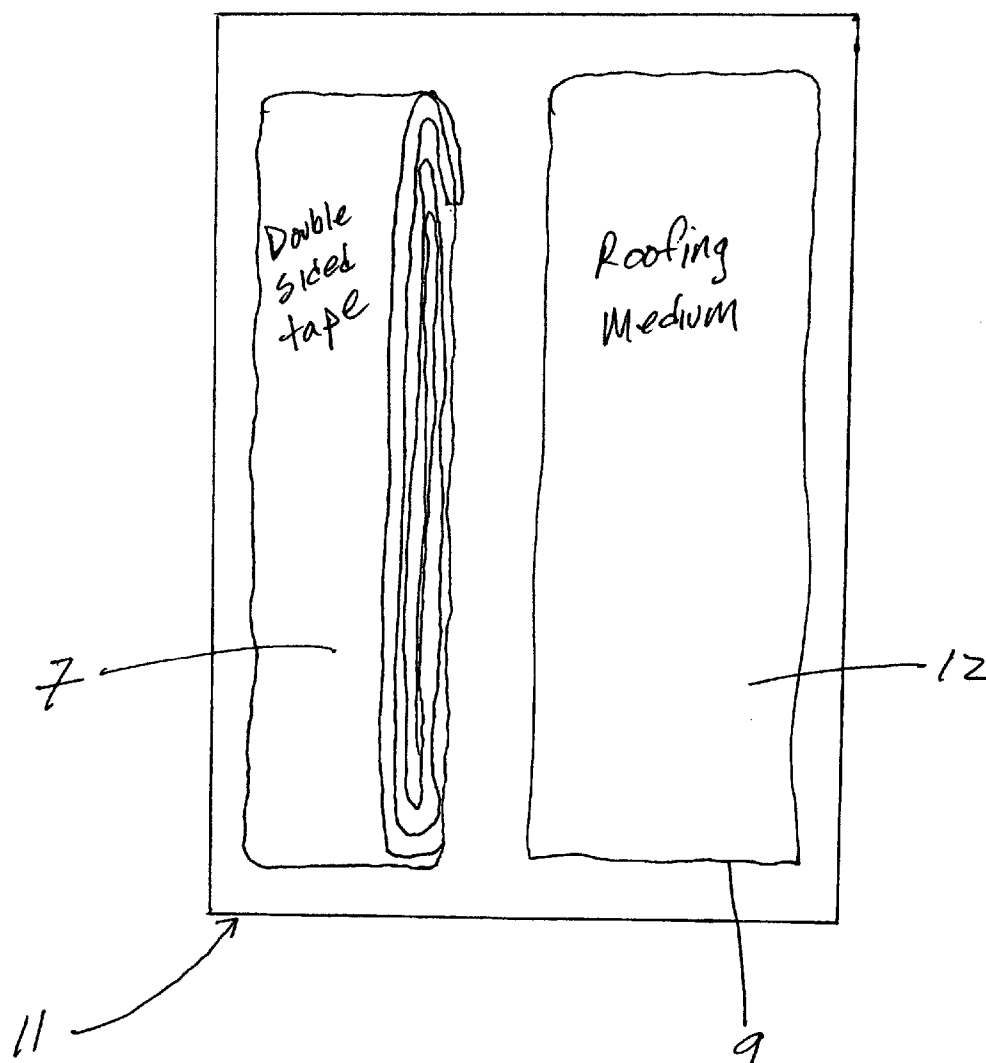




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(19) **United States**(12) **Patent Application Publication**  
**Margarites**(10) **Pub. No.: US 2008/0209835 A1**(43) **Pub. Date: Sep. 4, 2008**(54) **SURFACE REPAIR KIT AND METHOD**(76) Inventor: **Christopher E. Margarites,**  
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**E04D 1/00** (2006.01)(52) **U.S. Cl. .... 52/518**(57) **ABSTRACT**

A repair kit and method are provided. The repair kit is comprised of a double-sided adhesive tape and a quantity of medium. Alternatively, the tape contains an embedded, reinforcing scrim or added strength or utility. Another alternative embodiment provides a kit wherein one side of the adhesive of the tape is pre-fabricated with medium. In operation, a user removes a release liner of one of the sides of the adhesive tape, applies the exposed adhesive surface to the repair surface, then removes the other release liner of the opposite side of the tape and applies a coating of medium to cover the exposed top coat of adhesive. The kit is particularly useful in roofing repair, such as for the repair of tar-based granule containing shingles, commercial rolled granulated surfaces, metal surfaces, single-ply material based and concrete and masonry based surfaces.



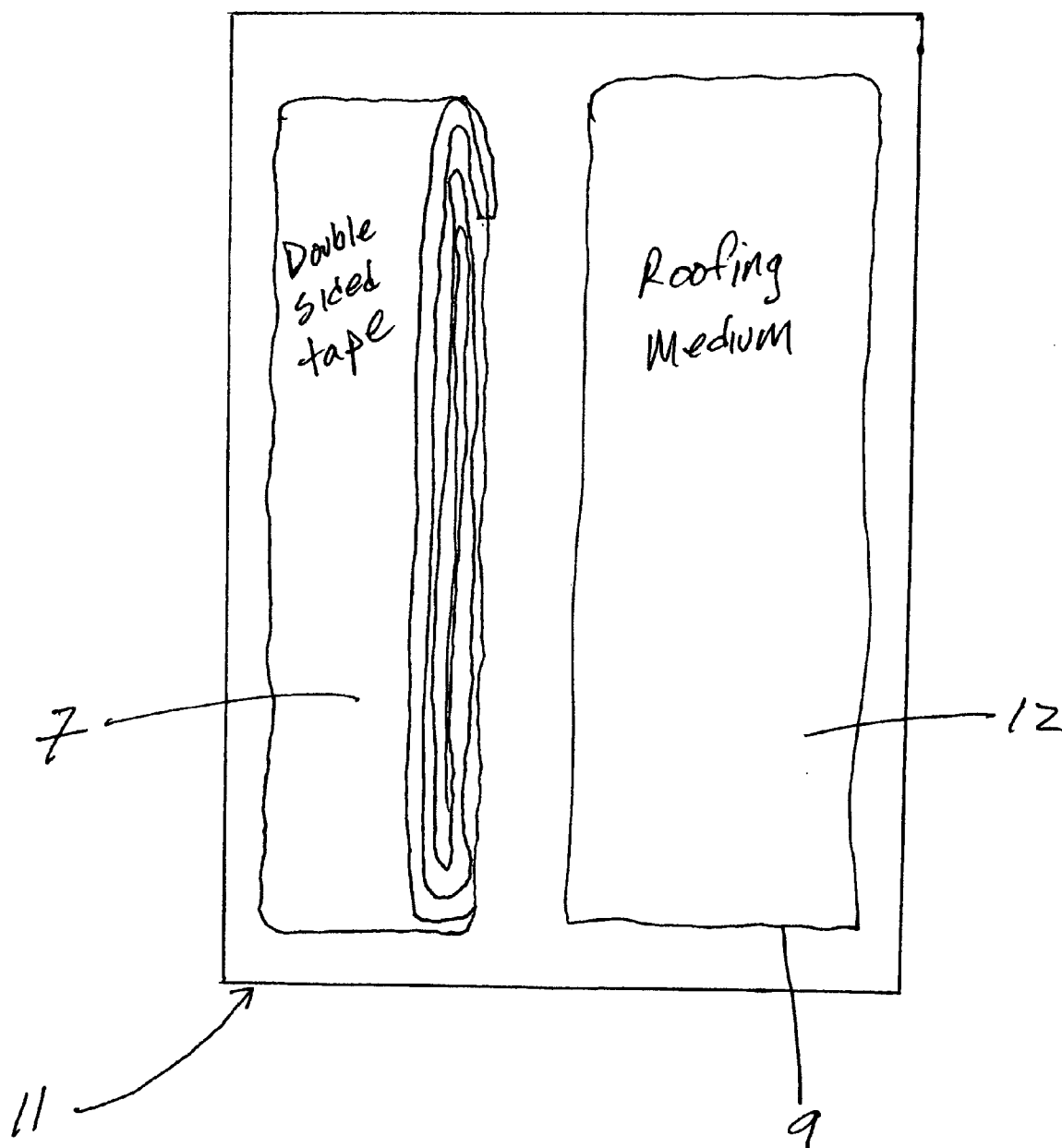
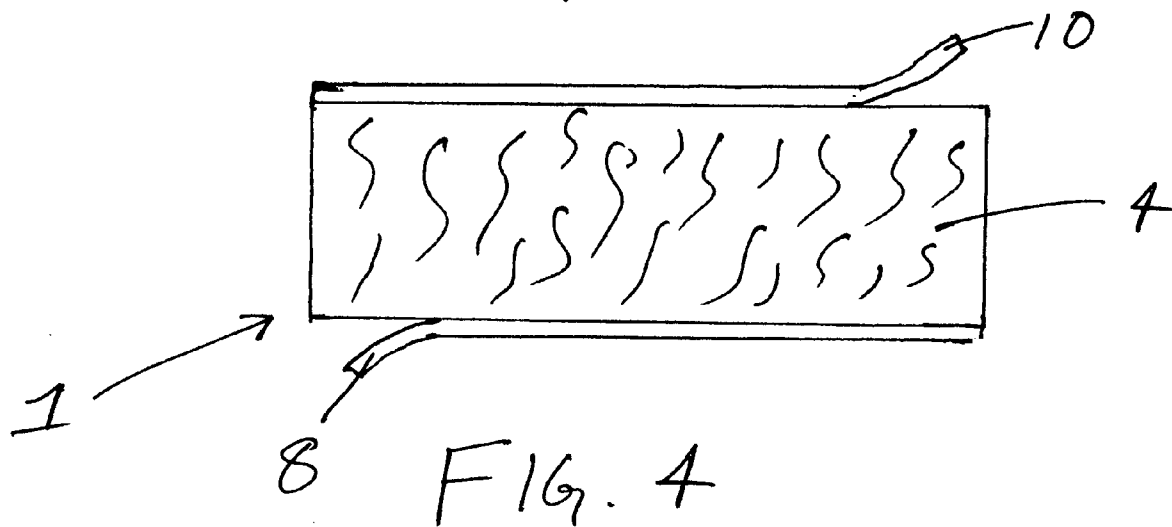
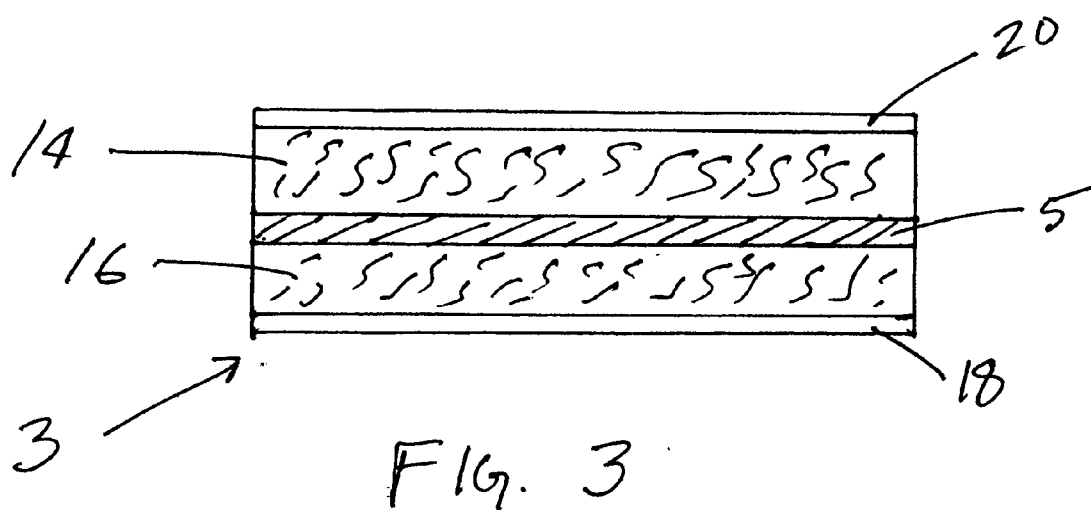
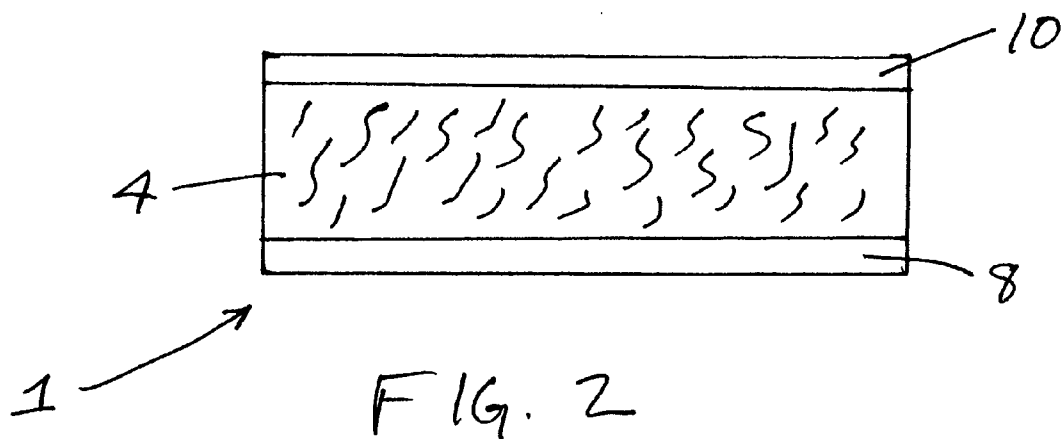
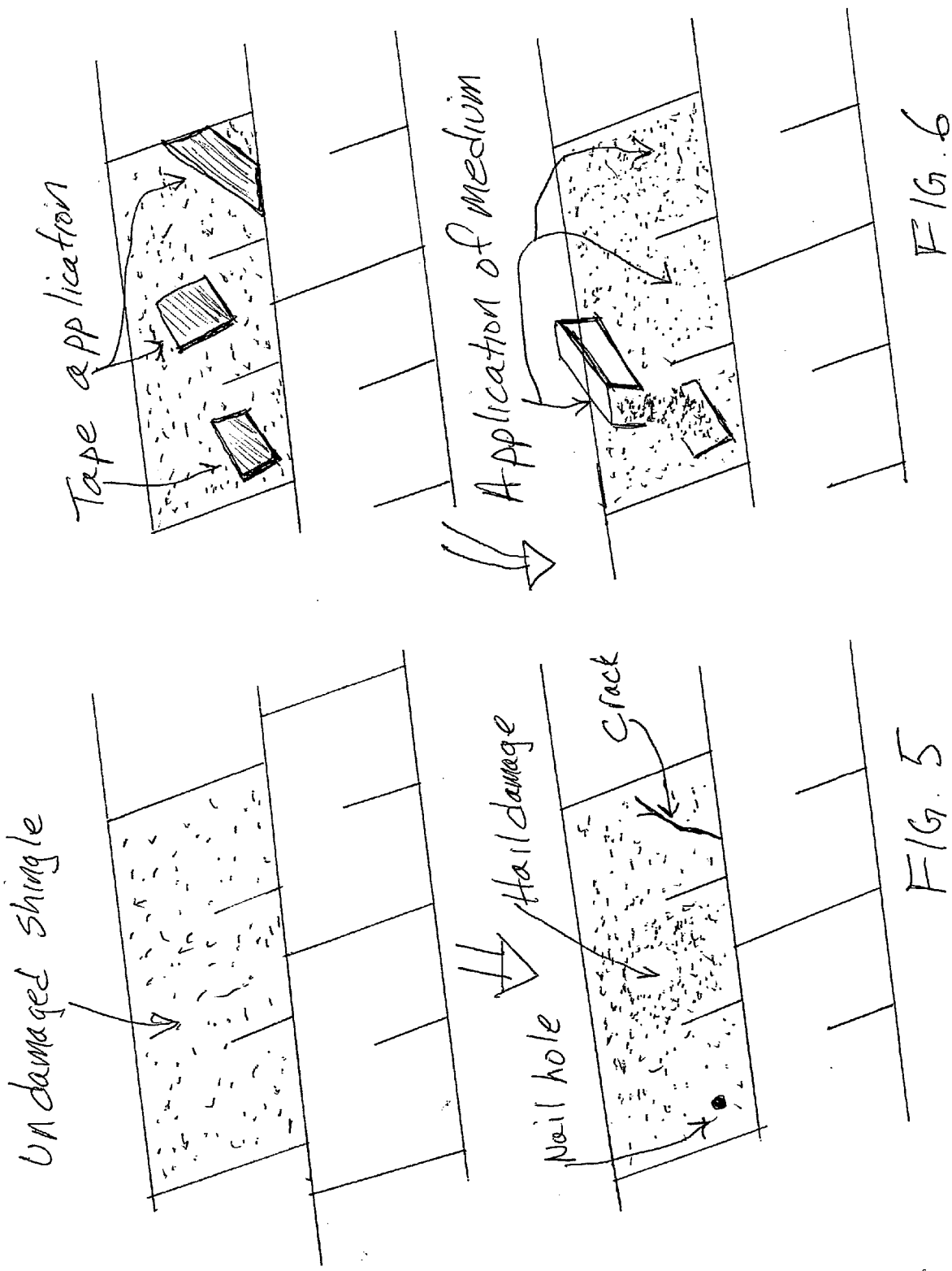


FIG. 1





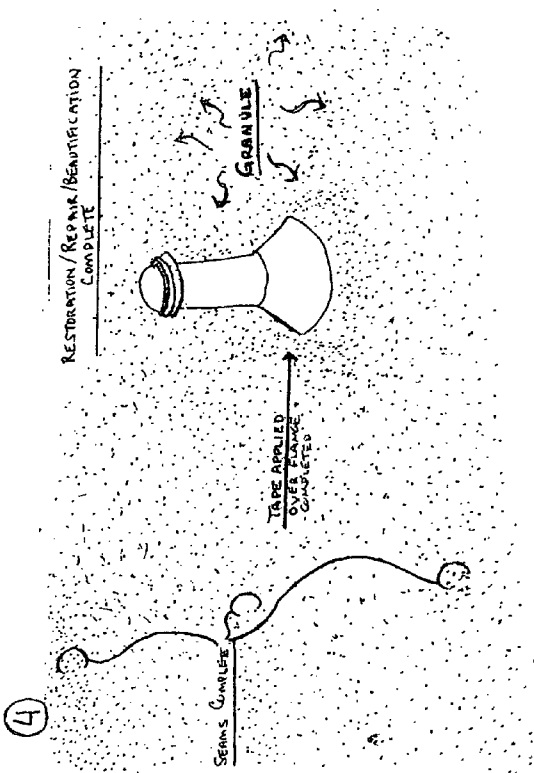
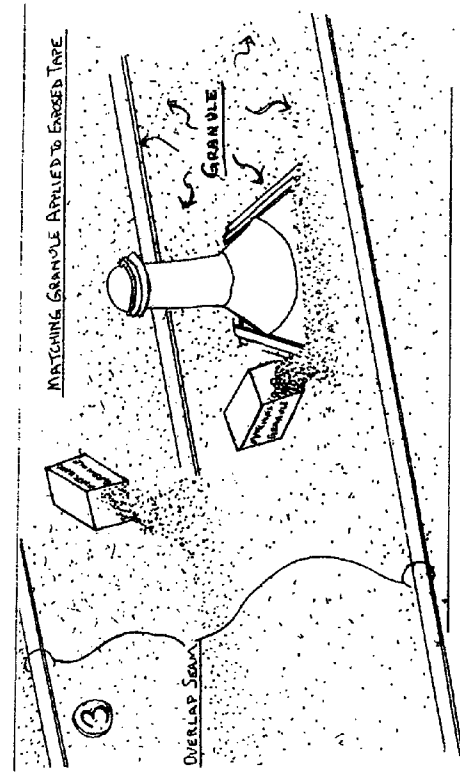


Fig. 7

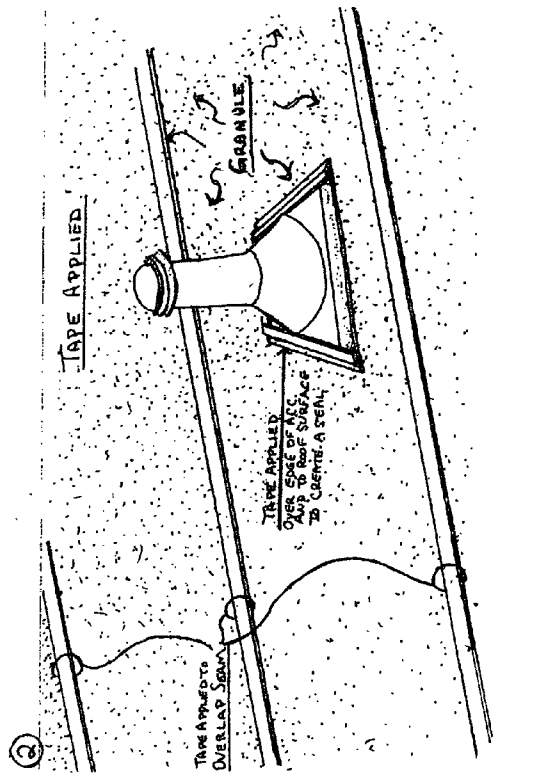
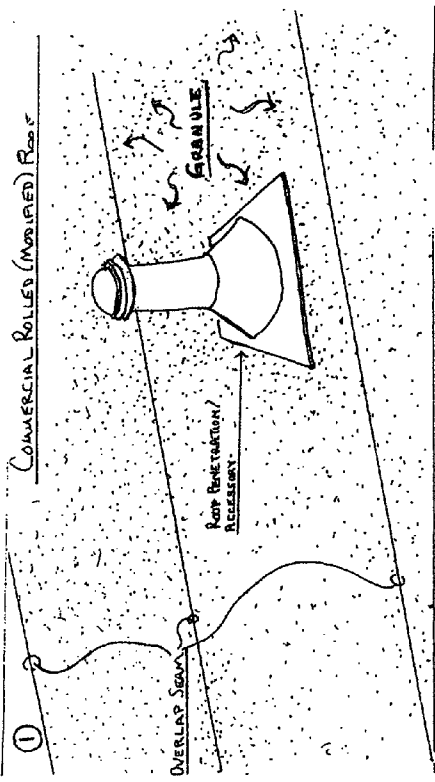
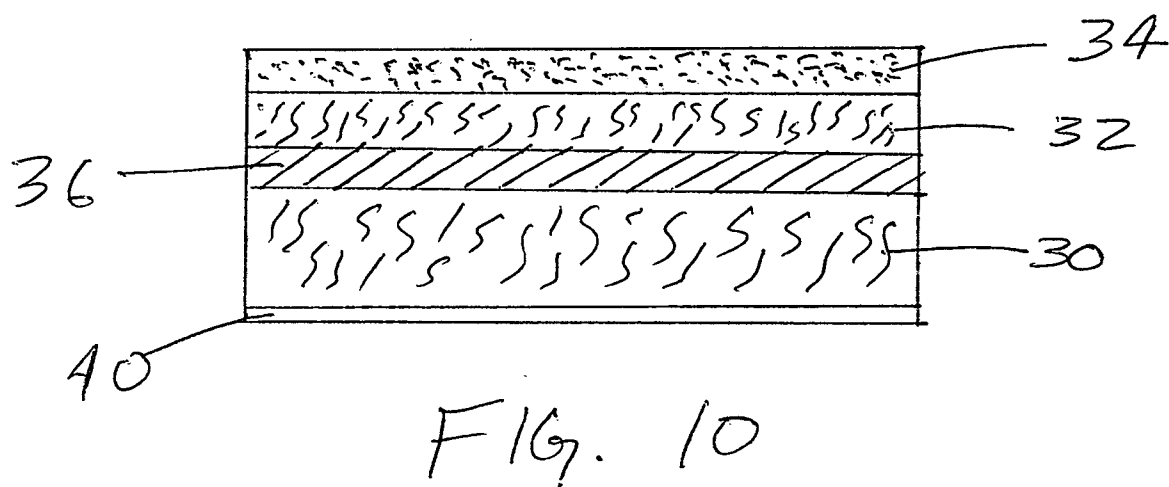
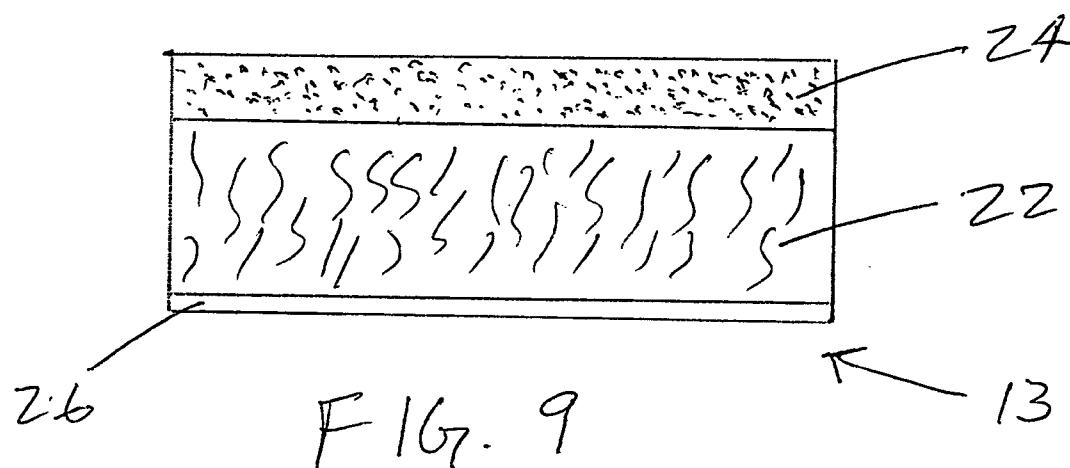


Fig. 8



## SURFACE REPAIR KIT AND METHOD

### BACKGROUND OF THE INVENTION

**[0001]** The present invention relates generally to the repair and beautification of construction surfaces, preferably roofing surfaces. The present invention further relates to the use of an adhesive, double-sided tape in combination with construction material to repair a construction surface. Roofing material choices vary depending upon the type of building, e.g., a residential or commercial building, as well as functional and aesthetic considerations.

**[0002]** There are numerous types of roof materials. One family of roof materials has a granulated surface. The granule surface (exposed top coat) is intended to increase life, improve weather-ability and add beauty. It is typically available in rolled or sheet form. Roll form is often called a "modified roof" and is typically used for a low-slope applications. Low-slope roofs are primarily found on commercial buildings. There are generally two types of rolled form roof materials with granulated surfaces: one is commonly referred to as "conventional commercial rolled-roofing" which is asphalt based, the other is styrene-butadiene-styrene (SBS) based. A third roll formed roofing material for low-slope roofs is based on atactic polypropylene (APP). APP seldom has a granulated surface.

**[0003]** Sheet form roofing materials with a granulated surface are commonly known as asphalt shingle. Two types of asphalt shingles are organic and fiberglass or glass fiber shingles. Organic shingles are generally paper (felt) saturated with asphalt to make it waterproof. Roll form and shingle (sheet) form are both coated with a top coat of adhesive asphalt with granules embedded into the adhesive layer. In some cases, a portion of the granules contain leachable copper or more often tin to prevent moss growth on the roof. Organic shingles contain around 40% more asphalt than fiberglass shingles which makes them weigh more and gives them better durability and wind blow-off resistance.

**[0004]** Fiberglass shingles have a glass fiber reinforcing mat manufactured to the shape of the shingle. The mat is coated with asphalt which contains mineral fillers. The glass fiber mat is not waterproof by itself and is a wet laid fiberglass mat bonded with urea-formaldehyde resin used for reinforcement. The asphalt makes the fiberglass shingle waterproof. Fiberglass reinforcement was devised as the replacement for asbestos paper reinforcement of roofing shingles. The older asbestos versions were actually more durable and were harder to tear, an important property when considering wind lift of shingles in heavy storms. Fiberglass based asphalt shingles are commercially replacing the older felt reinforcement based asphalt shingles.

**[0005]** Included in the shingle family is a newer design of asphalt shingle, known as a laminated shingle, which uses two distinct layers and is heavier, more expensive and more durable than traditional designs. Laminated shingles also give a more 3-D effect to a roof surface. The granules embedded in the top coat of the rolled form or shingle roof materials vary in composition and appearance (e.g., color). In general, such granule medium are mineral granules (ceramic-coated natural rock, sand-sized) containing some portion of iron or other color producing component. Alternatively, Roofing granules may have surfaces treated with oil and an elastomeric rubber. The elastomeric rubber can be an organic block copolymer having elastomeric and nonelastomeric repeating units. The oil and rubber are applied to the roofing granules' surfaces as

a thin film. The thin film of oil and rubber impedes granule staining from oils in asphalt roofing materials, and reduces dust formation during granule handling. Roofing granules are typically from about 1-4 millimeters in diameter.

**[0006]** Though roofing materials are engineered to withstand relatively harsh climate changes and weather, they ultimately wear out or become damaged. With such wear or damage the owner of the building generally has two choices: one, remove the old roofing material and apply a whole new roofing material or two, attempt to repair that portion of the roofing material that is worn or damaged. In general, flat roofs can be repaired by the application of hot-melt, polymer, caulk, or tar-based materials, with or without a tape-like solid sheet backing. Quite often the repair will include a mesh reinforcement embedded in the hot-melt, polymer, caulking or tar-like material applied to the damaged or leaking roof area. For residential surfaces, especially those comprised of individual tar-granule shingles, the entire roofing surface is torn off and a new roofing surface is applied to the entire roof. Alternatively, the old shingles are left in place and a new roofing shingle surface is applied over the old shingle surface, covering the entire roof.

**[0007]** In some cases, an owner may wish to save time and money by doing a limited re-roofing of a damaged or worn area. These types of repairs, however, are less common because the anesthetic look of a partially repaired roof is not attractive. This is due, primarily from the difficulty of blending the new roofing shingles with the remaining, old shingles, combined with the difficulty of getting loose, matching granule to remain adhered to the hot-melt, polymer, caulking or tar-like material patch. Therefore, re-roofing of residential, shingle based roofs is usually performed on the entire roof. Such efforts, however, are more costly than isolated repairs and, combined with time involved, are in many occurrences not performed until the roof is in serious need of repair. On low-slope roofs of all types (not limited to granulated rolled formed roofing) and metal roofs there is the need to seal around roof penetrations, along wall connections and valleys, and along the seams of the roof material once it is rolled out and laid side by side (the seam). Currently there are different methods of sealing these areas, such as factory edges with a sealant already applied requiring a heating medium to make the sealant viscous and sticky, or the removal of a release liner to expose a sealant, but in all cases at minimum a line between the different pieces of the rolled roof material is exposed, and in the worse cases an additional sealant such as hot-tar, caulking, a cover tape, or self-leveling sealant is applied over the seam leaving an aesthetically displeasing, non-matching seal, and in cases where an attempt is made to beautify the patch with matching granule, difficulty of getting the loose matching granule to remain adhered to the repaired surface remains a challenge.

**[0008]** A need therefore exists for the provision of a product, system and method of use that allows for the isolated repair and/or sealing of roofs that results in matching, aesthetically pleasing finished product.

### SUMMARY OF THE INVENTION

**[0009]** The present invention is directed to a repair product comprising a double-sided, adhesive tape and a top-coat medium. More specifically, the present invention is directed to a double-sided, adhesive roofing tape and quantity of roofing medium. The present invention is also directed to a double-sided, roofing tape with one side of the adhesive

coated with a top-coat material, preferably roofing granules. The present invention is also directed to a roofing repair/sealing kit, system and methodology comprising a double-sided, adhesive roofing tape and a quantity of top-coat medium, preferably roofing granules.

**[0010]** The present invention is also directed to a method of repairing/sealing a construction surface, preferably a roof or concrete surface, comprising the application of one side of a double-sided, adhesive tape to the area requiring repair and the addition of a top coat medium, such as a roofing granule, sand, dry concrete, matching metal or single-ply membrane or matching roofing or other material to the other face of the double-sided, adhesive tape.

#### DETAILED DESCRIPTION OF THE DRAWINGS

**[0011]** FIG. 1 is a top plan view of a repair kit of the present invention

**[0012]** FIG. 2 is a cross-section view of a repair tape of the present invention.

**[0013]** FIG. 3 is a cross-section of a repair tape of the present invention showing the partial release of a releasing liner.

**[0014]** FIG. 4 is a cross-section view of an alternative repair tape of the present invention with a reinforcing scrim embedded in the adhesive.

**[0015]** FIG. 5 is a view of a roofing surface requiring various repairs on a shingle type roof material.

**[0016]** FIG. 6 is a view of a roofing surface of FIG. 5 repaired with an embodiment of the present invention.

**[0017]** FIG. 7 is a view of a low-slope roofing surface requiring various repairs.

**[0018]** FIG. 8 is a view of a roofing surface of FIG. 7 repaired with an embodiment of the present invention.

**[0019]** FIG. 9 is a cross-sectional view of an alternative embodiment of the present invention wherein a release liner is replaced with roofing medium.

#### DETAILED DESCRIPTION

**[0020]** The present invention is directed to a two-sided material capable of adhering to a construction surface and a repair medium. More specifically, the present invention is directed to a double-sided adhesive tape, wherein one side of the tape adhesive can adhere to a surface and the other side of the tape adhesive can adhere to a repair medium. More specifically, the present invention is directed to a repair kit comprising a double-sided adhesive tape and a quantity of repair medium.

**[0021]** The present invention is also directed to a method of using the double-sided adhesive tape and repair medium to repair a construction surface. Although a preferred use of the present invention is for the repair or beautification of a roofing surface, the present invention can generally be used with any surface capable of receiving an adhesive layer of the tape of the present invention. The invention will be generally described with reference to a repair or beautification of a roofing surface but such description should generally be read more broadly to encompass use on other surfaces as well. Similarly, the present invention is generally described as being used to repair a surface but should be read more broadly to encompass repair as well as a beautification of the surface.

**[0022]** Referring to FIG. 1, in an embodiment, the present invention is directed to kit 11, comprised of double-sided tape 7 (shown in folded fashion) and medium container 9, comprising medium 12.

**[0023]** Referring to FIG. 2, tape 1 comprises three layers: adhesive layer 4 and release liners 8 and 10.

**[0024]** Adhesive layer 4 is intended for adherence to a surface requiring repair and for adherence to a repair medium. In general, layer 4 is intended to adhere to a surface and remain adhered through various weather conditions, e.g., rain, sleet, snow, hail, sunlight, and through a range of climate conditions, preferably of from about  $-56^{\circ}$  to  $126^{\circ}$  Celsius. Additionally, the adhering strength of layer 4 to its respective surfaces or mediums will generally be about 5 lbs per inch width, more preferably 20 lbs per inch width and most preferably 30 lbs per inch width. The adhesive of layer 4 can be comprised any adhesive that provides the appropriate level of adherence and can withstand the weathering conditions of the surface to be repaired for a reasonable period of time, e.g., more than one year, preferably 5 years, and more preferably 15 or more years. Examples of adhesive compositions suitable for layer 4 include, but are not limited to extruded and/or hot melt technologies, to butyl and non-butyl rubber based adhesives and their derivatives, rubberized asphalt and bitumen and its derivatives. The cross-sectional thickness of layer of 4 will vary, depending on the application, but will range from about 25 to about 300 mils, typically will be of from about 40 mils to 120 mils, and preferably 60 mils and at times, preferably 80 mils. As used herein, "mils" refers to one thousandth (0.001) of an inch.

**[0025]** Release liners 8 and 10 can be comprised of the same or different material and thicknesses. Liners 8 and 10 can be comprised of a variety of materials suitable to allow release from layer 4. Such materials will allow release from adhesive layer 4 with minimal force. Liners 8 and 10 protect adhesive layer 4 from becoming contaminated with materials, dust and the like and from sticking to unwanted surfaces. Examples of materials useful for employment as liners 8 and 10 include, but are not limited to, silconized paper, silconized polyethylene, silconized polypropylene. In general, layers 8 and 10 will have a cross-sectional thickness of from about 1 to about 10 mils, preferably about 2 to 4 mils.

**[0026]** Medium 12 comprises a variety of surfacing agents useful for applying to layer 4. In general, medium 12 will comprise the same or similar surface material of the surface to repair. Such similarities allow for an aesthetically pleasing application of the present invention to a repair surface. If the surface to be repaired is a granulated roof material then medium 12 may comprise roofing granules similar to those coated on the roofing shingle or sheet to be repaired. If the surface to be repaired is a concrete material, then medium 12 may comprise sand or dry concrete similar in texture and color to the concrete to be repaired. If the surface to be repaired is a metal or copper material, then medium 12 may comprise metal or copper similar to those of the surface to be repaired. If the surface to be repaired is a single-ply roof material like EPDM, chlorosulfonated polyethylene (Hypalan), TPO, or PVC roof material, then medium 12 may comprise swatches of roofing similar to those comprising the single ply roof to be repaired.

**[0027]** Alternatively, the adhesive tape of the present invention may contain an embedded scrim within the adhesive



layer. Referring to FIG. 3, in an embodiment, tape 3 comprises five layers: scrim 5, adhesive layers 14 and 16 and release liners 18 and 20.

[0028] Scrim 5 can be comprised of a variety of materials including, but not limited to, woven nylon, open weave polyester, expanded polyester, open weave cotton and closed weave fabrics. Scrim 5 can provide structural quality or improve the shear strength of tape 3. In general, scrim 5 will have a cross-sectional thickness of from about 1 to 10 mils, preferably 1 to 4 mils. Adhesive layers 14 and 16, which can be comprised of the same or different materials, will be comprised of the same types of materials discussed above for adhesive layer 4. Layers 14 and 16 can be the same or different cross-sectional thicknesses and will generally be from about 20 to 200 mils and preferably from about 40 to 80 mils. Liners 18 and 20 will be comprised of the same or different materials and will be comprised of the same types of materials and cross-sectional thicknesses discussed above for liners 8 and 10.

[0029] In operation, release liner 8 is removed from layer 4 by peeling away liner 8 from layer 4 (see FIG. 4). Layer 4 is then applied to the area desired for repair. An operator may use a pressing device, e.g., a roller, to ensure a good adherence of layer 4 to the surface for repair. Following application of layer 4 to the repair surface, liner 10 is removed by peeling away from layer 4 similar in manner to the peeling of liner 8. The exposed layer 4 is now ready to receive and adhere to medium 12, typically of the same surface material of the repair surface. Depending on the type of material comprising medium 12, it can be added to layer 4 in a variety of methods. For example, if medium 12 is a roofing granule or powdered concrete, then medium 12 can be sprinkled onto layer 4, to cover layer 4 with granules. If medium 12 is comprised of metal sheets, then medium 12 will be placed on top of layer 4 and pressed to create adherence.

[0030] Following initial application of medium 12, an operator may optionally press medium 12, e.g., with a roller, to more firmly adhere medium 12 to layer 4.

[0031] Alternative embodiments of the present invention are illustrated in FIGS. 9 and 10. In these embodiments, tape 13 and 15 are analogous to tapes 1 or 3, except that one of the release liners is replaced with a surface medium. Tape 13 is comprised of three layers: adhesive layer 22, release liner 26 and medium 24. In the other alternative embodiment, tape 15 (see FIG. 10) is comprised of four layers: adhesive layers 30 and 32, scrim 36, medium 34 and release liner 40. Adhesive layers 22, 30 and 32 are comprised of the same materials described above for layer 4. Adhesive layer 22 can be of similar cross-sectional thicknesses as described for layer 4. Adhesive layers 30 and 32 can be independently of similar thicknesses as discussed above for layers 14 and 16. Scrim 36 and release liners 26 and 40 are comprised of similar materials and thickness as those described above for scrim 5, and release liners 8 and 18, respectively. Mediums 24 and 34 are analogous and are comprised of material suitable to cover and finish exposed adhesive layers after application of the tapes to the surface of repair. Mediums 24 and 34 are generally comprised of the same or similar materials as the top coat of the surface to be repaired. Preferably, mediums 24 and 34 are comprised of roofing granules similar to those described above for medium 12.

[0032] In operation, tapes 13 and 15 are applied to a surface for repair by first removing liners 26 and 40, respectively, allowing layers 22 and 30, respectively, to adhere to the

surface to be repaired, and applying pressure to mediums 24 and 34, respectively, to create a good adherence of the adhesive layers to the surface to be repaired.

[0033] The tapes described above can be of various widths and lengths, depending on ease of manufacture and use. In general, the tapes will have a width of from about 1 to about 48 inches and preferably about 3 to about 12 inches. In general, the tapes will have a length of from about 6 to about 50 feet and preferably about 10 to about 20 feet. Depending on the length of the tape, it will generally be packaged as either a roll, single flat pieces, or as a folded configuration. The present invention kit can be prepared for larger industrial uses, wherein the tape is packaged in larger quantities or for smaller, consumer uses, wherein the tape is packaged in smaller quantities.

[0034] The methods of the present invention comprise the provision of a double sided, adhesive tape capable of being adhered to a surface to be repaired and also a repair medium. The methods involve adhering one side of a double-sided adhesive tape to a surface of repair and applying a medium to the other, exposed side of the adhesive tape. The present invention methods can employ the present invention repair kits, described above, or can employ a double-sided adhesive tape, similar to those described in the above kits, and a medium supplied by the user.

[0035] FIGS. 5 and 6 illustrate the use of the present invention kit in the repair and improvement of the aesthetic appeal of a granule, shingle type of roof. FIGS. 7 and 8 illustrate the use of the present invention kit in the improvement of rolled asphalt sheet types of roofing, typically found on low-slope roofs. In those examples, the seams formed from the side-by-side rolls and the seams around a roofing stack are sealed with the tape and medium of the present invention.

What is claimed is:

1. A repair kit comprising:

- a) a tape comprising an adhesive inner layer having a first and second face and release liners disposed on each of the two faces; and
- b) a quantity of medium.

2. A repair kit of claim 1, wherein the adhesive inner layer is comprised of material selected from the group consisting of butyl and non-butyl rubber based adhesives and their derivatives, rubberized asphalt, and bitumen and its derivatives.

3. A repair kit of claim 1, wherein the inner layer has a cross-sectional thickness of from about 25 to 300 mils.

4. A repair kit of claim 1, wherein the release liners are independently comprised of siliconized paper, siliconized polyethylene and siliconized polypropylene.

5. A repair kit of claim 1, wherein the medium is comprised of a roofing material.

6. A repair kit of claim 5, wherein the medium is selected from the group consisting of metals, coated metals, granulated sand, granulated rock, granulated concrete, powdered rock, powdered concrete, rubber sheets; PVC, EPDM, Hypalon and TPO sheets, and granulated rubber.

7. A repair kit of claim 5, wherein the medium is granulated rock or sand, are spheroid or cubic in shape, and are colored to match, or be similar to, the color of a roofing surface to be repaired.

8. A repair kit comprising:

- a) a tape comprising a scrim inner layer having two faces, first and second adhesive outer layers having a scrim surface and an adherence surface, wherein the scrim surface of the first outer layer is disposed on the first face

and the scrim surface of the second outer layer is disposed on the second face, and release liners disposed on each of the adherence surfaces; and

b) a quantity of medium.

9. A repair kit of claim 8, wherein the adhesive outer layers are, independently, comprised of adhesive selected from the group consisting of butyl and non-butyl rubber based adhesives and their derivatives, rubberized asphalt, and bitumen and its derivatives.

10. A repair kit of claim 8, wherein the outer layers have, independently, cross-sectional thicknesses of from about 25 to 300 mils.

11. A repair kit of claim 8, wherein the release liners are independently comprised of siliconized paper, siliconized polyethylene and siliconized polypropylene.

12. A repair kit of claim 8, wherein the medium is comprised of a roofing material.

13. A repair kit of claim 12, wherein the medium is selected from the group consisting of metals, coated metals, granulated sand, granulated rock, granulated concrete, powdered rock, powdered concrete, rubber sheets; PVC, EPDM, Hypalan and TPO sheets, and granulated rubber.

14. A repair kit of claim 13, wherein the medium is granulated rock or sand, are spheroid or cubic in shape and are colored to match, or be similar to, the color of a roofing surface to be repaired.

15. A repair kit of claim 10, wherein the scrim has a cross-sectional thickness of from about 1 to 10 mils and is comprised of material selected from the group consisting of woven nylon, open weave polyester, expanded polyester, open weave cotton and closed weave fabrics.

16. A repair tape comprising an adhesive inner layer having a first and second face, a release liner disposed on the first face and medium disposed on the second face.

17. A repair tape of claim 16, wherein the adhesive inner layer is comprised of material selected from the group consisting of butyl and non-butyl rubber based adhesives and their derivatives, rubberized asphalt, and bitumen and its derivatives.

18. A repair tape of claim 16, wherein the inner layer has a cross-sectional thickness of from about 25 to 300 mils.

19. A repair tape of claim 16, wherein the release liner has a cross-sectional thickness of from about 1 to 5 mils and is comprised of siliconized paper, siliconized polyethylene and siliconized polypropylene.

20. A repair tape of claim 21, wherein the medium is comprised of a roofing material.

21. A repair tape of claim 20, wherein the medium is selected from the group consisting of metals, coated metals,

granulated sand, granulated rock, granulated concrete, powdered rock, powdered concrete, rubber sheets; PVC, EPDM, Hypalan and TPO sheets, and granulated rubber.

22. A repair tape of claim 21, wherein the medium is granulated rock or sand, are spheroid or cubic in shape and are colored to match, or be similar to, the color of a roofing surface to be repaired.

23. A method of repairing a surface which comprises:

- a) providing a tape comprising an adhesive inner layer having a first and second face and first and second release liners disposed on each of the two faces;
- b) removing the first release liner from a face, to provide a first exposed adhesive inner layer face;
- c) applying the first exposed adhesive inner layer face to the surface;
- d) removing the second release liner to provide a second exposed adhesive inner layer face; and
- e) applying a quantity of medium to the second exposed adhesive inner layer face.

24. A method of claim 23, wherein the adhesive inner layer is comprised of material selected from the group consisting of butyl and non-butyl rubber based adhesives and their derivatives, rubberized asphalt, and bitumen and its derivatives.

25. A method of claim 23, wherein the inner layer has a cross-sectional thickness of from about 25 to 300 mils.

26. A method of claim 23, wherein the release liners have cross-sectional thicknesses of from about 1 to 5 mils and are independently comprised of siliconized paper, siliconized polyethylene and siliconized polypropylene.

27. A method of claim 23, wherein the medium is comprised of a roofing material.

28. A method of claim 27, wherein the medium is selected from the group consisting of metals, coated metals, granulated sand, granulated rock, granulated concrete, powdered rock, powdered concrete, rubber sheets; PVC, EPDM, Hypalan and TPO sheets, and granulated rubber.

29. A method of claim 28, wherein the medium is granulated rock or sand, are spheroid or cubic in shape and are colored to match, or be similar to, the color of a roofing surface to be repaired.

30. A method of repairing a surface which comprises:

- a) providing a tape comprising an adhesive inner layer having a first and second face, a release liner disposed on the first face and medium disposed on the second face;
- b) removing the release liner from the first face, to provide an exposed adhesive inner layer face; and
- c) applying the exposed adhesive inner layer face to the surface.

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