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(54) Title: STAIR ELEMENT AND METHOD FOR CLADDING THEREOF

(57) Abstract: The present invention relates to a stair element for a stair tread, comprising: - a tread surface, - a nose surface which in an orientation of use extends substantially downward relative to the tread surface, and - a covering comprising a decorative visual layer, wherein: - the decorative visual layer extends continuously from at least a part of the tread surface onto the nose surface and wherein the decorative visual layer has substantially a continuous finish over a transition between the tread surface and the nose surface.



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STAIR ELEMENT AND METHOD FOR CLADDING THEREOF

The present invention relates to a stair element for a stair tread.

5 The present invention likewise relates to a method for preparing a covering suitable for a stair element suitable for a stair tread, comprising a tread surface and a nose surface which extends in an orientation of use substantially downward relative to the tread surface.

10 Such a stair element, such as a stair tread or a tread renovation element, is already known per se. A tread renovation element can for instance be applied when an existing staircase is renovated. The stair element is then arranged on an existing stair tread to be renovated so
15 that the stair tread provided with the stair element has an appearance of a new and robust stair tread. Such stair elements can of course also find application on relatively new staircases, for instance when a new house is being built.

20 A drawback of the known stair element is that it may be the case that the tread surface and the nose surface do not fit properly to each other, whereby it appears as if gaps are present in the stair element.

25 The present invention has for its object to obviate or at least reduce such a drawback of the known art. The invention provides for the purpose a stair element for a stair tread, comprising:

- a tread surface,
- a nose surface which in an orientation of use
30 extends substantially downward relative to the tread surface, and
- a covering comprising a decorative visual layer, wherein:

- the decorative visual layer of the covering extends continuously from at least a part of the tread surface onto the nose surface and wherein the decorative visual layer has substantially a continuous finish over a transition between the tread surface and the nose surface.

A further advantage is that, because the decorative visual layer of the covering extends continuously from at least a part of the tread surface onto the nose surface and the decorative visual layer is substantially continuous over a transition between the tread surface and the nose surface, the stair element acquires the appearance of one entity, such as a wooden plank or a natural stone. Possible unevenness at the transition between tread surface and nose surface will be covered by the covering. A result hereof is that the stair element will have a robust appearance.

A further drawback of the prior art is that the known stair element has at least one limitation due to the way in which the stair element is manufactured. An example of such a limitation is the limited choice of finishes, such as designs or colours, for a surface of the stair element.

The invention has diverse preferred embodiments which will become apparent from the following description of several such embodiments. The advantages and inventive features of the invention in all its aspects, including the measures defined in the dependent claims, are by no means limited to the considerations stated above and/or below.

A first embodiment of the stair element according to the invention has the feature that the covering is provided with a recess for imparting a foldability at the position of the transition, preferably for providing a sub-

stantially sharp fold line for the covering, and preferably the visual layer. A drawback of a variety of materials which can be used to cover a stair element is that the materials are generally limited in the extent to which they can be folded without breaking and/or splitting. Wood for instance can generally not be bent to an angle of for instance 70° without the wood breaking and/or splintering.

Arranging a recess at a location where it is desired to fold the covering material provides a considerably greater possibility of folding the material to an acute angle. Owing to the recess less material has after all to be folded, thereby increasing the possibility of folding. The covering material must have a determined degree of foldability in order to achieve a sharp fold. An advantage of a stair element according to an embodiment of the invention is that, by arranging the covering on the tread surface and the nose surface, the choice of for instance the appearance of the stair element increases considerably because freely available floor materials such as linoleum, or floor materials designated commercially as linoleum, can be applied.

A further embodiment of the stair element according to the invention has the feature that the covering comprises a substrate and the recess comprises a depth in the substrate to a position below the visual layer, preferably to a position close to or as far as the visual layer. It is advantageous here for the stair element to comprise a recess with a depth of half the substrate or the covering, more preferably 3/5, 2/3, 70%, 80%, 90%, 95%, 98%, 100% of the thickness of the substrate or the covering. The variation in the depth of the recess makes it possible to realize a range of angles between the tread surface and the nose surface which the covering has to

form. A result hereof is that the transition between the tread surface and the nose surface can form a large number of angles using one covering material.

It is further conceivable that the stiffness of
5 the material affects the angle which can be obtained by means of folding, and that the material remains at this specific angle. Making the depth of the recess greater means that less material has to be folded, and the material can therefore be folded more easily. The combination of
10 the depth of the recess in the covering and the stiffness of the covering will ultimately define the maximum angle to which the covering can be folded.

It is advantageous here for the at least one recess to have substantially the cross-sectional form of at
15 least a triangular channel. Because the recess has substantially the cross-sectional form of a triangular channel, the covering will form a continuous whole in the folded state. The dimensions of the triangular channel can depend on the angle which the covering has to make, so
20 that in the folded state (arranged state) the sides of the triangular channel make contact with each other, or at least lie close to each other. As seen from a side of the stair element, the recess will not be discernible, or at least hardly so, in the folded state, so that from an aesthetic viewpoint it forms a unity.
25

A further embodiment of the stair element according to the invention has the feature that the stair element comprises a wear layer, preferably a transparent wear layer, more preferably arranged on a side of the visual
30 layer remote from the substrate. It is a general fact that during use a staircase is subjected to heavy usage from people walking up and down the stairs.

It is possible here for arranged stair elements to incur damage. Less damage will be caused to the covering and/or the stair element by providing a wear layer on the covering on the side of the covering facing toward a user.

5 The impact on the stair element is first absorbed by the wear layer before the rest of the stair element is subjected to the impact. A transparent wear layer has the advantage that a possible finish provided on the covering remains visible even after the wear layer has been arranged.
10

It is advantageous here for the covering to comprise linoleum. An advantage of linoleum is that it is available in numerous variations, so that a user can for instance select a determined finish. The material is further easy to process, widely available and provides good
15 quality for a stair element covering. Other non-limitative possible coverings are carpet, vinyl and/or lino.

According to a further embodiment of a stair element according to the invention, the covering is attached
20 by means of adhesion to the stair element. An advantage of this embodiment is that it is possible, when this is desirable and/or required, to remove the covering from the stair element. Known to a skilled person in the field are techniques which make it possible to remove the "old" covering so that a "new" covering can be arranged on the
25 stair element. Arranging a covering by means of adhesion is further a reliable way of arranging a covering on a stair element.

It is advantageous here that the transition comprises an acute angle with a corner or a small arc of curvature for the purpose of providing an impression of a natural wood appearance. Wooden planks or stair treads manufactured from natural stone have for instance at an
30

edge a transition comprising an acute angle with a corner. The appearance of for instance a wooden plank or a natural stone stair tread is provided by arranging the covering in the same manner.

5 A further aspect of the invention relates to a method for preparing a covering suitable for a stair element suitable for a stair tread, comprising a tread surface and a nose surface extending in an orientation of use substantially downward relative to the tread surface, the
10 method comprising steps for:

- providing covering material comprising a decorative visual layer; and
- arranging the covering material on the stair element such that following arrangement the decorative visual
15 al layer of the covering extends continuously from at least a part of the tread surface onto the nose surface, and wherein the decorative visual layer is substantially continuous over a transition between the tread surface and the nose surface.

20 Provided by means of the above method is a method for providing a stair element with a covering. It hereby becomes possible to apply, as covering, materials which are available per se as floor covering material. This provides a freedom of choice of for instance the appearance
25 of the stair element which is greater than in the case of prior art laminate materials. Such a method provides advantages as described in the foregoing in relation to respective aspects according to the invention.

30 It is advantageous here that the method comprises steps, prior to arranging of the covering, for arranging a recess such as a cut-out portion for preferably providing foldability at the position of the transition, preferably for providing a substantially sharp fold line of the cov-

ering and preferably the visual layer. It is also advantageous for the method to comprise steps for positioning the recess at the location of a transition between the first component and the second component. A result hereof is
5 that such a stair element has a natural appearance, since a finish of the covered stair element will correspond to the appearance of a natural wooden plank or a stair tread manufactured from natural stone.

An embodiment of a method for arranging a covering
10 on a stair element comprising the step of providing covering material comprises of providing linoleum. This embodiment has the same advantages as those stated above in respect of the use of linoleum or other similar material.

A further aspect of the invention relates to a
15 stair element for a stair tread comprising:

- a tread surface, and
- a nose surface which extends in an orientation of use substantially downward relative to the tread surface,

20 wherein the nose surface comprises a protective element for protecting a front face of the tread surface.

A first advantage of the stair element for the stair tread is that a front face of the tread surface is protected from outside influences coming from the direction of the nose surface. During use a user will knock
25 against the protective element of the nose surface instead of the front face of the tread surface. An advantage hereof is that the tread surface substantially retains the desired appearance.

30 The protective element also has the advantage of having a safety function so that, in the case a user is in danger of slipping off the tread surface, he/she is prevented from doing so by the protective element. In prac-

tice the protective element forms an upright edge on the front face of the tread surface so that a foot of a user is prevented here from sliding over the tread surface.

A further preferred embodiment of the stair element according to the invention has the feature that the protective element and the nose surface are formed integrally. An advantage of this embodiment is that the nose surface and the protective element form one whole and so have the same appearance. An integral component has the further advantage of being robust.

A further advantage is that the alignment of the protective element relative to the nose surface is effected during manufacture of the whole. The integral component comprising the protective element and the nose surface can further be arranged on a stair tread in a single operation.

It is advantageous here for the tread surface and the nose surface to be formed in two parts. One advantage is that the nose surface can be manufactured from a different material than the tread surface, with the result that variation in the appearance of the stair element is possible. Further defined by the nose surface in the arranged state is a space in which the tread surface can be placed. The protective element in this way protects the front face of the tread surface in the arranged state, and the protective element is more preferably placed against the front face of the tread surface in the arranged state so that dirt is for instance prevented from accumulating between the tread surface and the nose surface.

A preferred embodiment of the stair element according to the invention has the feature that the tread surface can be coupled to the nose surface using a V-shaped coupling element, wherein the coupling element is

preferably configured for the purpose of fixing the nose surface to the stair tread.

A first leg of the V-shaped coupling element is coupled in the arranged state to the nose surface and the second leg of the V-shaped coupling element can be coupled to for instance an upper surface of a stair tread on which the stair element is arranged during use. An advantage of the coupling element is that a stable coupling can in this way be realized between the stair element and the stair tread which can also be brought about in simple manner. The V-shaped coupling element can optionally be fixed to the stair tread using adhesive means and/or for instance screws.

A further preferred embodiment of the stair element according to the invention has the feature that the tread surface and/or the nose surface are at least partially formed from a material selected from the group comprising: leather, wood, MDF, HDF, steel and stainless steel. An advantage of this embodiment is the different types of appearance can be imparted to the stair element. A combination wherein the tread surface is for instance manufactured at least partially from leather and the nose surface for instance from steel gives the stair element a robust and sturdy appearance. A tread surface manufactured from leather has the further advantage that the tread surface is rough, so that a user will not, or is at least less likely to slip.

A further aspect of the present invention relates to an assembly of a stair element according to the invention and a stair tread,

wherein the transition from an underside of the tread surface and an upper side of the stair tread is substantially filled, or

wherein an underside of the tread surface and an upper side of the stair tread lie substantially against each other.

An advantage of the assembly is that during use
5 the tread surface is arranged in stable manner relative to the stair tread. The assembly is able to withstand the forces exerted thereon by users of the staircase. The lifespan of the stair element is in this way positively affected.

10 A first preferred embodiment of the assembly according to the invention has the feature that, in the case the transition from an underside of the tread surface and an upper side of the stair tread is substantially filled, the transition is substantially filled with polyurethane
15 foam. Polyurethane foam has the advantage of having good insulating and adhesive properties. In other words, a connection is brought about between the tread surface and at least a part of the stair tread by the use of polyurethane foam.

20 The polyurethane foam is further able in cured state to absorb the forces resulting from users being on the stair element, and indirectly on the stair tread.

A further preferred embodiment of the assembly according to the invention has the feature that, in the case
25 the transition from an underside of the tread surface and an upper side of the stair tread lie substantially against each other, a recess is arranged in the stair tread for the purpose of fixing the stair element.

In this embodiment a recess is arranged in the
30 stair tread for the purpose of fixing the stair element to the stair tread. Cut out in an upper surface of the stair tread is for instance an edge in which for instance a leg of the V-shaped coupling element can be placed. This em-

bodiment further has at least the same advantages as the above stated embodiment.

A further aspect of the invention relates to an assembly for a stair element according to the invention.

5 This assembly has at least the same advantages as those set forth above in respect of the stair element. A user has the further advantage that he/she can arrange the stair element him/herself on the stair tread.

Following below is a description of several embodiments shown in the accompanying drawings, which are given only by way of example and in which the same or similar parts, components and elements are designated with the same reference numerals, and in which:

Fig. 1 shows a cross-section of an embodiment of a stair element according to a preferred embodiment of the present invention;

Fig. 2 shows a covering of an embodiment of a stair element in non-folded state as according to a preferred embodiment of the present invention;

20 Fig. 3 shows a covering of an embodiment of a stair element in partially folded state as according to a preferred embodiment of the present invention;

Fig. 4 and 5 show schematic views of the arranging of a covering on a stair element according to a preferred embodiment of the present invention;

Fig. 6 shows a cross-section of a first embodiment of a stair element arranged on a stair tread;

Fig. 7 shows a cross-section of a further embodiment of a stair element arranged on a stair tread;

30 Fig. 8A and 8B show schematic views of a stair element in arranged state.

Fig. 1 shows a cross-section of an embodiment of a stair element 1 with a covering 5 in an embodiment accord-

ing to the invention. Stair element 1 comprises in this embodiment two planks 4 which are placed substantially transversely relative to each other and which form the stair element 1. Stair element 1 further comprises a covering 5 which in this embodiment is arranged over substantially a whole tread surface 2 and nose surface 3. Further shown clearly in the figure is a fold line 6 which is formed in that sides of recess 7 (not shown, see Fig. 2) have been moved against each other as a result of covering 5 being folded.

Fig. 2 shows covering 5 in non-arranged state. Shown clearly is that covering 5 consists of one whole, wherein a recess 7 is arranged on one side of covering 5. Recess 7 takes the form here of a triangle, wherein the term "triangle" is intended as non-limitative example. Any shape suitable for forming a recess 7 falls within the context of the invention. In this embodiment recess 7 further has a depth which is slightly smaller than the thickness of covering 5.

Fig. 3 likewise shows covering 5 in non-arranged state, but now partially folded. The parts of stair element 1 in this figure correspond to the previous figure and will therefore not be discussed again. Clearly shown in this figure is that by folding the covering 5 the size of recess 7 decreases. The result of the covering being fully folded is a fold line 6 as shown in Fig. 1.

Fig. 4 and 5 show a schematic overview of the arranging of a covering 5 on another part 4 of stair element 1. For placing purposes covering 5 is divided notionally into two parts. A first part is first placed on the other part 4 of stair element 1. This is indicated with arrow A in Fig. 4. The second part of covering 5 is then placed on the other part 4 of stair element 1, this operation also

comprising of folding the covering 5. This step is indicated with arrow B in Fig. 5. The result of said steps is a stair element 1 as shown in Fig. 1.

Fig. 6 shows a cross-section of a first embodiment of a stair element 8 arranged on a stair tread 4. Stair element 8 comprises a nose surface 9, a tread surface 10 and a V-shaped coupling element 11. Nose surface 9 is coupled to a first leg of V-shaped coupling element 11. Tread surface 10 is coupled to the second leg of V-shaped coupling element 11. The V-shaped coupling element 11 is arranged on a front face and an upper face of stair tread 4. There is further a space 12 between the upper face of stair tread 4 and the tread surface 10. This space 12 is filled in the arranged state, for instance with polyurethane foam. Arrow 13 also indicates the protective element of the stair element.

Fig. 7 shows a cross-section of a further embodiment of a stair element 8 arranged on a stair tread 4. The difference between Fig. 6 and Fig. 7 is that in Fig. 7 the tread surface 10 is arranged directly onto the upper face of stair tread 4. In order to realize this a recess is cut into the upper face of stair tread 4, this recess being dimensioned such that a respective leg of the V-shaped coupling element 11 can be placed in the recess. In the arranged state the tread surface 10 connects to the upper face of stair tread 4 as shown in the figure.

Fig. 8A and 8B show schematic views of a stair element in the arranged state. The parts of stair element 8 already discussed above are not repeated here. Shown in Fig. 8A are a nose surface 9, a tread surface 10, a V-shaped coupling element 11 and a stair tread 4. Tread surface 10 is situated here above the desired position. One

leg of the V-shaped coupling element 11 is arranged as shown on an upper face of stair tread 4.

In Fig. 8B tread surface 10 is in the arranged state. Shown is the space 12 which can be filled with polyurethane foam. Further shown clearly in area 14 is that
5 in the situation of use the protective element protrudes in vertical direction above tread surface 10. Hereby obtained is the effect that a user who possibly slips over tread surface 10 is prevented from falling by the protec-
10 tive element.

After examination of the foregoing many alternative and additional embodiments will occur to the skilled person, all lying within the scope of the present invention as defined in the appended claims.

CLAIMS

1. Stair element for a stair tread, comprising:
- a tread surface,
 - 5 - a nose surface which in an orientation of use extends substantially downward relative to the tread surface, and
 - a covering comprising a decorative visual layer, wherein:
- 10 - the decorative visual layer extends continuously from at least a part of the tread surface onto the nose surface and wherein the decorative visual layer has substantially a continuous finish over a transition between the tread surface and the nose surface.
- 15
2. A stair element as claimed in claim 1, wherein the covering is provided with a recess for imparting a backward foldability at the position of the transition, preferably for providing a substantially sharp fold line
- 20 for the covering, and preferably the visual layer.
3. A stair element as claimed in any of the foregoing claims, wherein the covering comprises a substrate and the recess comprises a depth in the substrate to a position below the visual layer, preferably to a position
- 25 close to or as far as the visual layer.
4. A stair element as claimed in any of the foregoing claims, more preferably comprising a recess with a
- 30 depth of half the substrate or the covering, more preferably 3/5, 2/3, 70%, 80%, 90%, 95%, 98%, 100% of the thickness of the substrate or the covering.

5. A stair element as claimed in any of the foregoing claims, wherein the at least one recess has substantially the cross-sectional form of at least a triangular channel.

5

6. A stair element as claimed in any of the foregoing claims, further comprising a wear layer, preferably a transparent wear layer, more preferably arranged on a side of the visual layer remote from the substrate.

10

7. A stair element as claimed in any of the foregoing claims, wherein the covering comprises linoleum.

8. A stair element as claimed in any of the foregoing claims, wherein the covering is attached by means of adhesion to the stair element.

9. A covered stair element as claimed in any of the foregoing claims, wherein the transition comprises an acute angle with a corner or a small arc of curvature for the purpose of providing an impression of a natural wood appearance.

10. Covering for covering a stair element, such as a tread or a tread renovation element, as claimed in one or more of the claims 1-9.

11. Method for preparing a covering suitable for a stair element suitable for a stair tread, comprising a tread surface and a nose surface extending in an orientation of use substantially downward relative to the tread surface, the method comprising steps for:

- providing covering material comprising a decorative visual layer; and

- arranging the covering material on the stair element such that following arrangement the decorative visual layer of the covering extends continuously from at least a part of the tread surface onto the nose surface, and wherein the decorative visual layer is substantially continuous over a transition between the tread surface and the nose surface.

10

12. A method as claimed in claim 11, comprising steps, prior to arranging of the covering, for arranging a recess such as a cut-out portion for preferably providing foldability at the position of the transition, preferably for providing a substantially sharp fold line of the covering and preferably the visual layer.

15

13. A method as claimed in claim 11 or 12, comprising steps for positioning the recess at the location of a transition between the first component and the second component.

20

14. A method as claimed in any of the claims 11 to 13, wherein the step of providing covering material comprises of providing linoleum.

25

15. Stair element for a stair tread comprising:
- a tread surface, and
- a nose surface which extends in an orientation of use substantially downward relative to the tread surface,

30

wherein the nose surface comprises a protective element for protecting at least one front face of the tread surface.

5 16. Stair element as claimed in claim 15, wherein the protective element and the nose surface are formed integrally.

10 17. Stair element as claimed in claim 15 or 16, wherein the tread surface and the nose surface are formed separately.

15 18. Stair element as claimed in any of the claims 15 to 17, wherein the tread surface can be coupled to the nose surface using a V-shaped coupling element, wherein the coupling element is preferably configured for the purpose of fixing the nose surface to the stair tread.

20 19. Stair element as claimed in any of the claims 15 to 18, wherein the tread surface and/or the nose surface are at least partially formed from a material selected from the group comprising: leather, wood, MDF, HDF, steel and stainless steel.

25 20. Assembly of a stair element as claimed in any of the claims 15 to 19 and a stair tread,

 wherein the transition from an underside of the tread surface and an upper side of the stair tread is substantially filled, or

30 wherein an underside of the tread surface and an upper side of the stair tread lie substantially against each other.

21. Assembly as claimed in claim 20, wherein, in
the case the transition from an underside of the tread
surface and an upper side of the stair tread is substan-
tially filled, the transition is substantially filled with
5 polyurethane foam.

22. Assembly as claimed in claim 20, wherein, in
the case the transition from an underside of the tread
surface and an upper side of the stair tread lie substan-
10 tially against each other, a recess is arranged in the
stair tread for the purpose of fixing the stair element.

23. Assembly for a stair element as claimed in any
of the claims 15 to 19.
15

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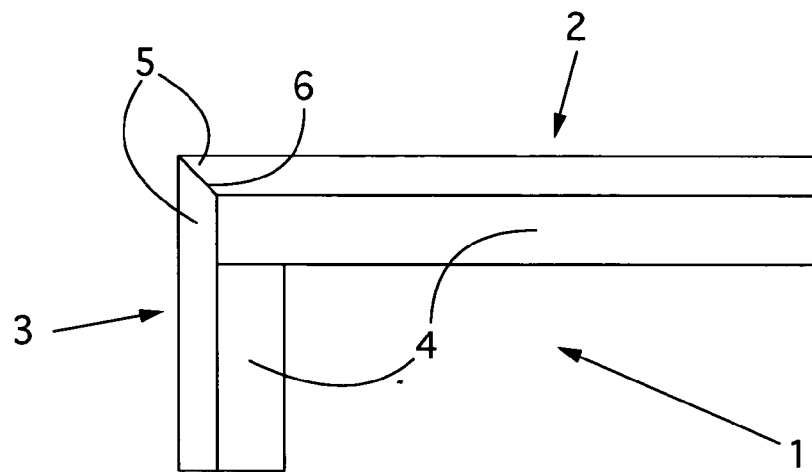


Fig. 1

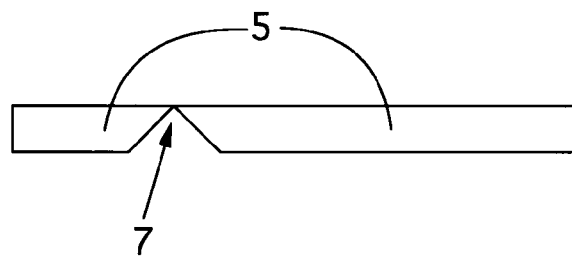


Fig. 2

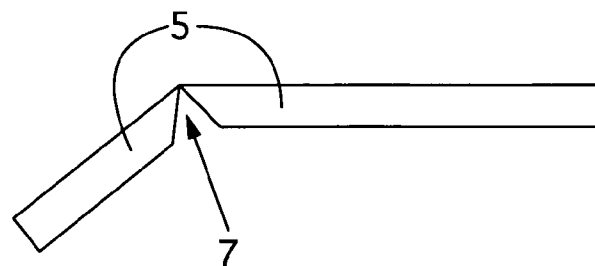
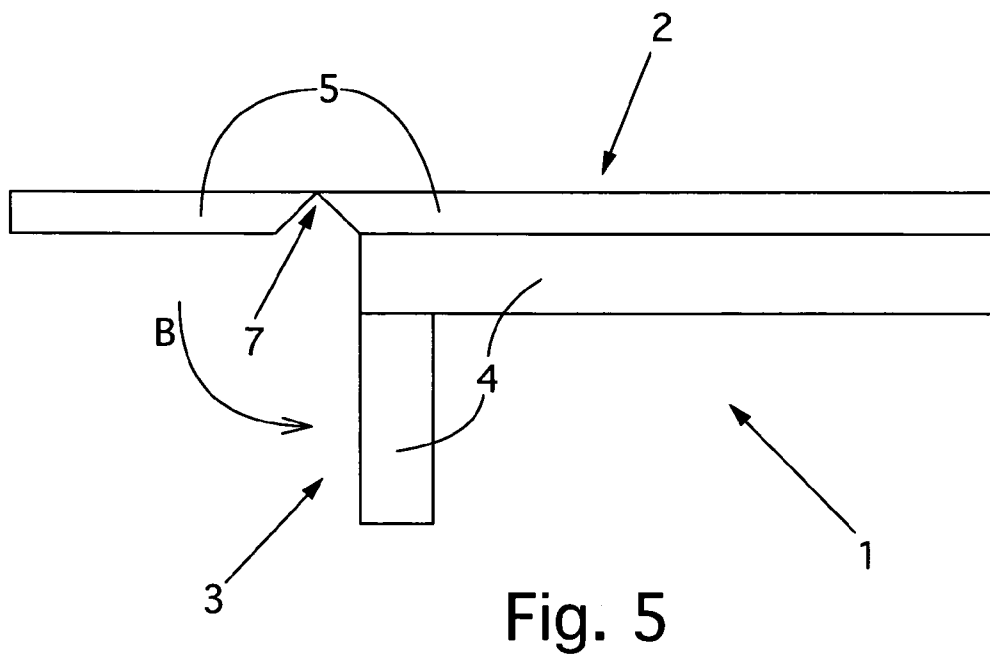
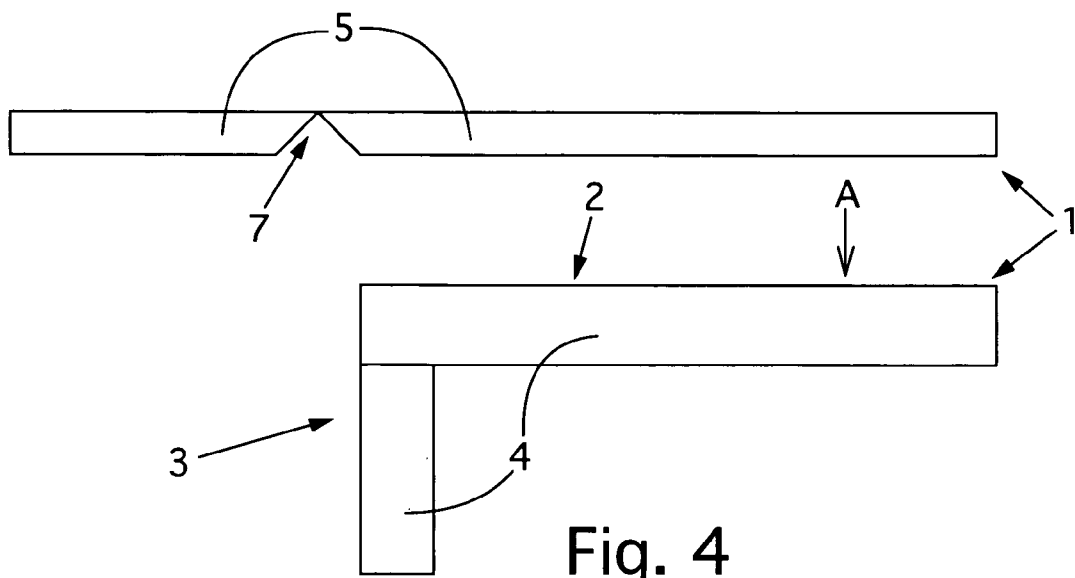


Fig. 3

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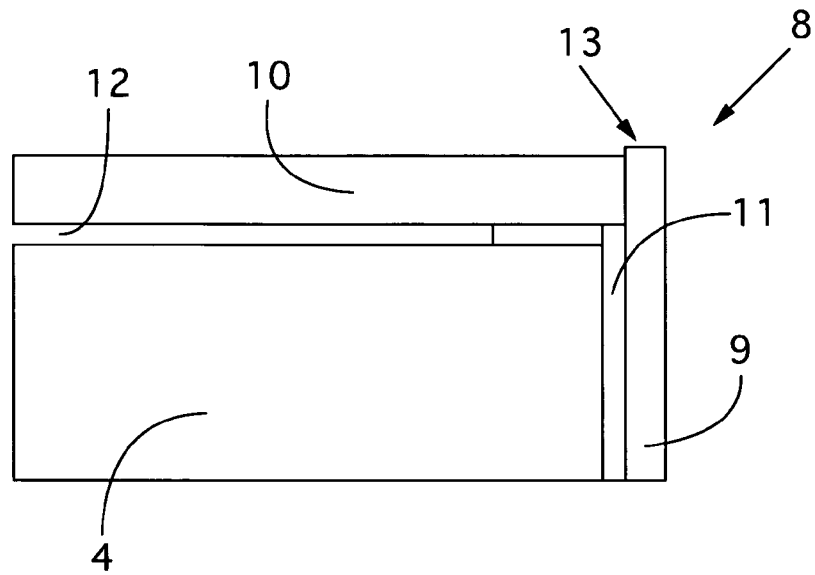


Fig. 6

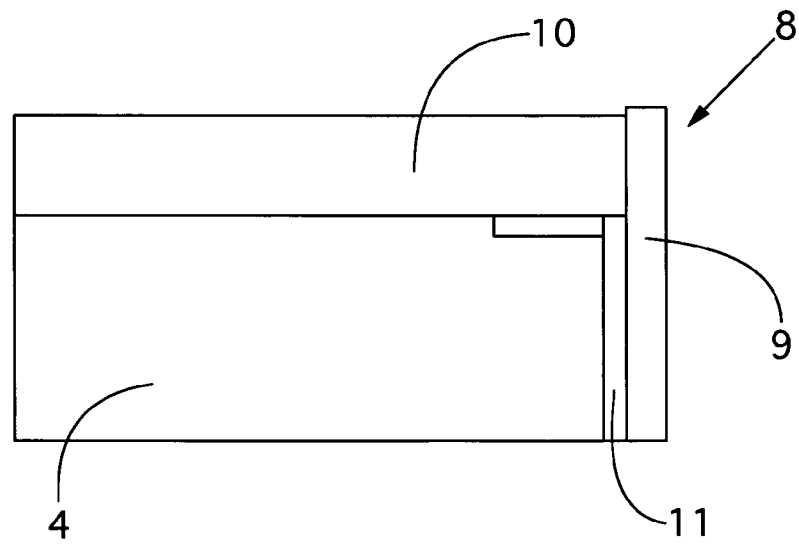


Fig. 7

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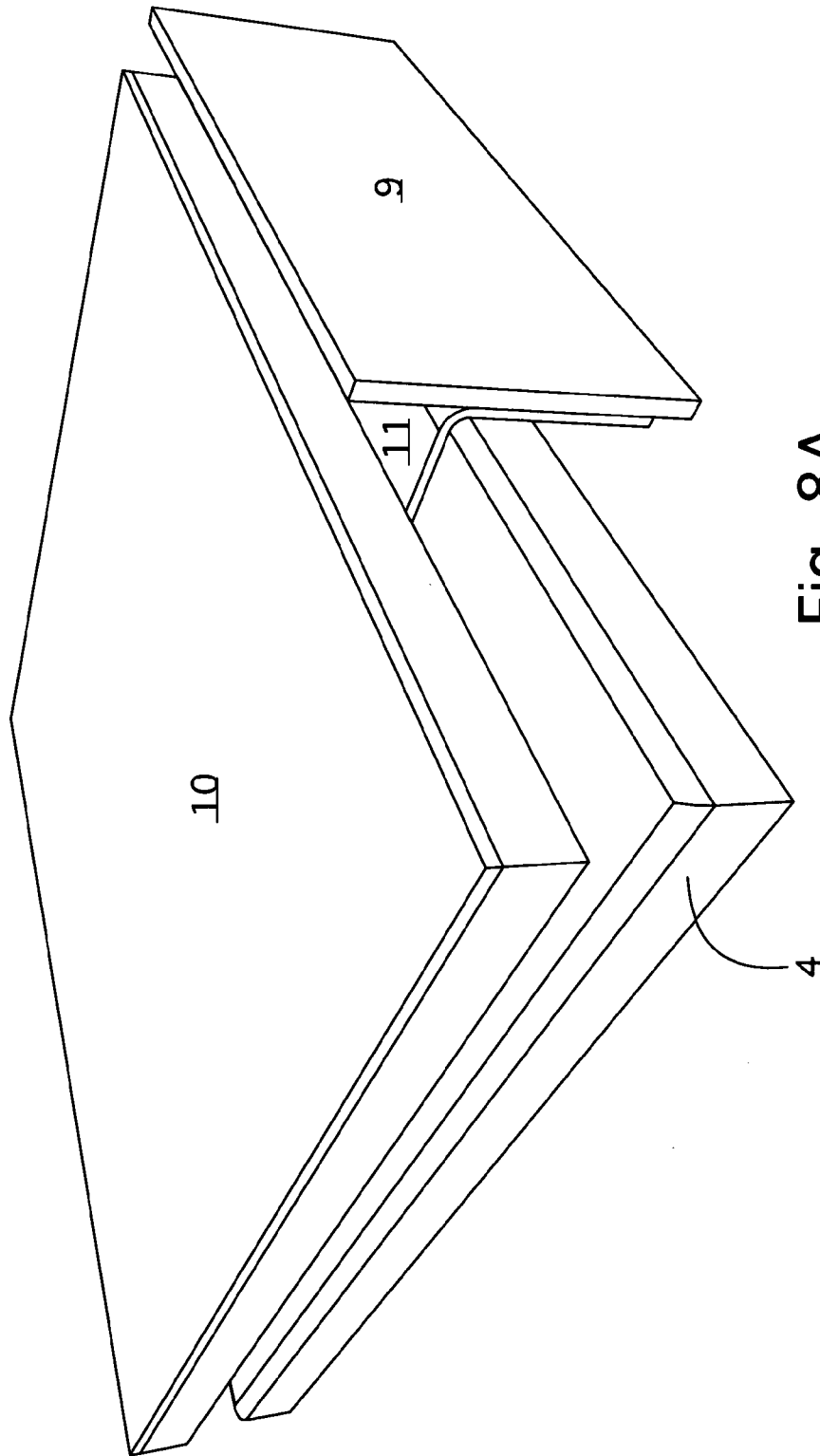


Fig. 8A

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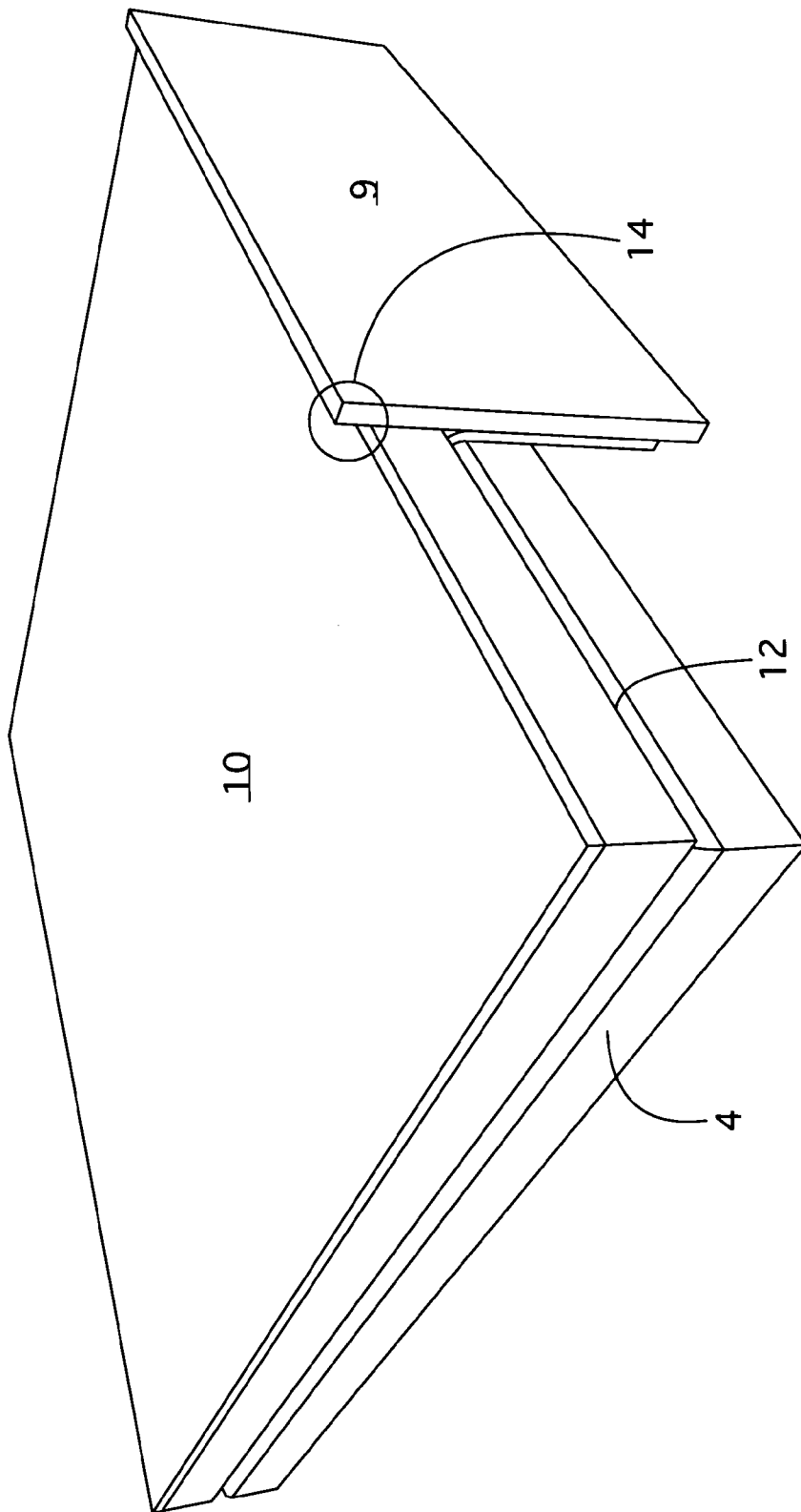


Fig. 8B