferably approximately 30-32 mm.

[0041] At the second base aperture 26a is provided a flange 20 extending in a widthways radial direction intended to serve as the supporting base of the fastening device 2 on the upper surface 3a, 4a of the two adjacent covering elements 3, 4 to be fitted, in such a way as to allow the levelling of said covering elements 3, 4. The flange 20 has a width "L1" of between approximately 5 mm and 15 mm, so that the overall diameter "D" of the fastening device 2 at the supporting base is between 35 mm and 60 mm, preferably approximately 50 mm.

[0042] Advantageously, the fastening knob 201 is provided with a plurality of external ribs intended to facilitate the gripping and working of the knob 201.

[0043] Inside the body 22 of the fastening knob 201 is defined a thread 50 that serves as a housing 51 for the threaded shaft 8 for coupling together the spacer element 1 and the fastening knob 201, as explained more fully below.

[0044] In the version shown, the thread 50 is defined by two threaded portions 32, 42 of two separate fastening elements 30, 40, at least one of which is movable in order to open/close the housing 51.

[0045] In a version not shown, guide elements are provided to guide the movable fastening element or elements 30, 40 in order to open/close the housing 51.

[0046] In other versions not shown of the fastening knob 201, the housing 51 has fixed dimensions and is shaped in such a way as to mate in form with the external threading 9 of the threaded shaft 8 for stable fastening of the threaded shaft 8 in the housing 51.

[0047] The first and the second positioning system 100, 200 may be used for positioning a first covering element 3 and a second covering element 4 adjacent to each other in order to create the floor or wall with coplanar upper surfaces.

[0048] Each covering element 3, 4 comprises a respective first surface 3a, 4a intended to serve as the upper surface of the covering to be formed, and an opposing rear surface 3b, 4b which is supported on a layer 80 of cement, mortar or fixing adhesive in order to anchor the covering element 3, 4 to the screed and at least one side edge 3c, 4c.

[0049] The first and the second covering element are positioned with the first or the second positioning system 100 or 200, in such a way that the respective side edges 3c, 4c are at least partially facing each other and the spacer element 1 is interposed between them, as explained more fully below.

[0050] The spacer element 1 comprises a base 5 intended to be made to bear, in use, on the adhesive 80 and to receive and support a portion of the rear surface 3b, 4b of the first and the second covering element 3, 4, and a stem 6 extending from the base 5 in a direction virtually perpendicular to the same along a longitudinal axis X.

[0051] The base 5 is delimited by an upper surface S, from which the plate 7 extends, and an opposing rear surface Sp, intended to be made to bear, in use, on the adhesive 80, and by inclined edges 5a diverging from the upper surface S to the rear surface Sp, intended to improve the adhesion of the base 5 of the spacer element 1 to the adhesive and/or to the covering elements.

[0052] The base 5 of the spacer element 1 has an "H"-shaped planform with two essentially parallel base portions 51, 52 extending along a longitudinal base axis Y of the base 5, joined by a connecting portion 53 arranged orthogonally to the two base portions 51, 52 and extending along the transverse axis Z.

[0053] In a three-dimensional Cartesian coordinate system based on the planes XYZ, the axis X will hereinafter be referred to as the longitudinal axis, the axis Y as the longitudinal base axis, and the axis Z as the transverse axis. The stem 6 of the spacer element 1 comprises a plate 7 intended to be interposed, in use, between the facing side edges 3c, 4c of the first covering element 3 and the second covering element 4, and a threaded shaft 8 extending orthogonally with respect to the base 5, positioned in such a way that the plate 7 is interposed between the base 5 and the threaded shaft 8.

[0054] The plate 7 comprises two opposing lateral surfaces S1, S2 intended to respectively bear against facing side edges 3c, 4c of the first covering element 3 and the second covering element 4, and has a thickness "d" generally between 0.5 mm and 8 mm, preferably between 1 mm and 5 mm.

[0055] The thickness "d" of the plate 7 determines the width of the gaps between the adjacent covering elements 3, 4.

[0056] The threaded shaft 8 is provided with an external threading 9 and is suitable for allowing the coupling of the spacer element 1 to a fastening knob such as that shown in Figure 10, and as explained more fully below. The threaded shaft 8 has an external diameter generally between 6 mm and 10 mm, preferably approximately 8-9 mm; and the external threading 9 has a pitch between 2 mm and 5mm, preferably 3-4 mm. Between the plate 7 and the base 5 of the spacer element 1 is provided an

intended breaking area 10 at which the spacer element 1 is broken in order to allow the separation of the plate 7 from the base 5, as explained more fully below.

[0057] The plate 7 comprises a first and a second upright 12, 13 extending orthogonally to the base 5 along a longitudinal axis X of the spacer element 1, a first cross-piece 14 joining the first and the second upright 12, 13 at the end opposite the base 5 from which the threaded shaft 8 extends, and a second cross-piece 15 associated with the base 5 by the intended breaking area 10.

[0058] The first and the second upright 12, 13 extend orthogonally with respect to the base 5 along the longitudinal axis X and have a constant cross-section along said longitudinal axis X.

[0059] The first and the second upright 12, 13, the first cross-piece 14 and the second cross-piece 15 are arranged in such a way as to define on the plate 7 an aperture 11. In this embodiment, the intended breaking line 10 is defined between the second cross-piece 15 and the upper surface S of the base 5.

[0060] The second cross-piece 15 extends essentially along the transverse axis Z and is therefore essentially parallel to the connecting portion 53 of the base 5 and positioned centrally with respect to the longitudinal base axis Y of the connecting portion 53, while the first and the second upright 12, 13 are arranged at the two base portions 52.

[0061] In the second embodiment, shown in Figure 5, the spacer element 1' is devoid of the second cross-piece, in other words the aperture 11' is defined on the plate 7' by the first and the second upright 12', 13', the first cross-piece 14' and the upper surface S' of the base 5'.

[0062] The first and the second upright 12', 13' are joined to the base 5' respectively at the two base portions 12a', 13a', while in this case the intended breaking line 10' is defined between the base of the uprights 12a', 13a' and the base 5'.

[0063] The aperture 11 or 11' constitutes a lightening element of the spacer element 1 or 1' and also allows the slidable insertion into the spacer element 1 or 1' of a positioning wedge 101, as shown in Figures 6 and 7. The aperture 11 or 11' has an essentially rectangular shape with a height H1, considered along the longitudinal axis X, of between 15 mm and 20 mm, and a width L2, considered along the transverse axis Z, of between 10 mm and 15 mm.

[0064] In one version, the base 5 is provided with weakening elements suitable for favouring the breakage of the spacer element at the intended breaking line 10. In the versions shown, which can be seen in greater detail in Figures 2, 7 and 11, the weakening elements comprise a plurality of recesses 70 defined on the rear surface Sp, Sp' of the base 5, 5'.

[0065] In one version, the base 5 is provided with lightening elements to reduce the consumption of materials for creating the base 5 of the spacer element.

[0066] In the version shown, the recesses of the plurality of recesses 70 also serve as lightening elements.

[0067] The plurality of recesses 70 also allows improved adhesion of the spacer element 1 on the adhesive 80, inasmuch as when the spacer element 1 is positioned on the adhesive 80, the adhesive 80 penetrates into the grooves of the plurality of recesses 70 and, as it hardens, stably anchors the spacer element in the desired position.

[0068] The "H" shape of the base 5 and the shaping of the edges 5a, 5a' allows a further increase in this effect.

[0069] The provision of recesses 70 on the base 5 also makes it possible to facilitate and improve the breakage of the spacer element 1 at the intended breaking area 10, as explained more fully below.

[0070] In the version of Figure 2 and 7, the plurality of recesses 70 comprises a first transverse recess 71 provided at the connecting portion 53 in a central position on the same, considered with respect to the longitudinal axis of base Y, and extending to the base portions 51, 52. Preferably, the transverse recess 71 is provided at the intended breaking area 10 of the spacer element 1, namely of the second cross-piece 15 and/or of the first and the second upright 12, 13; 12', 13'.

[0071] The provision of the transverse recess 71 facilitates the breakage of the spacer element. This recess serves as a weakening element, and it is therefore not necessary to weaken the plate at the intended breaking area.

[0072] The presence of the recesses also facilitates the moulding of the spacer element.

[0073] The recesses also allow the breakage of the spacer element to be made more precise.

[0074] Preferably, the transverse recess 71 has a greater extension along the transverse axis Z with respect to the second cross-piece 15, in such a way that the uprights 12, 13 are arranged at the transverse recess 71. This arrangement makes it possible to further improve the detachment of the intended breaking area 10.

[0075] This positioning makes it possible to improve the production process for the spacer elements of the invention and to obtain a more precise breakage of the same.

[0076] The plurality of recesses 70 also comprises further transverse recesses 72 provided at the base portions 51, 52, extending along the transverse axis Z, and a plurality of longitudinal recesses 73, provided at the base portions 51, 52, extending along the longitudinal base axis Y.

[0077] As noted, the presence of the recesses 70 makes it possible to improve the adhesion of the base 5 to the adhesive 80, and to increase the stability of the spacer element on said adhesive.

[0078] In the version of Figure 11, the plurality of recesses 70 comprises two separate transverse recesses 71" provided at the intended breaking area 10 of the spacer element 1, i.e. at the base of the uprights 12a', 13a'. This version is particularly suitable to be created in the version of the spacer element of Figure 5, i.e. in the version in which the intended breaking line 10' is defined

between the base of the uprights 12a', 13a' and the base 5'.

[0079] The transverse recesses 71" have an extension along the transverse axis Z greater than or equal to the extension along the transverse axis Z of the base 12a', 13a' of the uprights 12', 13'.

[0080] Preferably, the transverse recesses 75 have an extension along the transverse axis Z that substantially corresponds to the extension of the base 12a', 13a" of the uprights 12', 13'.

[0081] The provision of the transverse recess 71 or the transverse recesses 71" facilitates the breakage of the spacer element of the invention.

[0082] In addition, by providing the transverse recess 71 or the transverse recesses 71" at the intended breaking area, the breakage of the spacer element is simpler and more precise.

[0083] The recess or recesses serve as weakening elements, and it is therefore not necessary to weaken the plate at the intended breaking area.

[0084] The presence of the recesses also facilitates the moulding of the spacer element.

[0085] In a preferred version, the cross-piece 14 or 14' is provided with a sharpened edge 14a created from part of the aperture 11 shaped in such a way as to engage in the grooves 104a provided on the levelling wedge 101 in order to improve and stabilise the coupling between the spacer element 1 and the levelling wedge 101, as explained more fully below. The sharpened edge 14a is intended to form one of the sides of the aperture 11, 11' and is shaped in such a way as to engage in a mating form with the grooves 104a. The sharpened edge 14a acts as a locking element for locking the levelling wedge 101 in the aperture 11 or 11', as explained more fully below.

[0086] In other versions not shown, locking elements other than the sharpened edge may be provided, intended to cooperate with corresponding locking elements provided on the levelling wedge.

[0087] The provision of the sharpened edge 14a, or of locking elements in general, makes it possible to improve the stability and precision of the coupling between the spacer element 1 or 1' and the levelling wedge.

[0088] In one version, the base portion of the uprights or of the second cross-piece 15 has a reduced thickness in order to further facilitate detachment at the intended breaking line.

[0089] In a version not shown, the plate of the spacer element is solid, i.e. devoid of the aperture for insertion of the wedge, this version being particularly suitable to be used with the positioning system of Figure 10. The plate is rectangular in shape with a pair of walls extending parallel to the longitudinal axis.

[0090] In a version not shown, the spacer element is provided with two plates orthogonal to each other and interposed between the base and the threaded shaft and shaped in such a way as to define on the base of the spacer element four sectors, each of which is intended to receive a corner portion of a different covering element to be fitted.

[0091] This version of the spacer element is suitable to be used for so-called angular fitting, i.e. for fitting four separate covering elements simultaneously.

[0092] In another version not shown, the spacer element is provided with two plates orthogonal to each other arranged in a "T" shape, in such a way as to define on the base of the spacer element three separate sectors, each of which is intended to receive a different covering element to be fitted. This version is suitable to be used for so-called staggered fitting.

[0093] In the two versions indicated above, the intended breaking area is again defined between the plate and the base of the spacer element.

[0094] In operation, the operator prepares and spreads the adhesive 80 on the screed, positions the first covering element 3 on the adhesive 80, and then arranges the base 5 of a spacer element 1 in such a way that it is interposed between the adhesive 80 and the rear surface 3b of the first covering element 3, i.e. so that the rear surface 3b of the first covering element 3 is supported at least partially on the base 5 and the free edge 3c of the first covering element 3 is bearing against a surface S1 of the plate 7.

[0095] The adhesive 80 penetrates into the recesses of the plurality of recesses defined on the rear surface of the base 5 and between the two base portions 51, 52 of the same.

[0096] The fitter then fits the second covering element 4 in such a way that a portion of its rear surface 4b is supported on the base 5 and its free edge 4c facing the free edge 3c of the first covering element 3 is bearing against the surface S2 of the plate 7 opposite the surface S1 on which the free edge 3c of the first covering element 3 is bearing.

[0097] In this way, the plate 7 is interposed between the two adjacent covering elements 3, 4, and between said covering elements is defined a distance or gap essentially corresponding to the thickness "d" of the plate 7. Subsequently, if it is decided to use a positioning system such as that shown in Figure 10, the fitter takes hold of a fastening knob 201 and fastens it to the spacer element 1 by inserting the threaded shaft 8 into the housing 51.

[0098] The fitter then inserts the fastening device 2 to bring the flange 20 to bear against the upper surface 3a, 4a of the first and second covering elements 3, 4, closes the housing 51 by mating the thread 50 with the external threading 9 of the threaded shaft 8, and screws the fastening knob 201 on to the threaded shaft 8, thus generating a pulling force on the spacer element 1, which is progressively drawn inside the fastening knob 201.

[0099] Since the covering elements 3, 4 are interposed between the base 5 of the spacer element 1 and the flange 20 of the fastening device 2, this pulling force generates a corresponding pulling force on the covering elements 3, 4, which are progressively gripped between

the flange 20 and the base 5. Since the flange 20 is supported on the upper surfaces of both of the covering elements 3, 4 to be fitted, the elements are levelled, i.e. positioned in such a way that the respective upper surfaces 3a, 4a are coplanar.

[0100] The positioning system 200 is maintained in this gripping position for a sufficient time for the adhesive 80 to set, after which the fitter may uncouple the fastening knob 201 and the spacer element 1, and then break the spacer element 1 of the invention at the intended breaking line 10 and extract the stem 8 from the gap.

[0101] If, on the other hand, the fitter decides to use a positioning system 100 such as that shown in Figures 6 and 7, he takes hold of a levelling wedge 101 and inserts it progressively into the aperture 11 or 11' of the spacer element 1 or 1' in the direction of the arrow F, until the levelling wall 104 is brought to bear against the sharpened edge 14a of the aperture 11. With the aid of pliers or another suitable tool, the fitter then pushes the levelling wedge 101 further into the aperture 11 or 11' of the spacer element 1 or 1', generating a progressive pulling force on the spacer element 1 or 1', which is progressively drawn towards the levelling wedge 101.

[0102] Since the covering elements 3, 4 are interposed between the base 5 of the spacer element 1 and the base wall 102 of the levelling wedge 101, this pulling force generates a corresponding pulling force on the covering elements 3, 4, which are progressively gripped between the levelling wedge 101 and the base 5.

[0103] Since the levelling base 102 of the wedge bears on both of the upper surfaces of the two covering elements 3, 4 to be fitted, the elements are levelled, i.e. positioned in such a way that the respective upper surfaces 3a, 4a are coplanar.

[0104] The fitter pushes the levelling wedge 101 until the height "h" of the wedge 101 prevents any further movement of the wedge in the direction of the arrow F, i.e. when the height "h" of the wedge portion inside the aperture 11 or 11' of the wedge coincides with the height H1 of the aperture 11 or 11'. In this position, the sharpened edge 14a of the cross-piece 14 is inserted into one of the grooves 104a of the levelling wall 104 of the wedge 101, thus preventing any accidental movement of the wedge 101 and locking it inside the aperture.

[0105] The positioning system 100 is maintained in this gripping position for a sufficient time for the adhesive 80 to set, after which the fitter may uncouple the spacer element 1 and the levelling wedge 101 by moving the latter in the opposite direction, and then break the spacer element 1 of the invention at the intended breaking line 10 and extract the stem 8 from the gap.

[0106] The spacer element of the invention is extremely versatile, since it is suitable to be used with different positioning systems.

[0107] Moreover, the spacer element of the invention is easy to produce.

[0108] In addition, providing the intended breaking area at the uprights or at the cross-piece facilitates moulding operations. No special shaping of the moulds is required, nor any provision of undercuts.

[0109] Thus, as well as simplifying the moulding and mould preparation process, it makes it possible to increase the precision of moulding, hugely reducing the possibility of producing unacceptable parts, in which, for example, undesired detachments occur because the intended breaking line is too weak or, on the contrary, breakage is difficult because the intended breaking line is insufficiently weak.

[0110] In addition, the spacer element of the invention provides increased adhesion to the adhesive and therefore greater stability of positioning. Moreover, the spacer element of the invention makes it possible to reduce the consumption of materials used.

[0111] The spacer element of the invention also improves and stabilises the coupling between the spacer element and the levelling wedge.

Claims

1. A spacer element (1; 1') for a positioning system (100; 100'; 200) for covering elements (3, 4), comprising

   - a base (5; 5') intended to be made to bear on a fixing adhesive for said covering elements (3, 4) and to support a portion of a rear surface (3b, 4b) of said at least two adjacent covering elements (3, 4), and
   - a plate (7; 7') extending transversely along a longitudinal axis (X) of said spacer element (1; 1'), said base (5) being intended to be interposed, in use, between facing edges (3c, 4c) of said at least two covering elements (3, 4),
   - an intended breaking line (10; 10') being formed between said plate (7) and said base (5), said element (1; 1') being **characterised in that** it comprises
   - a threaded shaft (8) attached to said plate (7) on the side opposite said base (5), and
   - an insertion aperture (11; 11') formed in said plate (7; 7') and adapted to allow the slidable insertion of a positioning wedge (101).

2. A spacer element (1; 1') according to the preceding claim, wherein the plate comprises a pair of uprights (12, 13; 12', 13') orthogonal to said base and a cross-piece (14; 14') joining said uprights (12, 13; 12', 13') at the end opposite said base (5) so as to form said insertion aperture (11; 11').

3. A spacer element (1; 1') according to claim 2, wherein said uprights (12, 13; 12', 13') have a constant cross section along the longitudinal axis (X).

4. A spacer element (1; 1') according to claim 3, where-

in said plate (7) further comprises a second cross-piece (15) associated with said base (5), said intended breaking area being identified between said second cross-piece (15) and said base (5).

5. A spacer element (1; 1') according to any one of the preceding claims, wherein said plate (7; 7') comprises locking elements (14a) for locking a levelling wedge (101) in said aperture (11; 11').

6. A spacer element (1; 1') according to the preceding claim, wherein said cross-piece (14; 14') is provided with a sharp edge (14a; 14a') forming one of the sides of said aperture (11, 11a; 11', 11a'), said edge (14a; 14a') forming said locking elements and being so shaped as to be inserted with a positive coupling into groove-shaped elements (104a) formed in said levelling wedge (101).

7. A spacer element (1; 1') according to any one of the preceding claims, wherein said base (5; 5') is delimited by inclined edges (5a) diverging from said upper surface (S, S') to said rear surface (Sp, Sp').

8. A spacer element (1; 1') according to any one of the preceding claims, wherein said base (5, 5') comprises an upper surface (S, S') from which said plate (7, 7') extends, and an opposed rear surface (Sp, Sp'), intended to be made to bear, in use, on said adhesive (80), in which a plurality of recesses (70) is formed.

9. A spacer element (1; 1') according to the preceding claim, wherein said plurality of recesses (70) comprises at least one recess (73, 75) provided at said intended breaking line (10; 10') and suitable for facilitating the breakage of said spacer element.

10. A spacer element (1; 1') according to claim 9, wherein said at least one recess (73) has an extension greater than or equal to said intended breaking line (10; 10').

11. A spacer element (1; 1') according to any one of claims 8 to 10, wherein said plurality of recesses (70) comprises two recesses (71") defined at a base portion (12a', 13a') of said uprights (12', 13').

12. A spacer element (1; 1') according to the preceding claim, wherein said recesses (712) have an extension along the transverse axis (Z) greater than or equal to the extension of the base (12a', 13a') of said uprights (12', 13').

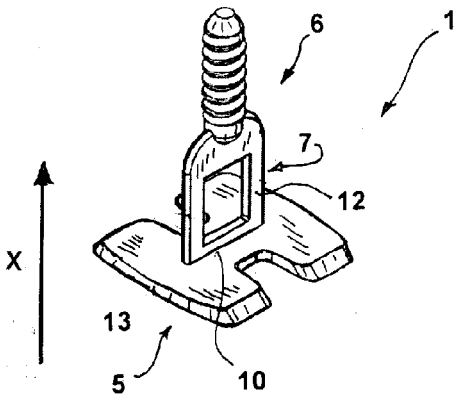

FIG.1

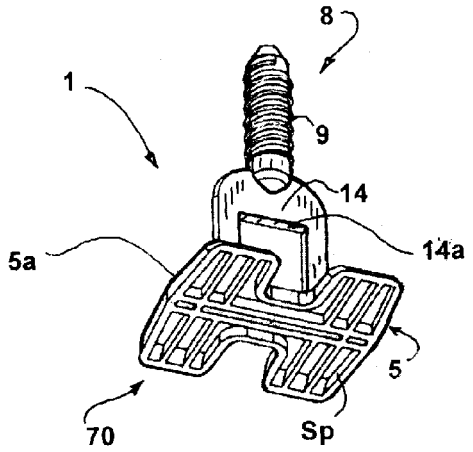

FIG.2

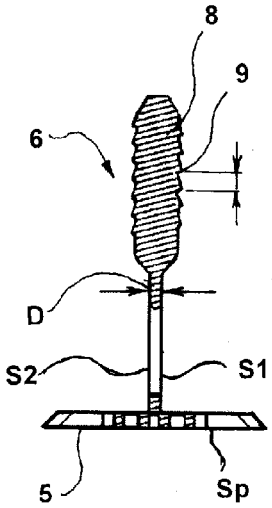

FIG.3

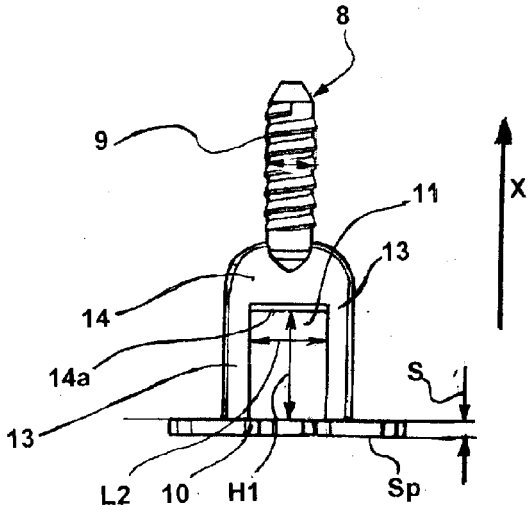

FIG.4

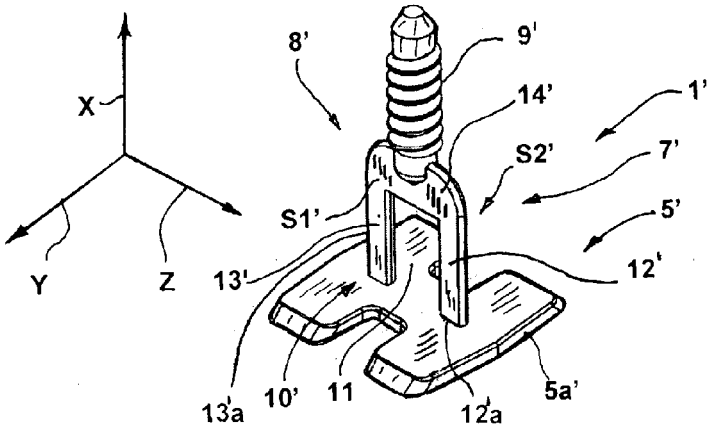

FIG.5

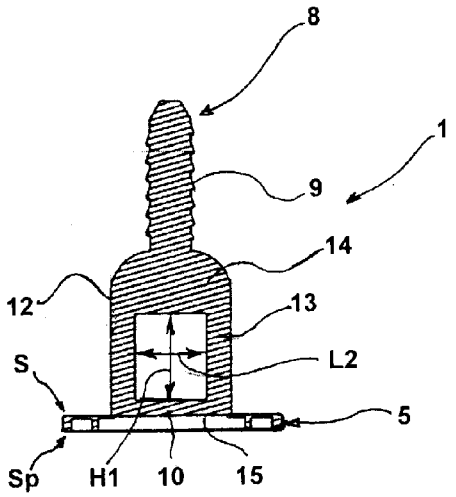

FIG.6

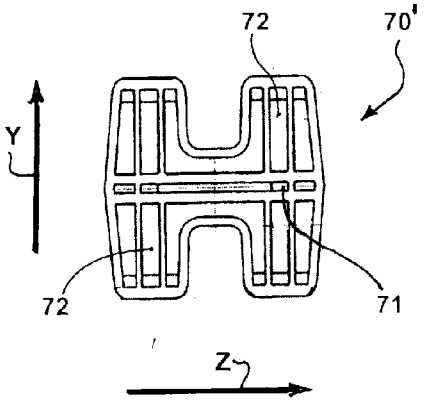

FIG.7

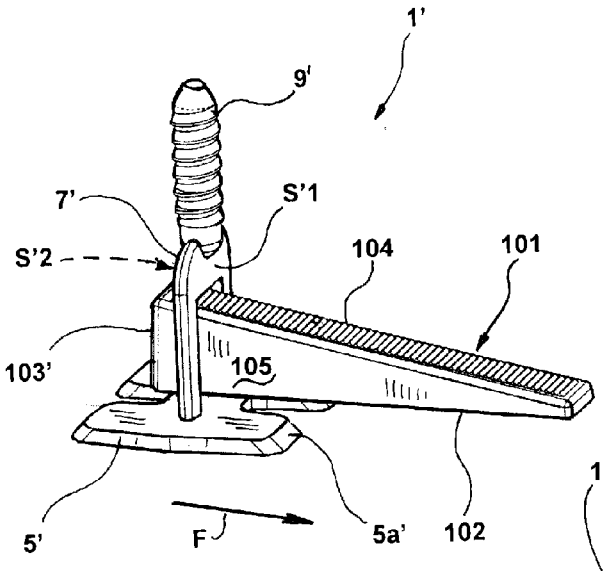

FIG.8

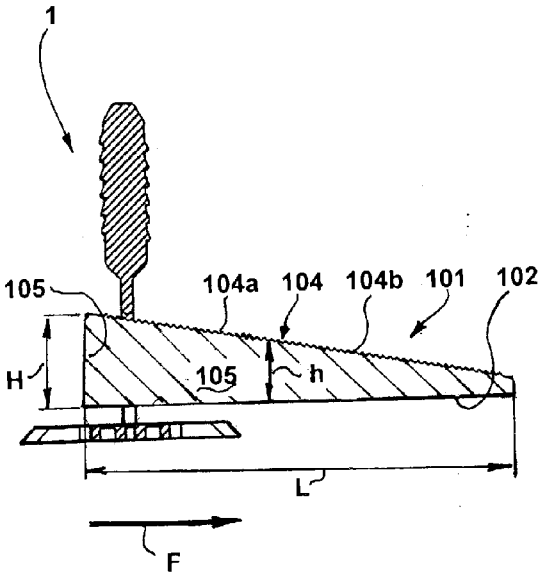

FIG.9

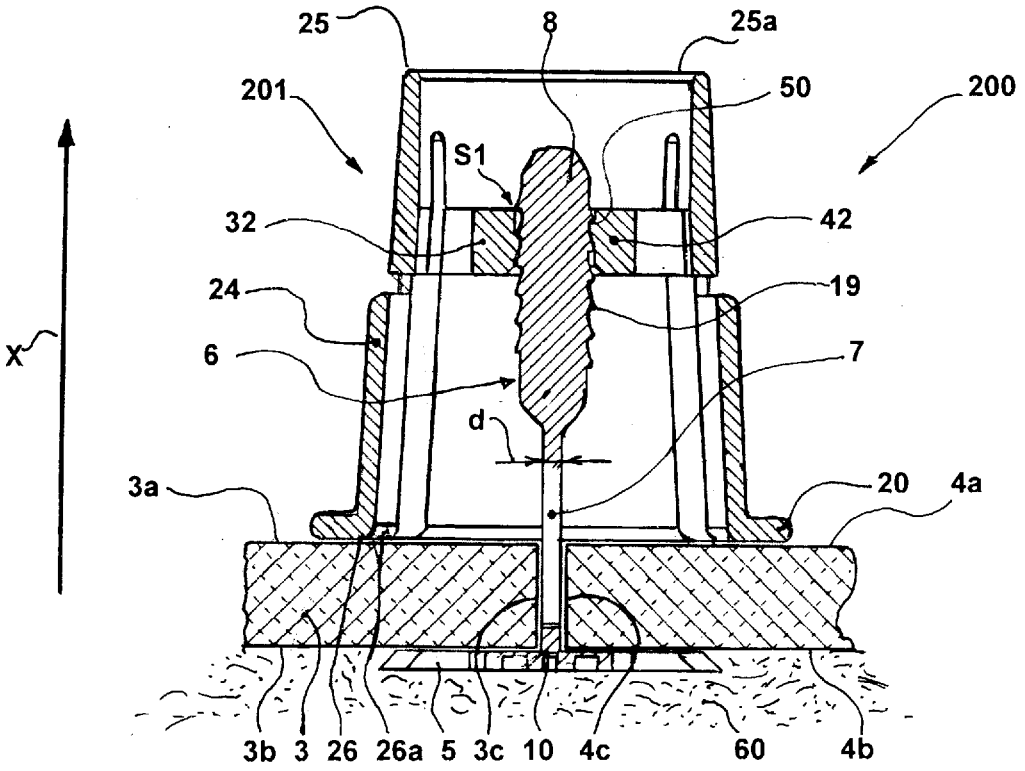
25
8
25a
201
50
200
S1
32
42
24
19
6
7
X
d
3a
20
4a
3b
3
26
26a
5
3c
10
4c
60
4b

FIG.10

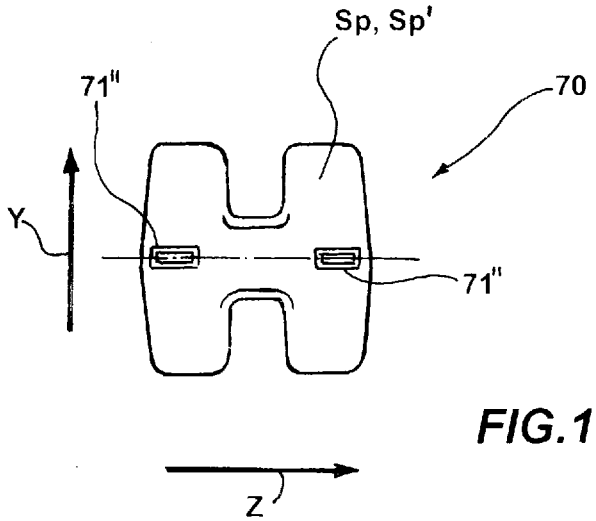
Sp, Sp'
71"
70
Y
71"
Z

FIG.11

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EUROPEAN SEARCH REPORT

Application Number
EP 15 17 6298

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 November 2015	Arsac England, Sally

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 November 2015	Arsac England, Sally

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