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(71) Applicant: **SIKA TECHNOLOGY AG** [CH/CH]; Zugerstrasse 50, 6340 Baar (CH).

(72) Inventors: **GEISSBÜHLER, Michael**; Riedholz, 6030 Ebikon (CH). **NEF, Benjamin**; Grenzstrasse 20n, 5525 Fischbach-Göslikon (CH). **SCHUMANN, Daniel**; Leimackerstrasse 16a, 8355 Aadorf (CH).

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(54) Title: SEALING TAPE WITH ADHESIVE LAYER ARRANGEMENT

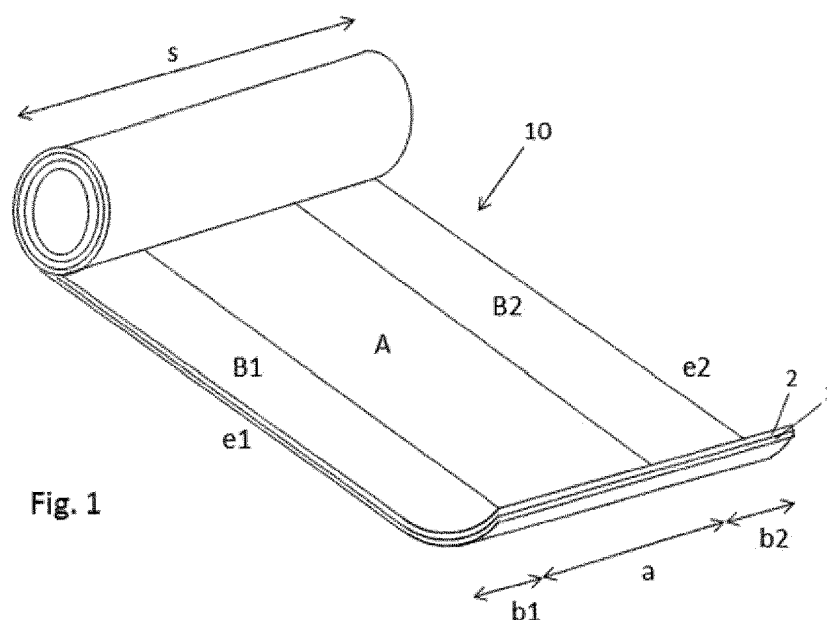


Fig. 1

(57) Abstract: The invention is directed to a sealing tape used for sealing joints and gaps between building constructions, especially between window frames and door frames and corresponding edges of the respective wall openings. The sealing tape comprises a barrier layer (1) and a layer of adhesive (2) applied on one of the sides of the barrier layer, which layer of adhesive (2) is applied in a different pattern in various sections of the barrier layer. In the side sections (B1, B2) near the edges (e1, e2) of the barrier layer, the layer of adhesive (2) is applied as a continuous solid layer whereas in the central section (A), the surface of the barrier layer (1) is only partially covered by the layer of adhesive.

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Sealing tape with adhesive layer arrangement

Technical field

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The present invention relates to tapes used for sealing joints and gaps between building constructions, especially between window frames and door frames and corresponding edges of the respective wall openings.

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Background of the invention

Sealing tapes comprising a barrier layer and a layer of adhesive applied on one surface of the barrier layer are typically used for sealing joints and gaps in building constructions against water, moisture and air penetration from outside to inside of the building. Typical polymers used in barrier layers include thermoplastics such as plasticized polyvinylchloride (p-PVC) and thermoplastic polyolefins (TPO) or elastomers such as ethylene-propylene diene monomer (EPDM) and crosslinked chlorosulfonated polyethylene (CSPE).

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Such sealing tapes are also commonly used for sealing gaps and joints between windows or doors and corresponding wall openings. The sealing tapes should be able to prevent transportation of air, water and moisture at the gaps and joints and to provide permanent bonding to wood, aluminum or plastic frames and wall constructions. They should, however, also enable controlled transmission of excess moisture from inside of the building through the barrier layer, when the outside conditions are suitable to prevent condensation of transported moisture into the structures of the building.

Depending on the application, a barrier layer with vapor diffusion blocking, retarding or enabling properties can be used in the sealing tape. The vapor permeability of a layer is usually expressed as water vapor diffusion equivalent air layer thickness value (Sd-value). The Sd-value depends on the water vapor

diffusion resistance and thickness of the layer. A barrier layer can have a constant water vapor diffusion resistance or a humidity dependent water vapor diffusion resistance. In the first case, a sealing tape with a high S_d -value such as 50-100 m can be used to seal the inside joint between window or door and edge of a wall to prevent transmission of moisture from the interior of the building to the structure of the building. Another sealing tape with a lower S_d -value such as 0.1-5 m is then used to seal the outside joint between the same constructions. In the second case, the water vapor diffusion resistance of the barrier layer changes as a function of humidity of the surroundings and same sealing tape can be used to seal both the inside and outside joints between window or door and edge of a wall.

US2004/0137185A1 discloses a self-adhesive tape consisting of a backing layer, an adhesive layer and a covering film applied on the adhesive layer. The tape has at least one lateral, longitudinal section at the longitudinal side of the tape, in which section the backing and the adhesive layer are perforated. The perforation is only provided in the at least one lateral, longitudinal section whereas the central region is not perforated. The perforations are stated to improve the adhesion of the tape during subsequent plastering because the applied plaster adheres through the openings of the perforations directly to the substrate and thus reinforces the adhesion of the tape.

EP2692959A1 discloses a sealing tape for sealing joints between constructions elements, the sealing tape comprising a functional membrane, an adhesive applied on the lower side of the functional membrane, and a fleece layer bonded with a hot melt adhesive on the upper side of the functional layer. The adhesive layer can be applied on the functional membrane as a solid continuous layer or as adhesive stripes extending lengthwise of the functional membrane. The disclosed sealing tape is especially suitable for sealing joints between brickwork and window and door frames.

One of the disadvantages of the state of the art sealing tapes is that the adhesive layer tends to act as a further barrier to the transmission of water

vapor through the barrier layer. This problem can at least be partially solved by using adhesive compositions having lower water vapor diffusion resistances than the barrier layer. However, adhesives having high vapor permeability cannot provide sufficiently reliable bonding in wet outside conditions.

- 5 Alternatively, the thickness of the adhesive layer can also be decreased in order to decrease vapor diffusion resistance of the adhesive layer. A thin adhesive layer is, however, not usually sufficient to enable bonding of the sealing tape to rough surfaces. In case a barrier layer with a humidity dependent vapor diffusion resistance is used, the problems related to the
- 10 increased vapor diffusion resistance of barrier layer are even more pronounced.

Summary of the invention

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The objective of the present invention is to provide a sealing tape for sealing joints between window frames and door frames and corresponding edges of the respective wall openings, which sealing tape at least partially solves the problems of the prior art. The wall can be a masonry, concrete, plaster or

20 plasterboard wall and window frames can be made of wood, aluminum or plastic.

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The invention is, however, not restricted to sealing joints between aforementioned frame components and respective wall openings but it can also be used to seal edges and corners between two walls and between roof

structures and walls.

Another objective is to provide a sealing tape, which can be produced with decreased costs.

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The subject of the present invention is a sealing tape according to claim 1.

The main concept of the invention is a sealing tape comprising a barrier layer and a layer of adhesive applied on one of the sides of the barrier layer, which layer of adhesive is applied in a different pattern in various sections of the barrier layer. In the sections near the edges of the barrier layer, the layer of
5 adhesive is applied as a continuous solid layer whereas in the center section, the surface of the barrier layer is only partially covered by the adhesive.

One of the advantages of the present invention is that the type of adhesive and thickness of the layer are less restricted by choice of the barrier layer used in
10 the sealing tape. Consequently, the layer of adhesive can be adjusted to provide optimal bonding to various materials used in window frames and wall constructions without significantly affecting the vapor diffusion resistance properties of the sealing tape. As a result a layer of adhesive with a uniform thickness and composition can be used, which simplifies the construction of the
15 sealing tape. Such sealing tapes can also be produced with decreased costs.

The benefits of the present invention are particularly pronounced in sealing tapes comprising a barrier layer having a moisture variable diffusion resistance.

20 Another advantage of the present invention is that the amount of adhesive can be reduced, which translates into reduced production costs of the sealing tape.

According to another aspect of the present invention, a method for sealing joints between structural members is provided.

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Brief description of the drawings

Additional refinements, advantages and features of the present invention are
30 described in more detail below with reference to the accompanying drawings. The same elements are provided with the same reference numbers in the various drawings.

Generally, it is remarked that the depictions in Figures 1-8 are not to scale and merely provide a schematic illustration of the structure and configurations of the embodiments of the inventive sealing tape.

5 Fig. 1 is a perspective view of a sealing tape disposed in a roll.

Figs. 2-6 show alternatives for the pattern in which the layer of adhesive is applied in the central section of the barrier layer.

10 Fig. 7 is a sectional view of one embodiment of the sealing tape along the transverse direction of the sealing tape.

Fig. 8 is a schematic presentation of an arrangement, in which two sealing tapes are used to seal an inside and outside joint between a wall construction
15 and a window frame.

Detailed description of the invention

20 The subject of the present invention is a sealing tape comprising a barrier layer (1) having opposite first and second major surfaces and opposite longitudinally extending edges (e1, e2), and a layer of adhesive (2) applied on the first major surface, said first major surface having a central section (A) and two elongate side sections (B1, B2) between the opposite edges (e1, e2) and a central
25 section (A), wherein the side sections (B1, B2) are substantially covered by the adhesive and the central section (A) is partially covered by the adhesive.

By the term “a barrier layer having a moisture variable diffusion resistance” is meant in the present document a barrier layer, the water vapor diffusion
30 resistance of which changes as a function of humidity of the surroundings.

Barrier layers with moisture variable diffusion resistance are typically used in sealing arrangements to provide air tightness in buildings, usually in

combination with heat insulation systems. In low humidity wintery conditions the barrier layer prevents the penetration of moisture through the membrane and thus prevents transportation of moisture from inside of the building into the structures of the building. In more humid conditions in the summer, the vapor
5 diffusion resistance of the vapor barrier decreases enabling diffusion of the humidity through the membrane.

The term “longitudinally” is used in the present document as synonym for “in lengthwise dimension”. By “longitudinally extending edge of the barrier layer”
10 is, therefore, meant the edge of the barrier layer which extends in lengthwise direction of the barrier layer.

By the term “substantially covered by the layer of adhesive” is meant in the present document that adhesive is applied on a surface in a form of continuous
15 solid layer of adhesive, wherein at least 90 %, preferably at least 95 %, more preferably at least 97.5 %, most at least 99 % of the surface is covered by the adhesive.

By “the surface being completely covered by the layer of adhesive” is meant in
20 the present document that adhesive is applied on the surface in a form of continuous solid layer of adhesive and that 100 % of the surface is covered by the adhesive.

By “the surface being partially covered by the adhesive” is meant in the present
25 document that adhesive is applied on the surface in a form of discontinuous layer of adhesive comprising adhesive-free area(s) and area(s) that are completely covered by the adhesive.

Fig. 1 shows a perspective view of a sealing tape (10) disposed in a roll. The
30 sealing tape (10) comprises a barrier layer (1) having opposite first and second major surfaces and opposite longitudinally extending edges (e1, e2), and a layer of adhesive (2) applied on the first major surface. The first major surface of the barrier layer (1) has a central section (A) and two elongate side sections

(B1, B2) extending between the opposite edges (e1, e2) of the barrier layer (1) and the perimeter of the central section (A).

The layer of adhesive (2) is applied to the first major surface of the barrier layer (1) in such way that the side sections (B1, B2) are substantially, preferably completely, covered by the layer of adhesive (2) while the central section (A) is only partially covered by the layer of adhesive (2). Preferably 5.0-60.0 %, more preferably 7.5-50.0 %, even more preferably 10.0-45.0 %, most preferably 12.5-40.0 % of the total surface area of the first major surface of the barrier layer (1) is free of adhesive.

The portion of the surface area that is free of adhesive can be determined by measuring the size of the adhesive-free areas and dividing sum of the adhesive-free areas by the total surface area. The size of the adhesive-free areas can be measured by optical means.

The width (a) of the central section (A) is preferably 20-95 %, more preferably 30-90 %, even more preferably 40-90 %, most preferably 50-90 % of the width (s) of the barrier layer (1). It has been found that a sealing tape having the width (a) of the central section (A) in the aforementioned ranges is particularly suitable for sealing joints between window frames and corresponding edges of the respective wall openings.

The width (b1, b2) of the side sections (B1, B2) is preferably 5.0-100.0 mm, more preferably 7.5-75.0 mm, even more preferably 10.0-50.0 mm, most preferably 15.0-30.0 mm. Preferably the side sections (B1, B2) have the same width. A sealing tape having the width (b1, b2) of the side sections (B1, B2) in the aforementioned ranges has been found to provide sufficient bonding to surface of structural members such as window frames and wall constructions.

Preferably, 5.0-90 %, more preferably 10.0-75.0 %, even more preferably 15.0-60.0 %, most preferably 20.0-50.0 % of the total surface area of the central section (A) is free of adhesive.

Preferably, the layer of adhesive (2) in the central section (A) has a pattern consisting of at least two unconnected adhesive-free areas. "Unconnected" means that each adhesive-free area in the central section (A) is always
5 surrounded by all sides in horizontal plane of barrier layer (1) with an area completely covered by the layer of adhesive (2).

Preferably, the layer of adhesive (2) in the central section (A) has a pattern consisting of a discontinuous network of adhesive-free voids, as shown in
10 Figures 2-4. The voids are present only in the layer of adhesive (2) and they are not passing through the barrier layer (1). In a discontinuous network of adhesive-free areas, the adhesive-free areas are not connected and water vapor is essentially prevented from seeping into and under the sealing tape through adhesive free channels at the cut off edges of the sealing tape.

15 The adhesive-free voids can be in the form of any two-dimensional geometrical shape, for example, circular (Figures 2 and 3), square (Figure 4), hexagonal, rectangular, polygonal, parallelogram, or rhomboidal, or oval. The shape of the voids can also be asymmetric.

20 The voids and can be uniformly distributed or their density can become reduced or increased in transverse direction of the barrier layer (1) towards the perimeter of the central section (A). Preferably, the adhesive-free voids are uniformly distributed as shown in Figures 2-4.

25 The adhesive-free voids can have substantially same diameter or the diameter can become reduced or increased in transverse direction of the barrier layer. With respect to the voids, which have non-circular geometry, the "diameter" refers in the present document to the maximum width, for example the major
30 axis of an oval. By "substantially same diameter" is meant here that the variance of the diameters of the voids is less than 1.0 mm, preferably less than 0.5 mm, more preferably less than 0.25 mm. By the term "variance of the

diameters” is meant the average of the squared differences from the mean diameter. Preferably, the voids have substantially same diameter.

Preferably, the diameter of the voids is in the range of 1.0-30.0 mm, more preferably 5.0-25.0 mm, even more preferably 7.50-20.0 mm, most preferably 10.0-17.5 mm. A sealing tape (10) comprising a layer of adhesive (2) with a series of voids having substantially same diameter in the aforementioned range in the central section (A) and a continuous solid layer of adhesive in the side sections (B1, B2) has been found to provide sufficient bonding to surface of the structural members such as window frames and wall constructions and good water vapor diffusion properties.

Preferably, the average diameter of the voids is in the range of 1.0-30.0 mm, more preferably 5.0-25.0 mm, even more preferably 7.50-20.0 mm, most preferably 10.0-17.5 mm. The term “average diameter” refers in the present document to the arithmetic average of the diameters.

The distribution of voids can be random or they can be configured such that they line up in rows, as shown in Figure 2 or such that they are offset between rows as shown in Figure 3.

According to a preferred embodiment, the adhesive-free areas in the central section (A) are in the form of circular voids having a substantially same diameter of 5.0-30.0 mm, preferably 7.5-25.0 mm, more preferably 10.0-20.0 mm. Preferably, the circular voids are configured such that they line up in rows.

The layer of adhesive (2) can also have a pattern consisting of a series of vertical or inclined stripes of adhesive extending between the opposite edges of the central section (A), as shown in Figures 5 and 6. Also in this case the adhesive-free areas formed between the stripes of adhesive are unconnected.

Preferably, the inclined stripes of adhesive cross the edges of the central section (A) at an angle α of 5-85 °, more preferably 10-80 °, most preferably 15-75 %.

- 5 Preferably, the layer of adhesive (2) in the central section (A) has such a pattern that the sum of the widths ($\sum l_i$, where $i=1..n$) of the successive areas completely covered by the adhesive measured in longitudinal direction of the sealing tape, as shown in Figures 2, and 4-6, is 10-80 mm, preferably 15-70 mm, more preferably 20-60 mm, for a 100 mm length of the sealing tape. The
10 number of widths n depends on the widths of the areas completely covered by the adhesive. Preferably, $n \geq 2$ applies.

- Preferably the layer of adhesive (2) in the central section (A) has such a pattern that, the ratio of the sum of the widths ($\sum l_i$, where $i=1..n$) of the
15 successive areas completely covered by the adhesive measured in longitudinal direction of the sealing tape to the sum of widths (b_1, b_2) of the side sections (B1, B2), is 0.5-2.0, more preferably 0.8-1.5, most preferably 1.0-1.25. The number of widths n depends on the widths of the areas completely covered by the adhesive. Preferably, $n \geq 2$ applies.

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- Even though the side sections (B1, B2) are substantially, preferably completely covered by the layer of adhesive (2), the side sections may comprise narrow longitudinal adhesive-free areas near the opposite edges (e_1, e_2) of the barrier layer (1). The width of the narrow longitudinal adhesive-free areas near the
25 opposite edges (e_1, e_2) is preferably less than 10.0 mm, more preferably less than 5.0 mm, even more preferably less than 2.5 mm, most preferably less than 1.0 mm.

- Preferably, the thickness of the layer of adhesive (2) in the areas completely
30 covered by the adhesive is 0.1-1.0 mm, more preferably 0.15-0.8 mm, most preferably 0.2-0.6 mm. The thickness of the layer of adhesive (2) in the central section (A) can be different from the thickness of the layer of adhesive (2) in the side sections (B1, B2), for example the thickness can be 10-50 % higher in

the side sections (B1, B2) compared to the thickness in the central section (A). Preferably, the layer of adhesive (2) is applied in uniform thickness on the first major surface of the barrier layer (1).

- 5 Preferably, in the side sections (B1, B2), the mass per unit area of the layer of adhesive (2) is in the range of 25-400 g/m², more preferably 30-350 g/m², even more preferably 50-350 g/m². The mass per unit area of the adhesive layer g/m² can be measured according to DIN EN 1849-2:2009.
- 10 Preferably, in the central section (A) the average mass per unit area of the layer of adhesive (2) is in the range of 10-150 g/m², more preferably 15-100 g/m². The average mass per unit area in central section is calculated by taking into account that the mass of adhesive in the adhesive-free areas is 0 g/m².
- 15 There are no particular restrictions for the type of adhesive in the layer of adhesive (2). The adhesive can be a reactive adhesive or a non-reactive adhesive, a hot-melt adhesive, a contact adhesive or pressure sensitive adhesive. These types of adhesives are generally known to one skilled in the art and are described in the CD Römpp's Chemical Lexicon, Georg Thieme
- 20 Verlag, Stuttgart 1995. The adhesive may be, for example, a polyurethane based adhesive or a polyolefin hot-melt adhesive.

The layer of adhesive (2) may comprise different adhesives on different sections of the barrier layer (1). For example, the adhesive in the side sections

25 (B1, B2) may be of different type than the adhesive in the central section (A) or adhesives in side section B1 may be different from the adhesive in side section B2. Preferably, only one type of adhesive is used in the layer of adhesive (2). The use of only one type of adhesive simplifies the structure of the sealing tape, which is translated into decreased production costs.

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The barrier layer (1) can consist of one single layer or of several layers, which are bonded to each other. The barrier layer (1) can comprise polymeric material and/or spun-bonded material.

Preferably, the barrier layer (1) comprises polymeric material selected from the group consisting of polyethylene (PE), polypropylene (PP), ethylene – vinyl acetate copolymers (EVA), ethylene – α -olefin co-polymers, ethylene –
5 propylene co-polymers, polyvinylchloride (PVC), ethylene acrylic acid co-polymers, polyurethane, polyesters, co-polyesters, polyether-esters, polystyrene (PS), polyethylene terephthalate (PET), polyamides (PA), co-polyamides, ionomers, and mixtures thereof. Ionomers are static thermoplastic co-polymers, which are generally known to one skilled in the art and are
10 described in the CD Römpp's Chemical Lexicon, Georg Thieme Verlag, Stuttgart 1995.

Preferably, the barrier layer (1) has moisture variable diffusion resistance. Such barrier layers can include at least one of an ionomer, a polyamide, a polyester,
15 a polyurethane, a polyolefin, the ionomer mixed with at least one polymer selected from a group consisting of polyamides, co-polymer of ethylene and vinyl acetate, co-polymer of ethylene and acrylic acid, and co-polymer of ethylene and methyl acrylate.

20 Examples of suitable barrier layers with moisture variable diffusion resistance, also known as "moisture adaptive vapor barriers or moisture adaptive barrier foils", are disclosed in US7442659 B2, EP0821755 A1, US20120302698 A1, EP1824902 B1, and US20150090126 A, the disclosures of which in their entireties are hereby incorporated by reference into this application.

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The barrier layer (1) having a moisture variable diffusion resistance has preferably a lower water vapor diffusion resistance at higher relative humidity of the surroundings and higher water vapor diffusion resistance at lower relative humidity of the surroundings. The Sd-value of the barrier layer (1) can be in the
30 range of 0.1-10.0 m, preferably 0.5-5.0 m at relative moisture of 80 %, and in the range of 10-100 m, preferably 15-50 m at relative moisture of 20 %. The Sd-value of the barrier layer (1) is measured according to DIN EN 1931:2001.

Preferably, the width (s) of the barrier layer (1) is in the range of 50-300 mm, more preferably 75-250 mm, most preferably 100-200 mm.

The thickness of the barrier layer (1) can be in the range of 5-200 μm , more preferably 10-100 μm , most preferably 15-50 μm .

The mass per unit area of the barrier layer (1) can be in the range of 20 – 250 g/m^2 , preferably 30 – 200 g/m^2 , most preferably 40-150 g/m^2 .

The barrier layer (1) can also comprise additives such as flame retarders, UV-stabilizers, colorants and color pigments.

Figure 7 shows the side view of the sealing tape (10) comprising a barrier layer (1) and a layer of adhesive (2) applied on the first major surface of the barrier layer (1).

Preferably, the sealing tape further comprises a release liner (3) positioned on the surface of the layer of adhesive (2) to protect the layer of adhesive against contamination and to prevent different surfaces of the sealing tape to adhere to each other before installation of the sealing tape. The release (3) liner preferably comprises a pattern of perforations corresponding to the pattern of adhesive-free areas in the central section (A). Preferable, the release liner (3) is a silicone-coated release liner.

The sealing tape can further comprise a carrier layer. The carrier layer can serve as a backing to the barrier layer (1) and protect it from mechanical stress and to improve the handling properties. The Sd-value of the carrier layer is preferably lower than the Sd-value of the barrier layer (1). In case the barrier layer (1) has a moisture variable diffusion resistance, the Sd-value of the carrier layer is preferably lower than the lowest Sd-value of the barrier layer (1).

The carrier layer can be composed of fiber material. The term “fiber material” refers here to a material that is buildup of fibers. The fibers can comprise

organic, inorganic or synthetic material such as cellulose, cotton, protein, glass or synthetic fibers. Synthetic fibers are preferably composed of polyester or homo- or copolymer of ethylene and /or propylene or rayon. The fibers can be short fibers or long fibers, spun, woven or non-woven fibers or filaments. In addition, the fibers can be straightened or elongated fibers. Perforated films composed of polyethylene, polypropylene or polyester are also possible materials for the carrier layer. The carrier layer can also comprise additives such as flame retarders, UV-stabilizers, colorants and color pigments.

10 The sealing tape can be provided in a roll and have an unrolled length of several times its width, preferably at least five times its width, more preferably at least ten times its width.

A sealing tape (10) comprising a barrier layer (1) and a layer of adhesive (2) can be produced as a continuous product using a method comprising applying the layer of adhesive (2) to the first major surface of the barrier layer (1).

The layer of adhesive (2) can be applied on the first major surface of the barrier layer (1) by die coating, extrusion coating, gravure coating, spray coating, melt blowing, gravure printing, lithographic printing, flexographic printing, or screen printing. The continuous layer of adhesive in the side sections (B1, B2) is preferably produced with coating or blowing techniques while the patterns in the central section (A) as shown in Figures 2-6 are preferably produced with printing techniques.

25 Figure 8 is a schematic presentation of an arrangement, in which two sealing tapes (10, 10') are used to seal an inside (6) and outside (7) joint between a wall construction (4) and a window frame (5). The central section (A) of the sealing tapes (10, 10') is preferably positioned longitudinally along the joint to be sealed and the side sections (B1, B2) are positioned along the surface of the structural members of the opposite sides of the joint.

A further subject of the present invention is a method for sealing a joint between structural members, the method comprising:

- a) Providing a piece of sealing tape (10) according to the present invention,
- 5 b) Positioning the central section (A) of the barrier layer (1) longitudinally along the joint, and
- c) Contacting the layer of adhesive (2) in the central section (A) and in the side sections (B1, B2) to the surfaces of the structural members on opposite sides of the joint there between, the barrier layer (1) extending longitudinally along
- 10 and bridging widthwise across the joint.

Preferably, the joint to be sealed is formed between a window frame and an edge of a wall.

- 15 A further subject of the present invention is the use of the sealing tape according to the present invention to seal a joint between structural members, preferably a joint between a window frame and an edge of a wall.

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Claims

1. A sealing tape comprising

- 5 - a barrier layer (1) having opposite first and second major surfaces and opposite longitudinally extending edges (e1, e2), and
 - a layer of adhesive (2) applied on the first major surface, said first major surface having a central section (A) and two elongate side sections (B1, B2) between the opposite edges (e1, e2) and the central
10 section (A), wherein the side sections (B1, B2) are substantially covered by the layer of adhesive (2) and the central section (A) is partially covered by the layer of adhesive (2).

- 15 2. The sealing membrane according to claim 1, wherein width (a) of the central section (A) is 20 – 95 %, preferably 30–90 % of width (s) of the barrier layer (1).

- 20 3. The sealing tape according to claim 1 or 2, wherein each side section (B1, B2) has a width in the range of 5.0 – 100.0 mm, preferably 7.5 – 75.0 mm.

- 25 4. The sealing tape according to any of previous claims, wherein the layer of adhesive (2) in the central section (A) has a pattern consisting of at least two unconnected adhesive-free areas.

- 30 5. The sealing tape according to claims 4, wherein the adhesive-free areas in the central section (A) are in the form of circular, square, hexagonal, rectangular, polygonal, parallelogram, rhomboidal, or oval voids, preferably circular voids.

6. The sealing tape according to claim 5, wherein the diameter of the voids is in the range of 1.0–30.0 mm, preferably 5.0–25.0 mm, more preferably 7.50–20.0 mm, most preferably 10.0–17.5 mm.

7. The sealing tape according to claim 5 or 6, wherein the voids have substantially same diameter.
8. The sealing tape according to any of claims 1-3, wherein the layer of adhesive (2) in the central section (A) has a pattern consisting of a series of vertical or inclined stripes of adhesive extending between the opposite edges of the side central section (A).
9. The sealing tape according to claim 8, wherein the inclined stripes of adhesive cross the edges of the central section (A) at an angle α of 5–85°, more preferably 10–80°, most preferably 15–75°.
10. The sealing tape according to any of claims 1-9, wherein in the central section (A), the sum of the widths of the successive areas completely covered by the adhesive measured in longitudinal direction of the sealing tape, is 10–80 mm, preferably 15–70 mm, more preferably 20–60 mm, per 100 mm length of the sealing tape.
11. The sealing tape according to any of claims 1-9, wherein in the central section (A), the ratio of the sum of the widths of the successive areas completely covered by the adhesive measured in longitudinal direction of the sealing tape to sum of widths (b1, b2) of the side sections (B1, B2) is 0.5–2.0, preferably 0.8–1.5, more preferably 1.0–1.25.
12. The sealing tape according to any of claims 1-11, wherein the barrier layer (1) has a moisture variable diffusion resistance.
13. The sealing tape according to any of claims 1-12, wherein the width (s) of the barrier layer (1) is in the range of 50–300 mm, preferably 75–250 mm, more preferably 100–200 mm.
14. A method for sealing a joint between structural members, preferably between a window frame and an edge of a wall, the method comprising

- a) Providing a piece of a sealing tape according to any of claims 1-13,
- b) Positioning the central section (A) of the barrier layer (1) longitudinally along the joint, and
- 5 c) Contacting the layer of adhesive (2) in the central section (A) and in the side sections (B1, B2) to the surfaces of the structural members on opposite sides of the joint there between, the barrier layer (1) extending longitudinally along and bridging widthwise across the joint.

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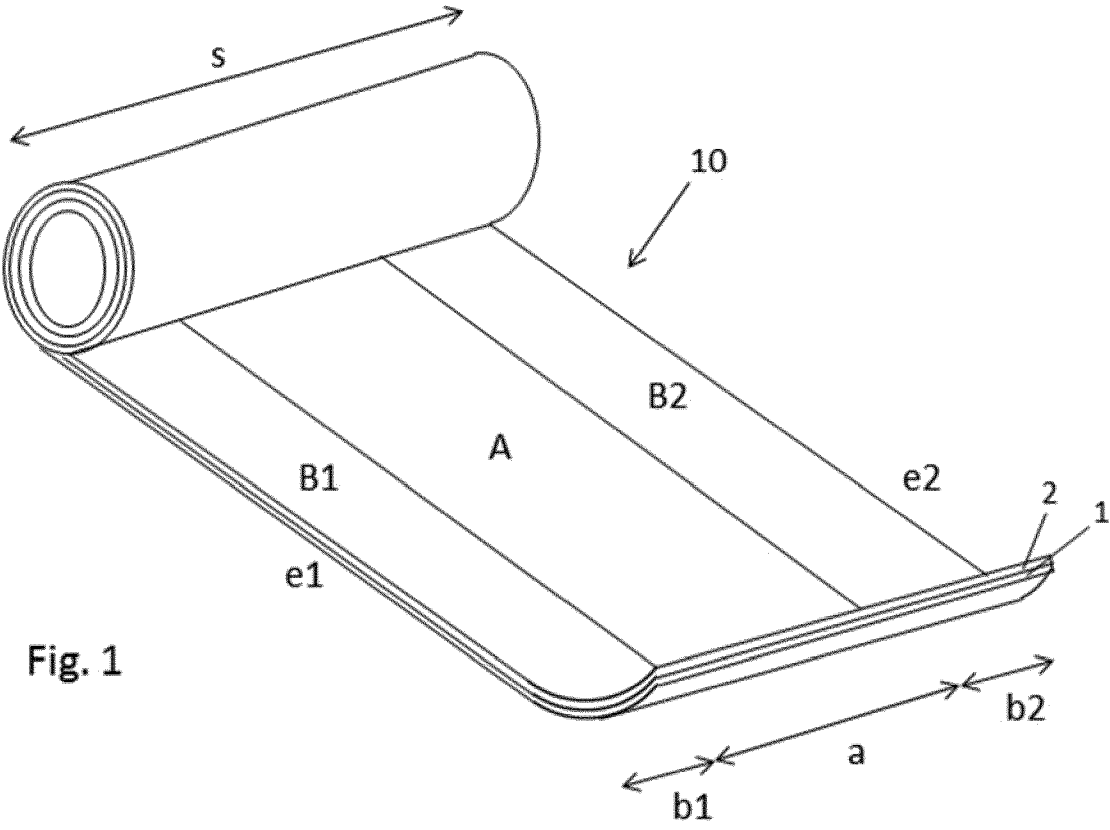
15. Use of the sealing tape according to any of claims 1-13 to seal a joint between structural members, preferably a joint between a window frame and an edge of a wall.

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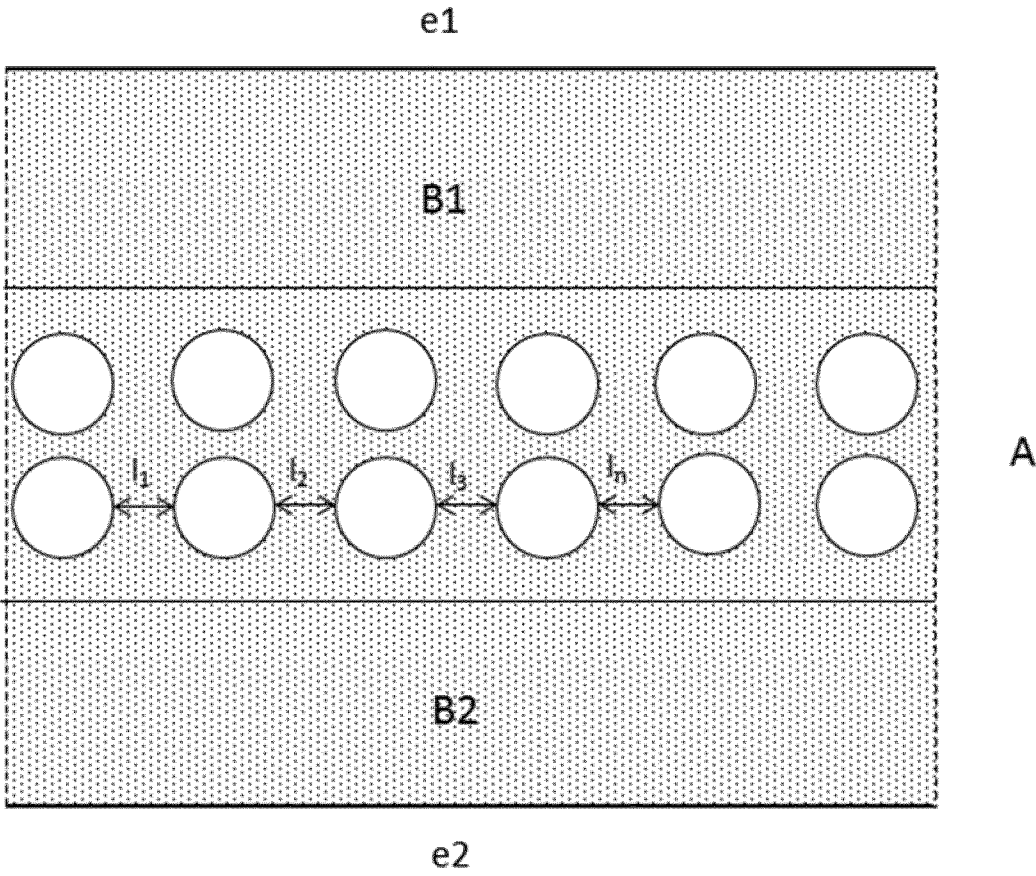


Fig. 2

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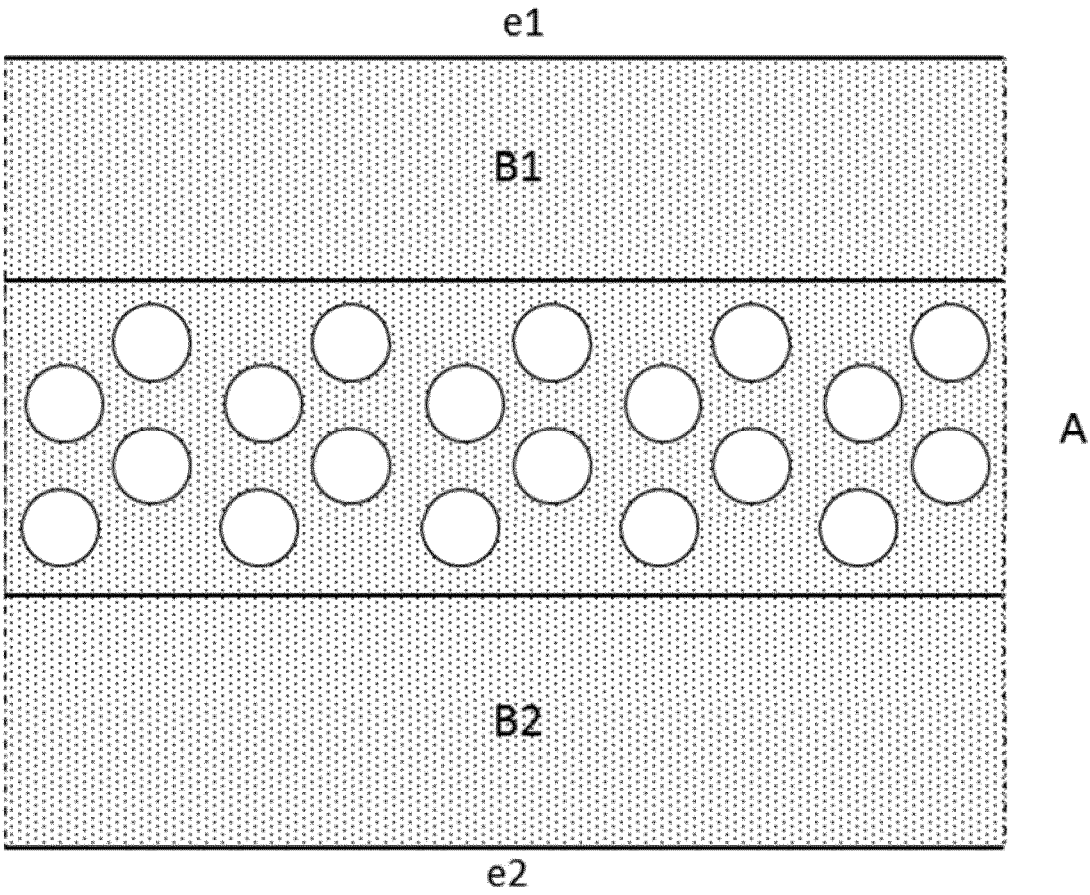


Fig. 3

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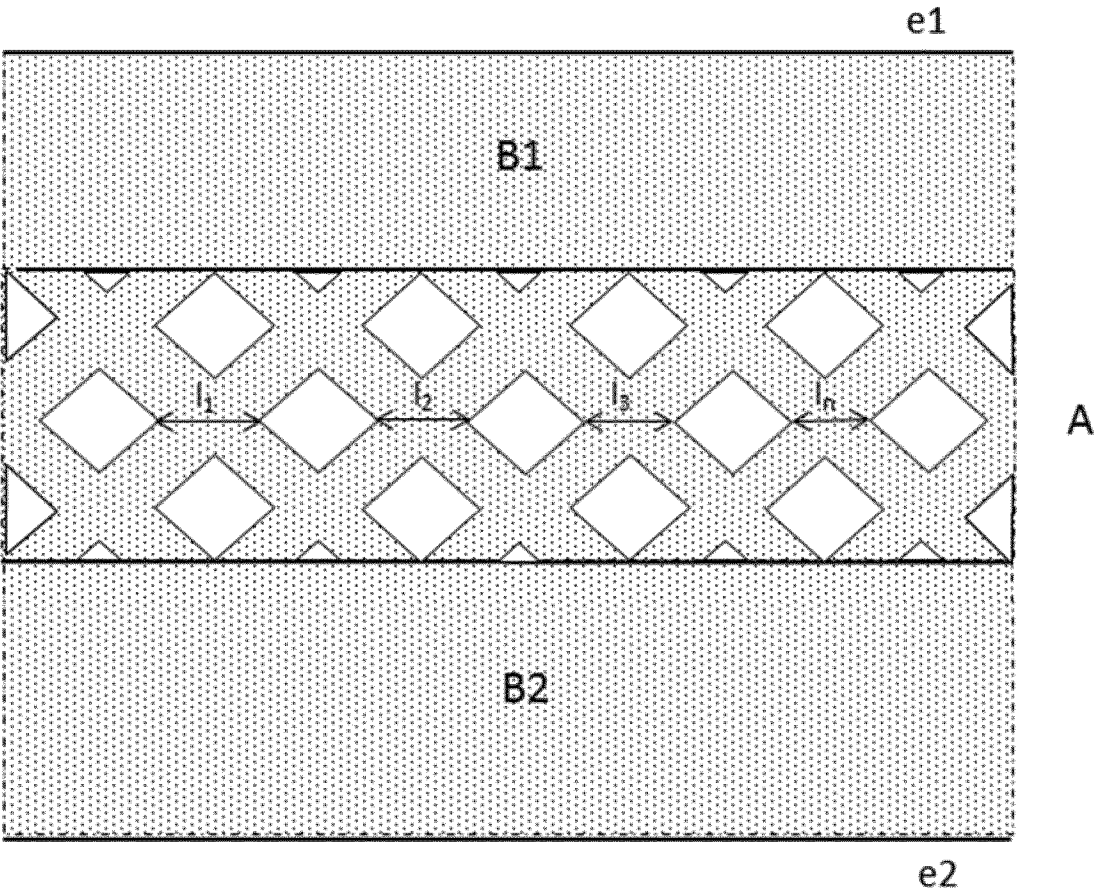


Fig. 4

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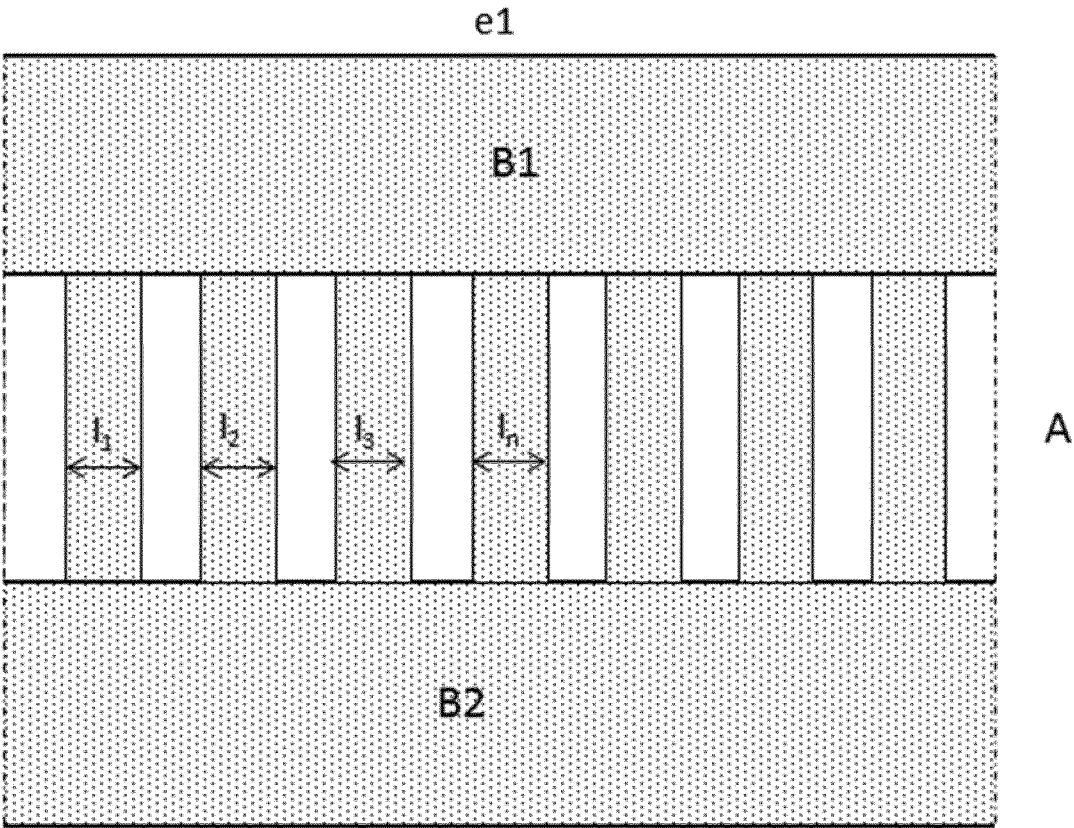


Fig. 5 **e2**

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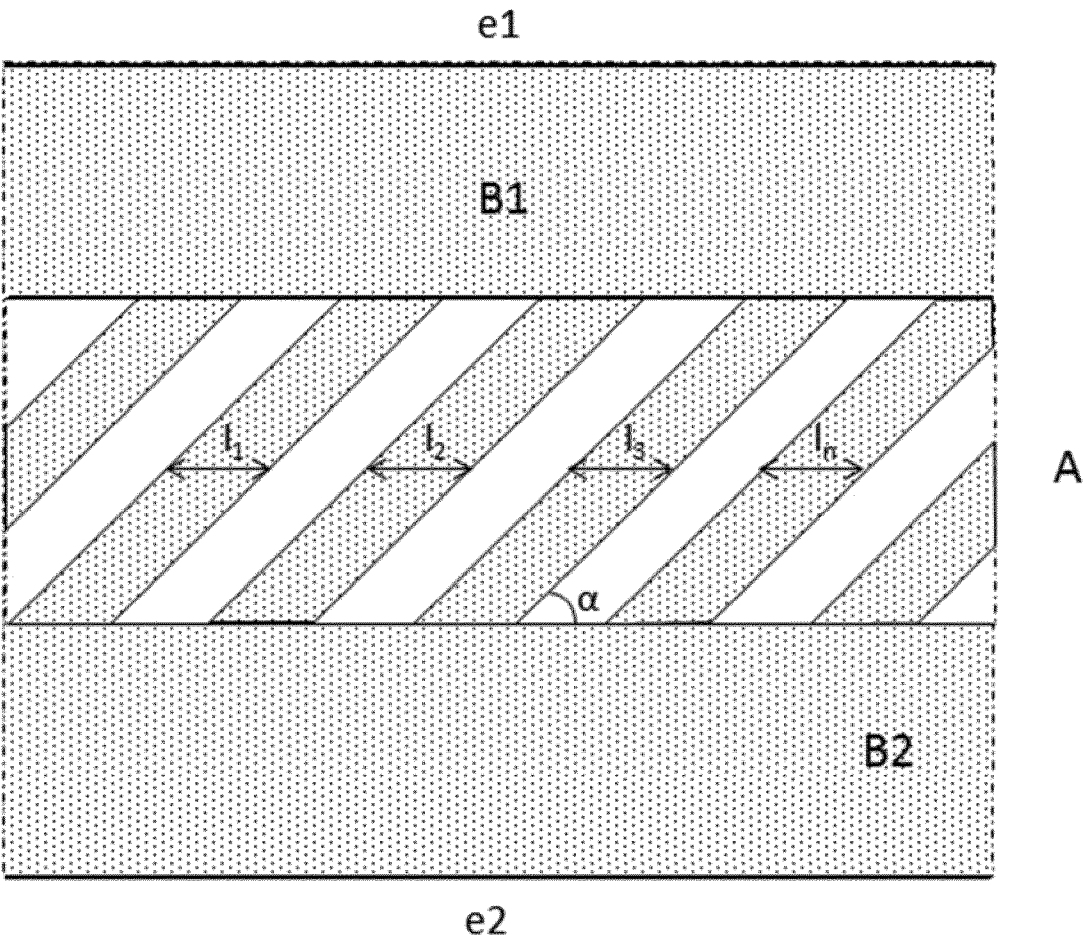


Fig. 6

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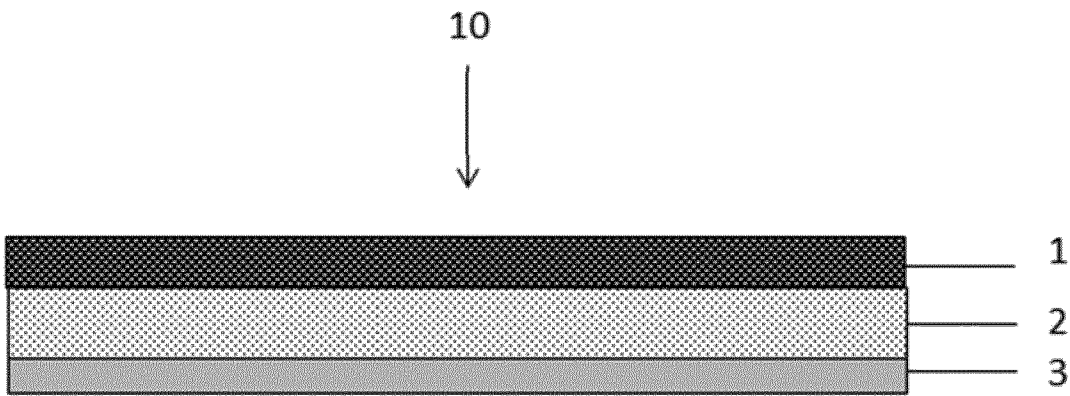


Fig. 7

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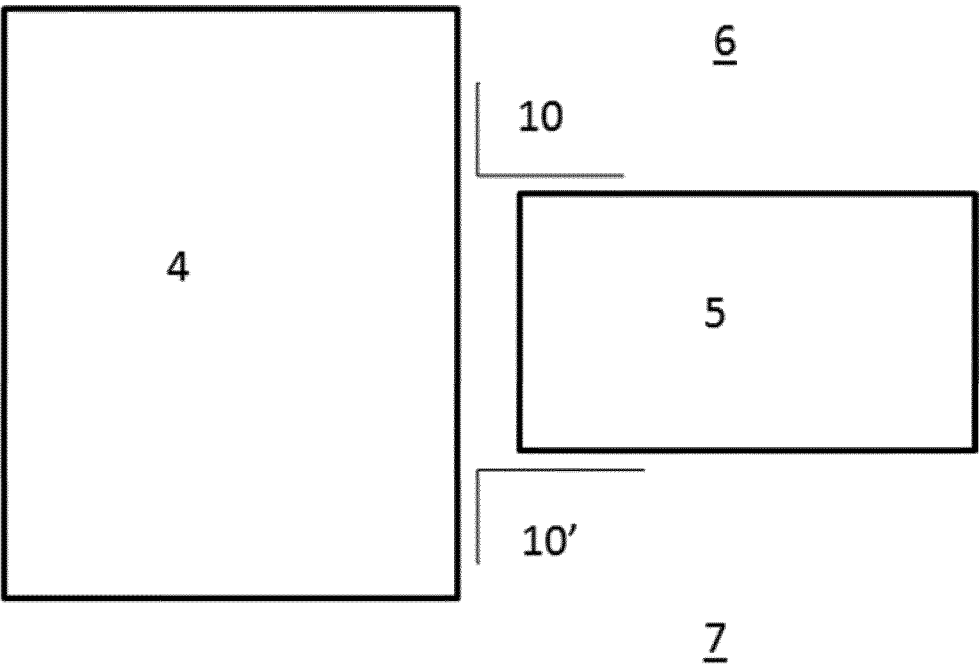


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/080847

A. CLASSIFICATION OF SUBJECT MATTER

INV. E06B1/62 E04B1/68 E04B1/62
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E06B E04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94/18407 A1 (MINNESOTA MINING & MFG [US]) 18 August 1994 (1994-08-18) page 9, line 6 - line 18; figure 6 page 12, line 16 - page 13, line 28 figure 6	1-3, 10-15
X	EP 2 692 959 A1 (HANNO WERK GMBH & CO KG [DE]) 5 February 2014 (2014-02-05) paragraph [0055]; figure 1	1-3, 10-15
X	US 2004/180195 A1 (MACUGA JAMES A [US]) 16 September 2004 (2004-09-16) paragraphs [0007], [0012], [0013]; figure 8K	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

29 January 2018

Date of mailing of the international search report

05/02/2018

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Verdonck, Benoit

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2017/080847

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