

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 June 2006 (08.06.2006)

PCT

(10) International Publication Number
WO 2006/060161 A2

(51) International Patent Classification:
E04B 5/00 (2006.01)

(21) International Application Number:
PCT/US2005/041407

(22) International Filing Date:
15 November 2005 (15.11.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/999,002 30 November 2004 (30.11.2004) US

(71) Applicants and

(72) Inventors: AKINS, Faron, L. [US/US]; 4544 Westhill Place, Kernersville, NC 27284 (US). AKINS, Daron, L. [US/US]; 3563 Homeward Trail Drive, Franklinville, NC 27248 (US).

(74) Agent: JONES, Robert, D.; Litman Law Offices, Ltd., P.O. Box 15035, Crystal City Station, Arlington, Virginia 22215 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

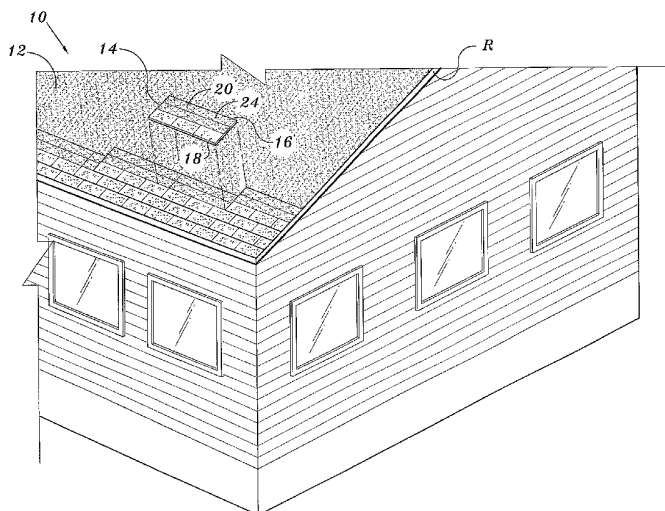
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ROOFING SYSTEM



(57) Abstract: The roofing system (10) allows numerous releasably interlocking shingles (14) to be attached to the roof (R) of a house without using nails. The roofing system (10) includes a single foundation layer (12) of hook and loop fastening material that is affixed to the roof (R), and a plurality of shingles (14) releasably attached to the foundation layer (12). The shingles (14) are overlapped onto each other in rows and held both to each other and the foundation layer (12). The shingles (14) may additionally laterally overlap each other to provide a greater level of resistance to the elements.

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ROOFING SYSTEM

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TECHNICAL FIELD

The present invention relates to roofing systems, and particularly to a roofing system having shingles or other roof coverings attached to the roof without nails.

BACKGROUND ART

As housing has evolved over the years, shingles have become the standard in
10 protection of a house's roof. Shingles are generally typically laid onto roofs using thousands of nails for every one thousand square feet of coverage. This method requires that installers secure these thousands of nails to the roof, which involves an inordinate amount of effort. The use of nails also means that once a shingle is laid, it is difficult to remove it if it is damaged. Further, each nail translates into thousands of potential leaks in the roof.

15 Therefore, a method of affixing shingles to a roof that does away with the use of nails would save a great deal of time and potential roof damage. However, it is essential that any nailless shingle-mounting system provide a very secure way to affix the shingles to the house, because wind, inclement weather, tearing, or curling of the shingles will result in an unprotected roof.

20 Accordingly, there is a need for a roofing system that does not use nails, but additionally secures the shingles tightly to the roof and also to each other if necessary. Thus, a roofing system solving the aforementioned problems is desired.

DISCLOSURE OF THE INVENTION

This disclosure is directed to a roofing system with a foundation layer of hook and
25 loop fastening material and a plurality of shingles. Each of the shingles has a top surface, a bottom surface, an upper portion and a lower portion. A roof attachment layer of hook and loop fastening material is affixed to the entire bottom surface of each of the shingles. The roof attachment layer is releasably mated with the foundation layer. The system also includes an overlap layer of hook and loop fastening material that is affixed to the upper portion of the
30 top surface of each of the shingles. The overlap layer is releasably mated with the roof.

attachment layer of an overlapping one of the shingles. The shingles are attachable to the foundation layer in rows with the lower portion of one row being releasably attached to the upper portion of an adjacent row of the shingles.

The disclosure is also directed to a roofing system that includes a nailless means for affixing shingles to a roof. The system includes a plurality of shingles with a top surface, a bottom surface, an upper portion and a lower portion. The shingles are attachable to the roof in rows with the lower portion of one row being releasably attached to the upper portion of an adjacent row of the shingles.

These and other features of the present invention will become readily apparent upon further review of the following specification and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an environmental, perspective view of a roofing system according to the present invention, only a portion of the roof having shingles attached thereto to show details of the system.

Fig. 2A is a top view of one of the shingles of the roofing system according to the present invention.

Fig. 2B is a bottom view of one of the shingles of the roofing system according to the present invention.

Fig. 3 is a side view of the roofing system in section according to the present invention.

Fig. 4 is an environmental, perspective view of the roofing system according to the present invention with shingles having interlocking hook and loop fastening strips, only a portion of the roof having shingles attached thereto.

Similar reference characters denote corresponding features consistently throughout the attached drawings.

BEST MODES FOR CARRYING OUT THE INVENTION

The roofing system of the present invention allows for numerous shingles to be attached to the roof of a house without using nails. The shingles are tightly affixed to the roof with a series of fasteners releasably interlocking the shingles to each other and also attaching the shingles to the surface of the roof.

The roofing system includes a single foundation layer of hook and loop fastening material and a plurality of shingles attached to the foundation layer. The foundation layer is attached to the roof either with an adhesive or with any other type of adherent. The foundation layer may be affixed to a water-resistant base sheet that is secured to the roof by adhesive or in any other manner. The shingles each have a roof attachment layer of hook and loop fastening material affixed to the entire bottom surface of the shingle. A first row of shingles is laid onto the foundation layer, securing the first row of shingles to the roof. On the upper portion of the top surface of each of the shingles is an overlap layer of hook and loop fastening material. The lower portion of the top surface of the shingle is, when laid, the exposed material that protects the roof, and may be made of asphalt, fiberglass or the like.

A second row of shingles is set onto the first row of shingles so that the lower portion of the roof attachment layer of each shingle in the second row secures to the overlap layer of a shingle in the first row of shingles. The upper portion of the roof attachment layer of each shingle in the second row attaches to the foundation layer, allowing the second row of shingles to affix both to the roof and to the first row of shingles. This process continues until the roof is completely covered with the shingles and only the exposed lower portions of each row are visible.

The shingles may include a lateral strip of hook and loop fastening material on the lateral edge of each shingle. When the shingles are laid next to each other, a first shingle partially overlaps the lateral edge of an adjacent shingle. The roof attachment layer of the first shingle mates with the lateral strip of hook and loop fastening material of the second shingle. Thus, the laterally adjacent shingles are releasably held to each other, providing a tighter hold to the roof.

By interlocking laterally adjacent shingles to each other and locking rows of shingles to subsequent rows, and additionally to the foundation layer, the roofing system provides a high level of resistance against wind, tearing, curling, and the like.

Fig. 1 is an environmental, perspective view of the roofing system 10. The roofing system 10 includes a single foundation layer of hook and loop fastening material 12 and a plurality of shingles 14 attachable to the foundation layer 12. The shingles 14 are designed to interlock together in rows on a roof R, covering the entire roof R with shingles 14.

Before the shingles 14 are laid, the foundation layer 12 is affixed directly onto the roof R. The foundation layer 12 may be attached to the roof R with an adhesive, stapling or

any other nailless attachment device. Once a first row of shingles 14 is affixed to the foundation layer 12, a second row of shingles 14 is placed on top of the first row so that the rows overlap each other. The rows of shingles 14 are laid in such a way that the entire roof R is eventually covered by the shingles 14.

5 Turning now to Figs. 2A and 2B, a top and a bottom view, respectively, of one of the shingles 14 is shown. Fig. 2A shows the top surface 20 of the shingle 14. The shingle 14 has an upper portion 16 and a lower portion 18. An overlap layer of hook and loop fastening material 24 is affixed to the upper portion 16 of the top surface 20 of the shingle 14. The lower portion 18 of the top surface 20 of the shingle 14 is, when laid, the exposed portion of
10 the shingle 14. The lower portion 18 of the shingle 14 is made with asphalt, an asphalt composite, laminated fiberglass, or any other material suitable to protect the roof from the elements. The lower portion 18 of the shingle 14 may be sectioned into three tabs or may be an unseparated material.

Fig. 2B shows the bottom surface 26 of the shingle 14. A roof attachment layer of
15 hook and loop fastening material 28 is affixed to the entire bottom surface 26 of the shingle 14. When the shingle 14 is placed on the roof R, the roof attachment layer 28 affixes onto the foundation layer of hook and loop fastening material 12 that is attached to the roof R. The shingle 14 is therefore releasably mated with the foundation layer 12.

The roof attachment layer of hook and loop fastening material 28 covers the entire
20 bottom surface 26 of the shingle 14, and therefore, when the shingle 14 is laid, provides a greater level of resistance against accidental tearing, inclement weather, and curling than if the bottom surface 26 had only a portion, e.g., the upper portion, covered with the hook and loop fastening material. Covering the entire bottom surface 26 of the shingle 14 with the roof attachment layer of hook and loop fastening material 28 provides a stronger hold against the
25 roof R surface, and permits interlocking the shingles 14.

Fig. 3 shows a side view of the reinforced nailless roofing system 10 in section. The foundation layer 12 is a base sheet 30 to which hook and loop fastening material 32 is attached. The bottom surface of the base sheet 30 is coated with an adhesive 40. The foundation layer of hook and loop fastening material 12 is laid onto the surface of the roof R and secured to the roof with the adhesive 40. A backing 36 may be attached to the bottom
30 surface of the foundation layer 12 in order to aid as a water barrier when the foundation layer 12 is laid. In this case, the adhesive 40 is coated onto the backing 36 before the foundation layer 12 and backing 36 are secured to the roof R. The backing 36 is made from a polymer, such as rubber, or any other water-resistant material.

After the foundation layer **12** is set onto the roof **R**, a first row of shingles **14a** is laid on the foundation layer **12**. The roof attachment layer of hook and loop fastening material **28**, attached to the entire bottom surface **26** of the shingle **14**, mates with the foundation layer **12** to fasten the shingle **14** to the roof **R**. A second row of shingles **14b** is then laid onto the first row of shingles **14a**. The lower portion **18** of the roof attachment layer of hook and loop fastening material **28** of the second row shingles **14b** mates with the overlap layer of hook and loop fastening material **24** affixed to the upper portion **16** of the top surface **20** of the first row shingles **14a**. The upper portion **16** of the roof attachment layer **28** of the second row shingles **14b** mates with the foundation layer of hook and loop fastening material **12**, allowing the second set of shingles **14b** to be releasably attached both to the roof **R** and to the first row of shingles **14a**. Thus, there is greater reinforcement of the shingles **14a** and **14b** to the house. Layers of shingles **14** are continually laid, row upon row, until the roof **R** is entirely covered with the shingles **14**.

Turning now to Fig. 4, the shingles **14** of the nailless roofing system **10** are shown with a lateral strip of hook and loop fastening material **50** affixed to a lateral edge of the lower portion **18** of the top surface **20** of the shingle **14**. After a first shingle **14c** is laid onto the roof **R**, a second shingle **14d** is laid adjacent to and overlapping a lateral edge of the first shingle **14c**. The roof attachment layer **28** of the second shingle **14d** mates with the lateral strip of hook and loop fastening material **50** of the first shingle **14c**. Thus, the laterally adjacent shingles **14c** and **14d** are releasably held to each other, providing a tighter hold to the roof **R**. By interlocking laterally adjacent shingles **14** to each other and locking rows of shingles **14** to subsequent rows and additionally to the foundation layer **12**, the roofing system **10** provides a high level of resistance against wind, tearing, curling, and the like.

Although one lateral strip is shown, a second lateral strip of hook and loop fastening material **50** may be affixed to the opposite lateral edge of the top surface of the shingle **14**.

While hook and loop fasteners have been shown, any other nailless fastener may be used to mate the shingles to the roof and to one another, including opposing magnets or magnetic sheeting, snaps, rivets, porous contacts, nano products, clasps, zippers, suction devices, pins, ionized material, snap-rivets, tape, zip ties, twist ties, organic material, or any other suitable material.

It is to be understood that the present invention is not limited to the embodiment described above, but encompasses any and all embodiments within the scope of the following claims.

CLAIMS

We claim:

1. A roofing system, comprising:
 - a foundation layer of hook and loop fastening material adapted for being affixed to a
 - 5 roof;
 - a plurality of shingles, each of the shingles having a top surface, a bottom surface, an upper portion and a lower portion;
 - a roof attachment layer of hook and loop fastening material affixed to the entire bottom surface of each of the shingles, the roof attachment layer releasably mating with the
 - 10 foundation layer; and
 - an overlap layer of hook and loop fastening material affixed to the upper portion of the top surface of each of the shingles, the overlap layer releasably mating with the roof attachment layer of an overlapping one of the shingles;
 - whereby the shingles are attachable to the foundation layer in rows with the lower
 - 15 portion of one row being releasably attached to the upper portion of an adjacent row of the shingles.
2. The roofing system according to claim 1, further comprising at least one lateral interlocking strip of hook and loop fastening affixed to a lateral edge of the lower portion of each of the shingles, the roof attachment layer of one of the shingles releasably mating with
- 20 the interlocking strip of another one of the shingles, whereby laterally adjacent shingles have releasably attachable, overlapping lateral edges.
3. The roofing system according to claim 1, wherein at least the lower portion of each of the shingles is made from asphalt.
4. The roofing system according to claim 1, wherein the lower portion of each of the
- 25 shingles is an asphalt composite.
5. The roofing system according to claim 1, wherein the lower portion of each of the shingles is laminated fiberglass.

6. The roofing system according to claim 1, wherein the foundation layer has a bottom surface, the bottom surface being coated with an adhesive adapted for securing the foundation layer to the roof.

5 7. The roofing system according to claim 1, further comprising a backing attached to a bottom surface of the foundation layer.

8. The roofing system according to claim 7, wherein the backing is made from a polymer.

9. A roofing system, comprising:
a plurality of shingles, each of the shingles having a top surface, a bottom surface, an upper portion and a lower portion; and
10 nailless means for affixing the shingles to a roof;
wherein the shingles are attachable to the roof in rows with the lower portion of one row being releasably attached to the upper portion of an adjacent row of the shingles.

10. The roofing system according to claim 9, further comprising nailless means for
15 interlocking laterally adjacent shingles.

11. The roofing system according to claim 9, wherein at least the lower portion of each of the shingles is made from asphalt.

12. The roofing system according to claim 9, wherein the lower portion of each of the shingles is an asphalt composite.

20 13. The roofing system according to claim 9, wherein the lower portion of each of the shingles is laminated fiberglass.

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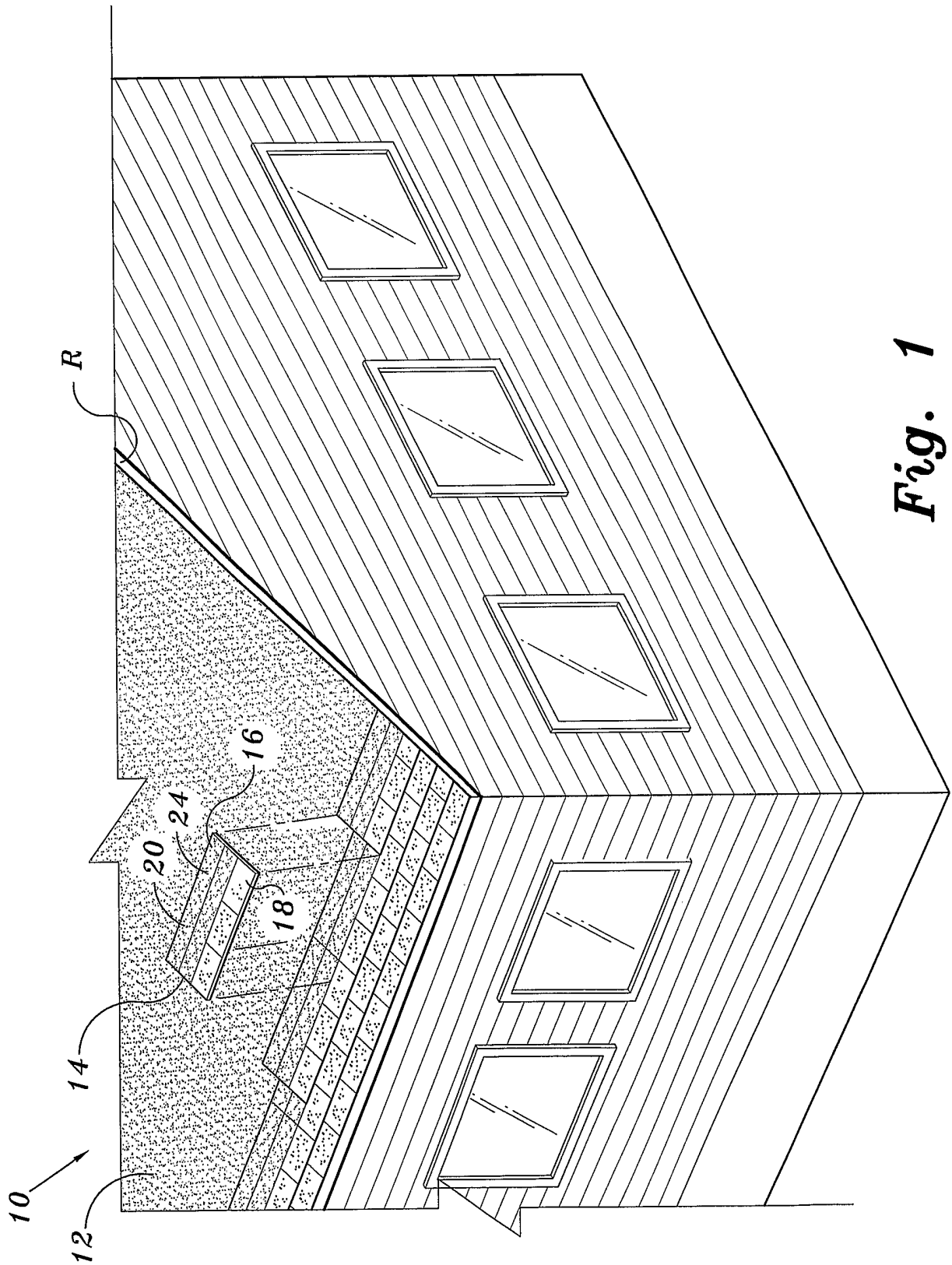


Fig. 1

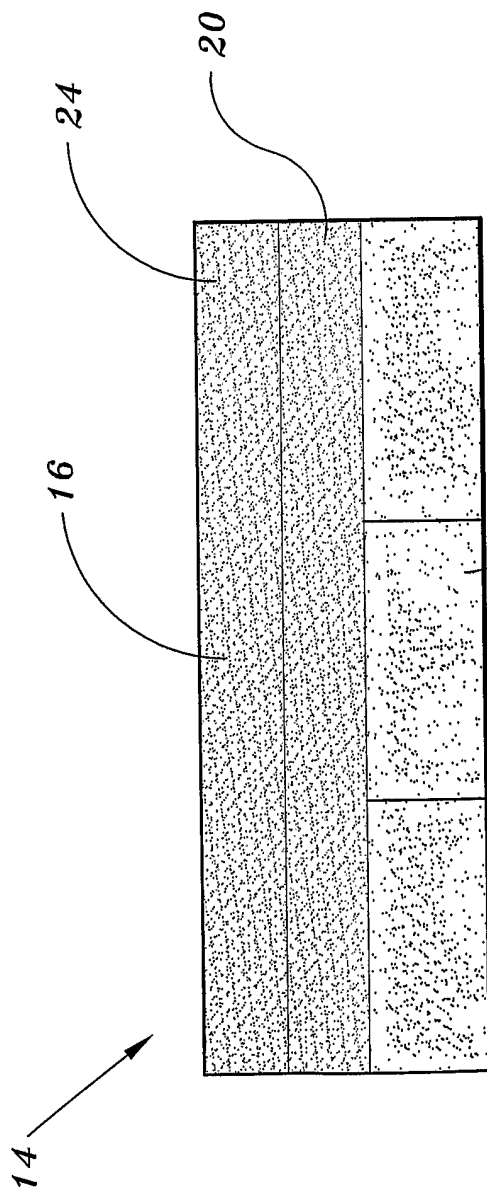


Fig. 2A

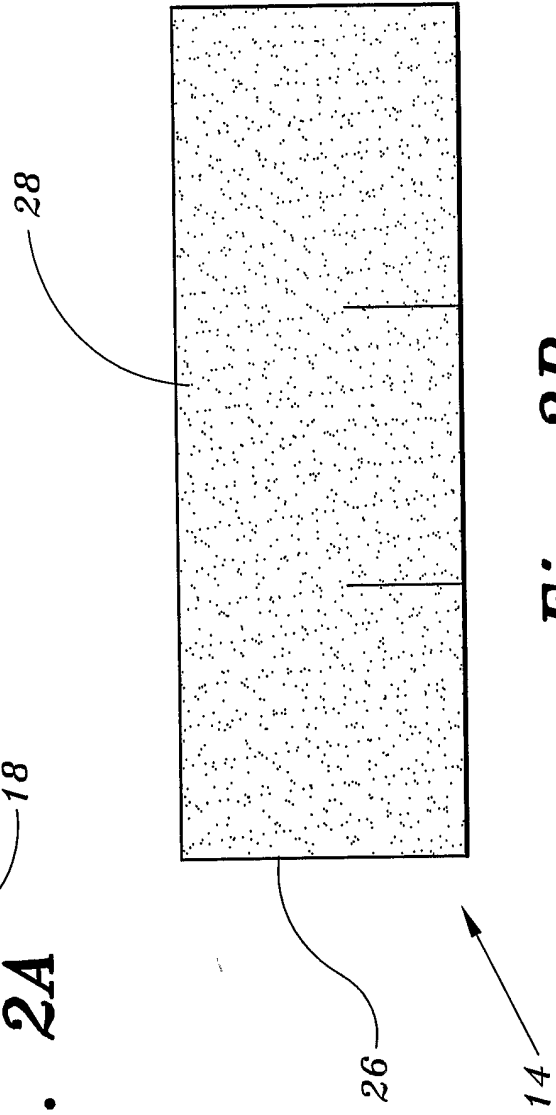
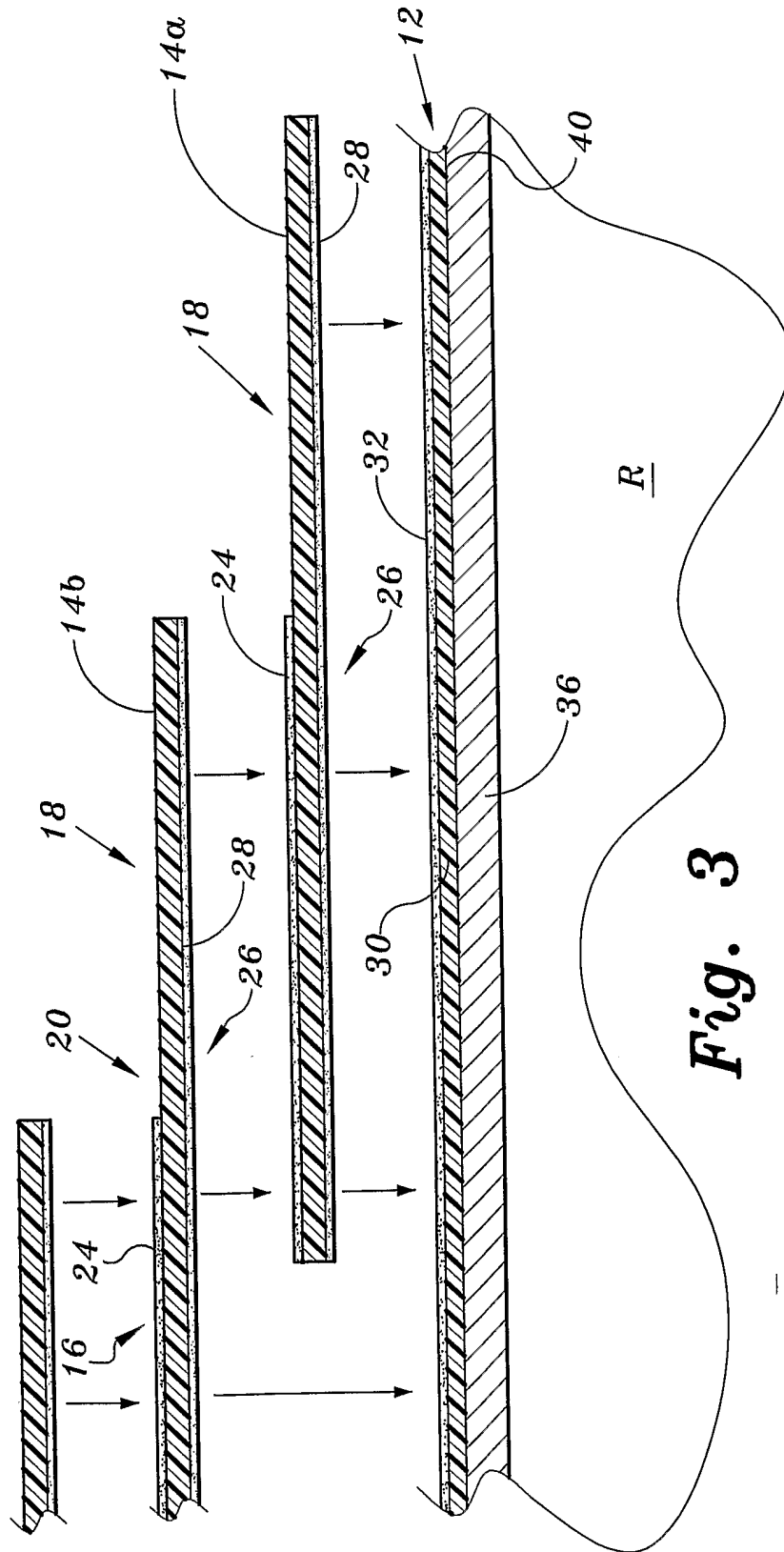


Fig. 2B

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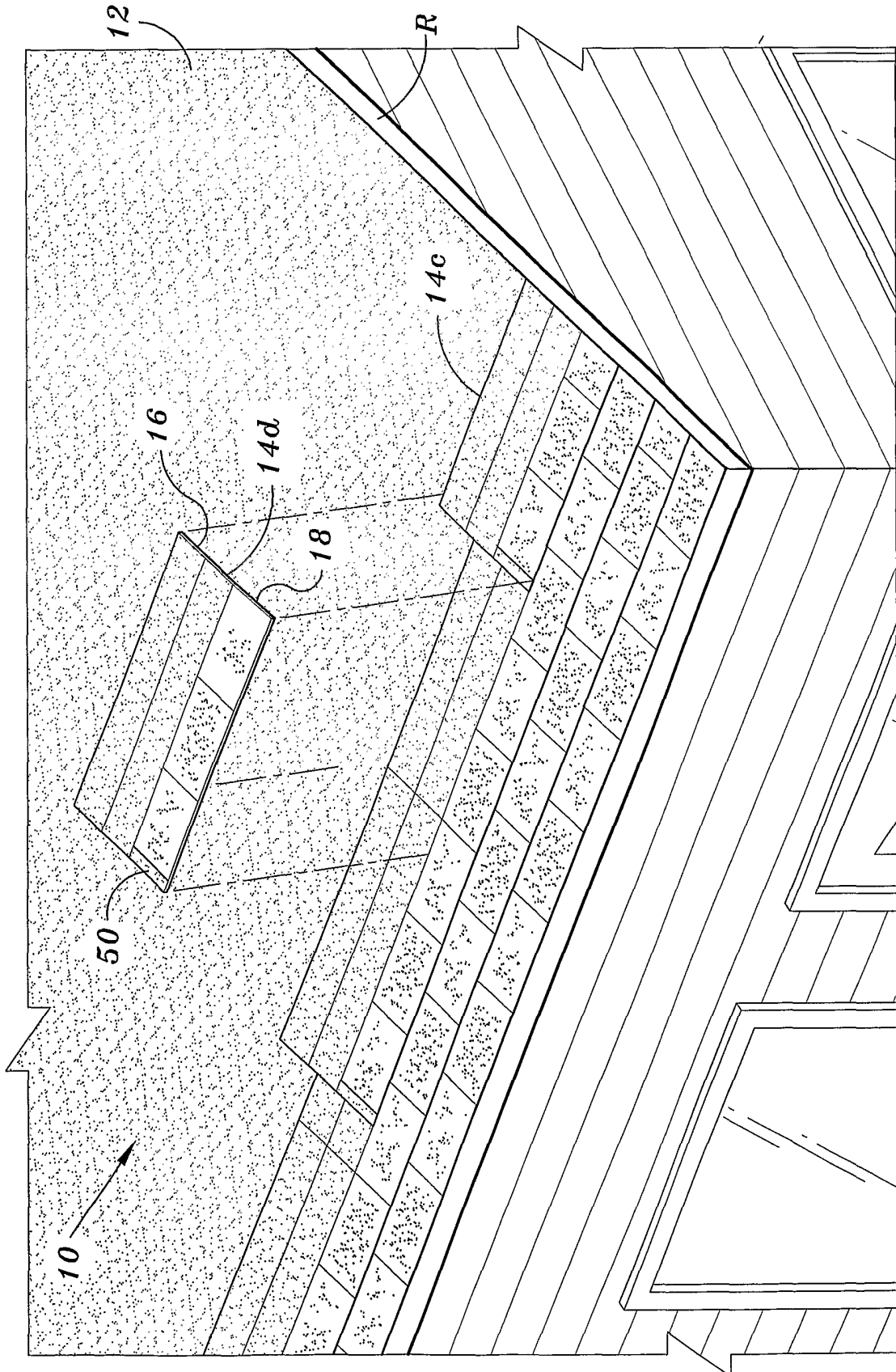


Fig. 4