



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
03.10.2012 Bulletin 2012/40

(51) Int Cl.:
E06B 1/62 (2006.01)

(21) Application number: **11460041.4**

(22) Date of filing: **04.08.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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(30) Priority: **11.08.2010 PL 39210610**

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(54) **Flashing tape, in particular for windows and doors and method of flashing tape production**

(57) The subject of the invention is a flashing tape, in particular to be used as a seal and insulation of the gap between window or door frame and a wall, and the method of the flashing tape production.

The tape according to the invention consists of at least two stripes of compressible insulation foam (1) and (1.1) made of plastic, covered with a vapour barrier layer (12) on one side at least, attached on both sides to the stiffening tape (2). The stripes (1) and (1.1) are compressed in the direction crosswise to the stiffening tape (2) by means of at least one protective film (3) which is

a perforated vapour-permeable film (5) and (5.1). The film is joined to the edge of the stiffening tape (2) in connection spots (6) or in points (7) and (7.1) if it is made of two film stripes (3) and (3.1). The protective film (3) of variable permeability for water vapour depending on air humidity is joined in place (4), whereas the stiffening tape (2) is more flexible in the longitudinal direction than crosswise. The stiffening tape (2) may be made of different materials, the same applies to stripes of compressible insulation foam (1) and (1.1) and a vapour barrier layer (12).

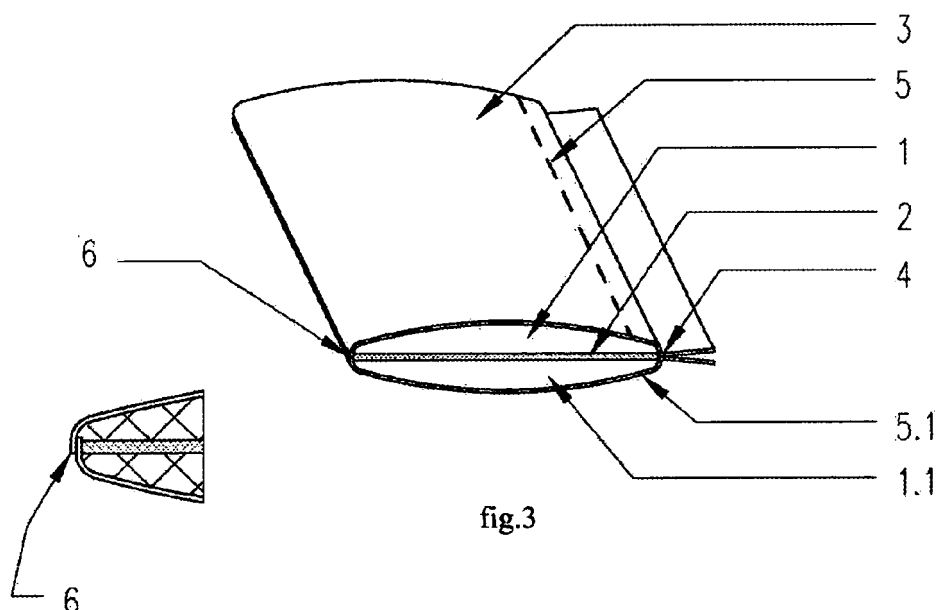


fig.3

Description

[0001] The subject of invention is a flashing tape, in particular to be used as a seal and insulation of the gap between window or door frame and a wall.

[0002] A traditional method of joints insulation between an opening in the building wall and a window or door frame is injecting a polyurethane foam to the gap or filling such gap with some insulating material, for example mineral wool. Basic drawback of such solutions is that they are labour-consuming and the gap insulation is not homogenous. Another disadvantage of such solutions is the fact that apart from these materials which play the role of thermal insulation, such as foam, or wool, it is necessary to additionally apply expansion tapes performing the sealing role.

[0003] There are also methods of sealing the joints between a window and wall by means of expanding tapes made of polyurethane foams impregnated with acrylic glue. This solution however, has a significant drawback as the window installation time with the tape must be limited to the tape expanding time which considerably limits the possibility to apply this solution in practice.

[0004] The patent application no DE199 44 611 describes a sealing stripe used as a seal of the gap consisting of a plastic tear-to-open sheath in which a foam stripe is placed. The drawback of such a seal stripe is that its shape is barrel-like. It prevents even placement of the stripe in a narrow gap, especially if the gap depth is bigger than its width.

[0005] The subject of the invention is a seal tape eliminating the aforementioned drawbacks.

[0006] In basic version, the flashing tape consists of two stripes of compressible insulation foam separated by a stiffening tape compressed in a direction crosswise to the stiffening tape by being wrapped with protective film. The compressible foam may be made of any material having a foam structure allowing its compression, for example a polyurethane foam or polyurethane foam impregnated with acrylic glue slowing down its expansion and increasing its insulating power. It is also possible to use other types of plastic foams. Insulating tapes may also be of different thickness. This thickness depends on the width of expansion gap. The stiffening tape allows to obtain a tape of an ellipse like shape, which is a significant advantage as such tape may be used for insulation of gaps having a big ratio of the expansion gap depth to its width which for example is the case for an expansion gap between opening in the building and a window or door, where the ratio of the gap depth to its width is usually bigger than 2. It is advantageous to make the stiffening tape from plastic. The stiffening tape may be perforated or goffered which reduces its stiffness in longitudinal direction while maintaining the crosswise stiffness. Such solution is particularly advantageous as it allows for easier wrapping the tape in corners. The stiffening tape material may be for example a cardboard or paperboard. The protective film made of plastic may also be made as

a multilayer film and/or film containing reinforcing materials such as nonwoven fabric, knitted fabric or textile. As a torn or cut protective film may play the role of external insulation, it may be made of a vapour-permeable film or a film of variable permeability for water vapour depending on air humidity. Such film has a low vapour-permeability at low air humidity and high permeability at high air humidity. The use of protective film for external insulation is particularly advantageous as it eliminates the necessity to apply additional external expansion tape. The connection of protective film may be made by means of adhesion or welding. It is also possible to use a sleeve made for example of heat shrink plastic film. In such version, the expansion of foam takes place by cutting the protective film.

[0007] In another version, the flashing tape consists of two stripes of compressible insulation foam separated by a stiffening tape compressed in a direction crosswise to the stiffening tape by wrapping with protective film. The protective film may be joined for example by gluing, sewing or welding. In a small distance from the spot where the film is joined there are perforations enabling tearing the protective film off. It is also possible to tear the film using different methods, for example by means of a pull strip or thread melted into the film. On the opposite side of the spot of the protective film connection there is a place, in which the this film is joined for example by gluing or welding to the edge of stiffening tape. This connection prevents movement of protective film while it is being torn. It is also possible to make the flashing tape without perforation. In such a case the tape is cut with a knife. Side edges of the insulating foams from the side which after the tape installation in the gap between a window and wall is located inside the building may additionally be covered with a vapour barrier layer or a layer of variable permeability for water vapour. This layer may for example be an impregnate or film of specific properties. It may also be an additional layer of compressible foam having the required properties. Such solution causes that it is not necessary to seal the gap between the window or door frame and the wall by means of an insulation tape.

[0008] In another version, the perforation is made on the side opposite to the spot where the film is joined. The tape expands after the sticking out film edges are pulled. In this version the protective film is removed completely.

[0009] It is also possible to use two protective films which are joined to the stiffening tape on its edge on its both sides. On the opposite side, the protective films in the spot in which they are joined may be glued, sewed or welded, and in a small distance from the spot where the film is joined there are perforations preventing tearing protective films off. It is also possible to produce the tape according to this example without perforation. In such a case the tape is cut with a knife.

[0010] Still another example of flashing tape is a double-sided tape. This version is particularly advantageous as the stiffing tape consisting of two stripes joined with

the protective film allows for strong compression of the foam. Protective film is attached to the stiffening tapes and two stripes of compressible foam are fixed.

[0011] The subject of the invention is presented in the manufacturing examples on a drawing on which fig. 1 and fig. 2 show flashing tape respectively before and after expanding, fig. 3 and fig. 4 show this tape consisting of two stripes of compressible insulation foam separated by insulating tape also before and after expanding, whereas fig. 5 and fig. 6 show the tape with perforation made on the side opposite to the protective film connection spot, again respectively before and after expanding, then fig. 7 and fig. 8 show the tape with two protective films connected with the stiffening tape on the edges at its both sides, before and after expanding, still another example of the tape with two stiffening stripes joined on the edges with the protective film is shown on fig. 9 and fig. 10 of the drawing, respectively before and after the tape expanding according to the invention. The location of spots where the protective film is attached to stiffening tapes is shown on fig. 11 of the drawing, whereas the connecting spots of the ready to use tape and place in which the tape is to be cut above the connecting spots are shown respectively on fig. 12 to fig. 15 of the drawing. Fig. 16 shows the section of an installed window with the flashing tape, and fig. 17 and fig. 18 show a view of the tape according to the invention placed in the corners, respectively wound up in a loop as on fig. 14 or cut to the gap length as shown on fig. 15.

[0012] As shown on fig. 1 of the drawing, the flashing tape consists of two stripes of compressible insulation foam (1) and (1.1) separated by a stiffening tape (2) compressed in a direction crosswise to the stiffening tape (2) and wrapped with protective film (3). Fig. 2 of the drawing shows the expanded flashing tape.

[0013] Another version of the double-sided flashing tape made according to the invention is shown on fig. 3. In this version, the flashing tape consists of two stripes of compressible insulation foam (1) and (1.1) separated by a stiffening tape (2) compressed in a direction crosswise to the stiffening tape (2) and wrapped with protective film (3). The protective film (3) is connected with itself in spot (4). In a small distance from the spot where the film is joined (4) there are film perforations (5) and (5.1). On the opposite side of the spot (4) of the protective film connection there is a place (6), in which the protective film (3) is joined to the edge of stiffening tape (2). Fig. 4 is an expansion of the view on fig. 3, it, however, shows the expanded tape.

[0014] The following version of the tape as per the invention is presented on fig. 5 of the drawing which shows the flashing tape differing from the one shown on fig. 3 by the fact that perforation (5) is located on the side opposite to the film connection (4). Fig. 6 presents this tape expanded.

[0015] Another example of the flashing tape made according to the invention is presented on fig. 7. The flashing tape in this version differs from the version presented

on fig. 3 as in this case two protective films (3) and (3.1) are joined by the stiffening tape (2) on its edge on both sides (7) and (7.1). On the opposite side, the protective films (3) and (3.1) are joined in spot (4), and in a small distance from the film connection spot (4) there are film perforations (5) and (5.1). Fig. 5 presents this tape expanded.

[0016] Still another example of the flashing tape made according to the invention in a double-sided version is presented on fig. 9 of the drawing. In this version, the stiffening tape consists of two stripes (2) and (2.1) joined with the protective film (3). The protective film (3) is joined to the stiffening tapes (2) and (2.1) in spots (8) and (8.1). This connection is shown on fig. 11. Two stripes of compressible foam (1) and (1.1) are fixed to the stiffening tapes (2) and (2.1). Further, as shown on figure 12 and figure 13 the stiffening tapes (2) and (2.1) are wound up to the inside, and then, as shown on fig. 14 the tape edges are joined in spot (9). The part of the tape located above the connection point (9) as shown on fig. 15 is cut in place (10). The stiffening tapes (2) and (2.1) are joined either on their entire surface (11) or on its part and they constitute a double-sided stiffening tape. Fig. 10 shows this type of the tape expanded.

[0017] Fig. 16 is an illustration of the installed window section with expanded flashing tape, the tape installation in expansion gap is clearly shown.

[0018] Fig. 17 and fig. 18 present the methods of flashing tapes installation in the corners. The tape may be wrapped in a corner in the form of a loop which is shown on fig. 13 or cut it in the corner adjusting its length to the length of the gap, which is presented on fig. 14 of the drawing.

[0019] The flashing tape in version shown on fig. 1 consists of two stripes of compressible foam (1) and (1.1) separated by a stiffening tape (2) compressed in a direction crosswise to the stiffening tape by wrapping them with protective film (3). The compressible foam (1) and (1.1) may be made of any material having a foam structure allowing its compression, for example a polyurethane foam or polyurethane foam impregnated with acrylic glue slowing down its expansion and increasing its insulating power. It is also possible to use other type of plastic foams. Insulating tapes may also be of equal or different thicknesses. Their thickness depends on the expansion gap width. The stiffening tape (3) allows to obtain a tape of an ellipse like shape, which is a significant advantage as such tape may be used for insulation of gaps having a big ratio of the expansion gap depth to its width which for example is the case for an expansion gap between opening in the building and a window or door, where the ratio of the gap depth to its width is usually bigger than 2. It is advantageous to make the stiffening tape (2) from plastic. The stiffening tape (2) may be perforated or goffered which reduces its stiffness in longitudinal direction while maintaining the crosswise stiffness. Such solution is particularly advantageous as it allows for easier wrapping the tape in the corners. The stiffening

tape (2) material may be for example a cardboard or paperboard. The protective film (3) made of plastic may also be made as a multilayer film and/or film containing reinforcing materials such as nonwoven fabric, knitted fabric or textile. As a torn or cut protective film (3) may play the role of external insulation, it may be made of a vapour-permeable film or a film of variable permeability for water vapour depending on air humidity. Such film has a low vapour-permeability at low air humidity and high permeability at high air humidity. The use of protective film (3) for external insulation is particularly advantageous as it eliminates the necessity to apply additional external expansion tape. In this version the connection (4) may be made by means of adhesion or welding. It is also possible to use a sleeve made for example of heat shrink plastic film. In this version, the expansion of foam (1) and (1.1) takes place by cutting the protective film (3). [0020] The tape compliant with the description above is presented in expanded state on fig. 2 of the drawing. [0021] The flashing tape in the version presented on fig. 3 consists of two stripes of compressible insulation foam (1) and (1.1) separated by a stiffening tape (2) compressed in a direction crosswise to the stiffening tape (2) by wrapping with protective film (3). The protective film (3) may for example be joined on the spot (4) by gluing, sewing or welding. In a small distance from the spot (4) where the film (3) is joined there are film perforations (5) and (5.1) enabling tearing the protective film (3) off. It is also possible to tear the film (3) off using different methods, for example by means of a pull strip or thread melted into the film. On the opposite side of the spot (4) of the film (3) connection there is a place (6), in which the protective film (3) is joined for example by gluing or welding to the edge of stiffening tape (2). This connection prevents movement of protective film (3) while it is being torn. It is also possible to produce the flashing tape without perforation. In such a case the tape is cut with a knife. Side edges of the insulating foams (1) and (1.1) from the side which after the tape installation in the gap between a window and wall is located inside the building may additionally be covered with a vapour barrier layer (12) or a layer of variable permeability for water vapour. This layer may for example be an impregnate or film of specific properties. It may also be an additional layer of compressible foam having the required properties. Such solution causes that it is not necessary to seal the connection between the window or door frame with the wall by means of an insulation tape.

[0022] Another example of the tape made according to the invention is presented on fig. 5 of the drawing. In this case the perforation (5) is located on the side opposite to the spot (4) where the film (3) is joined. The tape expands after the sticking out film edges are pulled. In this version the protective film (4) is removed completely. [0023] The following example of the tape version is illustrated on fig. 7 of the drawing. In this version, two protective films (3) and (3.1) are joined to the stiffening tape (2) on its edge on its both sides (7) and (7.1). On

the opposite side, the protective films (3) and (3.1) in the spot (4) in which they are joined may for example be glued, sewed or welded. In a small distance from the spot (4) where the film (3) is joined there are film perforations (5) and (5.1) preventing tearing of the protective film (3) off. It is also possible to produce the tape according to this example without perforation. In such a case the tape is cut with a knife.

[0024] Still another example of the flashing tape made according to the invention is a double-sided tape presented on fig. 9. In this version which is particularly advantageous as it allows for strong compression of the foam (2) the stiffing tape consists of two stripes (2) and (2.1) joined with the protective film (3). The protective film (3) is attached to the stiffening tapes (2) and (2.1) in places (8) and (8.1), and this connection is shown on fig. 11. Two stripes of compressible foam (1) and (1.1) are fixed to the stiffening tapes (2) and (2.1). Then, as shown on fig. 12 and fig. 13 the stiffening tapes (2) and (2.1) are wrapped to the inside and then, as shown on fig. 14 the tape edges are joined in point (9). The part of the tape located above the connection point (9) as presented on fig. 15 is cut in place (10). The stiffening tapes (2) and (2.1) are joined either on their entire contiguous surface (11) or on its part and they constitute a double-sided stiffening tape. Such solution allows for easy adjustment of proper stress of the protective film (3) by proper selection of its width. Fig. 10 presents this version of the flashing tape after expanding.

[0025] The construction of flashing tape enables easy and quick insulation and sealing of the gap, especially if the gap depth is bigger than its width. Such tape may be delivered in rolls of any length and widths adjusted to the gap width. The tape height may be adjusted to the gap width.

[0026] The installation of the flashing tape is made by pushing it along the gap between the window or door frame, and then tearing of the protective film (3). The compressible foam (2) and (2.1) is then expanded. After the tape installation, the finish works on frames may be immediately started, for example by their plastering or covering with plasterboards.

Claims

1. Flashing tape is used as seal and insulation of the gap between window or door frame and a wall, consisting of expanding foam in a tear-to-open plastic sheath **features that** it consists of at least two stripes (1) and (1.1) of compressible insulation foam covered at least on one side with a vapour barrier layer (12) attached on two sides to the stiffening tape (2), these stripes (1) and (1.1) are compressed in the direction crosswise to the stiffening tape (2) by means of at least one protective film (3) with perforation (5) and (5.1), whereby the film (3) is joined to the edge of the stiffening tape (2) in connection plac-

- es (6) or in places (7) and (7.1) in case it is made of two film stripes (3) and (3.1), whereby the protective film (3) is joined in spot (4).
2. The tape according to claim 1 **features that** the stiffening tape (2) is made of plastic. 5
 3. The tape according to claim 1 **features that** the stiffening tape (2) is made of cardboard. 10
 4. The tape according to claim 1 **features that** the stiffening tape (2) is made of paperboard. 15
 5. The tape according to claim 1 **features that** the stiffening tape (2) is more flexible in the longitudinal direction than crosswise. 20
 6. The tape according to claim 1 **features that** the protective film (3) is welded in the connection place (4). 25
 7. The tape according to claim 1 **features that** the protective film (3) is glued in the connection place (4). 30
 8. The tape according to claim 1 **features that** the protective film (3) is sewn in the connection place (4). 35
 9. The tape according to claims 1 to 8 **features that** the stripes (1) and (1.1) of the compressible insulation foam are made of cell polyurethane foam. 40
 10. The tape according to claims 1 to 8 **features that** the stripes (1) and (1.1) of the compressible insulation foam are made of flexible polyurethane foam soaked in acrylic impregnate. 45
 11. The tape according to claims 1 to 10 **features that** the protective film (3) is joined to the edge of stiffening tape (2) in the connection spot (6) by welding. 50
 12. The tape according to claims 1 to 10 **features that** the protective film (3) is joined to the edge of stiffening tape (2) in the connection spot (6) by adhesion. 55
 13. The tape according to claims 1 to 10 **features that** the protective film (3) is joined to the edge of stiffening tape (2) in the connection spot (6) by welding.
 14. The tape according to claims 1 to 13 **features that** the vapour barrier layer (12) is made of impregnate.
 15. The tape according to claims 1 to 13 **features that** the vapour barrier layer (12) is made of plastic.
 16. The tape according to claims 1 to 13 **features that** the vapour barrier layer (12) is made of aluminium film.
 17. The tape according to claims 1 to 13 **features that** the protective film (3) is made of plastic.
 18. The tape according to claims 1 to 13 **features that** the protective film (3) is made of nonwoven fabric.
 19. The tape according to claims 1 to 13 **features that** the protective film (3) is made of textile.
 20. The tape according to claims 1 to 13 **features that** the protective film (3) is made of plastic combined with nonwoven fabric.
 21. The tape according to claims 1 to 13 **features that** the protective film (3) is made of plastic combined with knitted fabric.
 22. The tape according to claims 1 to 13 **features that** the protective film (3) is made of plastic combined with textile.
 23. The tape according to claims 1 to 13 **features that** the protective film (3) is made of plastic combined with paper.
 24. The tape according to claims 1 to 13 **features that** the protective film (3) is vapour-permeable.
 25. The tape according to claims 1 to 13 **features that** the protective film (3) is a film of variable permeability for water vapour, depending on air humidity.
 26. The production method of the flashing tape **features that** two stiffening tapes (2) and (2.1) are joined with the protective film (3) in places (8) and (8.1), two stripes (1) and (1.1) of compressible foam are fixed to the stiffening tapes (2) and (2.1), and then the stiffening tapes (2) and (2.1) are wrapped to the inside, and further the tape edges are joined in place (9) whereas the part of the tape above the connection place (9) is cut in place (10), whereby the stiffening tapes (2) and (2.1) are either joined on entire contiguous surface (11) or on its part.

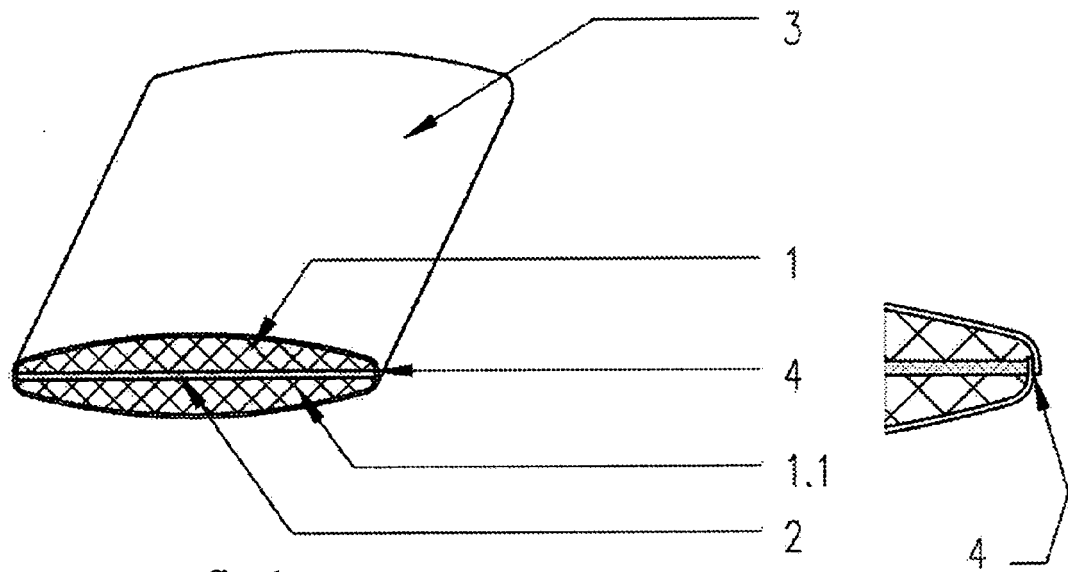


fig.1

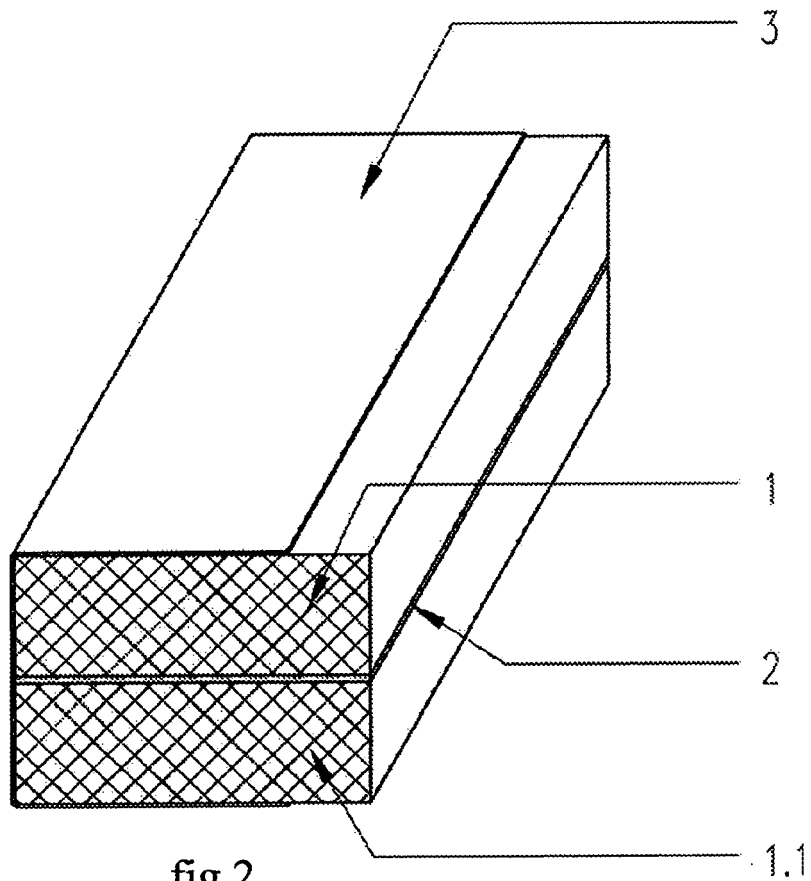
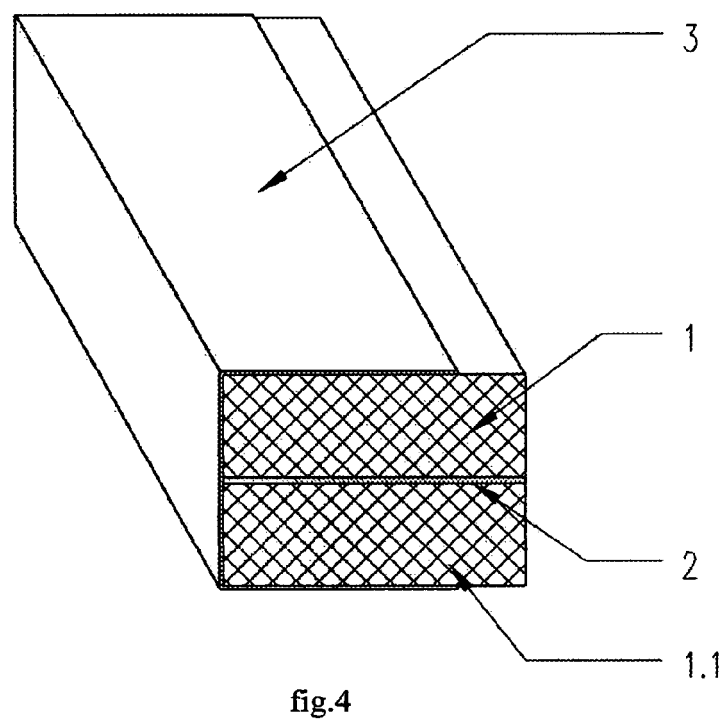
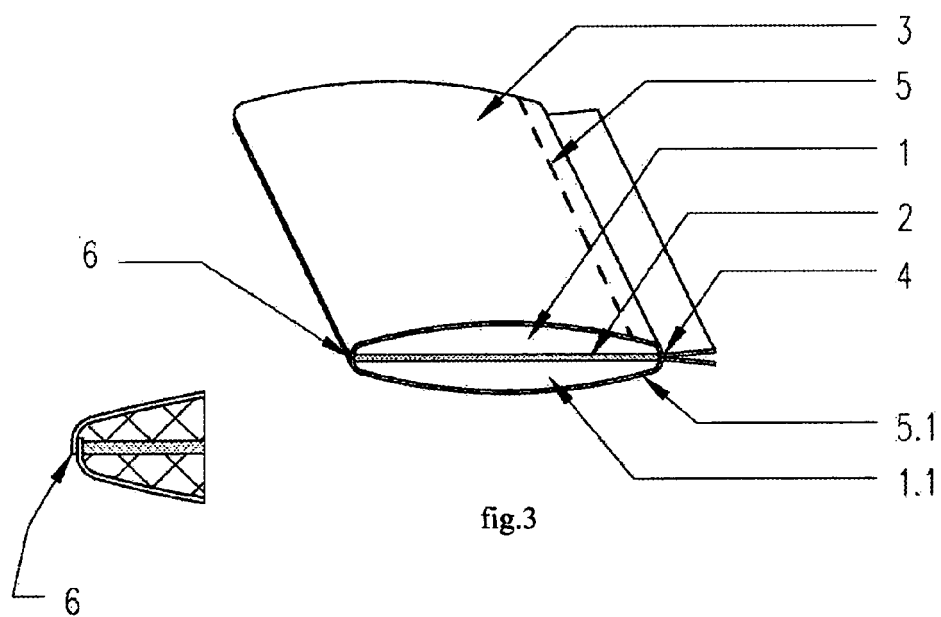


fig.2



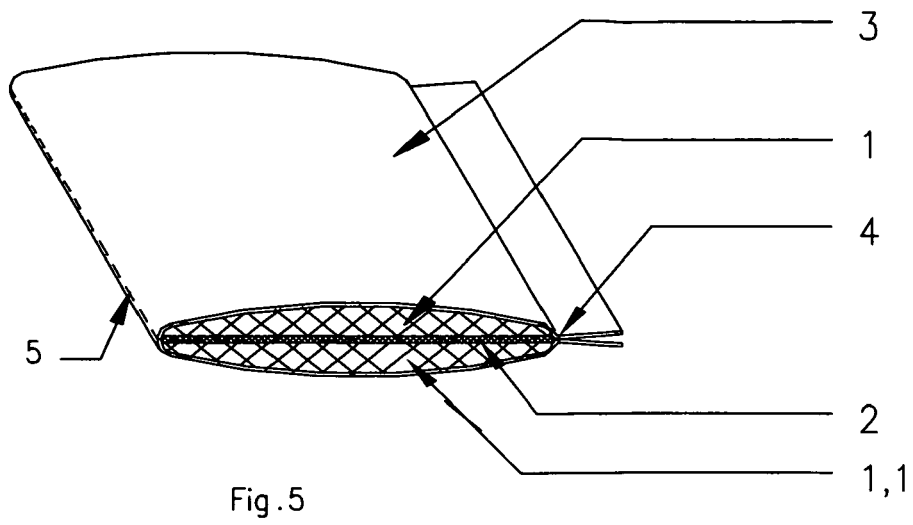


Fig. 5

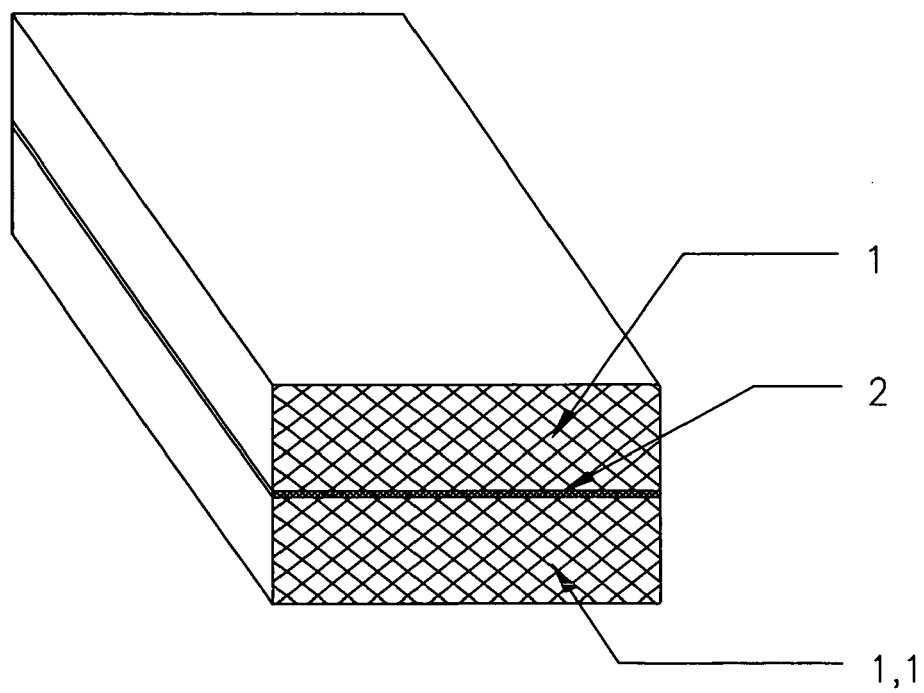
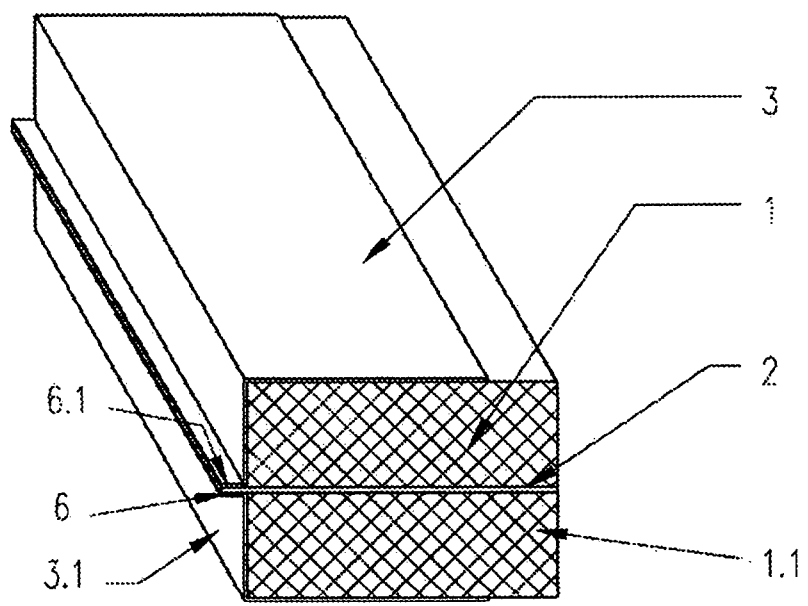
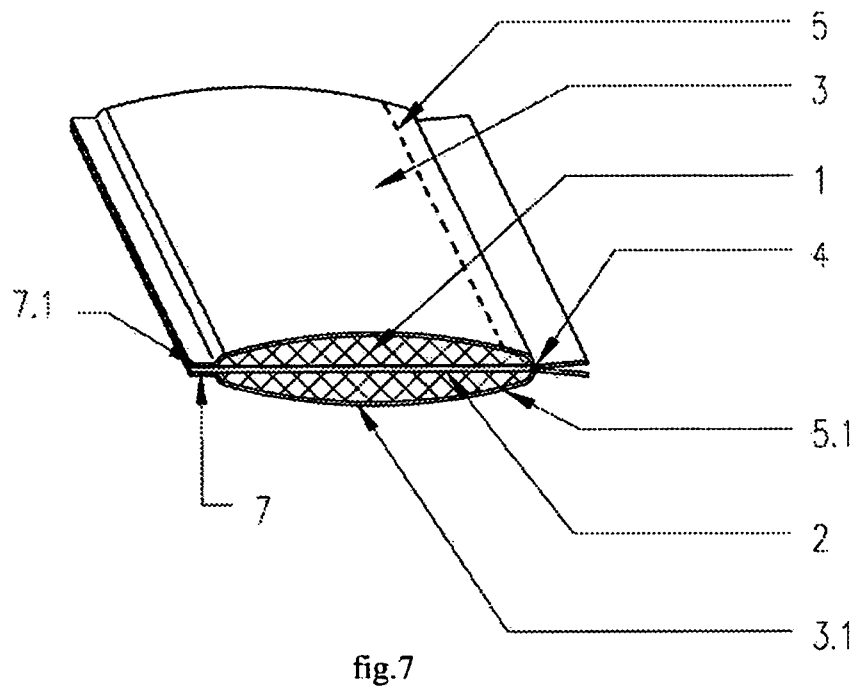


Fig. 6



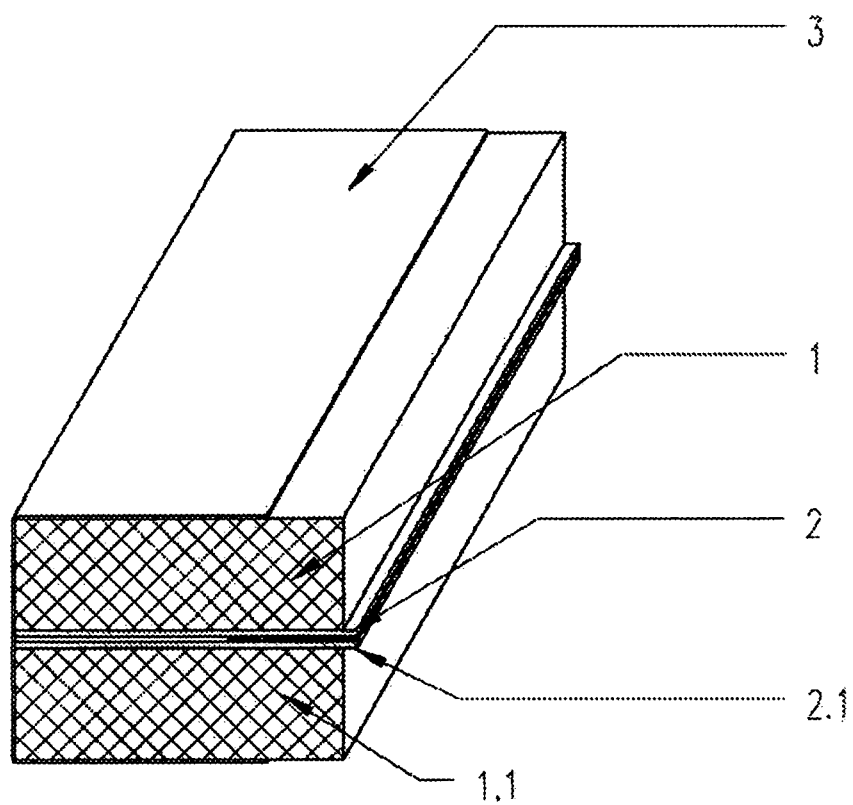
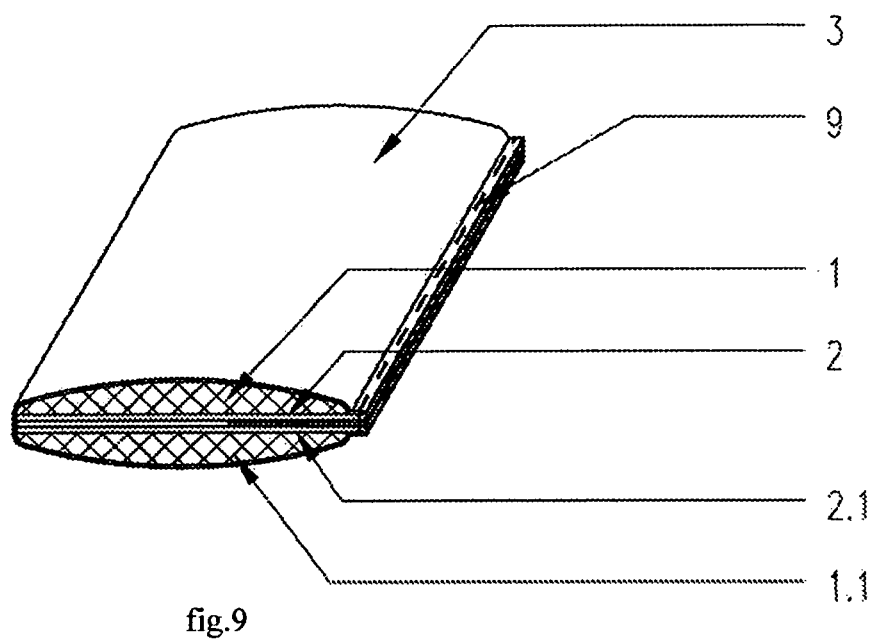
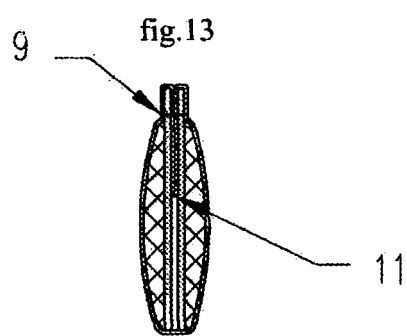
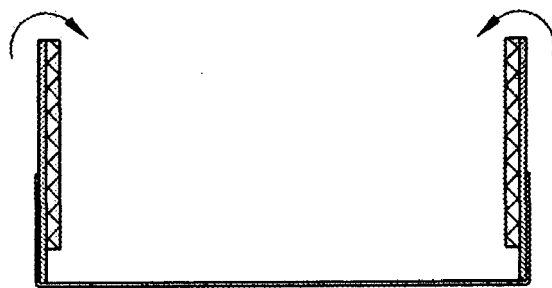
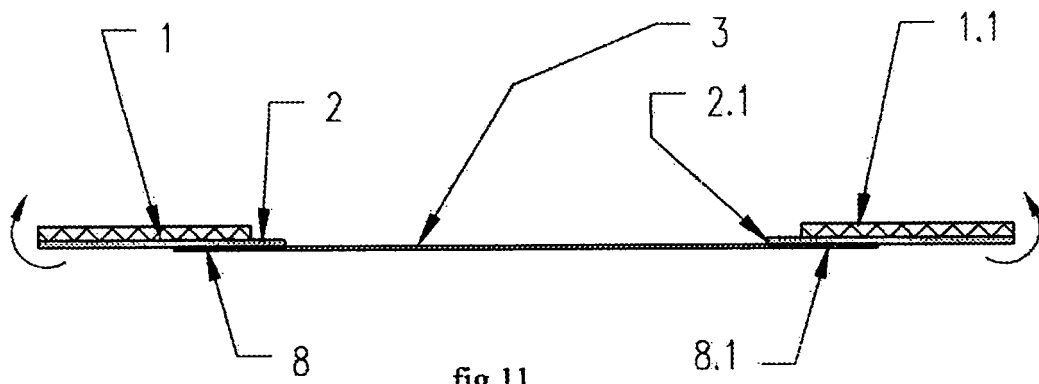


fig.10



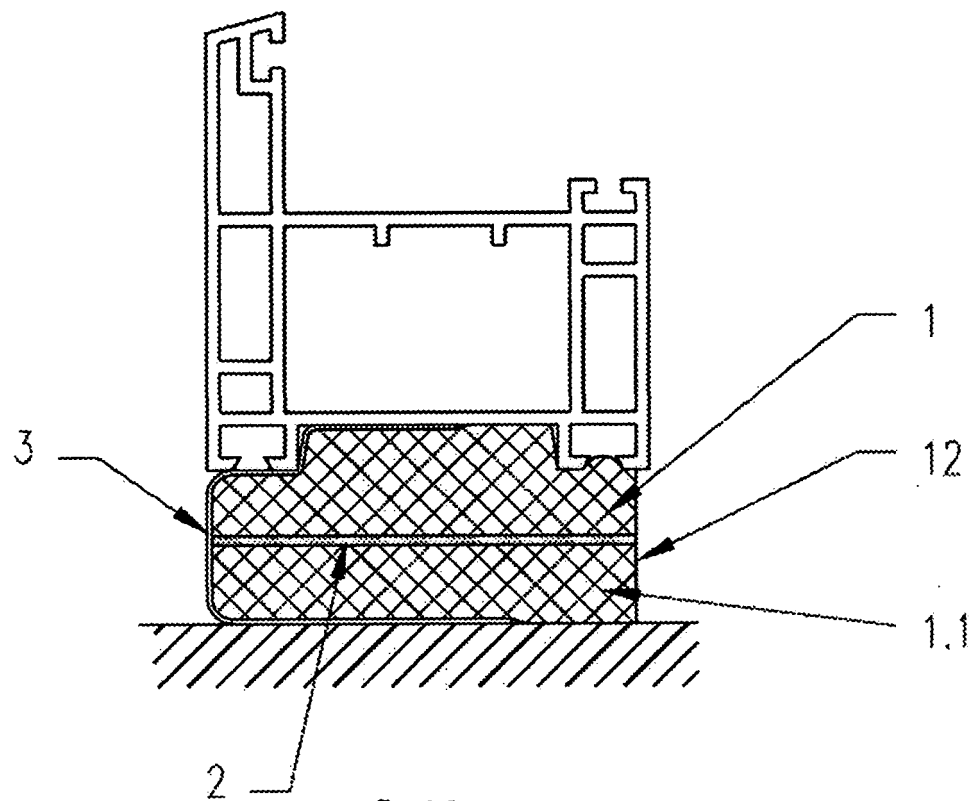


fig.16

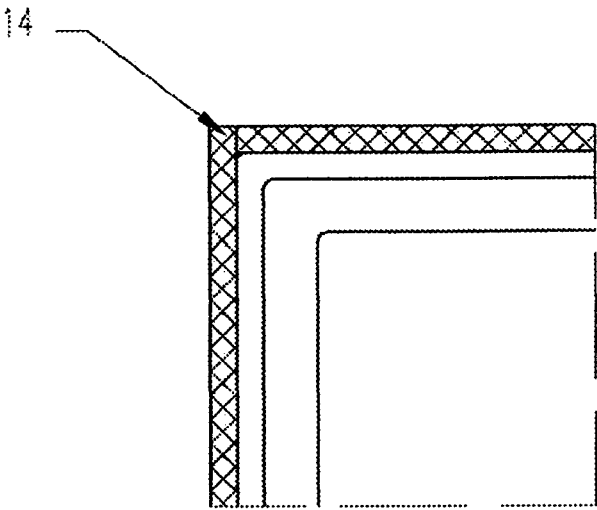


fig.17

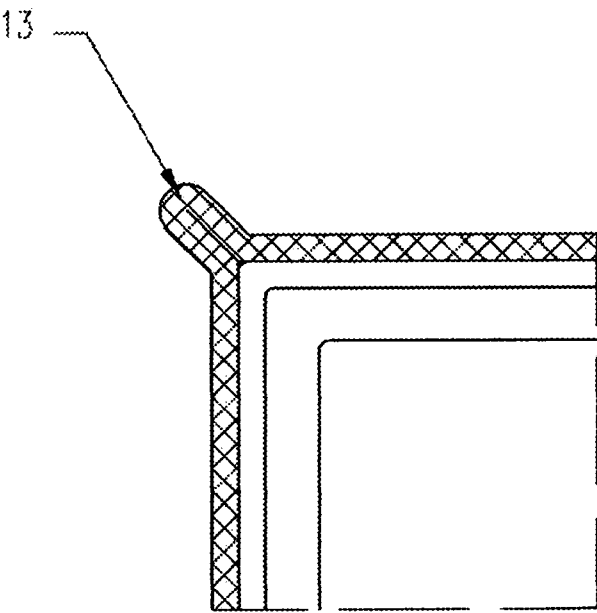


fig.18

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 19944611 [0004]