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Tetőfedő szerkezet épület számára és cserép a tetőfedő szerkezethez

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

ROOFING DEVICE OF A BUILDING AND TILE OF A ROOFING DEVICE

The present invention relates to a roofing device of a building aimed at resting on a framework and including tiles. This invention also relates to a tile of a roofing device of a building.

This invention is related to the field of manufacturing of devices designed to ensure the roofing of a building, more particularly to that of the manufacturing of devices designed to ensure the covering of a framework such a building includes.

Already known are such roofing devices of a building that is usually formed of a roof including a plurality of tiles coupled to a framework and at least partially interconnected with each other.

In this respect, it should be noted that such a framework usually includes trusses as well as horizontal rafters secured to such trusses. This framework then also includes battens (counter-battens) extending in the direction of the slope of the roof and secured to the rafters, as well as a sealing foil interposed between these battens and these rafters. Finally, this structure includes horizontal battens (laths) secured to the battens extending according to the slope of the roof, and to which the tiles are coupled. Such a framework includes a large number of parts that need to be transported, handled and assembled so that the carrying out of such a framework proves to be a long and tedious operation.

In addition, the tiles that rest on such a framework, on the one hand, are coupled to horizontal battens by tenons a rear portion of such a tile includes and, on the other hand, rest on at least one lower tile by a front portion such a tile includes.

Resting on another tile has the disadvantage of compulsorily imparting to the roof the look of a horizontal stair extending over the entire width of the roof and which is not necessarily desirable.

In addition, resting on another tile has the disadvantage of having to position the tiles of the roof with a minimum angle of inclination (generally 20 degrees, even much more according to the recommendations of tile manufacturers and/or to take into consideration the effect of the wind), since otherwise the rainwater penetrates between the superimposed tiles and flows into the building, thus creating water penetrations. It

is therefore not possible to make a roof that has a small slope, typically the angle of which is smaller than 10 degrees.

5 In addition, it should be noted that the tiles are resting, on the one hand, on a batten at the rear portion of such a tile and, on the other hand, on at least one lower tile at the front portion of such a tile. A failure of straightness of the batten to which such a tile is coupled and/or an unevenness of this tile or of a lower tile lead to an instability of such a tile, which is detrimental to the mechanical properties (more particularly to the mechanical strength) of the roof, which may endanger a roofer working on that roof.

10 Finally, in order to permit the flowing of the water, the tiles include, in the rear portion and laterally, tile portions aimed at being covered by covering portions adjacent tiles include. The presence of these portions to be covered substantially reduces the effective surface of such a tile designed to ensure the covering of a frame, in relation to the total surface of such a tile. Therefore and according to another disadvantage of such a tile, the portions of this tile to be covered represent a large proportion of the raw material used for manufacturing such a tile, which has to be baked, dried, transported, handled, without these portions to be covered making a contribution to the main function of the tile, which is that of covering a frame.

15 A roofing device corresponding to the technical features of the preamble of claim 1 is described in GB 2314356 A.

20 The present invention pretends to cope with the disadvantages of the roofing devices and the tiles of the state of the art.

To this end, the present invention relates to a roofing device of a building aimed at resting on a framework and including a plurality of tiles.

This roofing device is characterized by the features of claim 1.

25 Another feature consists in that the mounting profile bar adopts the shape of a rail, namely a metallic rail, including a base as well as two wings, even also two bends.

According to an additional feature, the means for receiving at least one mounting profile bar and/or the means for receiving the means for fastening a tile to a mounting profile bar include a recess, inside which is accommodated at least part of the profile bar or at least part of the means for fastening, which extends over at least part of the length of the tile, this longitudinally and close to a longitudinal edge of the tile.

The invention also relates to a tile of a roofing device of a building aimed at resting on a framework, namely for a roofing device having the above-mentioned features. This tile is characterized by the features of claim 10.

5 An additional feature consists in that the tile has an upper face including at least a portion, or extending parallel to a general plane of extension of the tile, or having an inclination relative to this plane and extending, as the case may be, longitudinally or transversely to the tile.

10 Thus, the roofing device according to the invention includes a mounting profile bar aimed at being fastened to the framework (in particular directly to the rafters and/or battens such a framework includes) extending in the direction of the slope and parallel to the plane of the roof and to the plane of the framework. The presence of such a mounting profile bar permits to avoid using horizontal battens and battens extending in the direction of the slope, which advantageously permits to facilitate the manufacture of a framework. In addition, the mounting profile bar is formed of a rail, inside which the
15 rainwater flows and through which the rainwater is evacuated from the roof.

A further advantage related to the presence of such a mounting profile bar consists in that this mounting profile bar constitutes a continuous and direct line between the top and bottom of the roof, which permits to significantly improve the flowing of the water between the top and bottom of the roof and, therefore, the global
20 tightness of the roof, compared to the tiles of the prior art, which are mounted one above the other in the height direction, and which result into the water flowing from the top to the bottom of the roof, in cascade and passing from a flowing from the upper tile to a flowing from the lower tile.

25 The tile of a roofing device of the invention has an upper face including at least one portion extending parallel with respect to the general plane of extension of the tile, which advantageously permits to position the upper face of such a tile in the extension of the upper face of an adjacent tile and a juxtaposed tile, for making a roof having a flat surface and free of stairs (as opposed to the roofs of the prior art).

30 As regards the means for receiving at least one mounting profile bar and which a tile includes, it includes a recess in which at least part of the mounting profile bar is accommodated, in particular a wing or a bend this profile bar includes. This means for

receiving advantageously permits to position the tile relative to the mounting profile bar, in a simple and automatic manner.

5 In addition, the means for receiving at least one mounting profile bar includes a recess, which extends close to a longitudinal edge of the tile, which is then positioned above the rail of the mounting profile bar. In addition, the tiles include, close to a transverse edge and/or at the level of a transverse edge area, means extending transversely to the tile and towards at least one longitudinal edge of the tile and designed to ensure the flow of the water towards such a longitudinal edge. As a result, the rainwater running off on a tile then flows toward a longitudinal edge of the tile through the means for ensuring the flowing, before flowing into a rail of the mounting profile bar. This design advantageously permits to avoid the significant overlapping portions the tiles of the prior art include and thus to significantly increase the useful area of a tile for covering a framework, compared to the total surface of such a tile and compared to the tiles of the prior art.

15 Therefore and with respect to a determined surface of a roof, the invention advantageously permits a substantial saving of raw material (more than 30%), a reduction of time and amount of energy for the manufacturing of the tiles of this roof surface, a reduction of the load being transported, handled and supported by the framework, compared to the tiles of the prior art.

20 This invention also permits, for one and the same roof surface, a reduction of the number of tiles compared to the number of tiles of the prior art, this for tiles (according to the invention and according to prior art) of a substantially identical weight and/or a substantially identical overall size. In particular, when, for a same roof surface of one square meter, this roof requires more than ten tiles of the prior art, this same roof requires less than seven tiles according to the invention.

25 Thus, for one and the same roof surface, the number and/or weight of the tiles are reduced by more than 30% and the roofer then also handles more than 30% less tiles and/or tile weight, compared to the tiles of the prior art.

30 In particular, the invention permits to avoid the overlapping portions in the front portion (nose) of such a tile, which advantageously permits to consider a roof appearance other than that of a stair, in particular a roof extending in a plane.

This also permits to significantly lower the minimum angle of inclination of the tiles (in practice, below 5 degrees) compared to that of the tiles of the prior art, this in order to obtain a roof with a very small slope, corresponding substantially to that of a flat roof, a building roof, an industrial roof or the like.

5 Additionally and conversely, the invention advantageously permits to consider the fastening, to mounting profile bars extending vertically, of tiles that also extend vertically, this for making a siding.

As mentioned above, the tiles rest on at least one mounting profile bar and include at least one means for receiving at least one such mounting profile bar. This
10 means is as a recess in the form of a groove within which at least part of this profile bar is accommodated. Thus, the tiles rest on at least one mounting profile bar, through a plurality of resting points, even on at least one resting line, which improves the stability as well as the mechanical characteristics of such a tile.

Finally, by positioning tiles above the mounting profile bars (which are in turn
15 positioned above the framework) extending between the bottom and the top of the framework, air is allowed to penetrate under the tiles and to flow between the bottom and top of the framework, up to the ridge. This advantageously permits to create a natural and efficient ventilation between the bottom and the top of the framework, but also to avoid the use of expensive accessories (such as cat flaps or lower ventilation
20 tiles) for creating such a ventilation.

Further objects and advantages of the present invention will become clear from the following description relating to embodiments that are given only as indicative and non-restrictive examples.

The understanding of this description will be facilitated when referring to the
25 attached drawings, in which:

- Figure 1 is a schematic perspective view of a roofing device of a building according to the invention;

- Figure 2 is a schematic cross-sectional view along II-II of the roofing device shown in Figure 1;

- Figure 3 is a schematic view of a detail of the device shown in Figure 2 and
30 corresponding to the fastening of two juxtaposed tiles to a mounting profile bar, this at

the level of a longitudinal edge of these tiles and through fastening means corresponding to an embodiment of a first type;

- Figures 4a to 4d are schematic perspective views of different means for fastening a tile to a profile bar, this according to an embodiment of a first type;

5 - Figure 5 is a schematic and cross-sectional view along V-V of the roofing device shown in Figure 1;

10 - Figure 6 is a schematic view of a detail of the device shown in Figure 5 and corresponding to the fixing of two adjacent tiles to a mounting profile bar, this at the level of a transverse edge of these tiles and through fastening means corresponding to another embodiment of the first type;

- Figures 7a to 7d are schematically perspective views of different means for fastening a tile to a profile bar, this according to this other embodiment of the first type;

- Figures 8 and 9 are schematic and perspective views of two models of tiles of the roofing device of a building.

15 The present invention is related to the field of manufacturing of devices designed to ensure the roofing of a building, in particular that of the manufacturing of devices designed to ensure the covering of a framework that such a building includes and aimed at resting on such a framework.

20 In fact, such a roofing device 1 usually includes a plurality of tiles 2 aimed at resting directly or indirectly on the framework a building includes.

Such a tile 2 usually includes a top face 20, visible from outside the building, and a lower face 21 directed towards the framework.

Such a tile 2 also includes two longitudinal edges 22 as well as two longitudinal edge areas 23, each delimited by a longitudinal edge 22.

25 Moreover, such a tile 2 includes two transverse edges 24, among which a front (or lower or downstream) transverse edge area and a rear (or upper or upstream) transverse edge area. This tile 2 then also includes two transverse edge areas 25, each delimited by a transverse edge 24, among which, in particular, a transverse front (or lower, or downstream) edge area (usually referred to as nose) and a rear transverse (or
30 higher or upstream) edge area (usually referred to as heel).

According to the invention, the roofing device 1 includes at least one mounting profile bar 3.

Such a mounting profile bar 3 is aimed at being fastened to the framework, more particularly to at least one rafter and/or to at least one batten this framework includes. In fact, such a mounting profile bar 3 is fastened to this framework so as to extend in the direction of the slope of this framework and parallel to the plane of the roof and to the plane of the framework, i.e. inclined relative to the horizontal line.

In fact, such a mounting profile bar 3 is fastened to the framework, preferably in a tight way, and by means of fastening organs (in particular in the form of clips, nails, screws, or the like) of the sealing type or supplemented with a means for sealing the fastening.

Between this framework and such a mounting profile bar 3 may be interposed a sealing film.

As can be seen in the attached figures, such a mounting profile bar 3 includes, on the first hand, a base 30 aimed at being fastened to the framework (in the way as described above), in particular to at least one rafter and/or at least one batten this framework includes. In this respect, it should be noted that such a base 30 is in fact aimed at being fastened above at least one rafter and/or above at least one batten this framework includes, in particular to the upper face of such a rafter and/or such a batten.

The fastening of the base 30 to the framework can then occur by snapping on, nailing, screwing or the like, more particularly in a tight way, as mentioned above.

According to another feature, the base 30 is aimed at extending in the direction of the slope of the framework and parallel to the plane of the roof and the plane of the framework.

On the other hand, the mounting profile bar 3 includes at least one wing 31 extending, from said base 30, longitudinally with respect to this base 30, and while forming an angle with this base 30.

In fact, such a wing 31 forms a substantially right angle either with said base 30, when the latter is flat, or with the bottom (aimed at being fastened to the framework) of such a base 30 when the latter adopts a trapezoidal cross-section.

Such a wing 31 is aimed at extending vertically and perpendicularly to the plane of the roof and the plane of the framework.

In fact, such a wing 31 extends in the extension of the base 30 (namely in the extension of a longitudinal end this base 30 includes) and/or laterally with respect to

the base 30 (namely laterally with respect to one longitudinal end this base 30 includes).

According to a preferred embodiment of the invention, this mounting profile bar 3 includes in fact two wings 31 extending from said base 30, longitudinally with respect to said base 30, on both sides of this base 30, and while forming an angle (as mentioned above) with the base 30.

These two wings 31 are substantially parallel and provide the mounting profile bar 3 with a substantially U-shaped cross-section and the shape of a rail, sleeve, fur or the like.

These two wings 31 are aimed at extending vertically and perpendicularly to the plane of the roof and the plane of the frame.

More particularly, above such a wing 31 rests at least one tile 2, even a plurality of adjacent tiles 2 (i.e. one located upstream or downstream of another one, according to the slope of the roof) the roofing device 1 includes.

As can be seen in the attached figures, the roofing device 1 also includes at least two juxtaposed tiles 2 (i.e. one located next to another one, along a horizontal line) which rest on a same mounting profile bar 3.

In this respect, it should be noted that the mounting profile bar 3 then preferably includes two parallel wings 31 and a longitudinal edge area 23 of each of juxtaposed tiles then rests on a wing 31 this mounting profile bar 3 includes.

However and according to a preferred embodiment of the invention, the mounting profile bar 3 also includes at least a bend 32 extending from a wing 31, longitudinally relative to the wing 31, and while forming an angle (preferably a right angle) with this wing 31.

In fact, such a bend 32 extends in the extension of the wing 31 (namely in the extension of a longitudinal end this wing 31 includes) and/or laterally with respect to the wing 31 (namely laterally with respect to one longitudinal end this wing 31 includes).

As can be seen in the attached figures, such a bend 32 extends parallel to the base 30 and above this base 30.

Of course, when the mounting profile bar 3 includes two wings 31, at least one of these wings (preferably both wings) then includes such a bend 22.

Therefore and according to a preferred embodiment, the mounting profile bar 3 includes two parallel wings 31 as well as two bends 32 each extending from a wing 31 of this mounting profile bar 3, one towards the other, and parallel to the base 30 of the mounting profile bar 3.

5 The mounting profile bar 3 then has a generally U-shaped cross-section and adopts the form of a rail, sleeve, fur or the like.

In particular on such a bend 32 then rests at least one tile 2, even a plurality of adjacent tiles 2 the roofing device 1 includes.

As mentioned above, the roofing device 1 includes at least two juxtaposed tiles
10 2, which then rest on the same mounting profile bar 3.

In this respect, it should be noted that a longitudinal edge area 23 of each of the juxtaposed tiles 2 then rests on a bend 32 such a mounting profile bar 3 includes.

In fact, these two juxtaposed tiles 2 then rest on these bends 32, so that the longitudinal edges 22 of these juxtaposed tiles 2 are facing each other.

15 According to a first embodiment illustrated in the attached figures, the longitudinal edges 22 of these juxtaposed tiles 2 are spaced apart so as to define, between these longitudinal edges 22, a spacing that (like these longitudinal edges 22) is positioned directly vertically relative to the base 30 of the mounting profile bar 3 and through which the water flows towards the mounting profile bar 3. An additional
20 feature consists in that the longitudinal edge 22 of at least one of the two juxtaposed tiles 2 includes (in particular close to the lower end of such a longitudinal edge 22) a drop of water 230, in particular formed by a set-back, designed to facilitate the draining of this longitudinal edge 22 and to prevent the flowing of the water under the lower face 21 of the tile 2.

25 However and according to another embodiment (not shown), the longitudinal edges 22 of these juxtaposed tiles 2 may include longitudinally interlocking means and/or means capable of forming at least one baffle. The presence of these means advantageously permits to improve the tightness at the level of the juxtaposition between two juxtaposed tiles 2.

30 A preferred embodiment consists in that the mounting profile bar 3 adopts the shape of a rail, namely a metal rail, including a base 30 as well as two wings 31, even also two bends 32.

As mentioned above, the roofing device 1 includes at least one mounting profile bar 3 on top of which rests at least one tile 2, even a plurality of tiles 2.

This roofing device 1 then also includes at least one tile 2, preferably made of clay or the like, and which then rests on top of two mounting profile bars 3 the roofing device 1 includes, and which extend parallel relative to each other. In this respect, it should be noted that in particular the longitudinal edge areas 23 of such a tile 2 then rest on top of the mounting profile bars 3, more particularly on top of the wings 31, even on top of the bends 32 these mounting profile bars 3 include.

According to the invention, the roofing device 1 also includes means (4; 5) for fastening a tile 2 to a mounting profile bar 3.

According to a first type of embodiment, the means (4; 5) for fastening a tile 2 to a mounting profile bar 3 include at least one hooking means (40; 50) designed to cooperate with the tile 2, more particularly with a complementary hooking means a means (7; 8) for receiving such means (4; 5) for fastening the tile 2 includes, as will be described in more detail below.

These means (4; 5) for fastening also include either a means 41 for making this hooking means 40 integral with the mounting profile bar 3, or a hooking means 51 designed to cooperate with this mounting profile bar 3.

According to a first embodiment (not shown) of this first type of embodiment, the hooking means 40 (designed to cooperate with the tile 2) is formed of a hook, while the means 41 for making the hooking means 40 integral with the mounting profile bar 3 is formed by a weld, a screw, a crimping or the like.

According to a second embodiment of this first type of embodiment illustrated in Figures 2, 3 and 4 (a to d), the means 4 for fastening a tile 2 to a mounting profile bar 3 are formed by a fastening organ 42 including, on the one hand, at least one hooking means 40 designed to cooperate with the tile 2. Such a hooking means 40 adopts, in particular, the shape of a hook or the like, namely obtained by deformation.

On the other hand, this fastening organ 42 includes means 41 for making this hooking means 40 (and thus this fastening organ 42 itself) integral with the mounting profile bar 3, more particularly with a wing 31 or (and preferably) a bend 32 this profile bar 3 includes. In fact, this means 41 for making integral may adopt the form of a female interlocking means 30 (namely formed by a recess obtained by deformation)

and capable of cooperating with a male interlocking means (more specifically a wing 31 or a bend 32) the mounting profile bar 3 includes.

It should be noted that such a fastening organ 42 may adopt the form of a clip (preferred embodiment), a clamp, a hook or the like and/or can be obtained by deformation of a blade (preferred embodiment), a tongue or the like, namely made of metal.

According to a third embodiment of this first type of embodiment illustrated in figures 5, 6 and 7 (a to d), the means 5 for fastening a tile 2 to a mounting profile bar 3 are formed by a fastening organ 52 including, on the one hand, at least one hooking means 50 designed to cooperate with the tile 2. Such a hooking means 50 adopts, in particular, the shape of a hook or the like, namely obtained by deformation.

On the other hand, this fastening organ 52 includes a hooking means 51 designed to cooperate with the mounting profile bar 3, in particular with the base 30 and/or with a wing 31 such a mounting profile bar 3 includes.

It should be noted that such a fastening organ 52 may adopt the form of a staple (preferred embodiment), a hook, a clip or the like and/or can be obtained by deformation of a wire (preferred embodiment), a rod or the like, in particular made of metal.

Anyway, such a fastening organ (42; 52) is of a deformable type, namely resilient, this in order to permit its placing on the tile 2 as well as on the mounting profile bar 3.

According to a second type of embodiment (not shown), the means for fastening a tile 2 to a mounting profile bar 3 may also be formed by a glue or the like interposed between such a tile 2 and such a mounting profile bar 3. Such glue is then more particularly a substitute for a fastening organ 52 as described above and as illustrated in figures 5 to 7.

According to a third type of embodiment (not shown), the means for fastening a tile 2 to a mounting profile bar 3 are formed by a screw, in particular a self-tapping screw passing through the tile 2 (more particularly an opening such tile 2 includes, namely female interlocking means 100 of this tile 2, or means 9 for ensuring the flowing off as described below include) and cooperating with the mounting profile bar 3, in particular with a bend 32 this mounting profile bar 3 includes.

As mentioned above, the roofing device 1 according to the invention includes a plurality of tiles 2, which are aimed at resting on at least one mounting profile bar 3.

These tiles 2 then each include at least one means 6 for receiving at least one such mounting profile bar 3.

5 In fact, such a means 6 for receiving at least one mounting profile bar 3 includes a recess 60, inside which is accommodated at least part of the mounting profile bar 3, more particularly a wing 31 or (and preferably) a bend 32 this mounting profile bar 3 includes.

10 This recess 60 extends over at least part of the length of the tile 2, more particularly over the entire length of the tile 2.

In addition, this recess 60 extends longitudinally and close to a longitudinal edge 22 of the tile 2.

In fact, in particular the longitudinal edge area 23 of the tile 2 then includes such a recess 60.

15 According to a preferred embodiment, such a recess 60 is formed by a longitudinal groove 61 (either continuous or interrupted by a recess 71 described below) extending over the entire length of the tile 2.

Such a groove 61 is provided for on the surface of the tile 2, more particularly on the surface of the lower face 21 of such a tile 2.

20 In fact, a tile 2 (the roofing device 1 according to the invention includes) rests on two parallel mounting profile bars 3. Thus, such a tile 2 then includes two means 6 for receiving such a mounting profile bar 3. Each of these means 6 extends over the entire length of the tile 2, longitudinally and close to a longitudinal edge 22 of the tile 2. Each of these means 6 adopts the form of a recess 60, formed by a longitudinal groove 61, and a longitudinal edge area 23 of the tile 2 includes.

25 As mentioned above, the roofing device 1 according to the invention includes means (4; 5) for fastening a tile 2 to a mounting profile bar 3.

These tiles 2 then each include at least one means (7; 8) for receiving the means (4; 5) for fastening such a tile 2 to such a mounting profile bar 3.

30 In fact and according to a first embodiment (corresponding to means 4 for fastening according to the second embodiment described above), such a means 7 for receiving the means 4 for fastening includes a recess 70 inside which are

accommodated at least part of these means 4 for fastening, in particular the hooking means 40 these 4 fastening means include.

This recess 70 extends, here too, over at least part of the length of the tile 2. In addition, the recess 70 extends longitudinally and close to a longitudinal edge 22 of the tile 2. Here too, in particular the longitudinal edge area 23 of this tile 2 then includes such a recess 70.

According to a preferred embodiment, such a recess 70 is formed by a recess 71 (namely a longitudinal recess) extending over part of the length of the tile 2.

Such a recess 71 is provided for deep in the tile 2 and/or extends in the extension (and at the rear) of the groove 61 the means 6 for receiving at least one mounting profile bar 3 includes.

As mentioned above, a tile 2 (the roofing device 1 according to the invention includes) rests on two mounting profile bars 3. Thus, such a tile 2 includes at least two means 7 for receiving means 4 for fastening such a tile 2 on the two mounting profile bars 3. Each of these means 7 extends over a portion of the length of the tile 2, this longitudinally and close to a longitudinal edge 22 of the tile 2. Each such means 7 takes the form of a recess 70 constituted by a recess 71, and that has a longitudinal edge area 23 of the tile 2.

According to another feature of the invention, such a recess 71 has longitudinal walls, at least one of which includes at least one complementary hooking means designed to cooperate with at least one hooking means 40 the means 4 for fastening a tile 2 to a mounting profile bar 3 include.

Such a complementary hooking means adopts the form of a hooking rim, of a particular surface condition of the longitudinal wall (rough, provided with asperities or the like) or the like.

However and according to a second embodiment (corresponding to means 5 for fastening according to the third embodiment described above), such a means 8 for receiving the means 5 for fastening a tile 2 to a mounting profile bar 3 includes a complementary hooking means 80.

In fact, such a complementary hooking means 80 is designed to cooperate with a hooking means 50 the means 5 for fastening include.

According to a particular embodiment, such a complementary hooking means 80 is formed by a hooking rim or the like.

It should be noted that the tile 2 includes such a complementary hooking means 80, this close to a transverse edge 24 of the tile 2, in particular close to a rear (or upper) transverse edge 24. In fact, in particular a transverse edge area 25 (more particularly the rear or upper transverse edge area 25, usually referred to as heel) includes such a complementary hooking means 80.

According to another feature of the invention, this means 8 for receiving the means 5 for fastening also includes a recess 81 inside which is accommodated at least part of the means 5 for fastening (more particularly the hooking means 50). In particular, the complementary hooking means 80 mentioned above then includes such a recess 81, close to a longitudinal edge 22 of the tile 2.

According to another feature, the tile 2 (the roofing device of the invention includes) includes close to a transverse edge 24 and/or at the level of a transverse edge area 25, a means 9 designed to ensure the flowing of the water towards at least one longitudinal edge 22 of the tile 2.

According to a preferred embodiment of the invention, the tile 2 includes a means 9 for ensuring the flowing of the water, close to the rear (or upper) transverse edge 24. More particularly, the upper (or rear) transverse edge area 25 of the tile 2 then includes such a means 9.

As mentioned above, the longitudinal edge 22 of a tile 2 is positioned vertically relative to the base 30 of the mounting profile bar 3. As a result, the water flows (through the means 9 for ensuring its flowing off) toward a longitudinal edge 22 and, once arrived at this longitudinal edge 22, flows inside the mounting profile bar 3 with a view to its evacuation through this mounting profile bar 3.

In fact, this means 9 (designed to ensure the flowing of the water towards at least one longitudinal edge 22 of the tile 2) extends transversely to the tile 2 and towards at least one longitudinal edge 22 of the tile 2.

According to the invention, this means 9 for ensuring the flowing of the water extends between the two longitudinal edges 22 of the tile 2.

In fact, such a means 9 for ensuring the flowing of the water towards a longitudinal edge 22 has a downward slope towards this longitudinal edge 22.

In this respect, it should be noted that according to the invention the means 9 for ensuring the flowing of the water is designed to ensure the flowing of that water towards the two longitudinal edges 22 of the tile 2. To this end, this means 9 has a double downward slope, each one towards such a longitudinal edge 22.

5 Such a means 9 for ensuring the flowing of the water towards the two longitudinal edges 22 of the tile 2 adopts the form of a groove, a gutter, a channel or the like.

As mentioned above, the tile 2 (more particularly, the upper or rear transverse edge area 25 of this tile 2) includes such a means 9 for ensuring the flowing of the water, close to the upper (or rear) transverse edge 24. In this respect, it should be noted
10 that this means 9 may then be located downstream or below the upper face 20 of the tile 2. In such a case, the tile 2 (more particularly, the lower or front transverse edge area 25 of this tile 2) also includes a covering rim aimed at extending above the means 9 for ensuring the flowing of the water and an adjacent tile 2 located downstream includes.

15 In such embodiment, the roofing device 1 includes means (not shown) for fastening to each other two adjacent tiles 2, in particular for immobilizing these two tiles 2 relative to each other, in a direction perpendicular to a general plane in which these tiles 2 extend. Such means for fastening may then adopt the form of a pin or the like designed to cooperate, on the one hand with the upper or rear transverse edge area
20 25 (more particularly with the upper or rear transverse edge 24) of an adjacent tile 2 located downstream and, on the other hand, with the lower or front transverse edge area 25 (in particular with the lower or front transverse edge 24) of an adjacent tile 2 located upstream.

A feature of the tile 2 of the roofing device 1 consists in that such a tile 2
25 includes interconnecting means 10 designed to cooperate with complementary interconnecting means another adjacent tile 2, more particularly an upper tile 2 (located upstream) or a lower tile 2 (located downstream) includes.

The presence of these interlocking means 10 advantageously permits to facilitate the mounting of a new tile 2 with respect to an adjacent tile already installed
30 and/or to immobilize a tile 2 with respect to an adjacent tile, namely in a direction perpendicular to a general plane in which such a tile 2 extends.

In fact, these interconnecting means 10 are formed, on the one hand, by a female interlocking means 100 the tile 2 includes close to a transverse edge 24 and/or the transverse edge area 25 of such a tile 2 includes and, on the other hand, by a male interlocking means 101 the tile 2 includes close to the other transverse edge 24 and/or the other transverse edge area 25 of the tile 2 includes.

In fact and according to a preferred embodiment of the invention, more particularly the tile 2 includes the female interlocking means 100 close to a rear (or upper) transverse edge 24 and/or to a rear (or upper) transverse edge area 25 (usually referred to as a heel) of this tile 2 that includes the female interlocking means 100.

As regards the male interlocking means 101, i.e. more particularly the tile 2 that includes this male interlocking means 101 close to a transverse front (or lower) edge 24 and/or the front (or lower) transverse edge area 25 (usually referred to as the nose) of the tile 2 that includes the male interlocking means 101.

According to the invention as illustrated in the attached figures, the male interlocking means 101 is formed by a rib, while the female interlocking means 100 is formed by a groove that moreover and advantageously constitutes at least partly the means 9 for ensuring the flowing of the water towards the two longitudinal edges 22 of the tile 2.

Another embodiment, which is not part of the invention, consists in that the female interlocking means 100 is formed by a mortise, while the male interlocking means 101 is formed by a tenon.

Yet another embodiment, which is not part of the invention, consists in that the female interlocking means 100 is formed by a recess, while the male interlocking means 101 is formed by a resilient tongue, a rod, a finger or the like.

An additional feature consists in that the tile 2 includes means for spacing apart the longitudinal edge 22 of two juxtaposed tiles 2 (more particularly the longitudinal edge 22 of a tile 2 relative to the longitudinal edge 22 of another juxtaposed tile 2) and/or the transverse edge 24 of two adjacent tiles 2 (more particularly the transverse edge 24 of a tile 2 relative to the transverse edge 24 of another, as the case may be, higher or lower adjacent tile 2).

In fact, these means for spacing apart include on the one hand, at least one organ (in particular a shoe, a finger, a stud or the like), provided for on a covering rim or a

male interlocking means 101 (an interlocking means 10, which the tile 2 includes, includes) and which extends towards a means 9 for ensuring the flowing of the water 9 or a female interlocking means 100 (this interlocking means of 10 includes), substantially perpendicular to the general plane of extension of the tile 2.

5 On the other hand, these means for spacing apart include a recess provided for on a means 9 for ensuring the flowing of the water 9 or a female interlocking means 100 (an interlocking means 10, which the tile 2 includes, includes), arranged in front of an organ (in particular on the bottom of the means 9 or of the female interlocking means 100), and inside which such an organ is accommodated.

10 In fact, these means for spacing apart are provided on such a tile 2 in particular close to at least one longitudinal edge 22 of the tile 2.

 These means for spacing apart advantageously permit to create between the (juxtaposed or adjacent, respectively) tiles 2, a (longitudinal or transverse, respectively) backlash necessary to compensate for the effects of temperature variation (expansion
15 due to heat and shrinkage due to cold), movements and deformations of the framework, and/or seismic movements.

 As mentioned above, the tiles 2 (the roofing device 1 includes) include an upper face 20 and a lower face 21.

 Therefore and according to an additional feature of the invention, such a tile 2
20 has an upper face 20 including at least one portion 200, which either extends parallel with respect to a general plane of extension of the tile 2, or has an inclination relative to this plane and then extending, as the case may be, longitudinally or transversely to the tile 2.

 According to a first embodiment (not shown), such an upper face 20 includes a
25 single portion 200 extending parallel to a general plane of extension of the tile 2. Such an embodiment advantageously permits to position the upper surface 20 of a tile 2 in the extension of the upper face 20 of an adjacent tile and a juxtaposed tile, for making a roof having a flat surface and without stairs (unlike the roofs of the prior art).

 As mentioned above, the upper face 20 may include at least one portion 200
30 having an inclination relative to the general plane of extension of the tile 2.

 In such a case, such portion 200 may extend transversely (figure 8) or longitudinal (figure 9) to the tile 2.

Therefore and according to a second embodiment, the upper face 20 of the tile 2 has a single portion 200 (corresponding to the entire surface of this upper face 20) having an inclination relative to the general plane of extension of the tile 2 and extending transversely with respect to that tile 2. This embodiment advantageously permits to make a roof having stairs.

In fact and as shown in the attached figures, the upper face 20 of a tile 2 may include at least two portions 200, each having a different slope inclination, or opposite inclination.

According to a first embodiment, these portions 200 may extend longitudinally with respect to the tile 2, which advantageously permits to facilitate the longitudinal flowing off. As can be seen in figure 9, such a tile 2 can then include 5 portions 200 extending longitudinally.

According to another embodiment, these portions 200 may extend transversely to the tile 2. This advantageously permits to facilitate the resting of a foot of an operator (in particular by creating a blocking point) and/or to decrease the speed of flowing of the water (particular application suitable for large ramps) and/or to create a means for retaining the snow (inter alia, providing such portion 200 with a significant inclination with respect to the plane of extension of the tile 2 and likely to form a means for retaining the snow).

As can be seen in figure 8, such a tile 2 may then include 4 portions 200 which, in pairs, have a slope with an opposite inclination.

According to an additional feature, the roofing device 1 of the invention may also include means for at least limiting (even preventing) the longitudinal displacement relative to a mounting profile bar 3, of at least one tile 2 and/or means (4; 5) for fastening a tile 2 to a mounting profile bar 3.

According to a first embodiment (not shown), the means for at least limiting the longitudinal displacement of at least one tile 2 include, on the one hand, at least one lug the mounting profile bar 3 includes (in particular a wing 31 or, preferably, a bend 32 of this mounting profile bar 3), which extends laterally with respect to the mounting profile bar 3 (in particular with respect to a wing 31 or a bend 32). In fact, such a lug can be formed by a deformation of a mounting profile section 3 delimited by a cut-out this mounting profile bar 3 includes.

On the other hand, these means for at least limiting the longitudinal displacement of at least one tile 2 include at least a stop, which cooperates with a lug as mentioned above, and which the tile 2 includes. Such a stop can be formed by a recess, by a transverse groove or the like.

5 Another embodiment consists in that the means for at least limiting the displacement of a tile 2 with respect to a mounting profile bar 3 are formed by means for fastening such a tile 2 to such a mounting profile bar 3, more particularly in the form of a screw as described above.

10 As regards the means for at least limiting the longitudinal displacement of the means 4 for fastening a tile 2, these include, on the one hand, at least one cut-out the mounting profile bar 3 (more particularly a wing 31 of this mounting profile bar 3) includes and, on the other hand, a finger, which cooperates with such a cut-out, and the means 4 for fastening a tile 2 to such a mounting profile bar include, in particular a fastening organ (42) includes.

15 The presence of these means for at least limiting the longitudinal displacement, with respect to a mounting profile bar 3, of at least one tile 2 and/or of the means (4; 5) for fastening a tile 2 to a mounting profile bar 3 advantageously permit to mount such a tile 2 to a framework with a large angle of inclination (for making a roof with a large slope), even to the siding.

20 The present invention then also relates, more particularly, to a tile 2 of a roofing device 1 of a building aimed at resting on a framework, namely a tile 2 for a roofing device 1 having the features as described above.

In fact, such a tile 2 has the features as described above.

Such a tile 2 is preferably made of clay or the like.

25 Such a tile 2 extends in a general plane of extension, which, in the operating position of the tile 2 (within the roofing device 1), extends in the direction of the slope of the roof, and parallel to the plane of the roof as well as to the plane of the framework.

30 In the operating position of this tile 2 (within the roofing device 1), the general plane of extension of such a tile 2 is perpendicular to a wing 31 of the mounting profile bar 3 and parallel to the base 30 of this mounting profile bar 3 as well as to a bend 32 of this mounting profile bar 3.

In particular, such a tile 2 includes at least one means 6 for receiving a mounting profile bar 3 (which has the characteristics described above) and at least one means (7; 8) for receiving means (4; 5) for fastening the tile 2 to this mounting profile bar 3 (which has the characteristics described above).

5 This tile 2 also includes a means 9 for ensuring the flowing of the water towards at least one such longitudinal edge 22 and having the characteristics described above.

This tile 2 also includes interlocking means 10 designed to cooperate with complementary interlocking means another adjacent tile 2 includes.

10 Finally, the tile 2 has an upper face 20 including at least one portion 200, either extending parallel to a general plane of extension of the tile 2, or having an inclination with respect to this plane and then extending, as the case may be, longitudinally or transversely to the tile 2.

Szabadalmi igénypontok

1. Tetőfedő szerkezet (1) épület számára, amely alkalmas arra, hogy egy gerendázatra támaszkodjon, és amely tartalmaz egyrészt legalább egy összeszerelő profilelemet (3), amely alkalmas arra, hogy a gerendázatra legyen rögzítve, és tartalmaz másrészt több cserepet (2), amelyek alkalmasak arra, hogy legalább egy összeszerelő profilelemre (3) támaszkodjanak, és amelyek mindegyike tartalmaz legalább egy eszközt (6) legalább egy ilyen összeszerelő profilelem (3) befogadásához, és legalább egy eszközt (7 ; 8), amely befogad egy eszközt (4 ; 5), amely egy cserepet (2) ilyen összeszerelő profilelemre (3) rögzít, és amely utóbbi a szerkezetben (1) van, amely cserép (2) tartalmaz:

- egy keresztirányú szél (24) közelében és/vagy egy keresztirányú szegély (25) szintjén egy eszközt (9), amely a cseréphez (2) viszonyítva keresztirányban és a cserép (2) két hosszirányú széle (22) között helyezkedik el, amely eszköz úgy van kialakítva, hogy biztosítsa a víz folyását eme két hosszirányú szél (22) irányában;
- illesztő eszközt (10), amely úgy van kialakítva, hogy együttműködjön egy kiegészítő illesztő eszközzel, amely egy szomszédos másik cserépben (2) van, és amelyet képez egyrészt egy apa illesztő eszköz (101), amely a cserépben (2) van egy keresztirányú szél (24) közelében, és/vagy, amely eme cserép (2) keresztirányú szegélyében (25) van, és, másrészt egy anya illesztő eszköz (100), amely a cserépben (2) van egy másik keresztirányú szél (24) közelében, és/vagy, amely eme cserép (2) másik keresztirányú szegélyében (25) van, amely anya illesztő eszközt (100) egy vájat képezi, amely megvalósítja, legalább részben azt az eszközt (9), amely biztosítja a víz folyását a cserép (2) két hosszirányú széle (22) irányában.

2. Az 1. igénypont szerinti tetőfedő szerkezet (1), amelynél az összeszerelő profilelem (3) tartalmaz egyrészt egy alaplapot (30), amely alkalmas arra, hogy a gerendázatra legyen rögzítve, és másrészt legalább egy oldalelemet (31), amely kinyúlik az alaplabból (30), hosszirányban eme alaplaphoz (30) viszonyítva és szöveget képezve ezzel az alaplappal (30).

3. A 2. igénypont szerinti tetőfedő szerkezet (1), amelynél az összeszerelő profilelem (3) tartalmaz továbbá legalább egy visszahajló részt (32), amely kinyúlik az oldalelemből (31), hosszirányban eme oldalelemhez (31) viszonyítva és szöget képezve ezzel az oldalelemmel (31).

4. Az előző igénypontok bármelyike szerinti tetőfedő szerkezet (1), amelynél az összeszerelő profilelem (3) sín, mégpedig fémsín alakú, amelynek alaplapja (30) valamint két oldaleleme (31), továbbá két visszahajló része (32) van.

5. Az előző igénypontok bármelyike szerinti tetőfedő szerkezet (1), amelynél egy cserepet (2) az összeszerelő profilelemre (3) rögzítő eszközt vagy egy csavar képezi, amely átmegy a cserépen (2) és együttműködik az összeszerelő profilelemmel (3), vagy egy ragasztó képezi, amely egy ilyen cserép (2) és egy ilyen összeszerelő profilelem (3) közé van helyezve.

6. Az 1-4. igénypontok bármelyike szerinti tetőfedő szerkezet (1), amelynél egy cserepet (2) az összeszerelő profilelemre (3) rögzítő eszköz (4 ; 5) tartalmaz legalább egy akasztó eszközt (40 ; 50), amely úgy van kialakítva, hogy együttműködjön a cseréppel (2), valamint tartalmaz, esettől függően, eszközt (41), amely ezt az akasztó eszközt (40) ráerősíti az összeszerelő profilelemre (3) vagy akasztó eszközt (51), amely úgy van kialakítva, hogy együttműködjön az összeszerelő profilelemmel (3).

7. Az előző igénypontok bármelyike szerinti tetőfedő szerkezet (1), amelynél a legalább egy összeszerelő profilelemet (3) befogadó eszköz (6) és/vagy egy cserepet (2) az összeszerelő profilelemre (3) rögzítő eszközt (4) befogadó eszköz (7) tartalmaz üreget (60 ; 70), amelynek belsejében van elhelyezve a profilelem (3) legalább egy része vagy a rögzítő eszköz (4) legalább egy része, amely üreg a cserép (2) hosszának legalább egy részére hosszirányban és a cserép (2) hosszirányú széle (22) közelében helyezkedik el.

8. Az 1-6. igénypontok bármelyike szerinti tetőfedő szerkezet (1), amelynél egy cserepet (2) az összeszerelő profilelemre (3) rögzítő eszköz (5) befogadására szolgáló eszköz (8) tartalmaz egy kiegészítő akasztó eszközt (80), amely a cserép (2) egy keresztirányú széle (24) közelében van.

9. Az előző igénypontok bármelyike szerinti tetőfedő szerkezet (1), amelynél a szerkezet (1) tartalmaz eszközt (11), amely legalább korlátozza legalább egy cserép és/vagy a cserepet (2) az összeszerelő profilelemre (3) rögzítő eszköz (4) összeszerelő profilelemhez (3) képesti hosszirányú elmozdulását.

10. Cserép (2) épület számára szolgáló tetőfedő szerkezethez (1), amely szerkezet alkalmas arra, hogy egy gerendázatra támaszkodjon, nevezetesen az előző igénypontok bármelyike szerinti tetőfedő szerkezethez (1), amely cserép (2) tartalmaz egyrészt legalább egy eszközt (6) egy összeszerelő profilelem (3) befogadásához, amely egy gerendázat tetőfedő szerkezetében (1) van, és amely rá van rögzítve a gerendázatra, és tartalmaz másrészt legalább egy eszközt (7 ; 8), amely befogad egy eszközt (4 ; 5), amely egy cserepet (2) az összeszerelő profilelemre (3) rögzíti, és amely utóbbi a gerendázat tetőfedő szerkezetben (1) van, amely cserép tartalmaz továbbá:

- egy keresztirányú szél (24) közelében és/vagy egy keresztirányú szegély (25) szintjén egy eszközt (9), amely keresztirányban helyezkedik el a cseréphez (2) viszonyítva, és a cserép (2) két hosszirányú széle között, amely eszköz úgy van kialakítva, hogy biztosítsa a víz folyását eme két hosszirányú szél (22) irányában;
- illesztő eszközt (10), amely úgy van kialakítva, hogy együttműködjön egy kiegészítő eszközzel, amely egy szomszédos másik cserépben (2) van, és amelyet képez egyrészt egy apa illesztő eszköz (101), amely a cserépben (2) van egy keresztirányú szél (24) közelében, és/vagy, amely eme cserép (2) keresztirányú szegélyében (25) van, és, másrészt egy anya illesztő eszköz (100), amely a cserépben (2) van egy másik keresztirányú szél (24) közelében, és/vagy, amely eme cserép (2) másik keresztirányú szegélyében (25) van, amely anya illesztő eszközt (100) egy vájat képez, amely megvalósítja, legalább részben azt az eszközt (9), amely biztosítja a víz folyását a cserép (2) két hosszirányú széle (22) irányában.

11. A 10. igénypont szerinti cserép (2), amelynél a legalább egy összeszerelő profilelemet (3) befogadó eszköz (6) és/vagy egy cserepet (2) az összeszerelő profilelemre (3) rögzítő eszközt (4) befogadó eszköz (7) tartalmaz üreget (60 ; 70), amelynek belsejében van elhelyezve az összeszerelő profilelem (3) legalább egy része vagy a rögzítő eszköz (4) legalább egy része, amely üreg a cserép (2) hosszának legalább egy részére hosszirányban és a cserép (2) hosszirányú széle (22) közelében helyezkedik el.

12. A 10-11. igénypontok bármelyike szerinti cserép (2), amelynél a legalább egy összeszerelő profilelemet (3) befogadó eszköz (6) tartalmaz üreget (60), amelyet a cserép (2) teljes hosszában elnyúló hosszirányú vájat (61) képez.

13. A 10-11. igénypontok bármelyike szerinti cserép (2), amelynél egy cserepet (2) az összeszerelő profilelemre (3) rögzítő eszközt (4) befogadó eszköz (7) tartalmaz egy üreget (70), amelyet egy mélyedés képez (71), amely a cserép (29) hosszának egy részén nyúlik el.

14. A 10. igénypont szerinti cserép (2), amelynél egy cserepet (2) az összeszerelő profilelemre (3) rögzítő eszközt (5) befogadó eszköz (8) tartalmaz egy kiegészítő akasztó eszközt (81), amely a cserépben (2) van egy keresztirányú szél (24) közelében, és/vagy, hogy eme cserépnek (2) van egy keresztirányú szegélye (25), és amely úgy van kialakítva, hogy együttműködjön egy akasztó eszközzel (5), amely a rögzítő eszközben (5) van.

15. A 10-14. igénypontok bármelyike szerinti cserép (2), amelynél a cserépnek van egy felső felülete (20), amelynek van legalább egy része (200), amely a cserép (2) általános kiterjedési síkjához viszonyítva vagy párhuzamosan terül el, vagy ezzel a síkkal szöget zár be, és esettől függően a cseréphez (2) viszonyítva hosszirányban vagy keresztirányban nyúlik el.

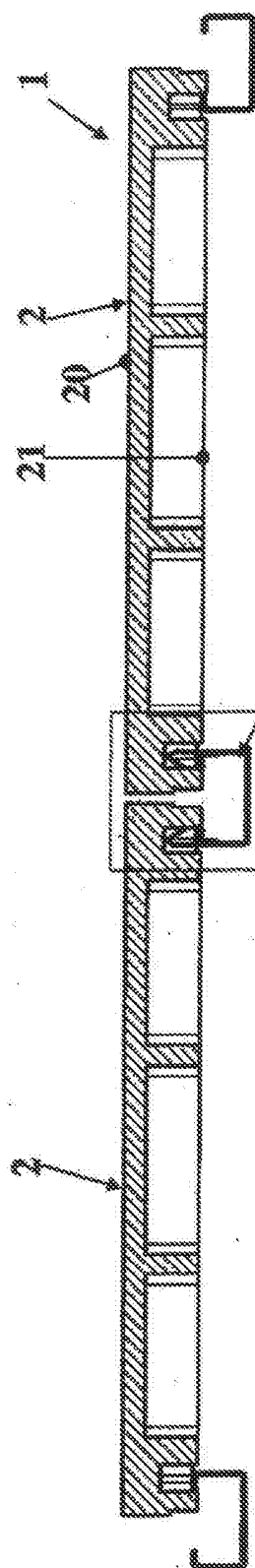


FIG. 2

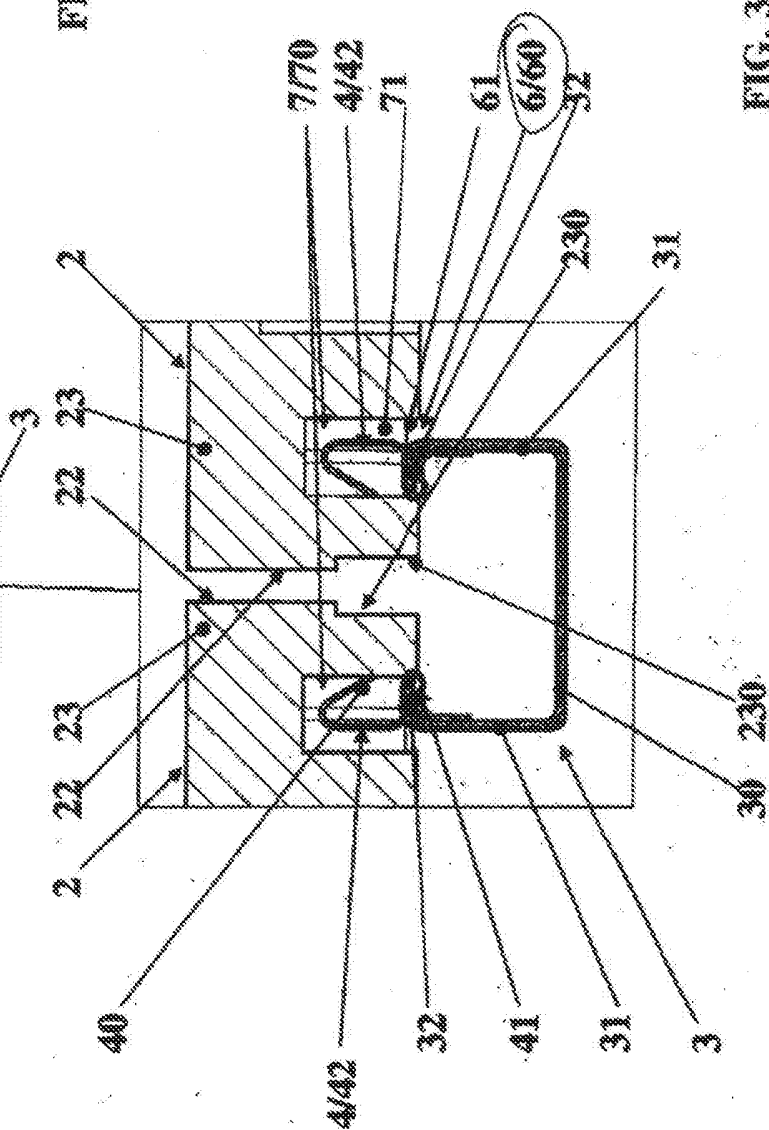


FIG. 3

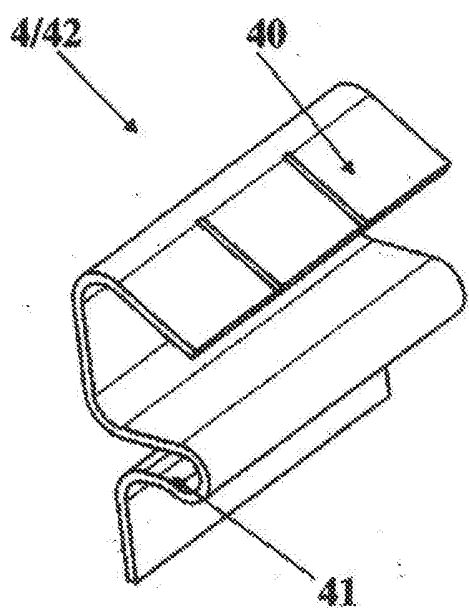


FIG. 4a

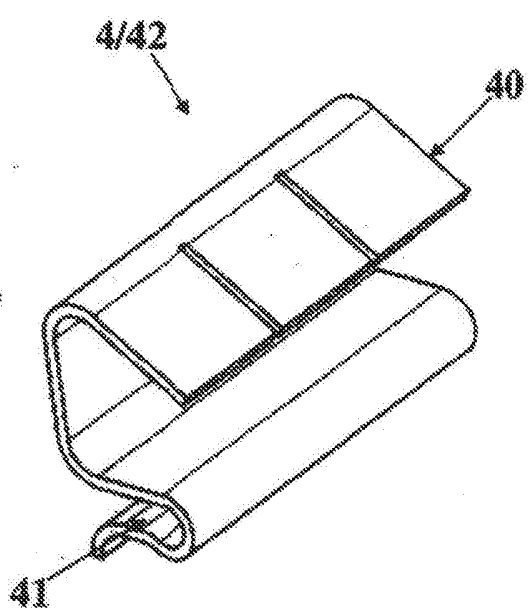


FIG. 4b

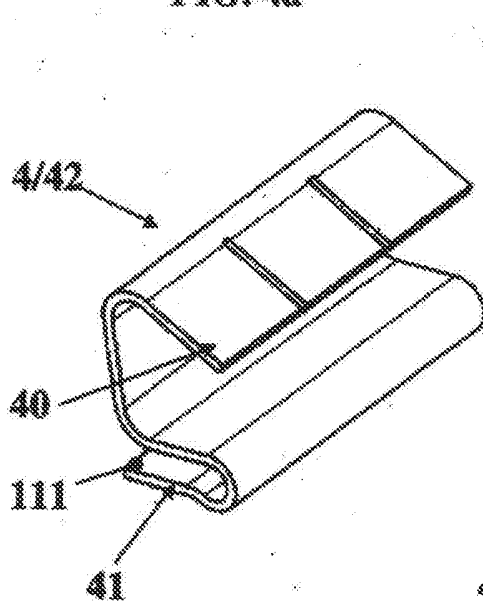


FIG. 4c

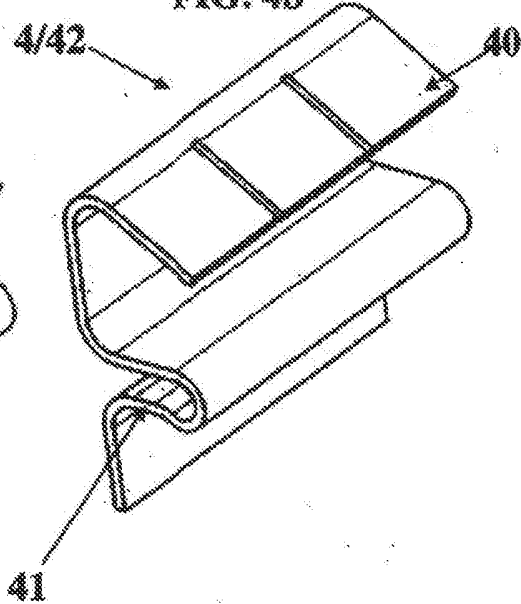
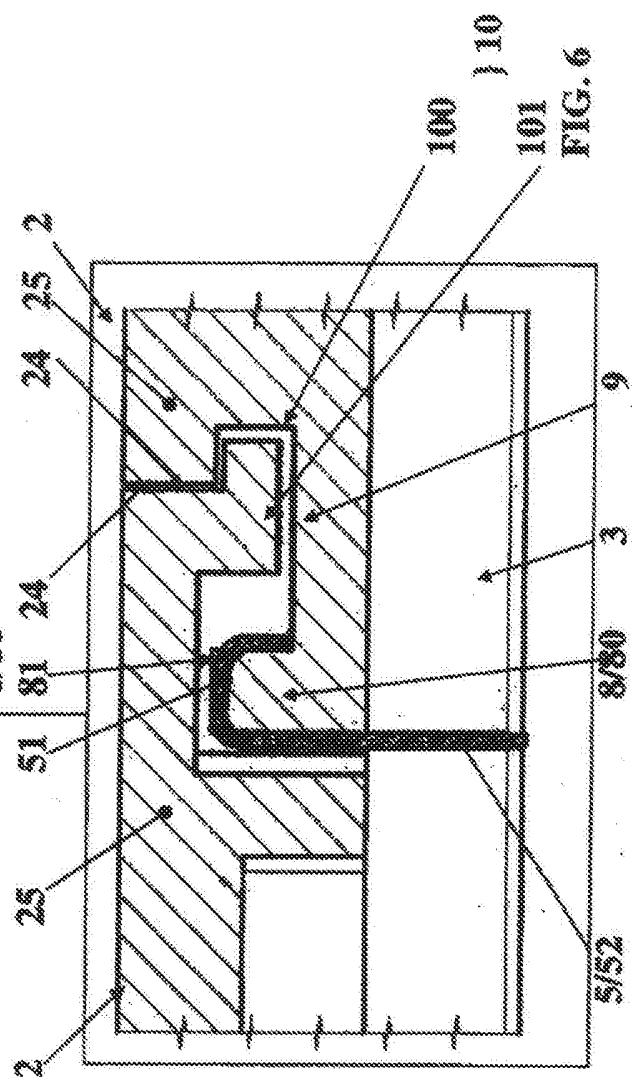
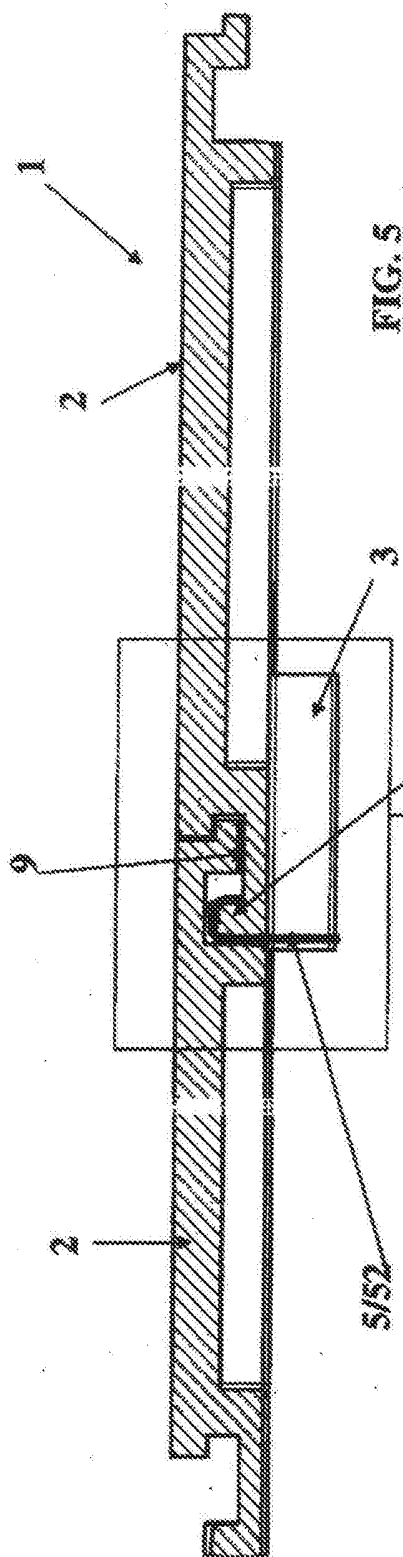


FIG. 4d



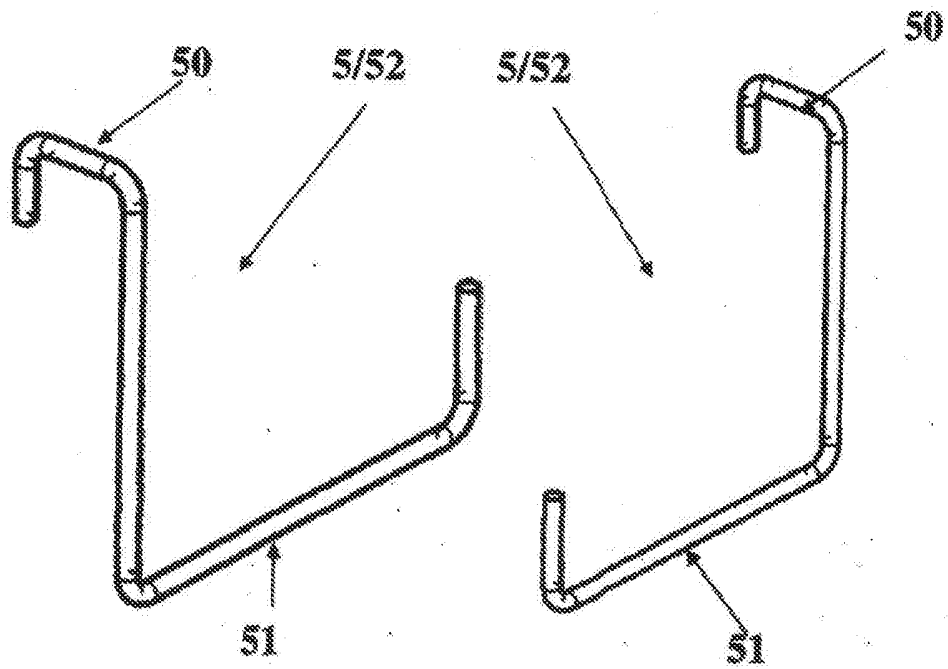


FIG. 7a

FIG. 7b

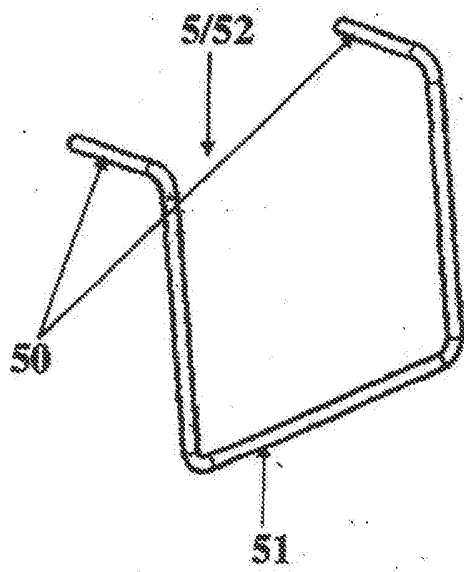


FIG. 7c

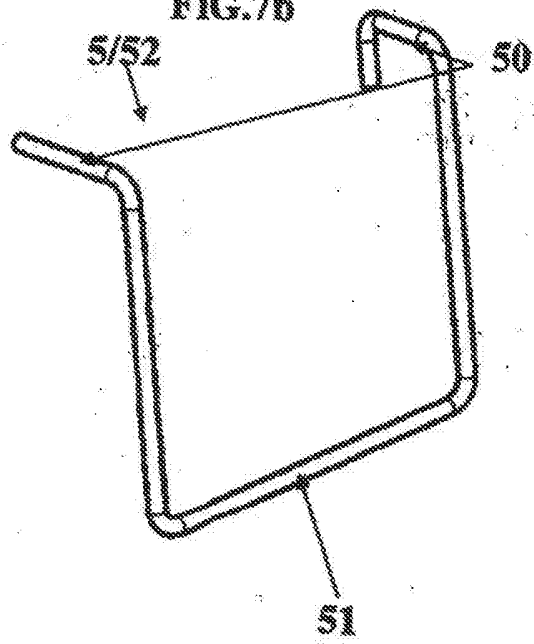


FIG. 7d

