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(54) **SHOE WITH VARIABLE WEAR PROPERTIES**

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(57) **ABSTRACT**

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The visual appearance of a shoe changes over time due to protected and unprotected areas of a wear-susceptible material overlaid on a visually distinguishable base material. As the wear-susceptible material abrades, new colors, textures, patterns, or other features may be revealed. Structures and methods of constructing the structures to vary the visual appearance of a shoe over time are provided.

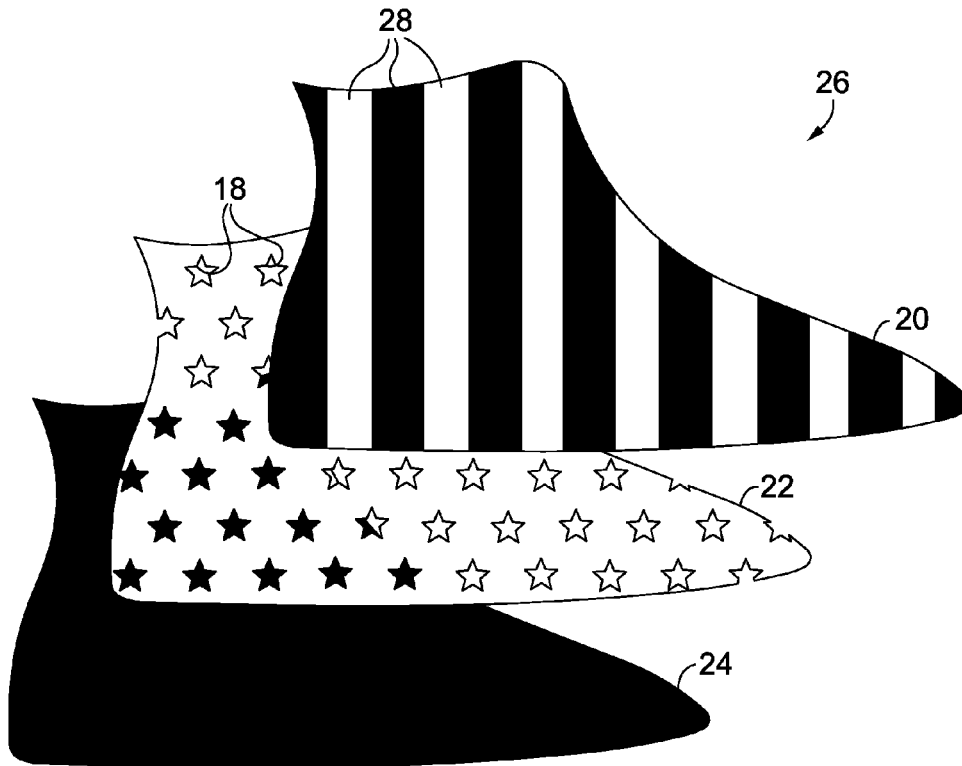




FIG. 1.

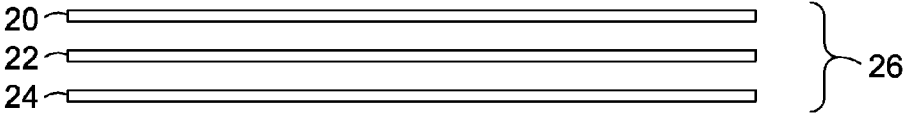
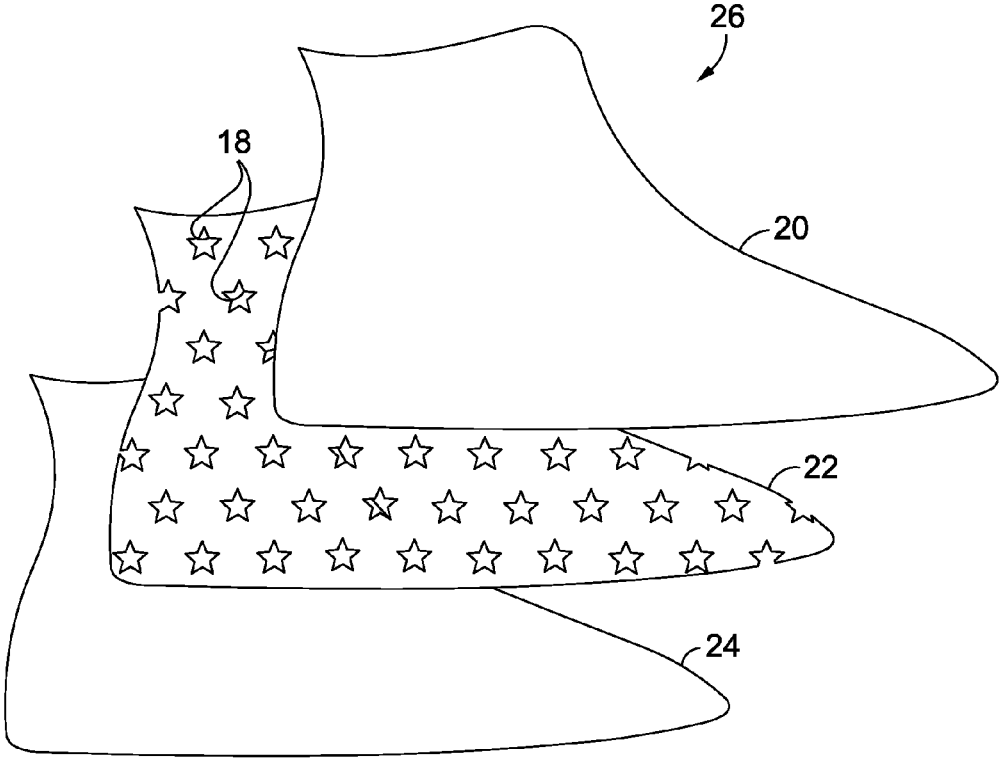


FIG. 2.



**FIG. 3.**

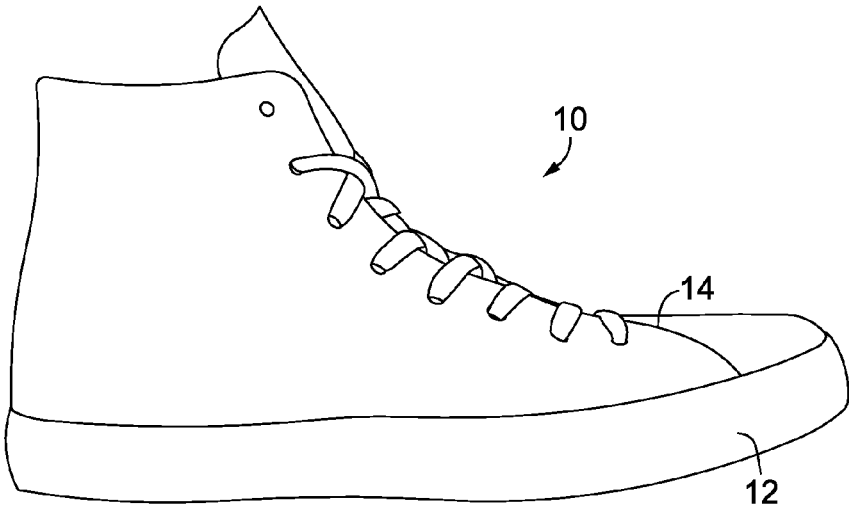


FIG. 3A.

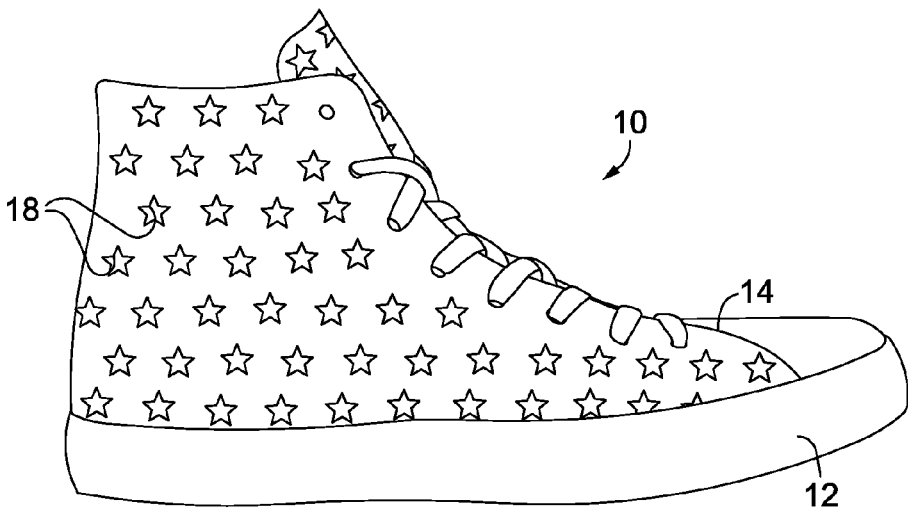


FIG. 3B.

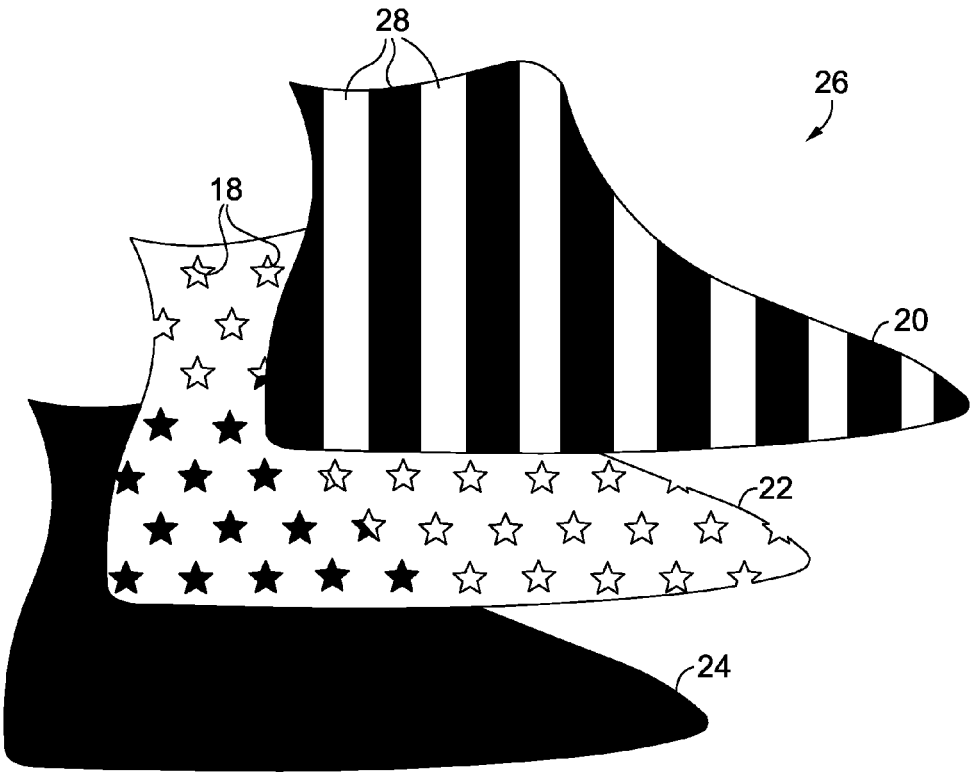


FIG. 4.

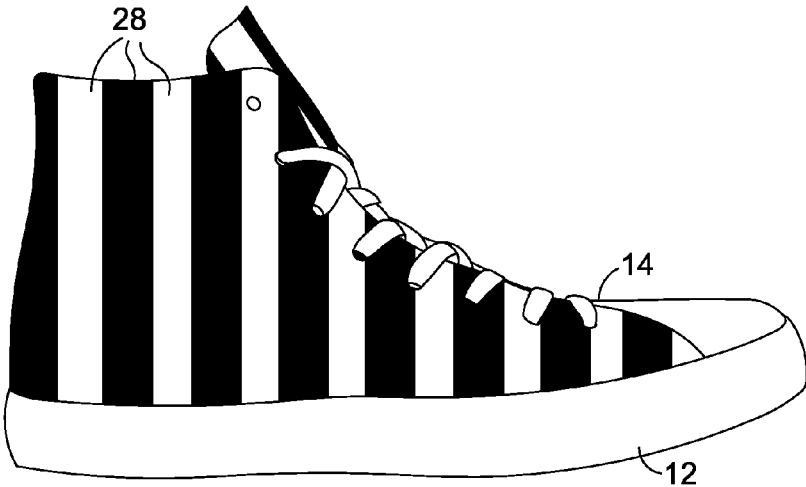


FIG. 4A.

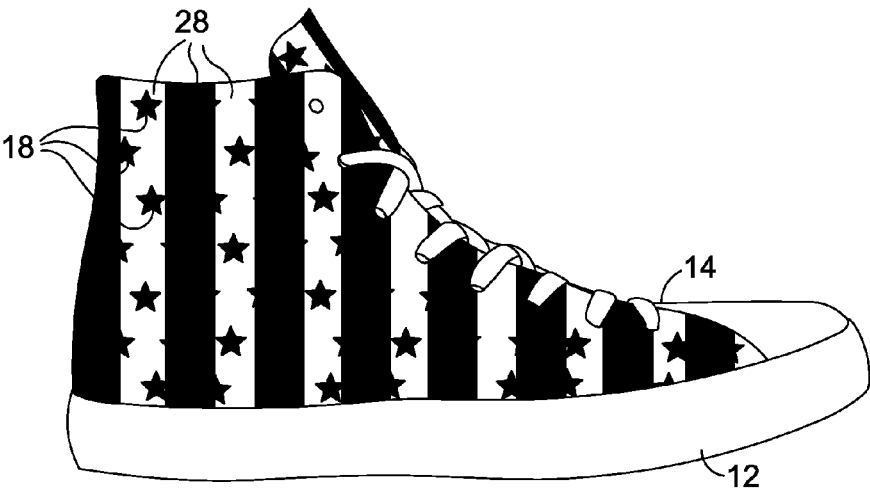
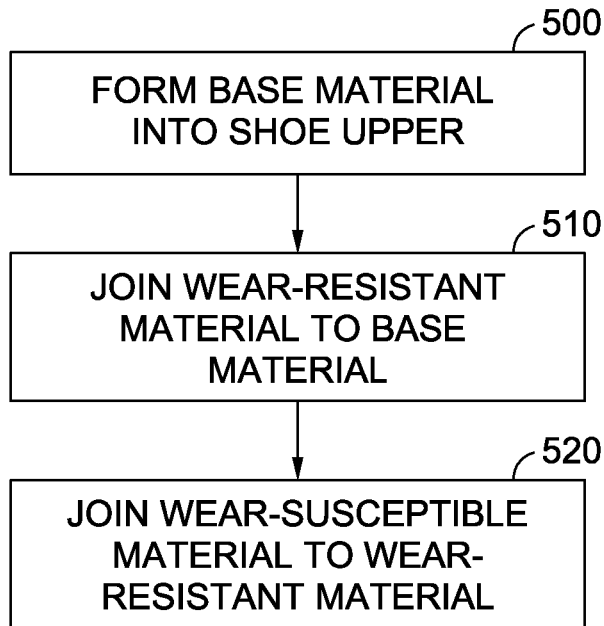


FIG. 4B.



*FIG. 5.*



*FIG. 6.*

## SHOE WITH VARIABLE WEAR PROPERTIES

### TECHNICAL FIELD

**[0001]** Aspects hereof relate to a structure and method for providing a shoe having an appearance that evolves with use. More particularly, aspects relates to a shoe upper having variable wear properties, such that the appearance of the shoe changes with use.

### BACKGROUND

**[0002]** A variety of shoe designs are known for varied aesthetic effect, including shoes with detachable features, such as laces or clips, which can be substituted by a user of the shoe to change the color, overall appearance, or design effect of the shoe. Alternately, some wearers may resort to using markers, pens, paints or the like to customize shoes, adding images or color to the shoe over time.

### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

**[0003]** Various aspects of the disclosure are described in detail below with reference to the attached drawing figures, wherein:

**[0004]** FIG. 1 is an exemplary side view of a shoe;

**[0005]** FIG. 2 is a schematic view of layered materials in accordance with some aspects of this disclosure;

**[0006]** FIG. 3 is a schematic view of layered materials in accordance with some aspects of this disclosure;

**[0007]** FIG. 3A is a side view of a shoe prior to use in accordance with some aspects of this disclosure;

**[0008]** FIG. 3B is a side view of a used shoe in accordance with some aspects of this disclosure;

**[0009]** FIG. 4 is a schematic view of layered materials in accordance with some aspects of this disclosure;

**[0010]** FIG. 4A is a side view of a newly assembled shoe in accordance with some aspects of this disclosure;

**[0011]** FIG. 4B is a side view of a shoe subjected to wear in accordance with some aspects of this disclosure;

**[0012]** FIG. 5 is an exemplary flowchart for a method for arranging two or more layers of materials in accordance with some aspects of this disclosure; and

**[0013]** FIG. 6 is an exemplary flowchart for a method for arranging two or more layers of materials in accordance with some aspects of this disclosure.

### DETAILED DESCRIPTION

**[0014]** This disclosure generally relates to a shoe upper. The shoe upper has regions of varied deterioration properties, such that some materials wear away, e.g., from humidity, abrasion, etc., faster than other materials in the shoe upper. By layering materials of different susceptibility to conditions typical when a shoe is used, the shoe may present a different design, pattern, or overall aesthetic impression over time-in-use. These design changes may be influenced by the wearer, or may be allowed to occur without wearer intervention.

**[0015]** Additional objects, advantages, and novel features of the disclosed shoe will be set forth in part in the description which follows, and in part will become apparent to those skilled in the art upon examination of the following, or may be learned by practice of the disclosure.

**[0016]** An article of footwear, such as a shoe, sandal, boot, and the like, having a varied appearance over time is disclosed. For discussion purposes, the term “shoe” will be used herein as a reference to general articles of footwear. The shoe’s appearance may change without intentional action by the wearer, e.g., from normal usage of the shoe. The rate of change in the shoe’s appearance may be increased or decreased by wearer intervention. The shoe may be constructed with three or more layers. The three layers may present varied resistance to common sources of deterioration (e.g., normal wear-and-tear from shoe usage). By layering materials of different visual effect, such as color, texture, ornamentation, etc., the deterioration of one or more layers before others changes the appearance of the shoe over the life of the shoe.

**[0017]** As used in this disclosure, “deterioration” refers to dissolution, disintegration, abrasion, tearing, fraying, or other disruption of a material such that it is worn away. Deterioration may be partial (e.g., thinning of a material layer) or complete. For example, a material may deteriorate partially by fraying or separating, but still be present. Deterioration may be complete in a portion of a material or layer. That is, on inspection by the unaided human eye, a portion of a material once present may be absent after complete deterioration, exposing an underlying material or structure to direct observation. As will be understood from the following description, some kinds of deterioration may be intentional and/or desirable, e.g., designed into the shoe.

**[0018]** As used in this disclosure “wear” refers to the normal process of deterioration that occurs when a shoe is worn; e.g., “wear and tear.” Wear may vary from shoe to shoe and from individual to individual. To avoid confusion with the wear of a shoe, e.g., on a foot, the donning and wearing of a shoe is described instead as “use” or “usage”.

**[0019]** FIG. 1 shows an exemplary shoe 10. The shape and function of the shoe can vary widely across the contemplated embodiments. The concepts described herein could be applied, for example, to dress shoes, athletic shoes, casual shoes, dance shoes, slippers, boots, sandals, or any other kind of footwear. As shown in FIG. 1, shoe 10 has a sole 12 and an upper 14. Many shoes have visually distinguishable soles 12 and uppers 14. For the purpose of this disclosure, the upper 14 is the portion generally facing upward, toward a wearer, or outward (e.g., laterally, medially, rearwardly, forwardly, etc.), away from the wearer’s foot, and the sole 12 is the portion positioned between the user’s foot and the ground during use. In some shoes, a portion of the upper may also wrap under the user’s foot during use and be joined with an upwardly facing portion of the sole. A sole may be unitary, or alternatively may include a foot-facing “insole” portion, a ground-facing “outsole” portion, a “midsole” portion disposed between at least a portion of the insole and at least a portion of the outsole, or any combination of an insole, a midsole, and an outsole.

**[0020]** Design region 16 is shown as a portion of upper 14 along the uppermost part of the shoe near the wearer’s ankle, however, design region 16 could occupy any portion of upper 14, including discontinuous portions of upper 14. For example, design region 16 could encompass an area near the toe of the shoe, an area near the laces or closure of the shoe (e.g., proximate the throat, forefoot opening, eyestays), an area along one or both sides of the shoe, or, if present, the ankle portion of upper 14, or combinations thereof. Design region 16 may extend across all or substantially all, such as



more than 75%, of the surface of upper **14**, as shown in FIG. 3B. A shoe and its mate may have design regions **16** which are symmetrical, or which are mirror images, or which are identical, or which are unmatched or unrelated.

[0021] Design region **16** includes design elements **18**. Design elements **18** are shown as discrete stars, however, any shape or design could be used. For example, design elements **18** may be other geometric shapes, such as circles, squares, rectangles, triangles, hexagons, octagons, crosses, diamonds, and the like, or irregular or random shapes, or combinations thereof. Design elements **18** could also be figurative shapes, such as clouds, raindrops, hearts, skateboards, skull-and-crossbones, alpha-numeric characters, symbols, and the like, or combinations thereof. Design elements **18** may combine to form a pattern, as of alternating stripes, a circle of stars, a rainbow of colored arcs, or individual letters, numbers, or other symbols which form a word, message, logo, or other visual marking(s).

[0022] Design elements **18** may be formed using a stack of materials **26**, as shown in FIG. 2. A layer of a wear-susceptible material **20** may be provided. Wear-susceptible material might be, for example, a tissue paper; a lightweight nonwoven material (i.e., a nonwoven material having a basis weight between 10 and 120 grams/square meter); a fabric of loosely woven or fine threads or yarns; thin foils, as of tin aluminum, copper, or alloys; another delicate material; or combinations thereof. In addition or instead of such exemplary materials, wear-susceptible material **20** may be or comprise water-soluble paints or pigments. Wear-susceptible material **20** (or any other layer of stack of materials **26**) may be a single, continuous sheet of material, or may be formed from two or more pieces joined together to form a single layer, e.g., by joining them end-to-end, or by joining two or more sub-layers together. For example, wear-susceptible material **20** may be a patchwork of similar materials of two or more properties, such as colors or textures. As another example, wear-susceptible material **20** may be a bi- or tri-fold thickness of a particular fabric. If wear-susceptible material **20** is formed from two or more pieces, the pieces may be of the same or different materials. For example, wear-susceptible material **20** may comprise tissue paper and a light nonwoven material. In some embodiments, a layer within stack of materials **26** may have different wear properties within the layer. For example, a film of material may be stretched unevenly, yielding thicker and thinner regions within the layer that would wear differently, or, in the case of wear-resistant material **22**, may confer different wear-resistance properties to adjacent materials in stack of materials **26**. Of course, two or more, or all, of the layers in stack of materials **26** could have different wear properties within each layer.

[0023] A layer of wear-resistant material **22** may be provided. Wear-resistant material might be, for example, thermoplastic polyurethane (TPU), or other thermoplastic, thermoset, or hot-melt resins. Wear-resistant material **22** may be adhesive to other layer(s) of the stack of materials **26**, or may be selected to at least partially impregnate one or more other layer(s) of the stack of materials **26** when heated, such that when cooled, wear-resistant material **22** is bonded to or embedded in one or more other layers of the stack of materials **26**.

[0024] Wear-susceptible material **20** is wear-susceptible in relation to wear-resistant material **22**, and vice versa. Wear-susceptible material **20** may be selected to provide the

desired rate of change in the appearance of shoe **10**. A material highly susceptible to sources of routine wear, such as stretching, dampness, abrasion, and the like, or combinations thereof, will present a modified appearance faster than will a material that is less susceptible to routine wear. In this regard, wear-susceptible material may be a material that would not typically be used in footwear, such as tissue paper or delicate fabrics, because wear-susceptible material is intended to deteriorate at a faster rate than the remainder of shoe upper **14** and/or shoe **10**, such that the shoe is still serviceable when wear-susceptible material **20** deteriorates. In some embodiments, wear-resistance is assessed particularly in regard to abrasion. That is, wear-resistance or wear-susceptibility may be abrasion-resistance or abrasion-susceptibility. In some embodiments, wear-resistance is assessed particularly in regard to moisture. That is, wear-resistance or wear-susceptibility may be moisture-resistance or moisture-susceptibility. In some embodiments, wear-resistance is assessed particularly in regard to mechanical deformation. That is, wear-resistance or wear-susceptibility may be deformation-resistance or deformation-susceptibility.

[0025] In contrast, wear-resistant material **22**, which may cover or become embedded in portions of wear-susceptible material **20**, may be highly resistant to sources of routine wear, and may have a service span similar to that of shoe upper **14** and/or sole **12**. In some cases, wear-resistant material **22** may extend the serviceable lifespan of shoe upper **14** and/or sole **12** by increasing the durability of shoe upper **14** relative to a shoe upper which does not comprise a wear-resistant material **22**. Wear-resistant material **22** may, alternately, have a longer lifespan than wear-susceptible material **20** and a shorter lifespan than base material **24**, in an exemplary aspect.

[0026] Stack of materials **26** may further comprise base material **24**. Base material **24** may be a traditional shoe upper material, such as canvas, leather, suede, faux-leather, polymer-based material, or combinations thereof. If leather or suede is used, a low-oil-content material, such as a material having an oil content of less than 5% by weight, may be preferred to facilitate adhesive-based joining base material **24** to other layers in stack of materials **26**, in an exemplary aspect. If non-adhesive joining methods, such as stitching, rivets, bosses, etc., are used to join the base material **24** with one or more overlying materials, base material **24** may possess a relatively higher oil content, e.g., greater than 5% by weight. Base material **24** may be less susceptible to abrasion and/or other sources of routine wear than wear-susceptible material **20**. Base material **24**, like wear-resistant material **22** and wear-susceptible material **20**, may be selected for heat-resistance during processing. For example, if upper **14** is joined to sole **12** by a vulcanization process, all of the materials in stack of materials **26** may be able to withstand vulcanization conditions, which may include 10-20 minute exposure to temperatures of 100-180° C., depending on the formulation of the rubber or rubber-substitute used in the sole. If wear-resistant material **22** is a hot melt or thermoplastic material, base material **24** and wear-susceptible material **20** may be able to withstand temperature and pressure conditions sufficient to melt wear-resistant material **22**.

[0027] Stack of materials **26** may include the base material **24**, which may be suitable for forming a shoe upper **14** or suitable for joining to a shoe upper **14**, or a portion thereof.

Prior to or after incorporation into shoe **10**, the layers of stack of materials **26** may be bonded together. This may be done by heat treatment, and may use only wear-resistant material **22** as a bonding agent, or may use supplementary adhesives, resins, or other joining techniques, such as welding and/or stitching. The periphery of design element **18** may be defined or bounded by the perimeter of a discontinuity in wear-resistant material **22**. As shown in FIG. 3, design elements **18** may be cut out of wear-resistant material **22**. Wear-susceptible material **20** is unprotected at design elements **18**, and elsewhere is bonded to and/or impregnated with wear-resistant material **22**. As shoe **10** encounters normal stretch, abrasion, moisture, and other deterioration-inducing conditions, wear-susceptible material **20** will deteriorate more quickly at design elements **18**, and will be rendered less susceptible to wear by its association with wear-resistant material **22** in areas outside design element **18**, where wear-resistant material **22** is present.

[0028] The result of the stack of materials **26** shown in FIG. 3 is a shoe as shown, prior to use, in FIG. 3A. In this exemplary view, wear-susceptible material **20** is a solid-color tissue paper, bonded to a solid-color canvas base material **24** by a hot melt NASA-T layer which serves as wear-resistant material **22**. NASA-T is a hot melt TPU film commercially available from SAMBU FINE CHEMICAL of Korea. From the outside surface of shoe upper **14**, the solid-color tissue paper that makes up wear-susceptible material **20** is initially solely or most prominently visible. In some embodiments, the wear-susceptible material **20** may be at least semi-transparent or semi-translucent, which may allow some visibility of one or more of the materials underlying the wear-susceptible material.

[0029] As shoe **10** is used, wear-susceptible material **20** wears away where it was not joined to wear-resistant material **22**, e.g., in design elements **18**, which were cut out of wear-resistant material **22** before forming stack of materials **26**. As shown in FIG. 3B, where wear-susceptible material **20** wears away, at design elements **18**, base material **24** becomes visible. As shown according to the embodiment depicted in FIG. 3B, the edges of design elements **18** may be even and clean. If desired, wear-susceptible material **20** may be selected to leave remnants of wear-susceptible material **20**, such as frayed threads from a delicate fabric. The shape or pattern of design elements **18** may be selected to encourage the development of remnants and/or to encourage the development of remnants of a particular shape or position. For example, fine tips in a star shape may tend to generate different patterns of frayed fabric remnants than a circle.

[0030] Base material **24** may have one or more different visual properties from wear-susceptible material **20**. Different visual properties include color, luster, texture, pattern, ornamentation, and combinations thereof. Suitable ornamentation may include glitter, rhinestones, metal, stones, buttons, studs, and combinations thereof. The difference in one or more visual properties may be subtle. For example, base material **24** may be a different shade of the same general color as wear-susceptible material **20**. As a more specific example, base material **24** may be light grey, and wear-susceptible material **20** may be white or medium grey. As another example of different visual properties, base material **24** may have essentially the same color as wear-susceptible material **20**, but have a canvas or leather texture, whereas the wear-susceptible material **20** has a paper-like texture.

[0031] FIG. 3 shows design elements having discontinuities cut out of wear-resistant material **22**, however, other discontinuities are possible. Discontinuities in wear-resistant material **22** might be formed, for example, by cutting, stamping, embossing, etching, cutting, or combinations thereof. For example, wear-resistant material **22** might be deformed or depressed to form design elements **18**, such that wear-resistant material **22** is not joined to wear-susceptible material **20** at design elements **18**. Alternately, wear-resistant material **22** may be applied as forms in the shape, design, or pattern of design elements **18**, such that design elements **18** retain the appearance of wear-susceptible material **20**, and the area of wear-susceptible material **20** outside of design elements **18** tends to deteriorate, revealing an underlying layer or layers.

[0032] FIGS. 2-4 show a three-layer stack of materials **26** used to provide the structure for an evolving shoe appearance. Additional layers may be used. For example, two or more layers of wear-susceptible materials **20** could be used. As a more specific example, a foil or woven fabric could be painted with a water-soluble paint or pigment, where the pigment would dissolve away before the foil or fabric deteriorated, giving an additional phase in the change in appearance of the shoe. As another example, additional layers of wear-resistant materials **22** and wear-susceptible materials **20** could be used. Layers closer to the base material **24** could have progressively greater wear-resistance. In some embodiments, stack of materials **26** may comprise a base layer **24**, overlaid directly with a wear-resistant material **22**, which may be overlaid directly with a wear-susceptible material **20**, as shown in FIG. 2. In some embodiments, a base layer **24** may be overlaid with a wear-susceptible material **20**, which may be overlaid with a wear-resistant material **22**. In some embodiments, a base layer **24** may be overlaid with a wear-susceptible material **20**, which may be overlaid with another wear-susceptible material **20**. As previously mentioned, other orders of materials and/or other intervening or added layers could be used as desired.

[0033] FIG. 4 shows stack of materials **26** having a wear-susceptible material **20** which includes its own design elements **28**, which are independent of design elements **18** in the wear-resistant material **22**. As shown in FIGS. 4 and 4A, design elements **28** on wear-susceptible material **20** comprise stripes alternating between two colors. In other embodiments, design elements **28** could be any shape, design, or pattern. As shown in FIG. 4A, design elements **28** on wear-susceptible material **20** are solely or most prominently visible in a newly assembled shoe. As the shoe is subject to normal wear, wear-susceptible material **20** will tend to disintegrate in regions that are unprotected by wear-resistant material **22**, such as the illustrated star-shaped design elements **18** shown in FIG. 4. As shown in FIG. 4B, where wear-susceptible material **20** has disintegrated, at one or more design elements **18**, base material **24** may be visible, yielding a combination of design elements **28** in the regions of wear-susceptible material **20** that were protected by wear-resistant material **22**, and design elements **18** in the regions of wear-susceptible material **20** that were unprotected by wear-resistant material **22**. Design elements **28** may be complementary to design elements **18** in theme,

pattern, color, etc. For example, as shown in FIG. 4B, design elements 18 and design elements 28 may combine to create a stars-and-stripes theme.

**[0034]** If wear-susceptible material 20 comprises design elements 28, the design elements 28 may be intrinsic to wear-susceptible material 20, or alternatively may be applied to wear-susceptible material 20. For example, the stripes of design elements 28 in FIG. 4 could be woven or knitted into a delicate fabric used as wear-susceptible material 20. Alternately, wear-susceptible material 20 could be dyed or printed, with indelible or soluble inks. Any suitable printing or coloring process may be used, including silk-screen, tie-dye, sublimation printing, inkjet printing, painting, embroidery, laser cutting, additive manufacturing, drawing, engraving, buffing, transfer printing, water-dipping, and combinations thereof.

**[0035]** Wear-resistant material 22 may be colored, printed, and/or ornamented. Colored and ornamented hot melt adhesives are commercially available, including the NASA-V and NASA-SKIN series products from SAMBU FINE CHEMICAL of Korea. A transparent or translucent wear-susceptible material 20 may be used, for example, with a colored or ornamented wear-resistant material 22 and/or base material 24. If desired, two or more layers of colored, patterned, and/or ornamented wear-resistant material 22 may be used, with different colors, patterns, and/or ornamentation in different layers and/or in different regions of a particular layer. In addition to or instead of being transparent or translucent, wear-susceptible material 20 may have cut-outs. Cut-outs or other discontinuities in wear-susceptible material 20 might be formed, for example, by cutting, stamping, embossing, etching, cutting, or combinations thereof. Cut-outs in wear-susceptible material 20 may be design elements 28, or may be distinct from design elements 28, if separate design elements 28 are present. Cut-outs in wear-susceptible material 20 may not be fully registered or aligned, or may be at least partially misaligned, with design elements 18 in wear-resistant material 22. If cut-outs in wear-susceptible material 20 align closely with design elements 18, then underlying layers, such as base material 24, would be visible before the shoe is worn, assuming a three-layer stack of materials 26 comprising one wear-susceptible material, one wear-resistant material, and one base material. If the cut-outs and design elements 18 are of different shapes, sizes, or spacing from one another, however, cut-outs in wear-susceptible material 20 may at least partially overlap one or more design elements 18 and still provide a change in appearance as the shoe is worn. In more elaborate stacks of materials, it may be desirable to align cut-outs and design elements 18 in some layers, or in some layers but not in others.

**[0036]** Stack of materials 26 can be used to form shoe 10 using one of several possible processes. Exemplary processes are shown as flowcharts in FIGS. 5 and 6. The orders of the steps shown in FIGS. 5 and 6 illustrate exemplary embodiments, but are non-limiting with regard to the broader scope of contemplated embodiments, as will be recognized by an ordinarily skilled artisan in view of the entire description, figures, and claims in this application. A process for incorporating stack of materials 26 into a shoe 10 or shoe upper 14 may involve additional steps, or may involve performing the steps in different orders, or may involve performing fewer than all of the depicted steps. For example, base material 24 could be formed into the shape of

a shoe upper in a first step 500, and then bonded to wear-resistant material 22 in a second step 510. In the same bonding of the second step 510 or in a separate bonding step 520, wear-susceptible material 20 could be joined to wear-resistant material 22. Alternately, as shown in FIG. 6, the base material 24, wear-resistant material 22, and wear-susceptible material 20 may be joined in a single step 600. The stack of materials 26 of base material 24, wear-resistant material 22, and wear-susceptible material 20, joined to form a unitary laminate, can then be fashioned into a shoe upper 14, or a design region 16 for a shoe upper 14, in step 610. In some processes, wear-susceptible material 20 can be layered over base material 24, and wear-resistant material 22 can be laid over and joined to wear-susceptible material 20 and/or base material 24. Alternately, as shown schematically in FIG. 2, wear-resistant material 22 can be layered over base material 24, and wear-susceptible material 20 can be laid over and joined to wear-resistant material 22 and/or base material 24. In at least one embodiment, two or more of the material layers may be formed into the shape of a shoe upper after joining the two or more material layers to one another.

**[0037]** In some processes, wear-resistant material 22 joins base material 24 to one or more wear-susceptible materials 20. Wear-resistant material may be adhesive, and/or may be a thermoset, thermoplastic, or hot melt material. In some aspects, wear-resistant material may be able to wet or impregnate wear-susceptible material 20 and/or base material 24 during manufacture, and become a solid which is stable under normal use temperatures (e.g., 0 to 30° C.; in some cases lower or higher) after curing and/or cooling. Stack of materials 26 may be joined by other means, such as stitching, embossing, spot or seam welding, adhesives, or the like. If wear-resistant material 22 does not penetrate wear-susceptible material 20, it should otherwise lend wear-resistance to those areas of wear-susceptible material 20 outside of design elements 18. For example, wear-resistant material 22 may overlay wear-susceptible material 20, such that only those portions of wear-susceptible material 20 within discontinuities in wear-resistant material 22, such as the discontinuities that form design elements 18, are exposed to deteriorating conditions.

**[0038]** The stack of materials 26 may be joined to each other in one or more steps. If wear-resistant material 22 is a thermoset, thermoplastic, or hot melt material, layer(s) of base material 24, wear-resistant material 22, and wear-susceptible material 20 may be joined by heating stack of materials 26 until wear-resistant material 22 melts, at ambient atmospheric pressure or at a higher pressure (e.g., pressing or ironing). When wear-resistant material 22 has melted to the desired degree, e.g., to sufficient fluidity to at least partially wet base material 24 and wear-susceptible material 20, stack of materials 26 may be cooled to set wear-resistant material 22. Stack of materials 26 may be formed into a shoe upper 14 after the layers are joined to each other. Joining the stack of materials 26 before assembling shoe upper 14 may help avoid misalignment of design elements 18 and/or design elements 28 on shoe 10.

**[0039]** Using a wear-resistant material 22 to protect only portions of a wear-susceptible material 20 allows the unprotected portions of the wear-susceptible material 20 to wear away, revealing one or more underlying layers. Revealing the underlying layers can change the appearance of the shoe over time, e.g., if one or more of the underlying layers are visually different in one or more aspects than an overlying

layer. Further, the wear patterns will vary based not only on shoe design, but also based on the individual who uses the shoe. For example, someone who tends to pivot her foot at the toe of her shoe may have a different wear pattern than someone who tends to cross her legs at the ankles, and both may have a different wear pattern than someone who rubs the shoes together when walking. Accordingly, the visible design on the shoes will be unique to different individuals based on different usage, possibly even differing between shoes in a pair of shoes. The wear patterns may reflect the use of the shoe or shoes, but is not necessarily an indicator of the useful life of the shoe. Base material **24** may be serviceable long after wear-susceptible material **20** has worn away in areas where wear-susceptible material **20** was unprotected.

**[0040]** An individual who likes a particular pattern may take care to prevent the shoes from encountering deterioration-promoting circumstances, such as puddles or excessive abrasion. Conversely, an individual who enjoys observing changes in the visible design on the shoe or who wishes to make the wear on a particular shoe or pair of shoes more uniform (or less uniform) can take active steps to wear away the wear-susceptible material, such as by rubbing the shoe or shoes with sandpaper or a firm brush. As a result, a shoe as described herein provides a changing pattern that prolongs the user's engagement with the shoe, and allows the user to determine whether that engagement will be passive amusement or active manipulation of the visible design.

#### Example 1

**[0041]** A light grey canvas base material was overlaid with a film of NASA-T hot melt adhesive having a melt temperature of approximately 275° F. (135° C.). NASA-T film is commercially available from SAMBU FINE CHEMICAL of Korea. The film is available in thicknesses ranging from 0.05-0.3 mm, and is transparent. The NASA-T film had cut-outs in the shape of stars. The NASA-T film was overlaid with a white tissue paper. The tissue paper was wood pulp paper and had a basis weight of approximately 9-11 pounds per square yard (approximately 4882-5968 grams per square meter). The tissue paper was lightly wrinkled from handling, and the wrinkles were not removed because the wrinkles created texture and visual variation within the tissue paper. The three layer stack of canvas, NASA-T, and tissue paper was then heated in a commercially available multi-purpose heat press, commonly used for the transfer of heat-transfer images to t-shirts. The NASA-T penetrated the canvas and tissue paper, forming a unitary laminate, with the tissue paper bonded to the NASA-T and the canvas material except at the portions where the NASA-T was cut away, where the tissue paper was locally unattached to the NASA-T and/or the canvas material. The entire laminate initially had the appearance of the white tissue paper. When abraded the tissue paper wore away in the area of the cut-outs in the NASA-T, revealing star-shaped portions of the light grey canvas material underneath. Abrasion was undertaken using sandpaper of varying grit, a buffing wheel, or a metal brush.

#### Example 2

**[0042]** A unitary laminate as described in Example 1 was fashioned into a shoe upper, including the tongue. Additional materials were added to form eyelets for shoelaces and

finished edges along the periphery of the laminate. The laminate was joined to a pre-formed rubber sole, and was subjected to vulcanization. The laminate survived the vulcanization process, maintaining an initial appearance of white tissue paper across the portions of the shoe comprising the laminate. Unbonded regions of the tissue paper were abraded by hand with a metal brush, sand paper, or a damp cloth, deteriorating the unprotected tissue paper and revealing star-shaped portions of the light grey canvas underneath.

**[0043]** From the foregoing, it will be seen that the claimed invention is one well adapted to attain numerous functional, structural, and aesthetic benefits, as hereinabove set forth, together with other advantages which will be recognized by an ordinarily skilled artisan in view of the entirety of this specification, including the accompanying claims and figures.

**[0044]** It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

**[0045]** Since many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

1. A shoe upper, the shoe upper comprising:
  - a base material having an outer surface;
  - a wear-resistant material joined to at least a portion of the outer surface of the base material and less than all of the outer surface of the base material; and
  - a wear-susceptible material joined to at least a portion of the wear-resistant material.
2. The shoe upper of claim 1, wherein a discontinuity in the wear-resistant material defines a periphery of at least one region of the wear-susceptible material adjacent to which there is no wear resistant material.
3. The shoe upper of claim 2, wherein the at least one region of the wear-susceptible material adjacent to which there is no wear resistant material corresponds to one or more aesthetic designs.
4. The shoe upper of claim 2, wherein the wear-susceptible material is layered over substantially all of the base material, including the at least one region of the wear-susceptible material adjacent to which there is no wear-resistant material.
5. The shoe upper of claim 4, comprising a plurality of regions of the wear-susceptible material adjacent to which there is no wear-resistant material.
6. The shoe upper of claim 4, wherein the wear-susceptible material is less susceptible to wear in a region or regions adjacent to which there is wear-resistant material, compared to the at least one region of the wear-susceptible material adjacent to which there is no wear-resistant material.
7. The shoe upper of claim 1, wherein the base material and the wear-susceptible material have at least one different visual property.
8. The shoe upper of claim 7, wherein the different visual property comprises at least one of color, luster, texture, pattern, and ornamentation.
9. The shoe upper of claim 1, wherein the wear-resistant material is adhesive to the wear-susceptible material and to the base material.

**10.** The shoe upper of claim **9**, wherein the wear-resistant material is a hot melt adhesive.

**11.** The shoe upper of claim **1**, wherein the wear-resistant material comprises thermoplastic polyurethane.

**12.** The shoe upper of claim **1**, wherein the wear-susceptible material comprises paper or a lightweight nonwoven fabric.

**13.** The shoe upper of claim **1**, wherein the base material comprises one of either canvas or leather.

**14.** A method for constructing a shoe upper having an aesthetic design that changes with wear, the method comprising:

providing a base material;

selectively applying a wear-resistant material to a portion of an outer surface of the base material and less than all of the outer surface of the base material; and

applying a wear-susceptible material over the base material to cover at least a portion of the outer surface of the base material having the wear-resistant adhesive applied, and at least a portion of the outer surface of the base material that does not have the wear-resistant adhesive applied.

**15.** The method of claim **14**, wherein the wear-resistant material is an adhesive.

**16.** The method of claim **15**, wherein the wear-resistant adhesive comprises one or more of a thermoplastic adhesive, a thermoset adhesive, and a hot melt adhesive.

**17.** The method of claim **15**, wherein the wear-resistant material is selectively applied to the portion of the outer surface of the base material by either or both of removing a first portion of the wear-resistant adhesive and forming a depression below an outer surface of the wear-resistant adhesive.

**18.** The method of claim **17**, wherein the wear-resistant adhesive is selectively applied to the outer surface of the

base material by layering one or more of a thermoplastic, thermoset, or hot melt adhesive with the base material, and heating the one or more of a thermoplastic, thermoset, or hot melt adhesive.

**19.** The method of claim **18**, wherein the wear-susceptible material is applied to the wear-resistant adhesive by layering an expanse of the wear-susceptible material with the thermoplastic, thermoset, or hot melt adhesive and heating the thermoplastic, thermoset, or hot melt adhesive.

**20.** The method of claim **19**, wherein the wear-resistant adhesive is joined to the base material and the wear-susceptible material in a single bonding step.

**21.** A shoe, comprising:

a shoe upper, the shoe upper comprising:

a base material having an outer surface;

a wear-resistant material joined to at least a portion of the outer surface of the base material; and

a wear-susceptible material joined to at least a portion of the wear-resistant material; and

a sole, wherein the sole is distinguishable from a portion of the shoe upper by at least one of construction and materials.

**22.** The shoe of claim **21**, wherein the base material has at least one different visual property relative to the wear-susceptible material.

**23.** The shoe of claim **22**, wherein the different visual property comprises at least one of color, luster, texture, pattern, and ornamentation.

**24.** The shoe of claim **21**, wherein the wear-resistant material is joined to at least a portion of the outer surface of the base material and less than all of the outer surface of the base material.

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