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(72) Inventor: **Olsen, John Ejrup**
2200, Copenhagen N (DK)

(74) Representative: **Plougmann & Vingtoft A/S**
Sundkrogsgade 9
P.O. Box 831
2100 Copenhagen Ø (DK)

(71) Applicant: **Icopal Danmark A/S**
2730 Herlev (DK)

(54) **Constructional membrane with an adhesive and a release sheet**

(57) A roofing membrane 10 with opposed first and second sides 11, 12, where the first side has a first bonding zone 14 with an adhesive 15 for bonding the first bonding zone to a second bonding zone on the second side of a like roofing membrane 40, the adhesive being covered by a release sheet 16 that can be removed to expose the adhesive. The release sheet has a plurality

of marks 21 each indicating a position for receiving a fastening means to perforate both the roofing membrane 10 and the release sheet 16 to thereby secure the roofing membrane to a building structure 30, the release sheet having a tear line 20 around each mark that allows, when the roofing membrane is secured to the building structure, removal of the release sheet outside the tear lines.

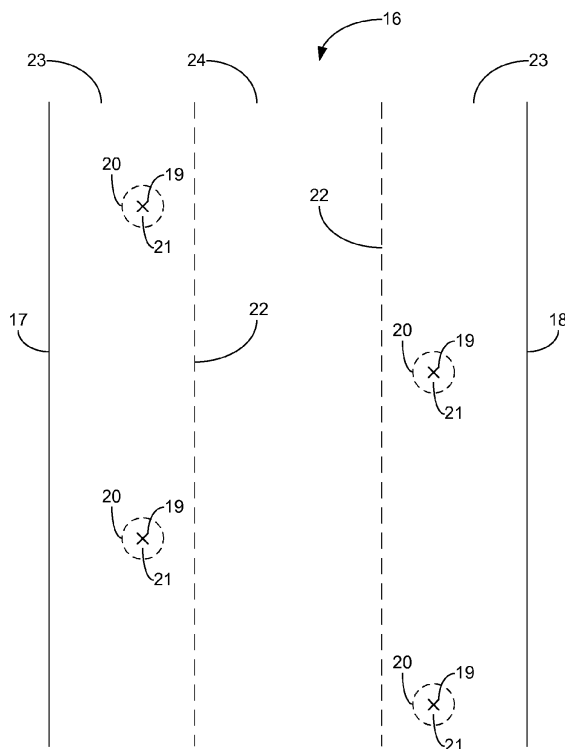


Fig. 4

Description

FIELD OF THE INVENTION

[0001] The invention relates to roofing membranes for fastening to a building structure to form at least part of an outer roof of a building.

BACKGROUND OF THE INVENTION

[0002] Roofing membranes for use as an outer roof of buildings can be bituminous membranes (also referred to as felt), rubber based membranes such as EPDM membranes, or PVC based membranes, and may be supplied as large sheets or as a web on a roll. Adjacent webs are arranged on a supporting building structure such as a wooden board so that edge portions of adjacent sheets or webs are overlapping, and the overlapping portions are bonded to each other e.g. by adhesion using e.g. a pressure sensitive adhesive or by hot melting depending on the type of roofing membrane. In case of bonding by adhesion with a pressure sensitive adhesive at least one of the adjacent webs has an edge portion with an adhesive for bonding the overlapping portions of the adjacent webs to each other by adhesion. The web of roofing membrane is preferably supplied with the adhesive covered by a release sheet that can be removed to expose the adhesive and subsequent adhesion to the overlapping bonding zone of the adjacent web. Such webs of roofing membrane are usually fastened to the underlying building structure by fastening means such as nails or screws that penetrate the roofing membrane in the edge portion with the adhesive. The adjacent web will overlay the edge portion with the adhesive and the fastening means, and the perforations of the roofing membrane resulting from the fastening means will be covered and a watertight roofing membrane will result.

[0003] Nails or screws are often used as fastening means for securing traditional roofing membranes to an underlying wooden board or other building structure. The nails or screws are placed by hand in the edge portion of the membrane carrying the adhesive, and a certain distribution of the fastening means is prescribed that will properly secure the roofing membrane to the underlying building structure so that it will withstand strong wind. However, when nails and screws are placed by hand there is a risk that the actual distribution will not be within prescribed limits; too few nails will reduce the resistance to strong winds, and an excessive number of nails will take longer time to apply without adding desirable or useful strength. In case the fastening means are not placed in accordance with the manufacturer's specifications regarding mutual spacing and distribution there is a risk that the roofing membrane will not be properly secured to the building structure and strong winds may eventually blow the roofing membrane off the building. On the other hand, an excessive number of fastening means may not result in a desired or advantageous increase in the

strength or wind resistance but will result in an increased number of fastening means consumed with a corresponding increase in the time spent.

[0004] Usually, the roofing membrane will be placed on the supporting building structure with the side having a bonding zone with an adhesive facing away from the supporting building structure which will usually be upward. The fastening means will be applied in this bonding zone and penetrate the adhesive.

[0005] The fastening means may be applied before the release sheet is removed from the adhesive and will thus also penetrate the release sheet. When the release sheet is subsequently removed the heads of the nails or screws will tend to retain not only the roofing membrane but also the release sheet, and the release sheet may become torn and leave small or large portions thereof on the adhesive, whereby complete removal of the release sheet will not result. Thereby the effective area of the adhesive will be correspondingly reduced. If a torn-off portion of the release sheet at the edge thereof is left on the adhesive this portion may create an opening at the corresponding edge of the adhesive which may lead to a leakage from the opening along the portion of the release sheet and through the penetration at the nail or screw and into the building.

[0006] Alternatively, the fastening means may be applied after the release sheet is removed from the adhesive. The fastening means will then be applied only through the roofing membrane and not through the release sheet whereby the above situation will not occur. However, when the adhesive is thus exposed particles like sand, dust, dirt and water may be blown onto the exposed surface of the adhesive and reduce the efficiency of the adhesive. The exposed adhesive will be exposed to UV light which may reduce or even destroy the tack of the adhesive. Further, there is a risk that the use of driving tools such as a hammer or screw driver may mark or possibly even penetrate the roofing membrane whereby the adhesive will be locally damaged which may result in an imperfect bond.

[0007] Therefore, usually only a portion of the release sheet is removed at a time for fastening the roofing membrane to the underlying roofing structure and then laid over the adhesive again to protect the adhesive against dirt, dust and sand. This is repeated until the entire length of the web is secured to the roofing structure and the entire release sheet is not removed until the time when the next, overlying web is to be adhered to the web that has thus been secured to the building structure.

SUMMARY OF THE INVENTION

[0008] The invention avoids the above problem by providing a roofing membrane with a release sheet that has a plurality of marks indicating positions for receiving fastening means to perforate the roofing membrane and the release sheet to thereby secure the roofing membrane to a building structure, the release sheet having a tear

line around each mark that allows, when the roofing membrane is secured to the building structure, removal of the release sheet outside the tear lines.

[0009] The fastening means can then be applied while the release sheet is still on the adhesive, and the plurality of marks provides a guide for obtaining the prescribed and correct distribution of the fastening means which is simple and easy to follow. The tear lines around each mark that allow removal of the release sheet outside the tear lines ensure that each fastening means will retain no more than the portion of the release sheet that is within the corresponding tear line. The release sheet may then be removed from the adhesive just before the overlying web is to be adhered thereto, whereby the adhesive is only exposed for a minimum of time and accumulation of dust and dirt and the risk of UV exposure and contamination with water is reduced to a minimum.

[0010] The invention thus provides a guide for placing the fastening means at the prescribed locations to ensure the proper strength of the roofing and also reduces the work and the time spent on the fastening process. The traditional working step of partially removing the release sheet and putting it back in place in order to protect the adhesive until the final removal of the release sheet before bonding is also avoided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

Figure 1 is a section through a first roofing membrane according to the invention;

Figure 2 is a section through the first roofing membrane in figure 1 secured to an underlying building structure;

Figure 3 shows the roofing membrane secured to the underlying building structure as in figure 2 and a second roofing membrane to be secured to the first roofing membrane.

DETAILED DESCRIPTION OF THE INVENTION

[0012] In figure 1 is shown a section through a portion of a roofing membrane 10 such as a bituminous roofing membrane supplied as a web on a roll. The roofing membrane 10 has a first side 11, a second side 12 opposite the first side and longitudinal edge 13. A bonding zone 14 at an edge portion of the first side 11 has a layer of an adhesive 15 such as a bituminous adhesive which is covered by a release sheet 16 that can be removed to expose the adhesive. For illustrative purpose the release sheet is shown at a distance from the adhesive 15.

[0013] In figure 2 the roofing membrane 10 is secured to a building structure 30 such as a wooden board by means of fastening means 31 such as nails or screws that are driven through the release sheet 16, the adhesive

15 and the roofing membrane 10 and into the building structure 30. For illustrative purpose the fastening means 31 are shown not having been driven to full contact with the release sheet. In practical use the fastening means 31 will be driven into the roofing membrane 10 so that their heads will be in contact with the surface of the surface of the surrounding portion of the release sheet.

[0014] In figure 4 is shown a portion of the release sheet 16. The release sheet 16 is in the form of a web with longitudinal edges 17 and 18. Between the longitudinal edges the release sheet has a plurality of marks 19 which each indicates a position for receiving a fastening means to perforate both the release sheet and the roofing membrane so as to secure the roofing membrane to a building structure. The marks 19 can be visible and/or tactile marks that serve as guides for placing the fastening means 31 with a prescribed distribution and a density which ensures proper fastening to the roof structure and also that the resulting roofing is water tight. Each mark 19 is surrounded by a ring of weakenings such as perforations that form a tear line 20 allowing portions 21 of the release sheet surrounded by the tear line to be separated from the release sheet outside the tear line by applying proper forces. The marks 19 are preferably made using the same process that is used for making the tear lines.

[0015] In figure 2 the fastening means 31 are positioned in the centres of the markings 19 and the tear lines 20 define a contour that is slightly larger than the contour of the heads of the fastening means which allows the fastening means to be placed with a corresponding margin.

[0016] When the roofing membrane 10 has been secured to the underlying building structure the release sheet can be removed by pulling it away from the adhesive. The heads of the fastening means will hereby retain the portions of the release sheet that are delimited by the tear lines 20 and the removed release sheet has corresponding holes.

[0017] This is illustrated in figure 3 where the release sheet has been removed and the portions 21 of the release sheet that are delimited by the now broken tear lines are retained by the heads of the fastening means, whereby the removed portion of the release sheet has corresponding holes. The portion of the release sheet that is retained by the fastening means and protrudes beyond the heads of the fastening means only has an insignificant area.

[0018] Also shown in figure 3 is a second roofing membrane 40 similar to the roofing membrane 10. The second roofing membrane 40 is shown with an optional layer of adhesive 41 such as a bituminous adhesive forming a bonding zone at a longitudinal edge on its side that faces towards the roofing membrane 10. The optional adhesive 41 is preferably covered by a release sheet to be removed before bonding to the first roofing membrane. The second roofing membrane 40 can then be brought into contact with the first roofing membrane 10 with their bonding zones overlapping, and the adhesive on one or both roof-

ing membranes will bond the bonding zones together. The thus established bond is water tight and strong enough to retain the second roofing membrane.

[0019] The second roofing membrane 40 may have its opposite longitudinal edge provided with a bonding zone with an adhesive like the first roofing membrane as shown in figure 1 to be fastened to the building structure and to a further roofing membranes as described above.

[0020] The fastening means include any suitable means that can be applied and driven by hand or by any suitable machine or apparatus. Nails and screws have been mentioned as examples, but bands or rails secured by two or more screws or nails may be useful to give a stronger hold for securing the roofing membrane in regions where strong winds can be expected. Such bands or rails may extend along a longitudinal edge of the roofing membrane in the entire length of the membrane or for a portion thereof. In such case the release sheet will preferably have tear lines 20 corresponding to the contour of the bands or rails like the middle strip 24 in figure 4.

[0021] Also shown in figure 4 is that the release sheet 16 has optional tear lines 22 extending in the longitudinal direction of the release sheet delimiting two lateral strips 23 and a middle strip 24. This is useful in membranes that are primarily used as water barriers and not exposed to wind forces. Examples of such uses are rain water reservoirs, swimming pools and waste deposits where liquids in the deposited waste material should be isolated from the soil. In such uses the two lateral strips 23 are removed from the adhesive and the middle strip 24 is left on the adhesive. The overlying membrane is bonded to both of the adhesive strips that have been exposed by removing the two lateral strips of release sheet. Since the middle strip 24 of the release sheet is not removed, the overlying membrane will adhere to the underlying membrane at the two lateral strips and not to the middle strip 24 the release sheet whereby a channel is delimited between the two membranes and the two adhesive strips. Tightness of the thus established bond can be tested by sealing the channel at its free ends and injecting a volume of air or other fluid into the channel and observing e.g. the pressure over a period of time sufficient to determine the tightness of the bond.

[0022] Another example is for use when the membrane will be fixed to e.g. a building structure at low ambient temperatures below a recommended minimum value for using the adhesive such as bituminous adhesives. In such cases the two lateral strips 23 will be removed and the middle strip 24 left on the adhesive. When the two membranes are joined the middle strip 24 of the release sheet will cause a channel to be formed that is delimited between the two membranes and the two lateral adhesive strips. The channel will not be sealed but can be used for introducing a hot or warm object or substance such as hot air that will heat the adhesive to a temperature above the recommended minimum temperature, whereby the temperature of the adhesive can be raised to a value above the recommended minimum temperature of

use. The temperature of the hot or warm object or substance can be kept well below the temperatures that traditionally occur when a flame is used, and the risk of fire or heat-induced deterioration of the adhesive or the membrane is avoided.

Claims

1. A membrane (10) with opposed first and second sides (11, 12), the first side (11) having a first bonding zone (14) with an adhesive (15) for bonding the first bonding zone (14) to a second bonding zone on the second side of a like membrane (40), the adhesive (15) being covered by a release sheet (16) that can be removed to expose the adhesive (15),
characterized in that
the release sheet has one or more tear lines (20, 22) defining a first portion (23, 24) and a second portion (21, 24) of the release sheet and allow the first portion (23, 24) to be removed from the adhesive and the second portion (21, 24) to be left on the adhesive.
2. A membrane (10) according to claim 1 being a roofing membrane and wherein the release sheet (16) has a plurality of marks (19) each indicating a position for receiving a fastening means (31) to perforate both the roofing membrane (10) and the release sheet (16) to thereby secure the roofing membrane (10) to a building structure (30), the release sheet (16) having a tear line (20) around each mark (19) that allows, when the roofing membrane (10) is secured to the building structure (30), removal of the release sheet (16) outside the tear lines (20).
3. A roofing membrane (10) according to claim 2 wherein the first bonding zone (14) is adjacent an edge (13) of the roofing membrane.
4. A roofing membrane (10) according to claim 3 wherein the release sheet (16) has a tear line (22) along an edge (18) of the release sheet and at a distance from the edge (18), the tear line (22) defining first and second portions (23, 24) on respective sides of the tear line (22) and allowing the first portion (23) of the release sheet (16) to be removed to expose the corresponding portion of the adhesive (15).
5. A membrane (10) according to claim 1 wherein the tear lines define two lateral portions (23) and a middle portion (24) between the two lateral portions (23), and the two lateral portions (23) can be removed from the adhesive while leaving the middle portion (24) on the adhesive.
6. A release sheet (16) for releasably covering an adhesive on a first bonding zone (14) of a roofing membrane (10), **characterized in that** the release sheet

(16) has marks (19) indicating positions for receiving fastening means (31) to perforate the release sheet (16) on the roofing membrane (10) to thereby secure the roofing membrane (10) to a building structure (30), the release sheet (16) having a tear line (20) around each mark (19) that allows the portion of the release sheet (16) outside the tear lines (20) to be removed when the roofing membrane (10) is secured to the building structure (30).

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7. A release sheet (16) according to claim 6 wherein the release sheet (16) has a tear line (22) along an edge (18) of the release sheet (16) and at a distance from the edge (18), the tear line (22) defining first and second portions (23, 24) on respective sides of the tear line.

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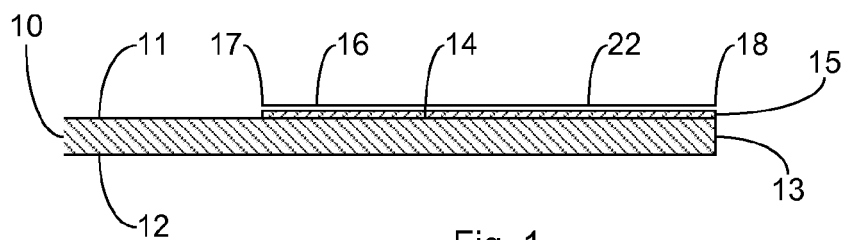


Fig. 1

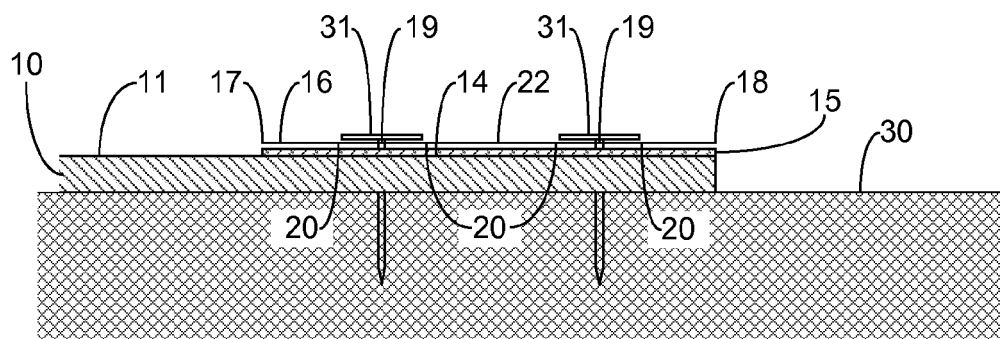


Fig. 2

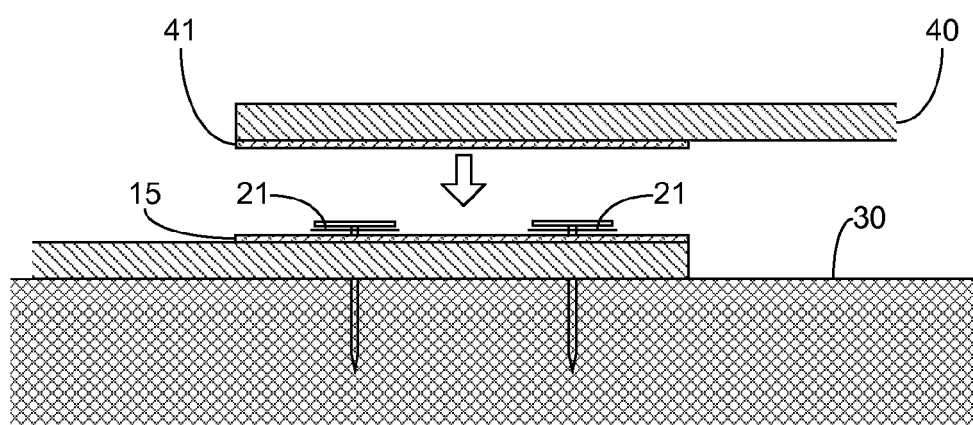


Fig. 3

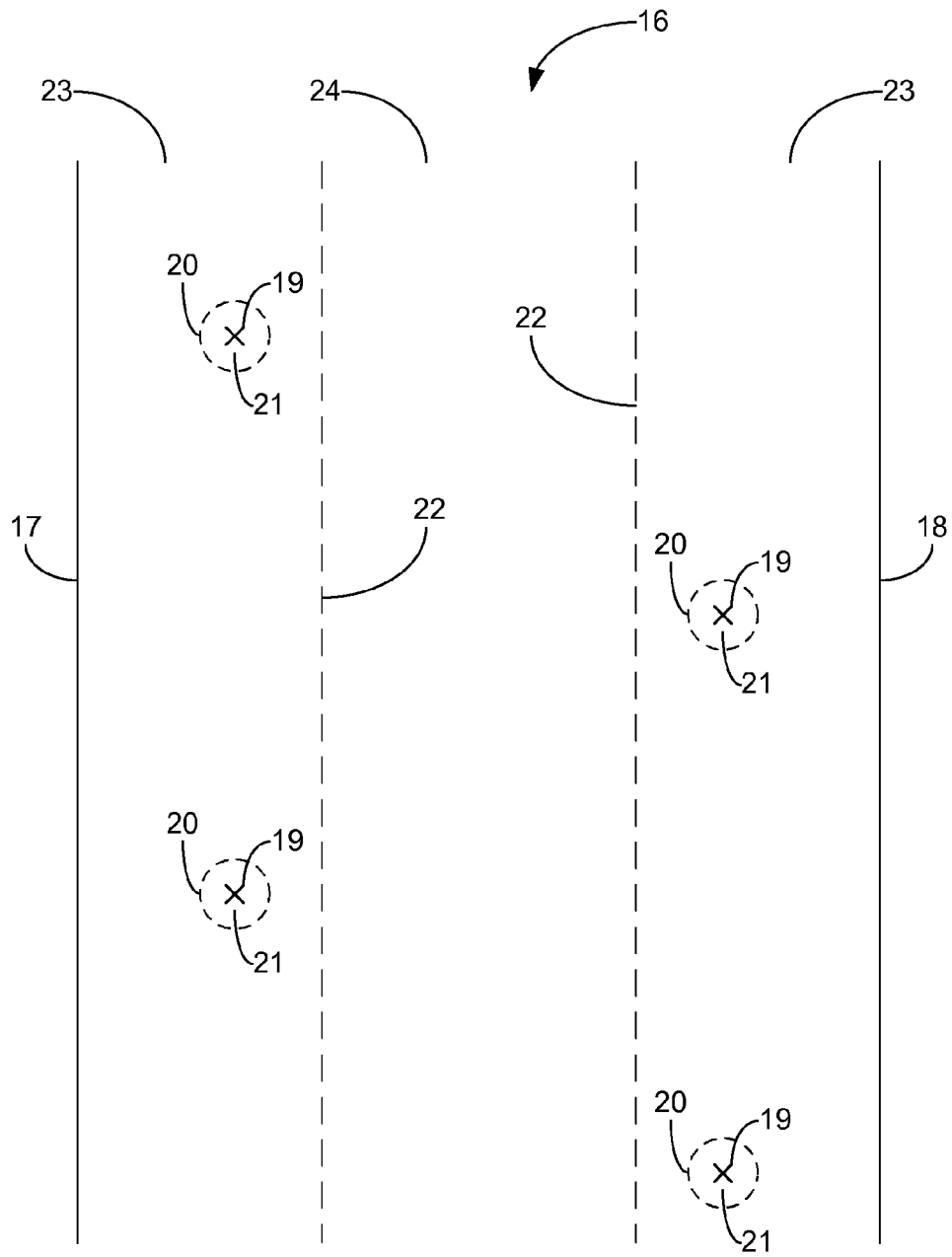


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 10 19 0770

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 April 2011	Examiner Bauer, Josef
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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