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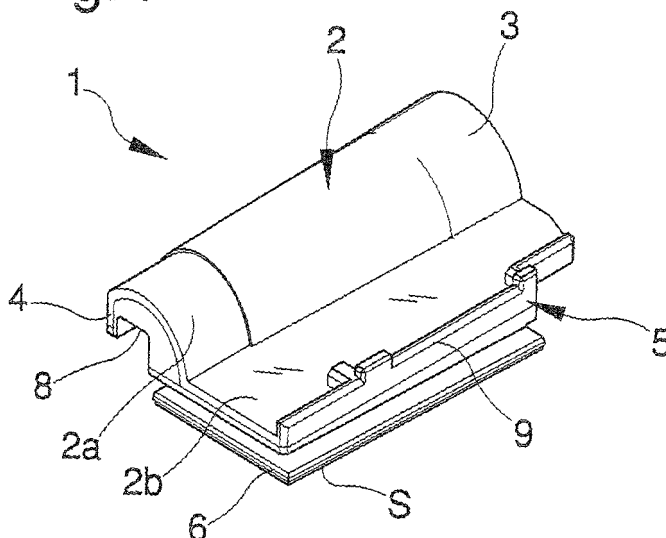
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(54) **Article for covering roofs or the like**

(57) An article (1) for covering roofs or the like, comprising a contoured body (2) which is provided with an exposed upper surface (3) and with a lower surface (4)

which is adapted to be arranged so as to face an area to be clad of a roof or the like, and at least one layer of thermally insulating material (5) which is associated with at least one portion of the lower surface (4).

Fig. 1



Description

[0001] The present invention relates to an article for covering roofs or the like.

[0002] With particular reference to the building sector, it is known to thermally insulate, waterproof and clad roofs and coverings of buildings in general.

[0003] In particular, the first step of thermal insulation entails laying, on the entire external area of the roof, panels made of insulating material, such as cork, expanded polyurethane, expanded polystyrene, or others.

[0004] The panels are thus appropriately contoured and arranged mutually side by side so as to cover the entire external area of the roof.

[0005] During the second step for waterproofing, a waterproofing sheath made of bituminous material (or also a liquid bituminous membrane spread onto the entire surface) is applied to the entire surface of the panels, preventing infiltrations of water in the gaps formed between two adjacent panels.

[0006] The sheaths are arranged side-by-side on the panels by the workers and are partially melted and heat-sealed together at the edges by using burners.

[0007] Once the entire area has been waterproofed, a plurality of flat tiles, curved tiles or the like are rested on the sheaths, arranged side by side and partially superimposed in order to clad the roof.

[0008] Further, it is known to provide ventilated coverings provided with an interspace which lies along the entire area to be thermally insulated and is adapted to be crossed by an air stream.

[0009] Such interspace is provided by spacing, by means of appropriate supporting elements, the tiles from the sheath of bituminous material arranged on the panels, and the resulting air layer acts as an additional insulator.

[0010] The covering is commonly completed by applying appropriate grilles at the lateral openings of the interspace, proximate to the gutter, which are adapted to prevent the access of birds or animals in general.

[0011] However, the known methods described above and the articles used have drawbacks.

[0012] The thermal insulation, waterproofing and cladding steps in fact are considerably complicated and require the presence of qualified workers, for a significant work times, with consequent high costs to provide the covering.

[0013] Another drawback consists in the need to shape the panels of insulating material appropriately, so as to adapt them to the surface of the area to be covered.

[0014] The panels are therefore cut and worked, consequently wasting material and increasing work times and waste disposal costs.

[0015] Another drawback is that the tiles or the like, by being simply rested on the sheaths, tend to slip downward under the action of atmospheric agents such as rain or snow, or due to thermal expansions caused by considerable temperature variations.

[0016] This movement can entail, for example, the movement of the outermost tiles toward the gutter of the roof, hindering or compromising considerably the regular conveyance and outflow of rainwater along the gutters and toward the outlets.

[0017] One should also not ignore the fact that the instability of the tiles or the like can cause accidental and potentially dangerous falls of workers during the step for cladding the covering or during other work on the roof, such as for example the installation of antennas, the repair of gutters, or others.

[0018] Another drawback relates to the structural fragility of the articles that are commonly used (tiles or the like).

[0019] Another drawback, in the case of the provision of ventilated coverings, is the high complexity of the methods used, which require highly specialized workers and materials and particular structures, all factors which lead to a considerable increase in general costs.

[0020] Such articles are in fact subject to breakage both during handling, packing and transport, due to accidental impacts, and after laying, as a consequence of the movements on the roof of workers during the provision of the covering or during other work (for example installation of antennas, work on gutters, or others).

[0021] This entails the purchase of larger quantities of articles than actually needed (usually approximately 3% more than the quantity needed), with an increase in general costs.

[0022] Further, breakage of the tiles after installation entails the possibility of infiltrations of water and requires the regular presence of specialized workers for inspection and maintenance interventions adapted to identify and replace the damaged tiles.

[0023] The aim of the present invention is to provide an article for covering roofs or the like which allows to facilitate and simplify the operations for thermal insulation and cladding of the covering of a building or the like.

[0024] Within this aim, an object of the invention is to reduce the general costs and construction times related to these thermal insulation and cladding operations.

[0025] Another object of the invention is to reduce the production of waste of materials and/or articles used during the covering operations.

[0026] Another object of the invention is to improve the structural stability over time of the cladding articles applied to the covering.

[0027] A further object of the invention is to improve the safety conditions of workers during the provision of the covering or during subsequent interventions, such as maintenance, installation of antennas, or others.

[0028] Another object of the invention is to facilitate the waterproofing of the covering while facilitating the ordinary conveyance and discharge of rainwater along the gutters and toward the outlets.

[0029] A further object of the invention is to improve the structural strength of the articles, consequently reducing further the production of waste, the general costs

for maintenance of the covering, and the possibility of water infiltrations, with damage to said covering.

[0030] A still further object of the present invention is to provide an article which is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0031] This aim and these and other objects which will become better apparent hereinafter are achieved by the present article for covering roofs or the like, comprising a contoured body which is provided with an exposed upper surface and with a lower surface which is intended to be arranged so as to face the area to be clad of a roof or the like, characterized in that it comprises at least one layer of thermally insulating material which is associated with at least one portion of said lower surface.

[0032] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of an article for cladding roofs or the like, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figures 1 and 2 are perspective views of a first embodiment of the article according to the invention;
Figure 3 is a perspective view of a plurality of articles according to the first embodiment of the invention, arranged so as to cover a roof or the like;
Figures 4, 5 and 6 are perspective views of articles related to a second embodiment of the invention;
Figures 7 and 8 are perspective views of a plurality of articles related to the second embodiment of the invention and arranged so as to cover a roof or the like.

[0033] With reference to the figures, the reference numeral 1 generally designates an article which can be used to cover roofs of buildings or the like.

[0034] The article 1 comprises a contoured body 2, which is provided with an upper surface 3, which is intended to be in view after laying, and with a lower surface 4, which is intended to face a portion of an area to be clad of a roof or the like.

[0035] It should be specified that with particular but nonlimiting reference to the present description, the terms "upper" and "lower" refer to the normal arrangement of the article 1 after laying for cladding a roof or the like.

[0036] The contoured body 2 can be shaped variously and in particular it can reproduce the profiles and shapes of traditional types of flat and/or curved tile for cladding roofs which are currently known.

[0037] Moreover, the contoured body 2 can be provided by using different types of materials which are commonly used, such as clay-based building materials, cement, PVC, or others.

[0038] The article 1 comprises at least one layer of thermally insulating material 5, such as expanded polyurethane, expanded polystyrene, a wood-based material

such as cork or the like, or others, which is associated with the lower surface 4.

[0039] Advantageously, the article 1 can comprise an additional layer of deformable material S, which is distributed on the lower face of the layer of thermally insulating material 5 and is adapted to self-adapt to hollows or protrusions of the area to be clad after laying.

[0040] The article 1 can further comprise a self-adhesive layer which is associated with the layer of thermally insulating material 5 or, as an alternative, with the deformable layer S, and is adapted to be arranged in contact with the area to be clad and to adhere to it in order to anchor the article 1.

[0041] Conveniently, the deformable layer S and the self-adhesive layer can coincide.

[0042] A protective film can be applied detachably to the self-adhesive layer, so as to facilitate the handling and transport of the article 1; the protective film is then removed by an operator before the step for laying the article 1.

[0043] With particular reference to a first embodiment of the article 1, as shown in Figures 1, 2 and 3, the contoured body 2 comprises a first substantially semicylindrical portion 2a, in which the upper surface 3 is convex and the lower surface 4 is concave.

[0044] The first portion 2a is provided with a lateral edge from which a second substantially plate-shaped portion 2b protrudes.

[0045] Advantageously, the article 1 comprises means 6 for connection to at least one other article 1 which is arranged adjacent during laying; the connection means 6 are constituted by a tab of the layer of thermally insulating material 5, which protrudes on at least one side of the article 1 and can be mated to a respective recess 7 formed in the adjacent article 1.

[0046] In particular, the tab 6 is substantially plate-like and parallel to the second portion 2b and protrudes from one side of the article and to the rear in order to enter the corresponding recesses 7, which are formed respectively at a lateral portion and a front portion of the articles 1 which are mutually adjacent during laying.

[0047] The tab 6 is provided with a lower face, on which the deformable (and/or adhesive) layer S is distributed and can be arranged so as to rest on the surface of the area to be clad.

[0048] In particular, the adjacent articles 1 are partly arranged so as to rest on said protruding portions of the tab 1. This allows, after laying, to obtain the layer of thermally insulating material 5 which is uniform and distributed over the entire area to be clad, facilitating better insulation and at the same time limiting infiltrations of rainwater.

[0049] The article 1 further comprises means for anchoring to an adjacent article, which are provided with a slot 8 which is formed at the lower face of the layer of thermally insulating material 5 which lies below the first portion 2a and inside which it is possible to insert a corresponding ridge 9 which is formed on the upper surface

of the second portion 2b of the adjacent article 1, at the edge which lies opposite the first portion 2a.

[0050] The first portion 2a is provided with a rear end which has a smaller cross-section. This allows, during laying, the mating of said end having a smaller cross-section with a corresponding front end of another article 1.

[0051] With reference to the second embodiment of the invention, shown in Figures 4, 5, 6, 7 and 8, two possible types of the article 1 which can be used in mutual cooperation to cover the area to be clad, are provided.

[0052] For the sake of greater clarity in presentation, the reference numeral 1a designates hereinafter a first article, shown in Figures 5 and 6, and the reference numeral 1b designates a second article, shown in Figure 4.

[0053] The contoured body 2 of the first article 1a has a substantially semicylindrical shape, in which the lower surface 4 is convex and the upper surface 3 is concave.

[0054] Similarly to what has been described above for the first embodiment of the invention, the article 1a comprises the connection means 6 which are constituted by a substantially plate-like tab, which protrudes laterally and at the front in order to enter the recesses 7 which are formed respectively at a lateral portion and a rear portion of the articles 1a which are arranged mutually adjacent during laying.

[0055] Conveniently, the contoured body 2 has a transverse cross-section which decreases toward the front end. This allows, during laying, the coupling of said front end to a corresponding rear end of another first article 1a.

[0056] The tab 6 is provided with a lower face, on which the deformable (and/or adhesive) layer S is distributed and can be arranged so as to rest on the area to be clad.

[0057] The contoured body 2 of the second article 1b has a substantially semicylindrical shape, in which the lower surface 4 is concave and the upper surface 3 is convex.

[0058] The layer of thermally insulating material 5 in this case is formed within the cavity of the contoured body 2 and is provided with an appropriate recess 10, which runs along almost the entire length of the contoured body 2.

[0059] As shown in Figure 6, a plurality of first articles 1a, which can be arranged so as to rest mutually side by side on the area to be clad, are adapted to form a layer of thermally insulating material 5 which is uniform and lies on the entire surface of said area.

[0060] The second article 1b can be arranged so as to rest between two first mutually adjacent articles 1a, with the recess 10 arranged so as to accommodate (snugly) the respective adjacent lateral edges thereof, allowing better stability of the entire structure.

[0061] As described above, the contoured body 2 of the second article has a transverse cross-section which increases toward the front end, allowing, during laying, the mating of said front end to a corresponding rear end of another second article 1b.

[0062] The operation of the article according to the in-

vention is as follows.

[0063] With particular but non-limiting reference to the first embodiment shown in Figures 1, 2 and 3, the provision of the covering of buildings or the like provides for a first step for waterproofing the area to be clad.

[0064] Such waterproofing step occurs by means of appropriate insulating sheaths made of bituminous material or the like, which are applied by workers to the area to be clad and are mutually heat-sealed by melting by means of burners or the like.

[0065] As an alternative, waterproofing occurs by means of a liquid bituminous insulating membrane which is applied by the workers over the entire surface of the area to be clad.

[0066] The articles 1 are then laid and arranged mutually side by side, partially superimposed and associated by way of the connecting means 6 described above.

[0067] If an additional deformable and adhesive layer S is present, the worker, after removing the article 1 from the packing, removes the protective film and arranges the article 1 so that the deformable and adhesive layer S makes contact with the surface of the area to be clad.

[0068] Once the laying of all the necessary articles 1 has ended, the layer of thermally insulating material 5 affects the entire clad surface.

[0069] Covering by means of the first and second articles 1a and 1b related to the second embodiment shown in Figures 4, 5 and 6 occurs in a similar manner.

[0070] In practice it has been found that the described invention achieves the proposed aim and objects, and in particular the fact is stressed that it simplifies the operations for thermally insulating and cladding the covering of buildings or the like.

[0071] The presence of the layer of thermally insulating material (which is integrated into the article) in fact allows to avoid the preliminary step of applying insulating panels in the area to be clad, as commonly performed to thermally insulate roofs or the like.

[0072] The thermal insulation and cladding steps, which are normally distinct and separate from the waterproofing step, are performed in a single operation during the laying of the articles.

[0073] This allows to simplify considerably the thermal insulation step, reducing considerably, at the same time, the total time for providing the covering.

[0074] The simplification of the entire process does not require the presence of highly qualified workers and this, together with reduced execution times, contributes to a considerable reduction in the general costs for providing the covering.

[0075] Another advantage of the invention consists in reducing the waste that is normally produced during thermal insulation and cladding operations.

[0076] The invention in fact allows to eliminate the waste that is generally produced by the working of insulating panels, which are not present here, and to reduce considerably the quantity of articles damaged during handling, transport or laying.

[0077] The presence of the layer of thermally insulating material in fact makes the article structurally stronger than known articles and therefore less subject to breakage.

[0078] Another advantage of the invention is the greater structural stability over time of the entire cladding, provided by the presence of an additional adhesive/deformable layer which allows the fixing and self-adaptation of the articles to the surface of the area to be clad, by the presence of the connecting means and by the presence of the anchoring means.

[0079] Such structural stability further improves the safety of workers who move over the clad surface during the provision of the covering or after, during operations for maintenance or of another type.

[0080] Another advantage of the invention is to facilitate the waterproofing of the covering, as a direct consequence of the high uniformity of the layer of thermally insulating material which is provided and is due to the particular shape of the connecting means of the articles.

[0081] A further advantage of the invention is that the presence of the layer of thermally insulating material allows to avoid the application of grilles or the like suitable to prevent the access of birds or animals in general to regions inside the covering, further reducing the general costs and further simplifying the process for providing the covering.

[0082] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0083] All the details may further be replaced with other technically equivalent elements.

[0084] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirement without thereby abandoning the scope of the protection of the appended claims.

[0085] The disclosures in Italian Patent Application No. MO2006A000100 from which this application claims priority are incorporated herein by reference.

[0086] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An article for covering roofs or the like, comprising a contoured body which is provided with an exposed upper surface and with a lower surface which is intended to be arranged so as to face the area to be clad of a roof or the like, **characterized in that** it comprises at least one layer of thermally insulating material which is associated with at least one portion of said lower surface.

2. The article according to claim 1, **characterized in that** it comprises at least one deformable layer, which is associated with a lower face of said layer of thermally insulating material.

3. The article according to one or more of the preceding claims, **characterized in that** it comprises at least one self-adhesive layer, which is associated with the lower face of said layer of thermally insulating material and/or said deformable layer.

4. The article according to one or more of the preceding claims, **characterized in that** said deformable layer and said self-adhesive layer coincide.

5. The article according to one or more of the preceding claims, **characterized in that** it comprises at least one protective film which is detachably associated with said self-adhesive layer.

6. The article according to one or more of the preceding claims, **characterized in that** said insulating material comprises expanded polyurethane.

7. The article according to one or more of the preceding claims, **characterized in that** said insulating material comprises expanded polystyrene.

8. The article according to one or more of the preceding claims, **characterized in that** said insulating material is wood-based.

9. The article according to one or more of the preceding claims, **characterized in that** it comprises means for connection to at least one adjacent article.

10. The article according to one or more of the preceding claims, **characterized in that** said connection means comprise at least one tab of said layer of thermally insulating material which protrudes on at least one side and can be mated to at least one respective recess formed in said adjacent article.

11. The article according to one or more of the preceding claims, **characterized in that** said tab is substantially plate-like and is provided with a portion which protrudes on at least one side of the article and can be inserted in said recess.

12. The article according to one or more of the preceding claims, **characterized in that** said deformable layer and/or said adhesive layer is associated with the lower face of said tab.

13. The article according to one or more of the preceding claims, **characterized in that** said contoured body comprises at least one first portion, which is substantially cylindrical and in which said upper surface is

convex and said lower surface is concave, and is provided with a lateral edge from which at least one second substantially plate-like portion protrudes.

14. The article according to one or more of the preceding claims, **characterized in that** it comprises means for anchoring to at least one other adjacent article. 5
15. The article according to one or more of the preceding claims, **characterized in that** said anchoring means comprise at least one slot which is formed at at least one of said upper surface of said second portion and at the lower face of said layer of thermally insulating material arranged below said first portion, which can be associated with at least one corresponding ridge which is formed on the other of said upper surface of said second portion and the lower face of said layer of thermally insulating material which lies below said first portion. 10 15 20
16. The article according to one or more of the preceding claims, **characterized in that** said ridge protrudes from the edge of said second portion which lies opposite said first portion. 25
17. The article according to one or more of the preceding claims, **characterized in that** said contoured body has a substantially semicylindrical shape, in which said lower surface is substantially convex and said upper surface is substantially concave. 30
18. The article according to one or more of the preceding claims, **characterized in that** said contoured body has a substantially semicylindrical shape, in which said lower surface is substantially concave and said upper surface is substantially convex. 35
19. The article according to one or more of the preceding claims, **characterized in that** said layer of thermally insulating material is shaped so as to form at least one recess which runs substantially parallel to the longitudinal axis of said contoured body. 40 45 50 55

Fig. 1

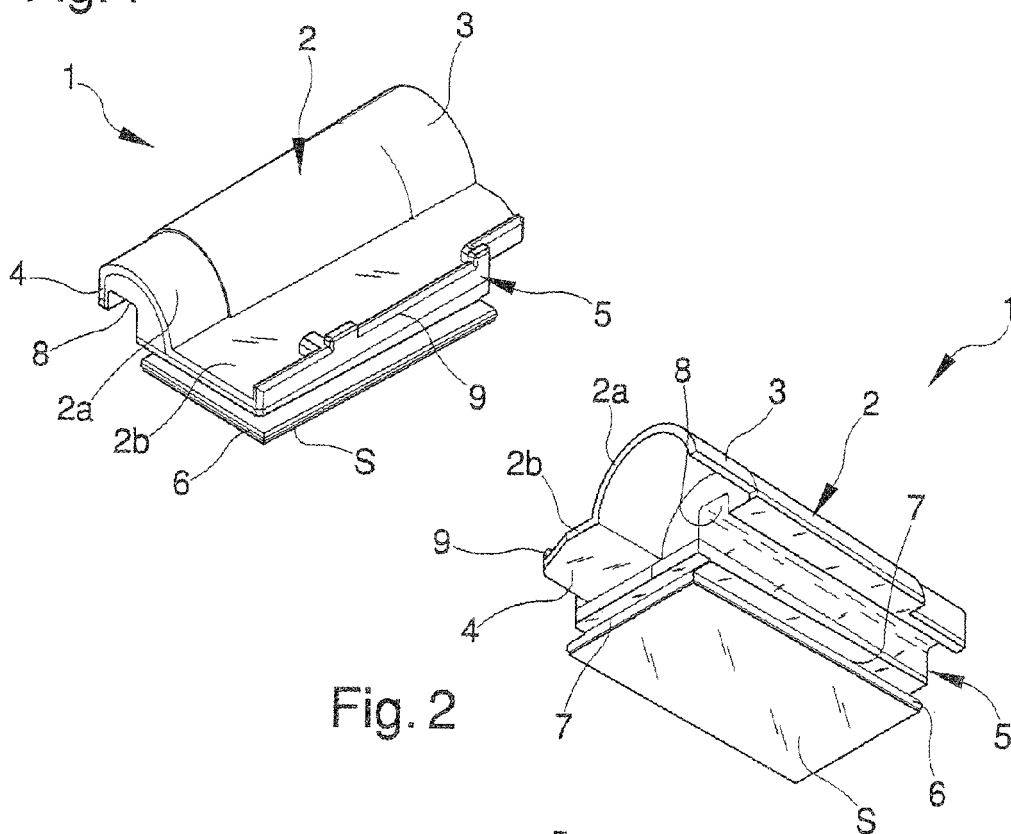


Fig. 2

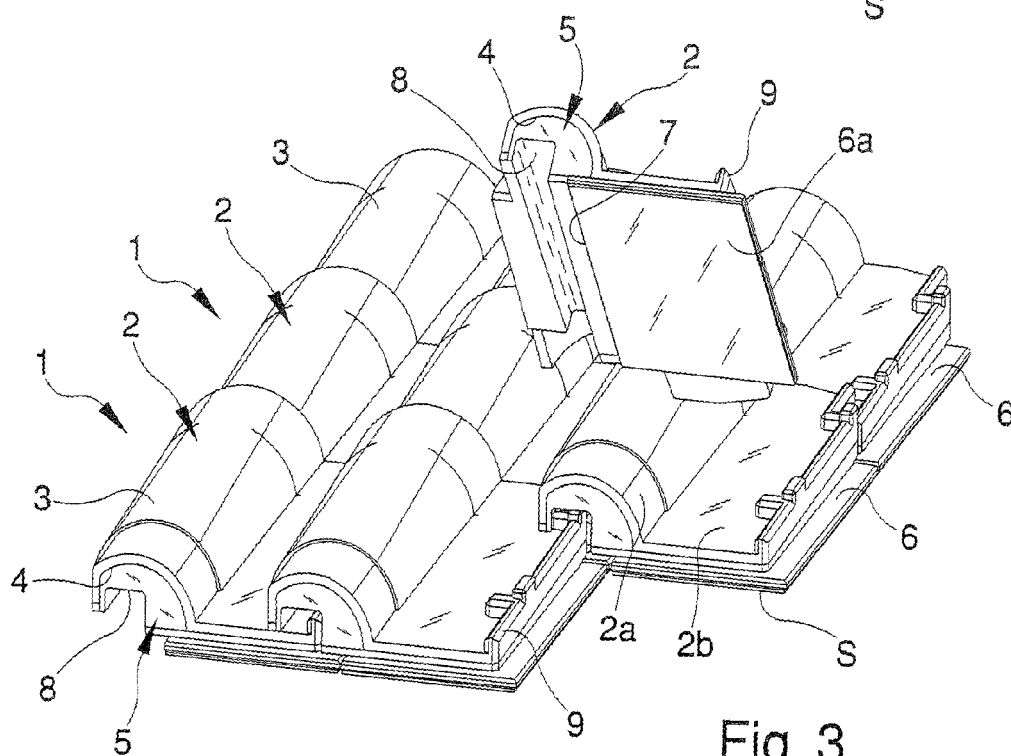
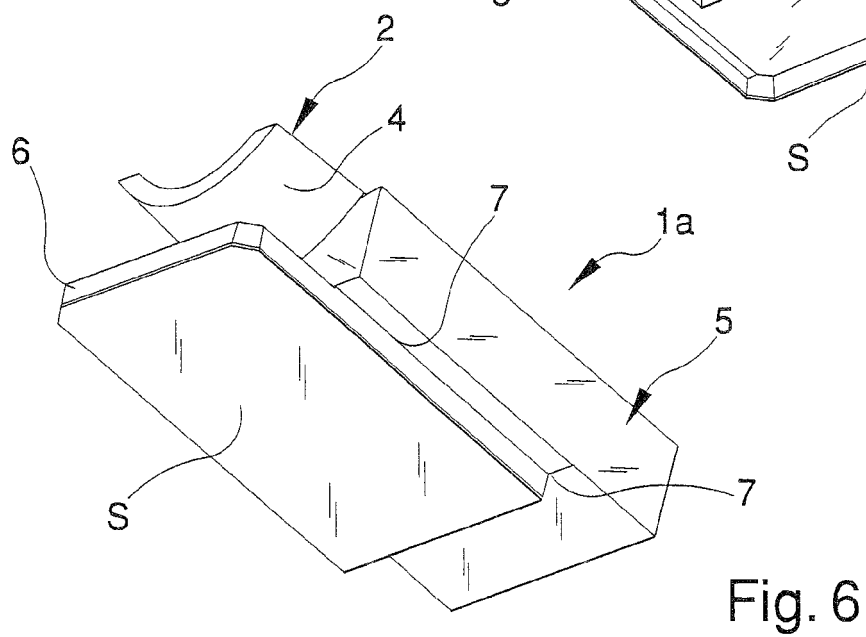
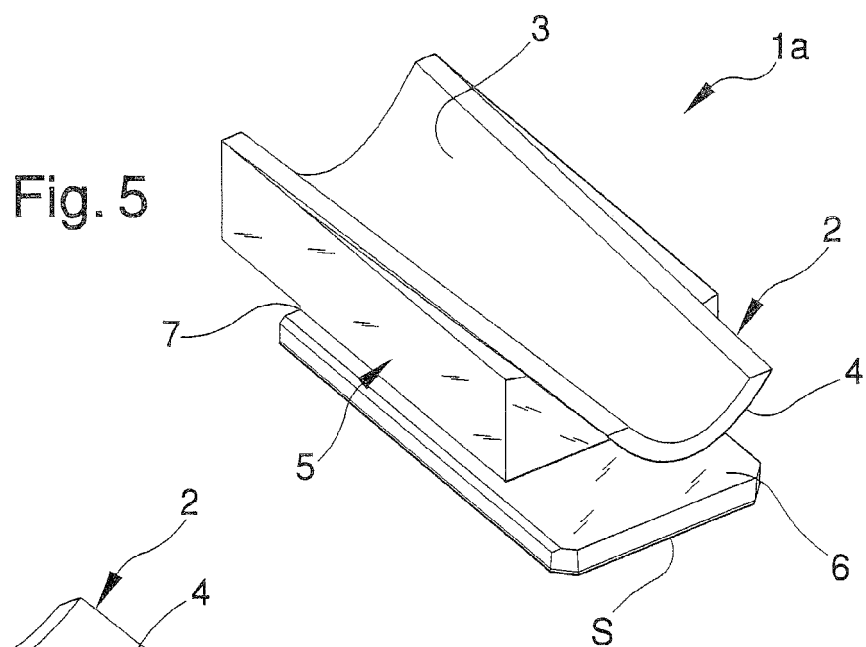
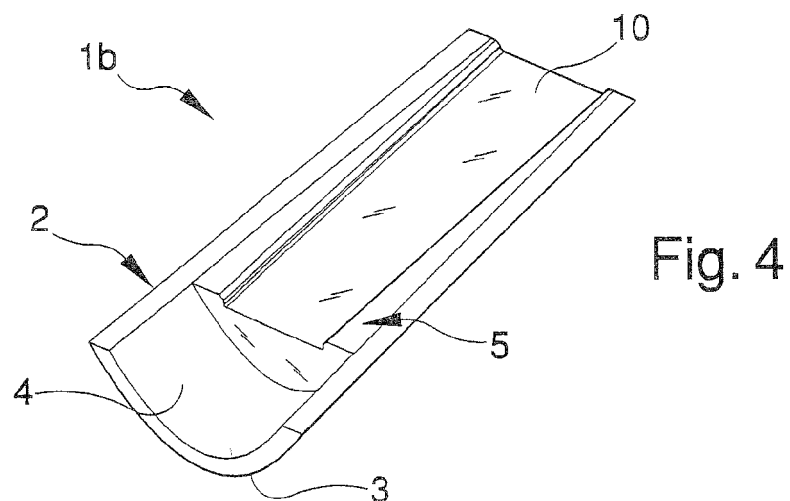
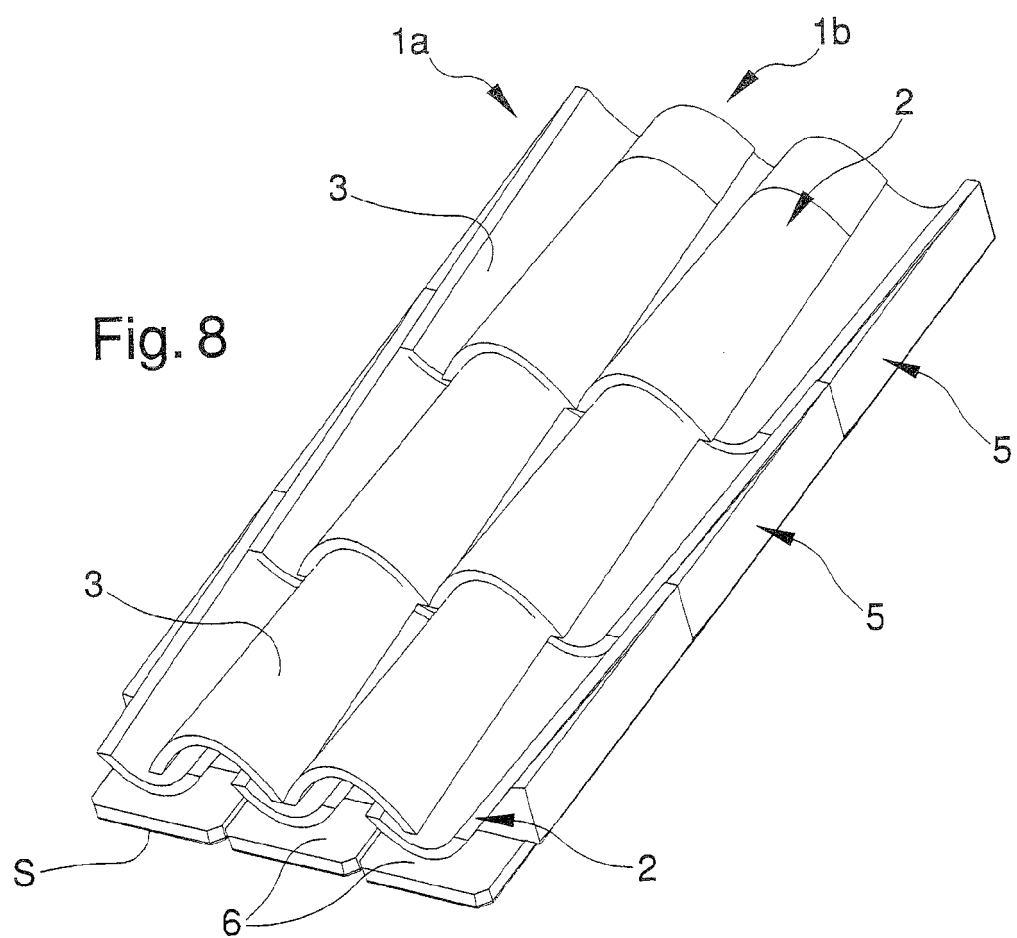
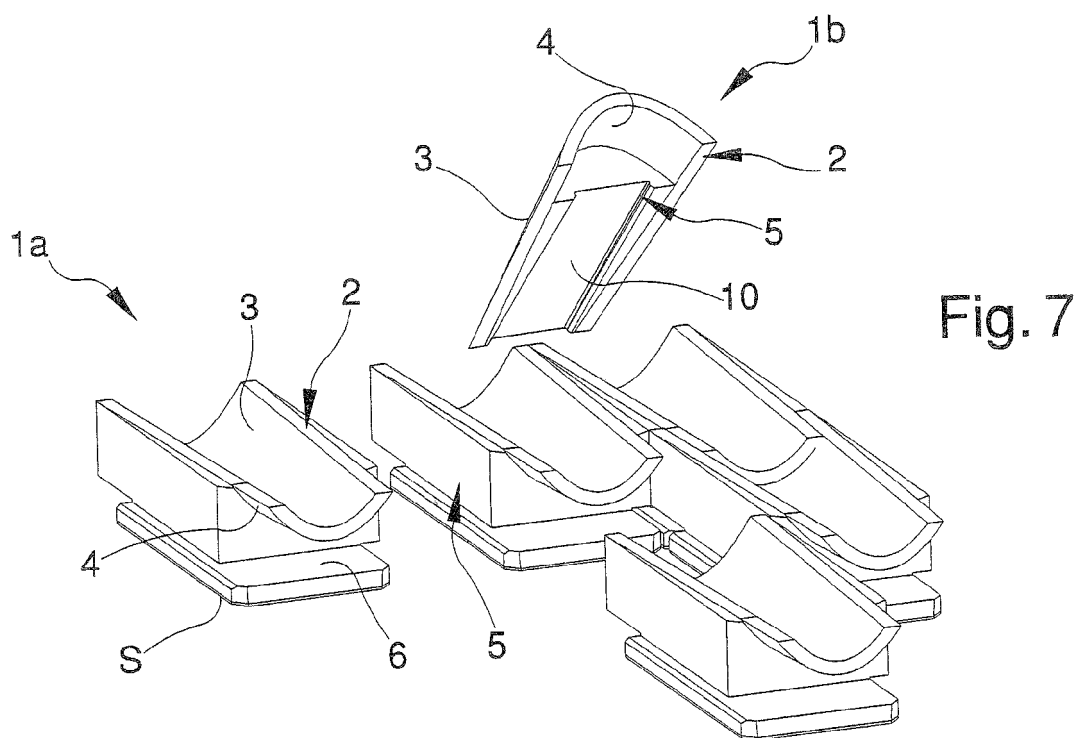


Fig. 3





REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- IT MO20060100 A [0085]