Title: DRY FORMULATION FRAGRANCE DELIVERY SYSTEM

Abstract: A fragrance delivery system comprising a dispensing device having a dispensing component and a dry formulation formed as a mixture of approximately 80 to 90 weight percent polyethylene glycol (PEG) and approximately 6 to 16 weight percent glycerin and approximately 0.5 to 10 weight percent fragrance component, wherein the mixture is dry as deposited on the dispensing component and dry as dispensed from the dispensing component during and after use.
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DRY FORMULATION FRAGRANCE DELIVERY SYSTEM

Description

Technical Field
The present invention generally relates to neutralizing unpleasant odors and, more particularly, to apparatus and a method for neutralizing unpleasant odors that may cling to the surface of a person's clothing, the fur coat or hair of a pet animal, surfaces of furnishings in households and offices, interior or exterior surfaces of vehicles of all kinds, work spaces and industrial facilities, etc.

Background Art
Dining out, attending concerts or dance performances, going to the theatre or to movies, going to parties, dances and celebrations, going to night clubs and other entertainment venues, or just hanging out with friends are some of the activities people engage in during their free time. Generally, in preparing to participate in these activities, people take great pains to look their best and to present themselves in the best possible light. Personal grooming aids and products are often employed, most of which are scented, in an effort to appear attractive. Perfumes and scented grooming products are used to enhance the effects, particularly among persons interested in attracting other persons of the opposite sex, for example.

Unfortunately, the scented effects tend to diminish rapidly, reducing the intended effect of the personal grooming efforts. Further, many of the venues for the above activities include exposure to a wide variety of odors. These odors typically originate from food and beverages in restaurants, from smoke in restaurants, bars, night clubs, etc., from the perspiration of the persons themselves and other patrons, and from other substances that may be encountered during an evening's entertainment. Many of these odors are unpleasant or become more so with the passage of time. Such odors are readily absorbed by a person's clothing or hair, and are carried with the person for the rest of the evening. Thus, not only are the original scents diminished through the natural evaporation and deterioration that occurs, but they are often overwhelmed or masked by the many odors in the surroundings. These circumstances may be especially worrisome to people in a dating situation, especially as the evening wears on and the persons anticipate extending the evening or just wish to freshen themselves before proceeding
with the remainder of the evening's activities, one's next appointment, etc. Other circumstances where the need to refresh one's clothing or hair may arise include following a long or arduous meeting, working out in a gym, a long walk between offices, playing with pets, and the like.

Conventional remedies include perfume or perfumed products such as cologne applied to a person's skin or clothing, typically provided in a spray container or a bottle. Other similar products may be applied by hand. Further, it is known that certain products, such as dryer sheets for use in clothes dryers, have sometimes been used in an effort to absorb the unpleasant odors from a person's clothing or hair, but generally with limited success. Further, such dispensing devices as traditionally used for perfume or cologne are not readily available with odor neutralizing capabilities adapted to neutralizing the odors accumulated on a person's clothing. Moreover, the use of paper or fabric odor absorbing devices has heretofore failed to provide more than limited usefulness.

It is known or has been observed that certain paper or fabric products, such as the Bounce® dryer sheets and Swiffer® floor mop products manufactured and distributed by the Proctor & Gamble Corporation for the laundry and floor cleaning markets respectively, and which may respectively contain anti-static or scented compounds or cleaning agents, have certain properties that might suggest possible applications in this field of odor neutralization of clothing. However, the available configuration of these articles is not appropriate or well suited to the application of neutralizing the odors absorbed by a person's clothing in a night club or restaurant venue. The Bounce® dryer sheets and the Swiffer® mop refills are loose sheets of fabric. They are not conveniently packaged for a person's pocket or purse, are not adapted to the particular use of odor neutralization of a person's clothing, and do not contain suitable substances for neutralizing odors absorbed into or clinging to a person's clothing or other surfaces.

Heretofore, applying devices for materials that include odor neutralization by masking or addition of a fragrance have been available only in liquid form, or in a dry form that requires activation by the addition of moisture or other liquid to prepare them for use. Such products and methods, in addition to often being difficult to use (requiring extra steps, etc.), often have other disadvantages such as leaving stains or other residue on
the surface treated with the applicating devices. Not only are these impractical for a person's clothing or hair, but they present obstacles for many other applications that seek to freshen a surface without leaving a wet film, residue or stain, that may be unwelcome or difficult to remove. There is thus a need for a wipe technology - an apparatus and a method of using the apparatus, that overcomes the disadvantages of the prior art devices and methods, and that is dry - before, during, and after it is applied to a surface to be treated and freshened. Further, it is desirable that a wipe can serve both to eliminate or neutralize unpleasant odors deposited or accumulated on the surface from the surroundings, and to in general to freshen or restore an original scent or replace an odor with an alternative pleasant scent.

Disclosure of Invention

Accordingly there is disclosed a dry formulation fragrance delivery system useful as a grooming aid, the delivery system comprising: a dispensing device having a dispensing component; and a dry formulation deposited on said dispensing component, said dry formulation comprising a mixture of polyethylene glycol (PEG), glycerin, and a fragrance component.

In one aspect the dry formulation is formed as a mixture of approximately 80 to 90 weight percent polyethylene glycol (PEG) and approximately 6 to 16 weight percent glycerin and approximately 0.5 to 10 weight percent fragrance component, all weight percentages being based on the total weight of the dry formulation; wherein said PEG has a molecular weight of approximately 3000 grams/mole to 5000 grams/mole; and said fragrance component is formed as a blend of at least one essential oil and at least one aroma compound.

In another aspect the mixture is dry as deposited on said dispensing component and dry as dispensed from said dispensing component during and after said grooming.

In another aspect the dispensing device comprises a brush formed of a body, an array of bristles disposed on a first side of said body, a rotating adjustment knob extending from a first end thereof and a handle extending from a second end thereof; and a rotatable dispensing component controlled by said adjustment knob and disposed within
a longitudinal opening through said body from said first side to a second opposite side of said body.

In another aspect the dispensing device comprises a brush formed of a body, an array of bristles disposed on a first side of said body, and a handle extending from a second end thereof; said body formed of first and second shells corresponding to said first and second sides, having a longitudinal window opening in said first shell and an access slot disposed through an edge of said body along and proximate a side of said window opening; and a renewable dispensing component disposed within said window opening in said first shell and installable through said access slot.

In another aspect the dispensing device comprises an elongate member having an axle portion and a handle portion; a roller disposed on said axle portion; and a dispensing component formed of a fabric surrounding an outer surface of said roller, said dispensing component including at least one layer of said fabric, said fabric having said dry formulation deposited on an outer surface thereof.

In another aspect a dry formulation fragrance control is provided, comprising a dispensing insole having a dispensing component; and a dry formulation formed as a mixture of polyethylene glycol (PEG), glycerin, and a fragrance, said mixture deposited on said dispensing component, wherein the dispensing insole comprises a three-layer assembly, in order, of an insole pad, a low tack adhesive layer, and at least one said dispensing component formed from a fabric layer, said assembly shaped to fit within a shoe.

In another aspect the dispensing device comprises a two-layer assembly of a first fabric dispensing layer and a second fabric body layer, wherein said first layer includes said dry formulation deposited thereon. In one embodiment the two-layer assembly comprises a clothing/pet/furniture/skin wipe configured for receiving four fingers of a user's hand between said first and second layers of said assembly. In another embodiment the two-layer assembly comprises a clothing/pet/furniture/skin wipe glove configured for receiving a user's hand within said glove between said first and second layers of said assembly 45. In another embodiment the two-layer assembly comprises a clothing/pet/furniture/skin
wipe mitten configured for receiving a user's hand within said mitten between said first and second layers of said assembly.

In another aspect the dispensing device comprises a body member having a transverse slot extending from a top to a bottom surface thereof, a handle extending from one side thereof, and an array of bristles disposed on said bottom surface of said body on each side of said slot; a comb having a plurality of tines, said comb removably secured within said transverse slot, and said tines extending past said bottom surface of said body between first and second portions of said array of bristles; and a dispensing component formed of a fabric affixed to at least one of first and second outer faces of said comb, said fabric having said dry formulation deposited on an outer surface thereof.

In another aspect the dispensing device comprises a body member having a substantially rectangular opening therethrough, a handle extending from one side thereof, and an array of bristles disposed on an underside of said body and surrounding said opening; a spool disposed within said opening and supported on fixed axial stubs; and a dispensing component formed of a fabric surrounding an outer surface of said spool, said fabric having said dry formulation deposited on an outer surface thereof.

In another aspect the dispensing device comprises an under layer and a carrier layer substantially congruent with said under layer, said layers bonded together along first and second opposite edges thereof, thereby creating a space therebetween such that at least four fingers of a user's hand can be inserted through said space.

In another embodiment a method of delivering a fragrance to a surface, comprises the steps of configuring a dispensing device having a dispensing component for receiving a dry formulation containing a fragrance component; producing said dry formulation from a mixture of approximately 80 to 90 weight percent polyethylene glycol (PEG) and approximately 6 to 16 weight percent glycerin as a carrier component and approximately 0.5 to 10 weight percent of a fragrance component, all weight percentages being based on the total weight of the dry formulation; and applying said dry formulation to said dispensing surface of said dispensing device.
In another aspect the method comprises the steps of engaging said dispensing device with a target surface; and manipulating said dispensing device to cause an amount of said fragrance component to be deposited onto said target surface in a non-liquid form, without leaving a residue of stain or significant traces of said dry formulation.

In another embodiment there is provided a fragrance delivery system useful as a grooming aid, the delivery system comprising a dispensing device having a dispensing component; and a dry formulation formed as a mixture of approximately 80 to 90 weight percent polyethylene glycol (PEG) and approximately 6 to 16 weight percent glycerin and approximately 0.5 to 10 weight percent fragrance component, all weight percentages being based on the total weight of the dry formulation; wherein said mixture is dry as deposited on said dispensing component and dry as dispensed from said dispensing component during and after said grooming.

There is also disclosed a personal care apparatus for neutralizing odors on a person’s clothing. The apparatus comprises a hand-held applicator formed of a first layer and a second layer bonded together along mutual edges thereof except along a portion of the mutual edges thereby forming a pocket or sleeve; an odor neutralizing formulation uniformly deposited on an outer side of the first layer of the applicator, wherein the formulation includes a base component and a neutralizer component; the base component includes approximately 86% polyethylene glycol ester and 10% glycerin and the neutralizer component includes a fragrance mixture formed of essential oils and one or more aroma compounds combined in predetermined proportions; and a pouch for enclosing the applicator when not in use, the pouch formed of a flexible packaging film and having a reusable closure mechanism disposed along one side thereof.

In another embodiment, a method for fabricating a clothing wipe is provided, comprising the steps of forming a first layer of an applicator in a first branch of a web process including uniformly depositing an odor neutralizing formulation on an outer surface of said first layer; forming a second layer of said applicator in a second branch of a web process including imprinting said second layer with indicia followed by merging said first and second web process branches in a step for aligning said first and second layers of said applicator for cutting, trimming and bonding operations; and forming and imprinting a
storage pouch for said applicator from flexible packaging film in a third web process followed by merging said third web process branch with said combined first and second web process branches in a step to insert said applicator in said storage pouch.

In another aspect of the method for fabricating a clothing wipe, the step of formulating the odor neutralizing formulation includes the steps of combining a fragrance mixture in a predetermined proportion to provide a fragrance component having a "clean linen" aroma; and combining the fragrance component with a base component including a mixture of a polyethylene glycol ester and glycerin. In another aspect, the polyethylene glycol ester is combined with the glycerin in respective proportions of 86% and 10% of the odor neutralizing formulation.

In another embodiment, there is disclosed an apparatus for neutralizing odors in clothing, comprising an applicator for applying a neutralizing substance to a person's clothing, the applicator including a carrier layer having a generally rectangular shape defined by a perimeter thereof and impregnated with the neutralizing substance, and a substrate layer having generally the same shape as the carrier layer and bonded to the carrier layer around all but a select portion of the perimeter of the carrier layer to form a finger pocket for manipulating the applicator. In an alternate embodiment, an activating mechanism or protective sleeve associated with the applicator may be provided for releasing the neutralizing substance from the carrier layer.

In another aspect of the invention, a method is disclosed comprising the steps of providing an odor-neutralizing applicator having a carrier layer impregnated with an odor neutralizing substance and adapted to be slipped over the person's fingertips of one hand; slipping the applicator over the fingertips of the person's hand; and manipulating the applicator against the person's clothing to neutralize the odors in the person's clothing. In an alternate embodiment the method includes the step of activating the carrier layer of the applicator to release the odor neutralizing substance onto the person's clothing.

In another embodiment of the present invention a clothing wipe is disclosed comprising a mixture of polyethylene glycol (PEG), glycerin, and a fragrance, said mixture deposited
as a dry formulation on a surface of a handheld applicator. The PEG mixed with glycerin and a fragrance together form a dry odor neutralizing formulation, and the PEG having a molecular weight within the range of 2000 to 7000 g/mol.

In yet another embodiment a reusable clothing wipe for freshening a person’s clothing comprises a handheld applicator having a first outer surface and a dry odor neutralizing formulation deposited on said surface of said applicator. The dry odor neutralizing formulation includes a base component and a fragrance component wherein the base component comprises a mixture of polyethylene glycol and glycerin.

**Brief Description of Drawings**

**Figure 1** illustrates a plan view of one embodiment of an apparatus for neutralizing odors on a person’s clothing;

**Figure 2** illustrates an edgewise view of the embodiment of Figure 1;

**Figure 3** illustrates a pictorial view of the use of the embodiment of Figure 1;

**Figure 4** illustrates a pictorial view of an alternate embodiment of an apparatus for neutralizing odors on a person’s clothing;

**Figure 5** illustrates a graphical depiction of an odor neutralizing formulation for use with the embodiment of Figure 4;

**Figure 6** illustrates a flow chart of one example of a method of manufacture of the embodiment of Figures 4 and 5;

**Figure 7** illustrates an alternate embodiment of the applicator pouch shown in Figure 4;

**Figure 8** illustrates a first alternate embodiment of the applicator;

**Figure 9** illustrates a second alternate embodiment of the applicator; and
Figure 10 illustrates a pictorial view of the use of the first or second alternate embodiments of the applicator.

Figure 11 illustrates an isometric view of an embodiment of the invention configured as a brush device;

Figure 12 illustrates a second isometric view of the embodiment of Figure 11;

Figure 13 illustrates an exploded view of the embodiment of Figure 11;

Figure 14 illustrates an exploded view of another embodiment of the invention configured as a brush device;

Figure 15 illustrates an isometric view of a portion of the embodiment of Figure 14;

Figure 16 illustrates an exploded isometric view of another embodiment of the invention configured as a brush device intended for use with pets and other animals;

Figure 17 illustrates an isometric view of another embodiment of the invention configured as a brush device;

Figure 18 illustrates an exploded view of the embodiment of Figure 17;

Figure 19 illustrates an isometric view of another embodiment of the invention configured as a brush device;

Figure 20 illustrates another isometric view of the embodiment of Figure 19;

Figure 21 illustrates an exploded view of the embodiment of Figures 19 and 20;

Figure 22 illustrates an isometric view of another embodiment of the invention configured as a roller device;
Figure 23 illustrates an exploded view of the embodiment of Figure 22;

Figure 24 illustrates an exploded view of an alternate embodiment of the invention depicted in Figures 22 and 23;

Figure 25 illustrates an exploded view of another embodiment of the invention configured as an insole device;

Figure 26 illustrates an isometric view of the embodiment of Figure 25;

Figure 27 illustrates a plan view of another embodiment of the invention similar to the embodiment depicted in Figures 8, 9, and 10;

Figure 28 illustrates another plan view of the embodiment of Figure 27;

Figure 29 illustrates a plan view of another embodiment of the invention; and

Figure 30 illustrates a plan view of an alternate embodiment of the embodiment depicted in Figure 29;

Figure 31 illustrates a plan view of an alternate embodiment to Figures 19, 20, and 21; and

Figure 32 illustrates an exploded view of the alternate embodiment of Figure 31.

Best Mode for Carrying Out the Invention

In the descriptions that follow, examples of a number of embodiments of devices and methods employing dry wipe fragrance technology will be described. These embodiments will serve to illustrate the concept and scope of the dry wipe fragrance or dry formulation fragrance delivery system of the present invention. The invention is adapted to uses as a grooming aid but is not limited to such uses. Following a detailed description of dry clothing wipes in several illustrative embodiments, including structural
adaptations to related uses, there appears detailed description of additional uses for the dry wipe technology disclosed herein. Examples include dry wipes for a variety of surfaces that may have accumulated odors of all kinds. The examples illustrate ways to freshen a surface with a fragrance that either masks the odor on the surface or replaces it with a more pleasant scent that is appropriate to the particular surface or item. Dry wipes for use with animals such as pets or animals being prepared for show are described. Dry wipes for household or office furnishings and automotive interiors that include a variety of materials with differing propensity to absorb odors are also described. Dry wipes can be produced in a variety of sizes and style of applicator to suit specific needs. The applicators described herein may be reusable, especially when stored in a container to preserve their freshness. However, low volatility is characteristic of the dry formulations used in the illustrated embodiments.

In general, the embodiments to be described may be thought of as a family of examples of a dry wipe fragrance delivery system. Each example includes a carrier or applicator that carries an embedded fragrance formulation until it is dispensed from the carrier or applicator. The carrier is constructed to retain the formulation until use, and to dispense the formulation on a light rubbing contact with the surface to be treated or freshened. Typically the dry wipes may be used for a number of applications before the formulation is depleted. The carrier may be fabricated in a variety of sizes and configurations suited to the particular kind of surface being treated. Some of the carriers are configured as mitts for placement on a user's fingers or hand. Other carriers may have textures or brush-like surfaces to facilitate applying the formulation to grained surfaces or surfaces that include hair, coatings of fur, etc. Moreover, there is little risk of soiling or contaminating the user's hand because the formulation is dry and the portion of the applicator that is touched by the user's hand is not that same as the surface that is impregnated with the formulation.

Referring to Figure 1, there is illustrated a plan view of one embodiment of an apparatus for neutralizing odors on a person's clothing by refreshing the person's clothing through odor neutralization and new scent deposition. An applicator 10 includes a top layer 12, which may bear a brand indicia 14 including a brand 16, and, as one alternate embodiment, a textual indicia 18 including instructions 20 for using the applicator 10. In
an alternative, wherein the top layer 12 includes only a brand indicia, textual indicia may be affixed to or printed upon the packaging for the applicator 10. A bonding region 22 is shown, indicating the location of a bond that is formed between the top layer 12 and other layers (not shown in Figure 1) below the top layer 12. It will be observed, however, that the bonding region 22, between the edge of the applicator 10 and the dashed line, surrounds the perimeter of the applicator 10 around all of the perimeter except for one edge of the applicator 10. The edge of the applicator 10 that does not include a bond is selected so that a person's fingertips may be inserted between two of the layers, as will be explained.

The applicator 10 in its preferred embodiment is intended to be a compact device easily carried in a pocket or purse. Thus, its dimensions are determined accordingly to be slim and only slightly larger than a business card, for example. The applicator 10 in the illustrative embodiment shown in Figures 1, 2 and 3 may be approximately 3.75 inches long and approximately 3.00 inches wide. The top layer 12 may be a paper material bearing the indicia 14, 18, which may, for example, be printed or embossed thereon by conventional processes. In alternative embodiments, however, the dimensions and shape of the applicator 10 may of course be modified for other applications without departing from the concept illustrated in Figures 1, 2 and 3. In general, the shape may be any plane figure that is bounded by a closed perimeter, such as triangular, rectangular, circular, elliptical, oval or polygonal. The portion of the perimeter that is open, called the open space 28, to permit the users fingers to be inserted between a carrier layer 24 and a substrate layer 26 (See Figure 2) in the manner of a finger mitt, may be located at any location along the perimeter of the applicator 10. In a preferred embodiment, the shape of the applicator 10 is generally rectangular with rounded corners, wherein the open space 28 - an entry side for inserting the user's fingers - is located along one of the shorter sides of the applicator 10. Other embodiments may position the open space 28 along a longer side or a curved side.

Referring to Figure 2, there is illustrated an edgewise view of the applicator 10. The structure of the embodiment shown includes three layers of material, each with a distinct purpose. The top layer 12 has been described previously. It may be bonded fully to an intermediate substrate layer 24, which may be fabricated from a thin, generally flexible
and substantially non-absorbent material that has some stiffness or resiliency to provide shape and "body" to the applicator 10. The purpose of the substrate layer 24 is to form a pocket in cooperation with the carrier layer 26 when the applicator 10 is prepared for use. Materials suited to this purpose include leather, synthetic, leather-like fabrics, heavy grade papers, and the like. The lower layer, the carrier layer 26, is preferably an absorbent layer of a non-woven fabric, such as may be formed of spun-bonded polyester fibers. This example, of which the fabric such as that used in the aforementioned dryer sheets is just one alternative, is illustrative only and a number of alternative fabric materials are feasible. The carrier layer 26 is preferably impregnated with an odor neutralizing substance to be described. In alternate embodiments, the carrier layer 26 may include pleasantly scented material such as perfume or cologne, either alone or in combination with the odor neutralizing substance.

The carrier layer 26 may be bonded to the substrate layer 24 around the perimeter of the substrate layer 24 except at the selected open space shown in Figure 2. This open space is provided for the person using the applicator 10 to insert his or her fingertips into the pocket 28 between the carrier layer 26 and the substrate layer 24 for the purpose of manipulating the applicator 10 during use. The edge of the bonding region 22, represented by a dashed line (also indicated by reference number 22), is shown within the pocket 28 between the substrate 24 and carrier 26 layers. The dashed line 22, also shown in Figure 1, may in one embodiment indicate one location of stitches for sewing the edges of the bonding region 22 together. The edges of the bonding region 22 may also be bonded using an adhesive, rivets, staples, clamps or crimped fasteners, or even be an integral part of both the substrate 24 and carrier 26 layers of the applicator 10. An example of the latter embodiment is provided when the substrate 24 and carrier 26 layers are formed of a single sheet of material that satisfies the requirements of both layers.

In some embodiments it is advantageous for the applicator 10 to be disposable; that is, it may be discarded when the odor neutralizing substance impregnated in the carrier layer 26 is exhausted. Thus, the materials used in the construction of the applicator 10 need not be particularly durable. On the other hand, it is further contemplated that other embodiments of the applicator 10 may be reusable. For example, an applicator 10 constructed of relatively durable materials and configured to be fitted with a replaceable
carrier layer 26, may be provided. The latter embodiment might provide a marketing advantage in that the applicator may be provided at nominal cost with or without a package of refill carrier layers 26 (or, carrier sheets 26). A reusable applicator would include a bonding mechanism to enable removal of the carrier layer 26 for replacement by a fresh carrier layer 26.

Referring to Figure 3, there is illustrated a pictorial view of the applicator 10 being used to apply the odor neutralizing substance to a person's clothing. The applicator 10 is shown being manipulated by a wiping action against the clothing 30 of a user, as indicated by the arrows 36. The user's fingertips 32 of his or her hand 34 are inserted into the pocket 28 between the substrate 24 and carrier 26 layers of the applicator 10. In a preferred embodiment, the pocket 28 in the applicator 10, when opposite sides (e.g., to the left and right of the applicator 10 as indicated by the triangular marks 38, 40 in Figure 3) of the applicator 10 are squeezed slightly, opens wide enough to receive two fingertips 32 therein for manipulating the applicator 10. Once installed on the user's fingertips, his or her hand 34 is moved in a side-to-side motion 36, rubbing or wiping the lower surface portion (not visible in the figure, but will be readily understood) of the carrier layer 26. This action causes the release and transfer of the odor neutralizing substance from a portion of the carrier layer 26 to the surface of the user's clothing 30, as will be described further herein.

Continuing with Figure 3, the odor neutralizing substance may, for example, be an activated charcoal material, impregnated into or formed into a fabric used to construct the carrier layer 26, that absorbs odor particles on contact with the carrier layer 26. In an alternative embodiment, a compound that combines with the chemicals in food odors and smoke, thereby causing them to be non-odorous, may be activated on contact with the person's clothing. In another alternative embodiment, a compound that volatilizes odorous substances on contact, causing them to disperse by evaporation may be used. Alternate embodiments may utilize a combination of these features in a single device to accomplish odor neutralization. For example, a device may combine the features of absorption and ionization to neutralize odors accumulating on the surface of clothing. Further, the odor neutralizing substance may be bound in microcapsules impregnated within the carrier layer, thus prevented from escaping until subjected to the pressure
associated with the rubbing or wiping contact 36 against the user's clothing surface when the applicator 10 is being used. The odor neutralizing substance may additionally include a perfume or other scented agent. Alternatively, the perfume or scented agent may be separately impregnated into the carrier layer 26.

In one example, an activated charcoal material that is formed into a textile fabric having a microporous structure may be used in the carrier layer 26. The microporous structure provides a very large surface area presented to the odor-causing substances, effectively absorbing them from the person's clothing during use of the applicator 10. The activated charcoal textile material, developed in Britain for its filtering properties, is further disclosed in U. S. Patent No. 6,313,371 issued to Conant et al.

The following detailed description describes several alternative and preferred embodiments with reference to Figures 4 through 10.

In one preferred embodiment to be described with reference to Figures 4, 5, 6, and 7, the odor neutralizing substance may include a formulation comprising a base component and an organic odor neutralizer component combined in predetermined proportions. In the illustrated example, the base component may comprise a mixture of a polyethylene glycol ester and glycerin, in approximate respective percentages of 86% and 10%. The polyethylene glycol (PEG) ester, a soft, colorless material is provided as a base component - a carrier - that provides sufficient body to the formulation to hold the odor neutralizer component in a solid matrix. When the clothing wipe device is rubbed along the surface of the clothing, a thin film of the carrier or base, with the neutralizer combined therewith, is deposited on the surface of the clothing. This film leaves no stain and may be removed when the clothing is washed. The glycerin is soluble in the base and provides a softening effect on the base, while slowing the release of the fragrance component of the odor neutralizer to be described. The glycerin is also washable and leaves no stain, and has a low vapor pressure so that the stability and shelf life of the device are enhanced.

The organic odor neutralizer component may comprise a fragrance component or mixture or composition. This component comprises approximately 4% of the total odor
neutralizing formulation. Fragrance mixtures are well known and are available in a wide
variety of formulations or types, for neutralizing a wide variety of odors. Some of the
available types include: a masking agent, a solvent, an absorbant, an encapsulant, and
a spray dry fragrance. In the present invention, one class of fragrance compositions or
mixtures has been found particularly suitable for counteracting or neutralizing odors on
clothing or a person's hair, for example. Such a fragrance mixture is a blend of several
constituents that is formulated to present - i.e., leave behind on the user's clothing - a
"clean linen" aroma or scent. In the illustrated embodiment, the constituents of the
fragrance mixture may include chemicals of an aromatic or aliphatic nature such as
aldehydes, ketones, alcohols, esters, and materials containing oxygen, nitrogen or
sulphur. The fragrance mixture are preferably comprises approximately 4% of the total
odor neutralizing formulation. However, due to the subjective nature of the sense
experience, this proportion may be varied by experimenting with the proportions to be
mixed. For example, the test may begin by varying the ingredients in greater or lesser
proportion until a preferred proportion is determined for a particular application.

In regard to the proportions of the three principal ingredients of the odor neutralizing
formulation described above in specific percentages, it is important to point out that these
are percent values arrived at for one embodiment of the illustrated clothing wipe. The
clothing wipe may be configured for a variety of specific applications depending on the
market for such variations. Accordingly, the proportions of the these ingredients may be
varied to suit particular formulations to meet a specific target market segment. In
general, the proportion of the polyethylene glycol ester may range from 80% to 90%, the
glycerin (or an acceptable substitute) may range from 6% to 16%, and the fragrance
mixture may range from 0.5% to 10%. Potential market segments may be gender-
specific or unisex, or directed to particular kinds of activities such as indoor or outdoor,
social or business or recreation, etc. Other applications may include clothing wipes that
are formulated as insect repellants or other ancillary uses besides refreshing the scent
or odors present on a person's clothing or hair. Such applications may include
ingredients that are combined in proportions that differ substantially from those set forth
herein. For example, a wipe having an insect repellant substance may include 15% to
30% repellant chemical in combination with a base component of 70% to 85% and a
fragrance mixture of a few percent, for example. Other applications may include wipes
having formulations adapted to a person's skin surfaces. Such applications may include ingredient formulations based on other types of ingredients in other proportions, etc. Thus, the clothing wipe described herein is only one example of a versatile delivery system for scented or other chemical formulations configured for a wide variety of personal care products.

In use, as described herein below, the rubbing action that occurs when the clothing wipe device is brought into contact with the user's clothing or hair and deposits the odor neutralizing formulation or substance in proportion to the degree of force used and the length of path or amount of time expended as the device is rubbed across the surface of the clothing. This provides a convenient way to regulate the amount of odor neutralizing formulation deposited during use, thereby affecting the strength and noticeability of the fragrance and the effectiveness of the clothing wipe device described herein.

Manufacturing the clothing wipe device may be illustrated by a simple sequence of steps. Both the applicator and the pouch may be supplied in bulk as thin fabrics and packaging film respectively. Each one may be imprinted in bulk web-processing facilities prior to cutting and bonding the individual pieces that will be assembled to form the applicator or the pouch. Imprinting may be used to apply logo and other indicia, as well as instructions for use and/or attractive graphics, to the pouch. The fragrance mixture may also be applied during a bulk web-processing process by depositing the compound odor neutralizer material in a slot-dye coating process, well-known in the art. In this process, the formulated mixture is placed into a reservoir such as a hopper device and conveyed to a distributing device that has a narrow slot orifice oriented across the width of the fabric that is to receive the mixture. The slot has a length approximately equal to the width of the fabric, and deposits a measured layer of the odor neutralizer formulation onto the surface of the bottom, active (first) layer of the applicator.

Materials for the bottom (first) and top (second) layers of the applicator are selected for the abilities to be imprinted, bonded ultrasonically, and fabricated in a web-processing process as will be described. The bottom layer of the applicator may be a single ply of a non-woven (e.g., spun-bound) polypropylene fabric or a two-ply combination of a non-
woven polypropylene fabric having a weight of approximately 160 g/m² weight and a rayon fabric that is needle punched in a predetermined pattern over the area of the layer to secure it to the polypropylene fabric. The total thickness of the two-ply layer may then have an approximate thickness of 0.10 inch or less. In a single layer embodiment the additional step to bond the rayon or other fabric layer may be deleted. The top layer of the applicator may preferably be a non-woven (e.g., spun-bound) polypropylene fabric of approximately 100 g/m² weight and a thickness of approximately 0.013 inch. These weights/thicknesses are approximate and selected for the size and weight appropriate to the look and feel of the hand-held clothing wipe device described in this example. Other materials may be selected as long as they have the properties suited to the application. Foreexample, certain alternate embodiments intended for heavy-duty service may be fabricated of heavier weight materials or synthetic fabrics of greater durability.

In the embodiment of Figures 4 - 7, the two layers, after imprinting, depositing the odor neutralizer to the bottom layer and cutting to size, may be ultrasonically bonded around the perimeter except for along one edge, allowing the one edge to remain open, thereby forming a pocket so that the applicator may be slipped over a user's fingers during use. The bottom layer may preferably be provided in a color different from the top layer to facilitate identification of the correct side of the applicator to apply to the user's clothing. For example, the bottom layer may be white and the top layer imprinted with the logo, etc. in other colors. In another embodiment to be described with reference to Figures 8 - 10, two opposite edges of the applicator are left open - unbonded - thereby forming a sleeve for the user's fingers.

The storage pouch may be manufactured from a flexible packaging film that is imprinted with graphics, logos, legends, indicia, instructions for use, etc. As is well known, flexible packaging film is available in many forms depending on the kind of product to be contained therein and the kind of graphics imprinted on the outside layer, etc. In the illustrated example, the packaging film, which should be adapted to containing personal care products, may be a laminated product whereby each layer of the material is selected to provide the particular properties desired in the package. Such flexible packaging film products are typically laminated of multiple layers of thin film materials such as a coated and printable outer layer to support printed graphics (e.g., polyester), low density
polyethylene (LDPE), a metal foil, a linear low density polyethylene film (LLDPEF), and the like. These materials may be provided in thicknesses that range from .25 to 1.5 mil (1 mil = 1/1000 of an inch). In the embodiment described herein the total thickness of the film packaging material may be approximately 3.5 mil. These materials in combination provide sufficient body, moisture and puncture resistance, resistance to tearing, the effects of light, etc.

As shown in Figure 4 the storage pouch 70 includes a closure mechanism along the one side or edge of the pouch that does not have a bound or welded edge along its perimeter. This open edge may be resealed to enclose the applicator therein when not in use so that the odor neutralizing capacity is preserved. One preferred closure mechanism is to provide the open edge with a string zipper - a flangeless zipper - or its equivalent. The locking members of the string zipper are sealed to the edges of the opening to be closed or opened. As is well-known, a string zipper allows for reclosing a package without requiring a separate traveling slider to zip or unzip the package. String zippers may be molded from polyethylene or other similar materials. Another closure mechanism is illustrated in Figure 7. In this example the bottom layer of the applicator is extended past the opening along the edge of the applicator, thus forming a closure flap. A strap of the same material used for the top layer may be attached parallel to the open edge on the outside of the applicator and spaced slightly away from the open edge of the applicator to serve as a retainer for the closure flap.

*Figure* 4 illustrates a pictorial view of an alternate embodiment of an apparatus for neutralizing odors on a person's clothing. This personal care product 50 includes an applicator 52 and a pouch 70. The applicator 52 is formed by bonding a bottom layer 54 of a suitable material to a top layer 56 of a suitable material along its edges 58 except for one edge 60 that is left open 62, thereby forming a pocket in the space between the top and bottom layers to enable a user to insert at least two fingers therein during use. Thus, in this embodiment, the first and second layers are bonded together along mutual edges thereof, except along a portion of the mutual edges - e.g., on one side or edge - thereby forming the pocket. The applicator 52 may be imprinted with graphics 64 such as brand name or logo indicia or other decorative features. The bottom layer 54 of the applicator 52 further includes an odor neutralizing formulation 66 applied-to or embedded
or impregnated into the outer surface of the bottom layer 54. The formulation 66 is further described in Figure 5.

Continuing with Figure 4 a pouch 70 for storing the applicator 52 in when it is not in use is shown. The storage pouch 70 may be formed of a single sheet of flexible packaging film as described herein above, folded along an edge 81 and bonded along opposite side edges 82. The fabrication process is shown in Figure 6 to be described. The pouch 70 includes a top side 72, a bottom side 74, and a closure flap 76 extending from the bottom side 74. The pouch 70 may also include graphics 80 such as decorative features, brand name, or logo indicia imprinted on the outer sides of the pouch. In the embodiment shown a string zipper 78 is provided as a first part on the underside of the closure flap 76 and a second part on the outer surface of the top side 72 of the pouch 70. The closure flap 76 may be folded along the dashed line 84 until the two parts of the string zipper 78 are placed in contact and pressed together. As is well-known, a string zipper is a reusable fastener for a package that includes complementary molded ridges that may be pressed together to seal the zipper. To open the package a user need only grasp the top and bottom sides along the string zipper 78 and pull the sides 72, 74 at their open edges apart to separate the ridges of the fastener.

**Figure 5** illustrates a graphical depiction of an odor neutralizing formulation 88 for use with the embodiment of Figure 4. In Figure 5, a base component may be formed of a mixture of polyethylene glycol ester 90 (PEG ester) and glycerin 92, mixed together in approximate proportions (of the total odor neutralizing formulation) of 86% and 10% respectively. The polyethylene glycol (PEG), which comprises most of the odor neutralizing formulation, is used as a thickening agent and a carrier or vehicle for delivery of the malodor counteractant. The molecular weight of the polyethylene glycol should generally be within the range of 2000 to 7000 g/mol (grams per mole), and preferably approximately 4000 g/mol. One example of the principal ingredient of a suitable base component or thickener is a product named Mapeg® 6000 DS PEG (6000) Distearate, which is available from the BASF Corporation, Florham Park, NJ 07932. This product, which has an average molecular weight of 6000 g/mol, is a polyethylene glycol ester widely used in soaps and other products as emulsifiers, stabilizers, viscosity control agents, and the like. There is also a variety of versions of this product available in
various molecular weights and other parameters, etc. One suitable PEG that is preferred for the present invention is a product called Carbowax™ Polyethylene Glycol (PEG) 4000, which has an average molecular weight of 3600 to 4400 g/mol. Further information about this product is available at www.carbowax.com and is manufactured by The Dow Chemical Co. of Midland, Michigan, 48640.

The glycerin 92 component is included in the formulation to soften the PEG somewhat to enable smooth application of the odor formulation 88 on the user's clothing. Substitutes for the glycerin 92 may include other poly alcohols or long chain poly oils well-known in the art. The combination of the PEG 90 and the glycerin 92 enables slower, more uniform release of the fragrance mixture (to be described). The purpose of the base component 90, 92 is to provide a solid but soft carrier or delivery vehicle for the fragrance mixture. The base component also provides a barrier to the escape of bad odors ("malodors") from the fabric of the person's clothing or the person's hair by providing a thin, transparent, colorless film upon the surface being wiped, yet is washable and leaves no stain.

The odor neutralizer component 94 makes up the remaining 4% of the odor neutralizing formulation 88. One reason for the relatively small percentage - approximately 4% - used in the illustrated embodiment is that typically only a very small amount of a malodor substance is very noticeable. Accordingly, only a very small amount of a counteracting fragrance may be needed to be effective in neutralizing the malodor. Further, it is possible for a limited amount of a fragrance blend or composition to counteract a malodor or to neutralize an odor. For example, in an aroma compound based on an aldehyde, the aldehyde may react with nitrogen in a malodor to form what is known in the art as a "Schiff Base" product that "ties up" the nitrogen malodor materials, thereby reducing the perception of the malodor.

Continuing with Figure 5, in the illustrated embodiment the odor neutralizer component preferably includes a fragrance mixture 94 formulated from an essential oil in combination with at least one aroma compound to provide an odor characteristic that matches the desired odor paradigm. The aroma compound, such as the aldehydes, ketones, alcohols, or esters, as is well-known, react easily with the elements that are
found in malodors - i.e., oxygen, nitrogen, and sulphur. A particular choice of aroma compound may be one of several that would be suitable for the type of clothing wipe 50 described herein. Thus, a preferred choice would be primarily a matter of (a) how the aroma compound reacts with other materials and (b) the desired subjective criteria associated with the scent of the aroma compound. As is well-known, an aroma compound typically may include many ingredients, combined in a proportion to yield a particular aroma or scent, in varying degrees of strength or intensity, duration of effects, etc., to name just a few kinds of characteristics.

In the present formulation these aroma compounds may include chemicals of an aromatic or aliphatic nature such as aldehydes, ketones, alcohols, esters, and/or materials containing oxygen, nitrogen or sulphur. One example of a fragrance mixture is perfume, which is a mixture of essential oils, aroma compounds, fixatives, and solvents, each selected to yield a desired particular effect. A typical recipe may include primary, secondary, and tertiary components, for example. In the present invention, a fragrance mixture that presents a "clean linen" scent is suggested as one non-limiting example of many possible fragrance mixtures and fragrance paradigms that may be used in a device of the type described herein, including active scents (typically associated with masculine users) and floral scents (typically associated with feminine users) for example.

Figure 6 illustrates a flow chart of one example of a method of manufacture of the embodiment of Figures 4 and 5. As is well-known, many products made from thin film or fabric materials may be suitably processed on web processing facilities. Web processing typically receives material from a bulk roll of material and may include mechanisms in various sequences for imprinting, coating, folding, bonding, depositing other substances thereon, cutting, filling, laminating, etc. Such processes are among those suitable for manufacturing both the applicator 50 and the pouch 70 described herein in Figure 4. Figure 6 depicts one such process applied to fabricate both the applicator 50 and the pouch 70. The method employs several web processing lines that begin with individual components of the clothing wipe, wherein the separate web processing lines or branches are merged in a single step to combine the individual processing lines or branches to join together two components of the finished product. This merging step may occur more than once, as illustrated in Figure 6.
Continuing with Figure 6, the flow for fabricating the applicator may begin at step 110 to load the web processor with the material for the top layer 56 of the applicator 52 followed by step 112 to imprint the top layer 56 with selected indicia or graphics 64 before sending the imprinted material to step 114. In a parallel process the material for the bottom layer 54 is loaded into a separate branch of a web processor in step 116 for forwarding via step 118 to feed the bottom layer 54 material through a machine such as used for a slot dye process to deposit measured amounts of the odor neutralizer formulation 66 onto the surface of the bottom layer 54. The odor neutralizer formulation 66 may be prepared in a step 120 and advanced to step 122 to be applied to the bottom layer 54 of the applicator 52.

As is well known, a slot dye process is adapted to dispense a measured amount of a substance from a narrow slot opening across the width of a moving belt of the film or fabric to be coated or imprinted. As readily understood by persons skilled in the art, alternatives to the slot dye process exist that also deposit a uniform coating of a material in fluid, powder, or granular form upon the surface of a fabric. The choice is best made to suit the particular form of the product being fabricated. The slot dye process is described as one readily understood method of applying a uniform coating of material to a surface of an object.

Following deposit of the odor neutralizer formulation 66 the material for the bottom layer 54 is next prepared to be aligned with and joined to - i.e., merged with - the material for the top layer 56 in step 114. Following alignment, the flow advances to step 124 wherein the line of applicators formed to that point may be cut into separate applicators 52 followed by bonding the side and rear edges 58 of the aligned top 56 and bottom 54 layers together in step 126. Such bonding may utilize an ultrasonic bonding process to bond the edges of the top 56 and bottom 54 layers to each other, thereby forming an applicator 52 that may be worn as a small pouch or finger mitt as depicted in Figure 3, or a sleeve as illustrated in Figures 8 - 10 that is slipped over the user's fingers. After the bonding step 126 the completed applicator 52 may be merged with the storage pouch 70 in step 128 and inserted into a storage pouch 70. The storage pouch 70 may be fabricated in a similar way to be described. In the bonding step, several alternative processes may be used including continuous ultrasonic, uniform discontinuous
ultrasonic, and a stitched bond. The stitched bonding may be stitched with a thread material or be simulated by an intermittent (discontinuous) ultrasonic bonding.

Beginning at step 130 with loading the flexible packaging film for fabricating the pouch 70 the flow advances to step 132 to imprint the flexible packaging film with indicia such as product or brand name, logo, colorful graphics, instructions for use, other text to comply with regulatory requirements, etc. following imprinting, the imprinted film passes through a station to cut the blanks of the pouch 70 to size in step 134 before being folded, and the aligned side edges are bonded, again by an ultrasonic process, for example. The completed storage pouch 70 is aligned to merge with the completed applicator 52 in step 128, wherein the applicator 52 is inserted into the pouch 70, including folding over the flap 76 to seal it against the top layer 56 by pressing the two sides of the string zipper 78 together or otherwise securing the closure. The process may then deliver the finished clothing wipes 50 to a bulk packing station 138 to prepare them for shipment. Typically the clothing wipes manufactured as described may be packaged in quantities of one dozen to multiples of a dozen, for example. The packed products may proceed to a station 140 that tests whether the package is to be shipped immediately in step 142 according to an order or transferred to inventory in step 144. At this point, the flow ends.

As will be readily understood, the example of the fabrication process depicted in Figure 6 is merely illustrative of one of several possible ways that the manufacture of these clothing wipe products may be accomplished. As noted herein above, the clothing wipe is a delivery vehicle well-suited to a wide variety of applications for delivering chemical-based products to the surface of a person's clothing or hair or skin. Its structure, regardless of the particular chemical formulations applied to the bottom layer of the clothing wipe, is thus basically the same as that described herein and adapted to being fabricated in the processes described and illustrated herein.

Figure 7 illustrates an alternate embodiment 150 of the applicator storage pouch 70 shown in Figure 4. As in Figure 4, the pouch 70 may be formed of a single sheet of flexible packaging film as described herein above, folded along an edge 81 and bonded along opposite side edges 82. The basic fabrication process as shown and described
in Figure 6 may be used. The pouch includes a top side 72 and a bottom side 74, and may also include graphics 80 such as decorative features, brand name, or logo indicia imprinted on the outer sides of the pouch. In the embodiment of Figure 7, a closure flap 152 extends from the bottom side 74. A retaining strap 154 for the flap 152 extends from each side edge 82 of the pouch where it is bonded to the respective side edge 82 at the locations 156 shown in figure 7. The flap 152 provides for closing and opening the pouch 70. Persons skilled in the art will realize that other closure methods or mechanisms are possible such as other types of zip fasteners, releasable adhesives and the like.

Figure 8 illustrates a first alternate and preferred embodiment of the applicator. In this embodiment of the applicator 152, both ends of the applicator 152 are open, thereby forming a sleeve to permit the user's fingertips to extend beyond the end of the applicator. Further, the bonding of the bottom 154 and top 156 layers on either side edges 166 of the applicator 152 is indicated by the dashed lines 158. Indicia 168 are shown on the top layer 156. The same materials are used in the fabrication of this embodiment as the embodiment of Figure 4 but the structure is slightly different, reflecting improved utility and only one of several other possible variations.

Continuing with Figure 8, the applicator 152 is formed by bonding a bottom layer 154 of a suitable material to a top layer 156 of a suitable material along first and second side edges 166, leaving both ends 160 open - i.e., forming a sleeve by providing a passage between the first and second layers - to enable a user to insert at least two fingers in and through the space or passage 162 between the layers 154, 156 of the applicator 152 during use. The feature of permitting the user's fingers to extend through the passage or sleeve 62 of the applicator 152 has been found to work well because the applicator 152 is less likely to slip off the user's finger during its use. The bonding of the top 156 and bottom 154 layers is indicated by the dashed lines 158 along the side edges 166 of the applicator 152. The dashed lines 158 may indicate the location of ultrasonic bonds or, alternatively, the stitches of a sewn binding. The applicator 152 may be imprinted with graphics 164 such as brand name or logo, or indicia 168 or other decorative features. The bottom layer 154 of the applicator 152 further includes an odor neutralizing formulation 66 embedded, impregnated, or other wise applied into or upon the outer surface of the bottom layer 154. The odor neutralizing formulation 66 is further described
in Figure 5.

**Figure 9** illustrates a second alternate embodiment of the applicator. In this embodiment of the applicator 172, both ends of the applicator 172 are open to permit the user’s fingertips to extend through the space 182 between the bottom 174 and top 176 layers of the applicator 172. In this embodiment the top layer 176 is formed as a strap across the mid-section of the applicator 172. The bonding of the bottom 174 and top 176 layers on either side of the applicator 172 is indicated by the dashed lines 178, and indicia 188 are shown on the upper layer 176. This embodiment of the applicator 172 is a variation of the embodiment depicted in Figure 8 that may be implemented to save cost, for example. The same materials are used in its fabrication but the structure is slightly different, reflecting one of several possible variations.

Continuing with Figure 9, the applicator 172 is formed by bonding a bottom layer 174 of a suitable material to a top layer 176 or strap of a suitable material along both side edges 180, leaving both ends of the applicator 172 open to enable a user to insert at least two fingers in and through the space 182 of the applicator 172 during use. The feature of permitting the user’s fingers to extend through the space 182 of the applicator 172 in the manner of a sleeve has been found to work better because the applicator 172 is less likely to slip off the user’s finger during its use. The bonding of the top 176 and bottom 174 layers is indicated by the dashed lines 178 along the side edges 180 of the applicator 172. The dashed lines 178 may indicate the location of ultrasonic bonds or, alternatively, the stitches of a sewn binding. The applicator 172 may be imprinted with graphics 184 such as brand name or logo, or indicia 188 or other decorative features. The bottom layer 174 of the applicator 172 further includes an odor neutralizing formulation 66 embedded or impregnated into or otherwise applied upon the outer surface of the bottom layer 174. The odor neutralizing formulation 66 is further described in Figure 5.

**Figure 10** illustrates a pictorial view of the use of the first or second alternate embodiments of the applicator. This view is similar to Figure 3 except the user is shown with the embodiment of Figure 8 in use. The use of the embodiment of Figure 9 is similar. The applicator 152 is shown being manipulated by a wiping action against the
clothing 190 of a user, as indicated by the arrows 196. The user's fingertips 192 of his or her hand 194 are inserted into the space or sleeve 162 between the bottom 154 and top 156 layers of the applicator 152. In a preferred embodiment, the space 162 in the applicator 152, when opposite sides 166 (See Fig. 8) of the applicator 152 are squeezed slightly, opens wide enough to receive two fingertips 192 therein for manipulating the applicator 152. Once installed on the user's fingertips, his or her hand 194 is moved in a side-to-side motion 196, rubbing or wiping the lower surface portion (not visible in the figure, but will be readily understood) of the bottom layer 154 against the surface of the clothing 190. This action causes the release and transfer of the odor neutralizing formulation 66 (See Figure 5) from a portion of the bottom layer 154 to the surface of the user's clothing 190. An important attribute of the applicator 152 (and also other embodiments thereof as described herein) is that it enables a controlled release of the amount and strength of the fragrance component upon the user's clothing or hair when rubbed against these surfaces.

The applicators 10, including embodiments 52, 152, 172, and variations thereof, described herein above may be used multiple times and stored in a person's pocket or purse when not in use. However, in an alternate embodiment, the applicator 10 may be enclosed in a protective wrapper (See, e.g., Figure 4) that is removed by the user prior to use. This wrapper or pouch may be configured to retard deterioration or prevent inadvertent dispersion of the odor neutralizing formulation or odor masking substances that may occur between uses. In another alternate embodiment, a protective layer of thin paper or plastic material having a low tack adhesive may be attached as a fourth layer (not shown) to the underside of the carrier layer 26. To activate the carrier layer 26, the user need only remove the fourth layer for use and replace the fourth protective layer over the carrier layer 26 after use. In a variation of this alternate embodiment, microcapsules of the odor neutralizing substance may be embedded in the adhesive that secures the protective layer to the carrier layer. Such microcapsules are well-known in the art for incorporating sample fragrances in periodical advertisements for the fragrance products. The microcapsules are ruptured when the protective layer is peeled away from the carrier layer, thus releasing or activating the odor neutralizing substance just prior to the use of the applicator 10. In another variation the fragrance mixture may be encapsulated in a starch compound, for example. Encapsulates act to retard the volatility
of the fragrance mixture until it is released by contact or other action to open the encapsulate. Other mechanisms are spray dry fragrances, which can be deposited on clothing and released with friction against the fabric.

While the invention heretofore described has been shown in only one of its forms, it is not thus limited but is susceptible to various changes and modifications without departing from the spirit thereof. For example, the embodiment illustrated in the drawings is shown with the opening disposed in one of the longer sides of the applicator 10. In one modification (not shown because its appearance is readily visualized to one skilled in the art, based on the structural features shown in Figures 1, 2 and 3), the opening for receiving the user's fingertips may be provided in one of the shorter sides of the applicator, thus permitting insertion of the user's fingers to a greater extent to provide a firmer grip on the applicator 10.

In another modification, the applicator 10 may be enlarged such that a user's entire hand fits within the pocket 28 between the substrate 24 and carrier 26 layers. This configuration enables the use of the applicator as a hand mitt, for applying odor neutralizing substances to a larger fabric surface area, for example, such as to upholstery in vehicles or on furniture or draperies and curtains in offices or residences, etc.

As noted herein above, potential market segments for clothing wipes as described herein may be gender-specific or unisex, or directed to particular kinds of activities such as indoor or outdoor, social or business or recreation, etc. Other applications may include clothing wipes that are formulated as insect repellants or other ancillary uses besides refreshing the scent or odors present on a person's clothing or hair. Other applications may include wipes having formulations adapted to a person's skin surfaces. Such applications may include ingredient formulations based on other types of ingredients in other proportions, etc. Thus, the clothing wipe described herein is only one example of a versatile delivery system for scented or other chemical formulations configured for a wide variety of personal care products.
Yet another modification is to provide a pouch or sleeve 70 as described in Figure 4 for enclosing and storing the applicator 10 within when not in use. Such a pouch or sleeve may also protect the carrier layer 26 from contact with other surfaces or substances that could degrade its functional characteristics. A sleeve could also be employed as part of a mechanism for activating the applicator just prior to use, if that is a particular objective of the product. In this embodiment, removing the applicator 10 from enclosure or contact with the sleeve may serve to activate the odor neutralizing substance for use.

In the following paragraphs several alternate embodiments are described: (A) A clothing wipe comprising: a mixture of PEG, glycerin, and a fragrance, said mixture forming a dry formulation deposited on a surface of a handheld applicator; (B) A reusable clothing wipe for freshening a person's clothing, comprising: a handheld applicator having a first outer surface; and an odor neutralizing dry formulation deposited on said surface of said applicator; and (C) A method for neutralizing odors on clothing, comprising the step of: transferring a dry formulation of polyethylene glycol (PEG), glycerin, and a fragrance from an applicator to the surface of a person's clothing, skin, or hair, or to other surfaces as will be described.

The more general form of the clothing wipe described herein may be adapted to a variety of applications, all of which embody the principles set forth herein and in the appended claims. The principle concept of the present invention, contrary to conventional practice in the industry that typically teaches complex combinations of numerous ingredients, is of a dry formulation of the combination of only three ingredients in carefully selected proportion and applied to the applicating surface of a wipe applicator that fits on a person's fingers or hand. The wipe is small, portable, reusable, convenient, and inexpensive to manufacture and use. From the foregoing description and further details to follow it is important to understand that the wipe described herein contains and is specifically adapted to dispense a dry formulation onto the intended surface, to avoid leaving any stain or residue that cannot be washed by conventional means. This is in distinct contrast to conventional wipe products heretofore available that are typically characterized, and limited to, the use of dry formulations that must be activated with water before use, or the use of wet formulations, some of which leave a residue that is difficult to remove or which can even damage the surface finish if applied too copiously.
or with improper technique. Such wet formulations would be inappropriate for the uses disclosed herein because of the risk of stains, damage or harm to the surfaces contemplated for the present dry wipe invention.

The embodiments described in detail herein are provided to illustrate without limitation the concepts or principles of a dry wipe system for dispensing or delivering a malodor counteractant to a surface that a person wishes to freshen. As one example, any fragrance that can be delivered by the applicator may be used, from among the hundreds available. The clothing wipe can be used in a variety of scenarios or locations in which clothing is subject to picking up different kinds of odors such as an indoor dance event, a night club, an athletic event, a downtown (out of doors) event, movie theatres - any number of places that may have characteristic odors that a user might want to counteract with the clothing wipe. The wipe could also be used to "freshen" a user's skin and / or hair after an active dance or other circumstance where perspiration is likely to arise.

Some of these characteristic odors might be: perspiration, other perfumes and fragrances, automobile exhaust, cooking and food odors, tobacco smoke, mildew, popcorn, etc. Neutralizing these odors may require different scents or different proportions of the constituents of the scent. For the example of strong or noxious odors, either a higher % of fragrance or a fragrance that provides more complete masking would be suitable.

Another example provides a wipe that replicates a user's cologne or perfume so as to refresh his or her's own "scent." For instance, a cologne or perfume customer could receive an applicator packaged or supplied with a cologne or perfume product that is already prepared for use or that the customer could prepare by adding the cologne or perfume themselves before going to an event.

As yet another example, the wipe can be used by workers in industrial settings, such as automotive repair, machine shops, paint shops, kitchens, bakeries, butchering facilities, feed stores and the like - that is, any work environment that contains strong or unpleasant odors. In such cases, where the workers may need to mingle or meet with
customers or executives, a clothing wipe may be used to advantage.

Extending the scope of the concept and principles described herein, one may be led to uses of the dry wipe (as distinguished from so-called wet wipes or delivery systems that spray a liquid substance on to a target surface or in the air that are well known in the art) to freshen household surfaces such as furnishings and countertops, to wipe the fur of pet animals such as dogs, cats or other animals, and to freshen the interior surfaces of automobiles, trucks, airplanes and other vehicles, for example. The fragrances selected or developed and the size of the applicator may be adapted to each specific application. In most applications a scented fragrance to match the particular odor neutralization task is important; in some other applications a formulation that is unscented or provides only a very slight scented presence may be preferable.

Referring to Figures 4 through 10, previously described for an exemplary embodiment to illustrate the concepts of the invention, persons skilled in the art will recognize that a number of alternate embodiments are possible, either identical with or are close structural equivalents or derivatives of the embodiment illustrated in the figures. Accordingly, reference to the figures as previously described should enable persons skilled in the art to readily understand the structures of the various additional alternative embodiments to be described herein below.

For example, in the dry clothing wipe described, the fabrics used to form the applicator, the odor neutralizing formulation deposited on the surface of the applicator, and the scent provided by the formulation use materials, ingredients, and have characteristics that may be varied within the overall concept of the illustrated embodiments - a personal care or wipe device that is configured for delivering a dry odor neutralizing formulation from a convenient, reusable applicator to a person's clothing, hair, or skin or other intended surface.

Selection of the fabric for the applicator may be from among a wide variety of materials. The dispensing component portion of the dispensing device is preferably a fabric that has an affinity for water - i.e., is hydrophilic - such as a non-woven, spun bonded polypropylene fabric or its equivalent. The fabric chosen for the applicating surface of
the wipe must be able to receive deposition of the dry formulation on it during manufacturing, retain it without significant absorption during storage or non-use, and disperse it readily but controllably onto the target surface when it is wiped against it. Other essential properties or characteristics may include color, surface texture or roughness, and so forth, as will be described.

Further, the fabric chosen must be low in cost, which favors non-woven fabrics made by such processes as spun bonding, or pressing the fibers together. Moreover, the fabric must be suitable for automated manufacturing processes, including machine operations such as cutting, bonding of pieces together, etc. Various synthetic fibers may be used to make fabrics suitable for receiving a deposited dry formulation thereon that may subsequently be applied or transferred to another fabric surface simply by wiping the applicator along the other fabric or surface. In some applications, it may be advantageous to form the applicator of fabrics of a color that is selected to mask the particles of dust, strands of hair, etc. that may be picked up by the applicating surface of the applicator as it is rubbed across the surface to dispense the dry formulation. In other applications, the applicating surface may include features or textures that attract or retain or adhere to such particles of dust or hair and the like that are encountered by the wipe, to enable their removal as well as freshening the surface being treated by the wipe.

Selection of the fragrance to be used in the formulation presents a different kind of task because the applicator may be adapted to a wide variety of uses simply by choosing a particular fragrance from among many that are available. Further, the proportion of the fragrance in the formulation may be varied depending on the circumstances of use of a specific embodiment of the wipe and characteristics of the fragrance. As is well known, fragrances are typically effective in relatively small amounts, such as ½ % to 10% of a combination of ingredients for most applications and, in the present invention, may preferably be on the order of 1% to 5%, generally determined empirically.

As is well known to persons skilled in the art, fragrances or scents may be classified or categorized in several ways, depending on the use of the fragrance or the interests of the person or entity that organizes the categories. Most such categories will overlap to a strong degree. Thus masculine scents may include category members not present in
feminine scent categories. Others may include both. Still others may include categories for determining industrial or cleaning uses of scents and fragrances.

For example, scents that may be found in cleaning products may include cedar, cinnamon, citrus, cotton, lemon, sage, etc., while scents for use in a dry clothing wipe as described herein may appropriately be selected from perfumes or colognes preferred by masculine or feminine users. Such scents or fragrances for the latter uses may be classified as floral, citrus, fougere (fern-like), woody, oriental, spice, etc. Still others may be categorized as clean cotton or clean linen to impart a freshened or clean scent to one's clothing - not unlike freshly laundered clothing - after using the wipe.

Neutralizing odors using fragrances or scents can be accomplished either by chemical interaction of the scent compound with the molecules of the malodor, or by masking or covering the malodor with a stronger but pleasant scent. Both methods are suitable for use in clothing wipes as described herein and other forms of wipes using a dry formulation. In some special applications special scents may be developed, and some embodiments may even be available with an array of optional scents.

Producing or formulating a fragrance having a given scent typically involves mixing selected essential or fragrance oils in predetermined proportions. Essential oils are volatile or aromatic liquid extracts from plants. Synthetic "fragrance oils" mimic the aromatic aspects of botanical oils. The resulting mixture may be mixed with alcohol and or distilled water. The resulting scent or fragrance is then combined with the base component of the odor neutralizing formulation, which may be the mixture of the polyethylene glycol (PEG) and glycerin, for use on the clothing wipe disclosed herein. In general, the process of mixing the ingredients proceeds as follows. (1) In a suitable vessel, heat the PEG at about 70°C until fully liquid; (2) add the glycerin and mix well until uniform; (3) add the fragrance and continue mixing until uniform; and (4) cover until ready for depositing on the substrate layer - the fabric dispensing component of the various embodiments described herein. The amount deposited will typically be in the range of 0.1 to 0.5 grams per square inch (or about 0.01 to 0.08 g/cm²) but can be adjusted depending on the application.
The dry wipe technology described herein may be adapted to a wide variety of applications for freshening surfaces of a person's skin, hair; or surfaces of household or office furnishings, appliances, and fixtures; or the hair, fur, or feathers of pets such as dogs, cats, rabbits and other rodents, birds, etc.; or the surfaces in the interiors of automobiles, trucks, airplanes, boats, and the like. Most such adaptations are easily accomplished by varying the size of the applicator, the materials used in its construction, or the formulation and the accompanying fragrance selected for the particular intended surface application.

For example, a home or office wipe may require a larger applicator such as a mitt to accommodate a person's entire hand, which is basically a scaled up version of the applicators depicted in the drawings herein, including the open-ended construction of Figures 8, 9, and 10, or the single-ended embodiment shown in Figures 1 through 4. A dry wipe for household surfaces may be configured by appropriate selection of size, fabric, and formulation to adapt to freshening the surfaces of any and all articles found in homes or offices without limitation such as tables, counters, cabinets, chests, chairs, sofas, bedding, rugs or carpets, lamps, appliances, TV and electronic equipment, baskets for laundry and trash, and decorative objects. Fragrances adapted for household dry wipes may preferably be provided with an outdoor "fresh air" scent or, for another example, the ever-popular lemon scent frequently used in wet wipe formulations.

In a further embodiment of a dry wipe adapted to uses on pets - dogs, cats, rodents, even pet birds, for example - the applicator may be provided in the same size as for the personal clothing wipe depicted herein or in a larger, "mitt-sized" applicator that can accommodate a person's hand. Such a wipe would have a fragrance adapted to the particular animal, one for dogs, another for cats, perhaps unscented for animals that might be sensitive to particular fragrances, etc. The wipe may also be configured structurally to better suit the surface being treated, as in the case of pets or other animals with fur, hair, or feathered skin. In other words, the bottom, applicating side of the wipe may be configured differently than a clothing wipe for personal (human) use. For example, the bottom layer of the applicator may have a texture or a rough, nappy surface, or be configured with an array of bristles (as in a brush) so that it more readily picks up particles of dust or hair, etc. during use while freshening a surface.
Alternatively, the bottom portion of the applicator may be configured with a comb-like structure in combination with the dry odor neutralizing formulation to enable use of the dry wipe to transfer the formulation to the hair or fur of a pet animal during grooming. In other embodiments not shown but contemplated herein include those in which the bottom layer or fabric of the applicator, which is impregnated or otherwise includes the dry formulation deposited thereon, may be configured with alternating strips of the normal fabric described above situated between strips of textured or bristled material, or nappy fabric. In yet another example, the bottom layer or portion of the applicator may be a darker color so that particles of dust or hair or feathers that adhere to the wipe during use might be less visible.

Yet another alternate embodiment of a dry wipe may be configured for use to neutralize the odors that accumulate or otherwise become deposited on the interior surfaces of an automobile, truck, aircraft or other vehicle. Such a dry wipe might preferably be provided with a hand mitt-sized applicator because of the convenience of the larger area of the applicator and its ability to be installed on a person’s hand. The bottom layer of the applicator and the fragrance used may be provided in several versions, each adapted to use with a different kind of surface that might be encountered in the interior of the vehicle, such as fabrics of different textures, leather, hard, polished trim surfaces, etc. Again, the bottom portion of the applicator having the dry formulation in combination therewith may be specifically configured to best adapt it to the surface being treated with the dry odor neutralizing formulation.

The description above and the description which follows disclose a number of additional alternate embodiments to illustrate the scope of the concepts and principles of the present invention as set forth in the appended claims. Some examples of structures and materials that are equivalents as they are expressed in the various distinct embodiments that share all of the same concepts and principles. Persons skilled in the art will recognize the existence of and be familiar with alternatives to each of the materials suggested herein. In other words, the fabrics and their equivalents, the polyethylene glycol (PEG) and its equivalents, the glycerin and its equivalents, the fragrances or malodor counteractants and their equivalents, as each is selected for use in the particular embodiment of the invention appropriate to the surface desired to be treated - i.e.,
freshened - with the dry formulation wipe described herein, are all contemplated in the foregoing description.

For example, the polyethylene glycol (PEG) material used as a thickening agent and carrier in the dry wipes described herein is selected from a hydrophillic compound having a range of molecular weights and viscosities from liquid through solid. In the present invention it is preferred that PEG compounds, or acceptable substitutes therefor, of medium to moderately high molecular weight, e.g., within the range of 2000 to 7000 g/mol and preferably approximately 4000 g/mol, or at least semi-solid consistency be used such that the combined formulation is essentially dry when the applicator is removed from its storage pouch or other container for use on an intended surface. The glycerin is added to improve the smoothness, uniformity, and spreadability of the formulation. Other odorless, viscous supplements may be used as long as the mixture of the base material such as the PEG or its substitute and the supplement used are compatible and the resulting mixture provides a suitably dry delivery vehicle for the fragrance or malodor counteractant from the surface of the applicator to the surface that is intended to be freshened by use of the wipe, whether, as appropriate, it is configured as a clothing wipe, a household wipe, a pet wipe, or an automotive interior wipe and the like.

There are other chemical categories that could potentially be used in place of the polyethylene glycol as long as they are solid at room temperature and will give a limited deposition when the applicator is wiped on a surface. Categories such as paraffin waxes, glycerides, coco butters, fatty alcohols, ethoxylated alcohols, emulsifiers, hydrogenated oils, etc. may perform suitably with this type of product. Also there are other emollients that can be potentially be used in place of the glycerin, such as propylene glycol, low molecular weight glycols, alcohols and other solvents that will soften the substrate and have a low volatility so that the product will have a proper shelf life without drying and becoming brittle. Blends and mixtures of the above chemical classes can also achieve the desired end product, i.e., a mixture of polyethylene glycol plus paraffin wax or a solid longer chain aliphatic alcohol could serve as the major ingredient in the formulation.
In a broadened sense, the clothing wipe concepts described herein above provide illustrative examples of a reusable dry formulation fragrance system such as a dry formulation grooming aid - a device or method or system using a dry formulation that usually includes a fragrance that is delivered or dispensed by some sort of device (wipe, brush, roller, pad, mitten, glove, etc.) for the purpose of performing some grooming action on a person's clothing, hair or skin; a pet's hair or fur coat; the surface of an object such as home or office furnishings, automotive (or other vehicle) interiors, etc. It should be understood that the term "grooming" is used in the broadest sense as treating a surface in some useful way by applying the dry formulation fragrance or other component to the surface. Further, the dry formulation is understood to be a mixture that is dry as deposited on the dispensing component prior to use and dry as dispensed on - delivered to - a target surface during and after use. The term "dry" means non-liquid, as in a polymeric matrix. Examples of the variety of applications are discussed in the foregoing description. The description which follows discloses several exemplary embodiments to illustrate structures of the delivery system adapted to satisfying the differing requirements of many of these alternative applications. In some applications the grooming may be accompanied by treating the target surface in some way in addition to depositing a fragrance to the surface. Examples include applying sun-screen, insect repellant, or in the case of pets, an antidote to fleas, etc. Accordingly, a variety of embodiments to be described herein below provide more kinds of such devices, methods or systems for the delivery of dry formulations having scented or unscented, specifically treated or untreated properties that have utility, primarily but not limited to, a grooming application.

For purposes of the present invention, the term "dry formulation" means that the fragrance component (or other substance delivered as a part of the dry formulation) is dispersed in a solid form material such as a polymeric matrix, as opposed to being conveyed in a liquid base or carrier. At normal room or outdoor temperatures, the formulation is dry - i.e., not liquid and not viscous - on the dispensing surface, and it is dry on contact with the target surface as it is applied to the target surface. For example, dry on the dispensing surface means that it is dry in the same way a hard wax finish is dry after it is applied to the dispensing surface. Similarly, dry on contact with the target surface means that after application the dry formulation leaves the fragrance on the surface, usually with only minimal traces of the polymeric matrix (the PEG + glycerin, the
delivery agent or carrier or base component). It is a key attribute of the dry formulation of the present invention that, after application - usually by a wiping or roll-on action of the dispensing device - it is present on the target surface only in trace amounts and is thus basically imperceptible except by detecting the scent of the fragrance or the absence of the malodor. In other words, the formulation is invisible but the fragrance or absence of the odor is what is perceived. Moreover, the dry trace residue if any is clear and essentially colorless, it leaves no stain, and is readily washed when the target surface is cleaned. In contrast, other "dry" products such as chap stick, underarm deodorants, lipstick, etc. intentionally leave a residue of the formulation as the intentional object of its use.

Thus, the carrier or base component of the dry formulation fragrance provides the medium for conveying the fragrance component from the mixing or composition stage, wherein the PEG and the glycerin are mixed in their viscous phase at elevated temperatures, to the application surface of the dispensing device during manufacture, where it becomes dry as it cools below approximately 100°F, and from the dispensing device to the user's target surface as it delivers or transfers the fragrance component during use. The carrier or base component is formulated to be dry at normal temperatures, to deposit the fragrance component evenly upon the target surface, while leaving no stain or significant residue or traces of the carrier component on the target surface.

When describing the proportions of the ingredients of the dry formulation fragrance or other combination, the amounts are preferably expressed as "weight percent" of the total weight of the formulation. Thus, for example, the dry formulation might be expressed as a mixture of approximately 80 to 90 weight percent polyethylene glycol (PEG) and approximately 6 to 16 weight percent glycerin and approximately 0.5 to 10 weight percent fragrance component. Further, the primary base component, a polyethylene glycol ("PEG") may include its molecular weight, such as 3000 to 5000 g/mol. for example, with a preferred range of 3500 to 4500 g/mol. Moreover, the proportion of the fragrance in the formulation may be varied depending on the circumstances of use of a specific embodiment of the wipe and characteristics of the fragrance. As is well known, fragrances are typically effective in relatively small amounts, such as ½ % to 10% of a
combination of ingredients for most applications and, in the present invention, may preferably be on the order of 1% to 5%, generally determined empirically.

In the more general case of alternative embodiments to the illustrated examples described herein, the following data is supplied as a guide to the parameters of manufacture.

The percentage of solid (polyethylene glycol) ingredient needs to be sufficient to cause solidification of the formulation at temperatures at which the product would normally be used. This would require ranges as follows:

- Waxy or solid ingredients: 40 - 95%
- Emollients or solid ingredient softeners: 5 - 40%
- Fragrance or odor fighting ingredients: 1 - 20%

Other ingredients can be added to this formulation for desired effects. This could be, but not limited by, ingredients such as antistats to reduce static electricity, skin conditioning ingredients such as vitamins, Aloe Vera, etc, surfactants or cleaners, coloring agents, etc.

The percentage of additional ingredients could be as low as 0.05% for certain very active ingredients to as high as 50% to achieve the desired effect such as incorporating a cleaning agent into the formulation. For example:

- primary alcohols 0.001% - 50%
- secondary alcohols 0.001% - 50%
- aldehydes 0.001% - 100%
- esters 0.0001% - 100%
- ketones 0.0001% - 50%
- phenolic compounds 0.0001% - 50%
- any other recognized aromachemical compounds 0.00001% - 100%

To prepare the formulation for deposition onto the dispensing pad or substrate, the solid ingredient(s) need to be heated until liquid. With the formulation listed above, this requires a temperature of 50-90 degrees Celsius (122-194 F). The fragrance is usually added to the batch at the temperature where the mixture is still liquid, but as low as
possible to avoid vaporizing the more volatile ingredients in the fragrance. The final
formulation is applied to the substrate while the batching is still liquid, generally when the
temperature has been allowed to drop to the lower end of the heating range. This is likely
in the range of 60 - 70 Celsius (140 -158F), but the application temperature of the
formula is dependant on both the formulation ingredients as well as the equipment and
the process used to apply the formulation to the substrate.

The end product formulation is a solid at room and temperatures up to 120 +/- 20
degrees Fahrenheit. The consistency is like a candle wax or a hard shoe polish so that
when the applicator is rubbed onto clothing or other surfaces, the odor fighting fragrance
in the formulation will be transferred to the surface. If the product formulation is too soft,
to much of the waxy formulation will be applied and if the formulation is too hard the
amount of product deposited to the surface will not be sufficient to achieve the desired
effect.

The formulation contains both solid and liquid ingredients as described above. The solid
ingredient from the supplier can be in powdered, prilled or solid form. Both the fragrance
and emollient softener (glycerin) in our formula are liquids for all normal encountered
temperatures. During the process batching and heating as described above, the mixture
becomes a liquid and stays a liquid until the mixture cools below its solidification
temperature. With our formulation, the solidification temperature is about 145F (+/-
10F). As it's applied to the applicator it cools very quickly for the proper handling and
packaging.

In the following detailed descriptions a variety of alternative embodiments of the invention
are presented, to illustrate various ways that the concept of applying a dry formulation
containing a fragrance component or a substance with other chemical properties or
scents to mask or neutralize odors that accumulate on surfaces can be applied as a
grooming aid to a wide variety of such surfaces. This concept enables, for example,
grooming of a person's hair, skin, or clothing; the hair or fur coat of a pet or other animal,
or even the "fur" of a fur coat, natural or synthetic; the surfaces of upholstery or
furnishings of an office, residence, customer areas in business establishments; or the
interior surfaces of vehicles, private or engaged in public transportation, and the like.
By way of illustration and not limitation some embodiments are configured as brushes having a wipe surface incorporated in the bristle portion of the brush. Others may have a roller device incorporated into the brush to transfer the fragrance formulation to the target surface by rolling it on as the brush is passed through the hair or fur coat or otherwise used to brush the target surface. Still others are configured as rollers for rolling along a surface without the need for brushing to dispense or deliver the fragrance component to clothing, upholstery, or other surfaces. Further, still others are wipes configured for being slipped over a person's fingers or hand, similar to the clothing wipes described previously in the present Detailed Description. The embodiments described herein include removable or replaceable dispensing components having a dry formulation fragrance or other substance - some configured as a removable cartridge or the like - that add a fragrance to the target surface or absorb or mask odors accumulated on a target surface such as skin, hair, clothing, upholstery, etc. The wipe surfaces or the roller surfaces of the dispensing devices may be reusable and replaceable. Several different brush styles are illustrated to suit different kinds of target surfaces to which the fragrance component may be applied. Other embodiments include gloves or mittens, which are adapted to efficient application of the fragrance component to furnishings or upholstery in buildings or vehicles, for example.

Beginning with Figure 11 various embodiments are illustrated, some of which employ the same structural features or components as depicted in previous figures and are thus identified by the same reference numbers. The embodiments depict exemplary devices to illustrate the concepts and principles of the invention but do not exhaust the possibilities for implementing the invention. Accordingly it is intended that persons skilled in the art may apply the concepts illustrated herein to practice the invention without departing from the scope of the invention as set forth in the appended claims.

A structural feature common to all of the embodiments described herein is a dispensing surface that includes a coating of the dry formulation fragrance described herein. The dispensing component portion of the dispensing device is preferably a fabric that has an affinity for water - i.e., is hydrophilic-such as a non-woven, spun bonded polypropylene fabric or its equivalent that is coated with the dry formulation in a manufacturing process that precedes the manufacture of the apparatus that supports the dispensing device in
a form convenient for hand-held use. In most embodiments the side of the fabric dispensing component opposite the coated side is also coated, but with a low tack or other type adhesive to secure the fabric to a part of the dispensing device or to enable multiple layers of the fabric to be applied to the dispensing device. Thus it will be understood that when a structural element is identified as a roller, or a wipe pad or surface, it will include the dispensing component (the fabric) and the coatings as described above. In the figures, the dry formulation fragrance coating is visible and indicated by the shading on the respective surfaces in the drawings. Thus, a reference number for the dispensing component will represent the fabric and the coating thereon.

Further, in most embodiments, at least one edge of the dispensing component may be uncoated along a narrow band at the edge of the fabric to enable convenient removal of a top layer of multiple layers of the fabric to replenish the dispensing device with a fresh dispensing component. For example, in the embodiment of Figures 11, 12, and 13, the roller element 214 includes a dispensing component 215, which is to considered as one or more layers of a fabric material coated on the outer surfaces with the dry formulation fragrance and on its opposite side with a low tack adhesive. There will be a few exceptions to this structure, which will be identified as needed.

Referring now to Figures 11, 12, and 13 several views of an embodiment of the invention configured as a brush-type dispensing device are illustrated. The brush 200 is depicted in Figures 11, 12, and 13 in top, bottom, and exploded views respectively. Brush 200 includes a bottom side 202 having bristles 204 attached to the bottom side 202 typically in an orderly and uniform array, and a top side 206 that attaches to the bottom side 202 along a seam or parting line 238. The bottom 202 and top 206 sides, which may typically be fabricated as separate "halves" to facilitate manufacture and assembly, may be secured along the seam or parting line 238 using adhesives or other fasteners, or snap-fit or slide-together parts, all well known in the art. In the illustrated embodiment the bottom 202 and top 206 sides may, illustratively, be molded shells of a thermoplastic material, or stamped of sheet metal, as is well understood in the art. The bristles 204 may be nylon, boar's hair, metal, or other synthetic materials, the selection being dependent upon the intended use or application. An opening 208 (see 208A - top and 208B - bottom) is provided in both the bottom side 202 and the top side 206 to receive a roller 214 as shown that functions as a dispensing component or surface in the dispensing
device (brush 200). The roller 214 may be supported on an axle or on pivots as will be described. The roller 214 includes a dispensing surface 215, preferably fabric (to be described), upon which the dry formulation may be deposited during manufacture. The brush 200 includes a handle 210 and an access cap 212 on the distal end of the handle 210. An adjustment knob 216 to be described is disposed in the forward end (opposite the end having the handle 210) of the bottom side 202.

Continuing with the exploded view in Figure 13 the adjustment knob 216 includes a threaded screw 218 extending from a rear side thereof along its axis of rotation, whose threads match the internal threads of the hole 224 in the forward end of the bottom side 202. The adjustment knob 216 is part of an assembly including a coil spring 220 and an adjustable pivot 222 to adjust the longitudinal compression along the axis of a splined roller spindle 228, thereby acting as a brake on the rotation of the roller 214 during use of the brush 200. The splined roller spindle 228 is a "push-fit" within the cylindrical bore 213 of the roller 214. Preferably, the roller 214 is an assembly that includes a cylindrical form wrapped with several layers of a non-woven, spun bonded, hydrophilic fabric that is coated on the outer surface with the dry formulation fragrance and the inner surface with a low-tack adhesive. The fabric layers are preferably lightly scored or perforated laterally at intervals roughly corresponding to the circumference of the roller 214, so spent portions of the fabric may be removed to expose fresh surfaces of the coated fabric. The fabric itself may, for example, be a polypropylene sheet material having a weight of approximately 100 g/m² although other weights may be preferable in certain specific applications.

The assembly of the spindle 228 and roller 214 is rotatigly supported on a fixed pivot 226 and the adjustable pivot 222, which may typically be conical in profile and are positioned in each end of the opening 208 in the brush 200. The adjustable conical pivot 222 is mounted on a rectangular or square base that is supported in a similarly shaped compartment 223 to prevent it from rotating as the roller device 200 is being used or the adjustment knob 216 is being adjusted. The adjustable pivot 222 and the compression spring 220 are positioned within the opening 208 in alignment with the screw 218 on the adjustment knob 216. As the knob 216 is rotated clockwise, the compression spring 220 may be compressed to exert more tension on the end of the spindle 228, thus resisting
its ability to roll; similarly, as the knob 216 is rotated counter clockwise the compression spring 220 tension is reduced, allowing the roller to roll more freely. The handle 210 of the brush 200 is hollow in the illustrated embodiment. Accordingly, the access cap 212 includes a portion with external screw threads 232 that match internal screw threads 234 disposed within the distal end of the handle 210. The threaded access cap 212 thus enables access to the hollow handle 210 for storing a spare roller 230 within it. The spare roller 230 may be identical with the roller 214.

Materials for the various parts of the brush device 200, and for similar variations of the brushes described herein, including the bottom 202 and top 206 sides, the cap 212, the cylindrical form for the roller 214, the knob 216, spindle 228, and pivot 222 may be fabricated by injection molding or stamping, from thermoplastic or metallic materials respectively, or their equivalents, all of which are well known to persons skilled in the art. The bristles of the brush device 200 may be formed of nylon, metal, boar's hair, or synthetic materials suited to the application. The compression spring 222 may be metal or plastic as appropriate for the application. In one example, the spring 222 may be formed from spring steel as a coil spring.

In operation the brush depicted in Figures 11, 12, and 13 is configured for use as a hair brush that also applies a fragrance to the hair being brushed. The surface of the roller is covered with a fabric material, preferably a hydrophilic, non-woven or spun-bonded polypropylene fabric as described herein in the description of the embodiments of Figures 4 - 10. This material is chosen because it readily accepts the dry formulation as it is deposited on the fabric during manufacture and readily disperses it as the applicator or dispensing device is brushed through a person's hair that also causes the fragrance to be transferred to the hair through the rolling and/or wiping action of the dispensing component - the roller 214. The separate layers of the fabric may be uncoated at a narrow strip along one or more edges of the fabric to enable easier grasping of a layer for easy removal to expose a fresh layer. It is intended that the roller 214 not spin freely, but will roll as the brush is passed through the hair or fur, its rotation being retarded by the tension exerted upon the ends of the roller by the pivots 222, 226.
Figures 14 and 15 illustrate an exploded isometric view of an embodiment similar to the brush device 200 of Figures 11 - 13, except for the mechanism used to control the rotation of the roller. As before, the bottom 202 and top 206 halves of the brush body of the brush device 260 in Figures 14 and 15 are assembled at a seam or parting line 238. In this embodiment, roller 214 is mounted on spindle 228 and supported at one end by pivot 226. However, at the opposite end of the spindle 228 a detent mechanism controlled by an adjustment knob 240 is provided. The knob 240 includes a three-part shaft extending from a rear side of the knob 240. The three parts include, in order, a detent shaft 242, a circular retaining rim 256, and a spindle support 244 having a square cross section (in this illustrative embodiment), all disposed axially along a longitudinal axis from the center of the back side of the knob 240. The detent shaft 242 may have a cross section having anywhere from three to ten substantially equal sides; that is, it may be an equilateral triangle, rectangle, etc. . . . to an octagonal or even a ten or twelve-sided cross section. Typically, and in this illustrated embodiment, the detent shaft may have an equilateral octagonal cross section. However, the detent mechanism that may be used is not limited to the particular embodiment depicted in the figures.

The detent mechanism assembly 258 includes the adjustment knob 240 and its detent shaft 242, retaining rim 256, and spindle support 244 plus a detent bulkhead 252 that includes a castellated retainer 254 as shown in Figure 15. The castellated retainer functions as a detent shroud in that the segments (or prongs or fingers) of the castellated structure are flexible (because the distal ends of the segments are free and the retainer 254 is molded of a plastic material). The detent assembly 258 is formed when the knob 240 and detent shaft 242, etc. is pressed through a hole 255 in the central portion of the detent bulkhead 252 and through the castellated detent retainer 254 that surrounds the hole 255. As the retaining rim 256 passes through the castellated retainer 254 the segments (the free ends of the individual sides of the castellated structure) of the castellated retainer 254 flex outward to permit the rim 256 to engage the distal ends of the segments of the retainer 254, thus retaining the knob 240, detent shaft 242, and spindle support 244 within the detent bulkhead 252. As depicted in Figure 15, the detent assembly is inserted into a slot 250 within a recess 246 within the bottom side 202 of the brush device 260, after inserting the spindle support 244 into the proximate end of the roller 214 and spindle 228 assembly. The same materials may be used to fabricate the
brush device 260 and the components of the detent assembly 258 as for the structural
components of the embodiment of Figures 11 - 13.

In operation the brush device 260 of Figures 14 and 15 is used in the same way as the
brush device 200 except that the roller 214 is held in a fixed orientation relative to the
brush 260 by the detent assembly 258. Thus, the brush device 260 applies the dry
formulation fragrance in a wiping action as the brush 260 is passed through the hair or
fur being groomed. Rotation of the adjustment knob 240 may be used to position a fresh
surface of the roller 214 for dispensing the dry formulation fragrance onto the target
surface. The fabric that surrounds the roller 214 may be uncoated at a narrow strip along
one or both edges of the fabric (see the ends of the roller 214 in Figure 14) to enable
easier grasping of a layer for easy removal to expose a fresh layer of coated fabric 215.

Figure 16 illustrates an exploded isometric view of another embodiment of the invention
configured as a brush device. This embodiment, brush device 280, is constructed much
like the brush devices 200, 260 with respect to the brush and bristle structure except that
it employs a viscous bushing 262 (also called a viscous rotary damper) inserted in one
end of the roller 214 to damp or retard its rotation during use, and thereby does not
require an adjustment knob 240 as in the previous illustrative embodiments. The viscous
bushing 262 includes, for example, a central bushing 264 having a square bore through
its center and an outer bushing surface 266. The viscous bushing 262 is inserted -
preferably a "press-fit" - into a rearward end 270 of the roller 214, or alternatively, is
equipped with keyed external ribs that fit into corresponding slots within the bore within
the roller 214, as shown and described in the embodiment depicted in Figure 23 for
example. The end of the roller with the viscous bushing is inserted into the opening 208b
in the bottom shell 202 over a square (or other non-round profile) support 268, which may
be molded into the face of a bulkhead member 236. The support 268 may have any
non-round cross section as long as it will match the non-round cross section of the
internal bushing 264 of the viscous bushing 262. The square support 268 supports the
inner bushing 264 in a fixed, non-rotating position while supporting the rearward end of
the roller 214. A pivot body 274 having a conical pivot bushing 276 is installed in the
opposite, forward end of the roller 214 and the forward end of the roller 214 is placed into
a space 272 in the forward end of the bottom shell 202 with a compression spring 278
inserted between the pivot body 274 and the forward end of the space 272 in the bottom shell 202. The viscous bushing 262 may typically be an off-the-shelf purchased component.

The structure illustrated in Figure 16 supports the roller within the opening 208a/b of the assembled brush device 280 and allows the roller 214 to roll against the resistance provided by the viscous bushing 262. When in use, if the brush device is lightly brushed over the target surface, the roller 214 will tend to hold a non-rotating orientation within the opening 208a/b and the brush device acts primarily as a wipe to dispense a relatively smaller amount of the dry formulation fragrance. However, if the brush device 280 is passed through the target area more vigorously the roller 214 will be caused to roll somewhat, thus tending to dispense relatively more of the dry formulation fragrance. Thus, the use of this embodiment is susceptible to a certain amount of variation or skill to control the amount of the dry formulation fragrance onto the target surface.

Figures 17 and 18 illustrate isometric views of another embodiment of the invention configured as a brush or dispensing device. Brush device 300 may be assembled from a top shell 282 and a bottom shell 284, which may be formed of molded thermoplastic or stamped from sheet metal, for example. Bottom shell 284 includes an array of bristles 286, which may be fabricated from nylon, metal, boar’s hair, or synthetic materials suited to the application. An opening 288 is formed in a central portion of the bottom shell 284 to accommodate a cartridge 292 to be described. The cartridge 292 may be assembled from (see Figure 18) a carrier 295 formed of a thin resilient material such as spring steel or plastic and at least one layer (preferably a plurality) of fabric dispensing components 296. An integral tab-like handle 294 may extend from one edge of the carrier 295. The dispensing component(s) 296 is/are fabricated from sheets of a hydrophilic, non-woven fabric that have a coating 297 of the dry formulation fragrance on the outer (convex) surface and a low-tack adhesive coated on an inner (concave) surface. The fabric dispensing components 296 may preferably be, for example without limitation, a spun bonded polypropylene fabric having a weight of approximately 100 g/m².

In the illustrated embodiment, the cartridge 292 is enclosed as an assembly within the space between the top 282 and bottom 284 shells for the brush device 300 when
assembled along a common edge 298. A slot 290 is provided along the common edge or seam 298 of one side of the body of the brush device 300. The slot enables the cartridge 292 assembly to be removed for replacement. The resiliency of the carrier 295 permits the cartridge 292 to be inserted or removed through the slot 290, even when up to a half-dozen layers of the fabric dispensing components 296 are installed - i.e. stacked - on the carrier 295. The carrier 295 flattens slightly during installation or removal and is restored to its normal, relaxed state when fully disposed within the body of the brush device formed by the top 282 and bottom 284 shells. When installed, the cartridge 292 causes the uppermost dispensing component 296 to protrude slightly into the bristle area. This embodiment 300 may be used like an ordinary hair brush. The dry formulation fragrance is applied via a wiping action of the dispensing component surface against the target surface as the brush is passed over - i.e., wiped onto - the target surface. As in previous embodiments, the separate layers of the fabric dispensing component 296 that cover the carrier 295 may be uncoated at a narrow strip along one or more edges of the fabric dispensing component 296 to enable easier grasping of a layer for easy removal to expose a fresh layer of the dispensing component 296.

Figures 19, 20, and 21 illustrate isometric views of another embodiment of the invention configured as a pet brush device 320. In this embodiment the handle 310 is disposed from one of the longer sides to provide more comfortable and efficient use when grooming the relatively thick fur of many pet animals. The pet brush 320 also includes a different structure for locating a wipe surface of the dispensing component in position for dispensing the dry formulation fragrance while grooming a pet. As in previous brush embodiments, the shells that make up the brush body may be molded of thermoplastic or stamped from sheet metal. The pet brush depicted in Figures 19, 20, and 21 includes a bottom shell 302 and a top shell 306 assembled along a parting line or seam 328 and may be secured along the seam or parting line 238 using adhesives or other fasteners, or snap-fit or slide-together parts, all well known in the art. The bottom 302 and top 306 shells, including the integral handle 310 may be injection molded of an ABS plastic or its equivalent, for example. Bristles 304 are disposed on the outer surface of the bottom shell 302. The bristles may be formed of nylon, metal, boar’s hair, or synthetic materials suited to the application. In the pet brush 320 the bristles may be stiffer and/or spaced more openly to enable convenient grooming of thick fur coats. Bristles 320 made of
stainless steel or other non-corrosive metal wire may be preferred.

The exploded view in Figure 21 illustrates a dispensing device for the pet brush 320 configured as a comb-like structure 314 having tines 316 disposed, in this example, uniformly along the lower edge of the comb 314. The tines 316 of the comb 314 are configured to extend within the space among the bristles 304 as shown in Figure 20 so that the dispensing component having the dry formulation coating 325 is directly in the path of the hair or fur being brushed with the pet brush during use. The comb 314 includes slender extensions or tangs 318 formed in each end of the comb 314. Each tang 318 includes a notch 326 in its upper end. The notched tangs 318 are provided to lock the comb 314 in the ends of slot 308 when installing the comb 314 in the brush device 320. The tangs 318 are intended to be resilient and flexible enough to bend slightly to enable the comb 314 to be locked or latched into position within the slot 308. The comb 314 may be removed by squeezing the tangs 318 toward each other to un latch or unhook the notches 326 from the ends of the slot 308. The comb 314 may preferably be faced with fabric dispensing components 322, 324 on respective opposite sides of the comb 314. The fabric dispensing components 322, 324 may be the same non-woven, spun bonded polypropylene fabric used in embodiments previously described herein. The fabric may preferably be, as before, a hydrophilic, non-woven, spun bonded polypropylene having a weight of approximately 100 g/m², and coated on the side facing away from the comb with the dry formulation fragrance 325 and on the opposite (inner) side with a strong adhesive (not shown in this view, but is understood that the fabric dispensing components 322, 324 are secured to the faces of the comb 314. Alternatively, the comb 314 may be formed of sheets of thin plastic such as ABS or an equivalent material that is somewhat flexible so that it will bend slightly during use of the brush 320 as it is passed through the fur coat of a pet, for example. In some embodiments it may be advantageous to increase the width of the tines 316 to provide greater surface area for the fabric dispensing components 322, 324 to adhere to. In other embodiments, the fabric dispensing components 322, 324 may be adhered to the surfaces of the tines 316 with a low tack adhesive to permit convenient replacement of the fabric with fresh dispensing components 322, 324.
The pet brush embodiments described herein may advantageously employ any of a
variety of fragrances, fragrance substitutes, or other agents of particular applicability to
the grooming of pets or other animals, to be carried and dispensed or delivered by the
exemplary devices. For example, some fragrance control agents (alternatively: odor
neutralization agents) may be selected from the list including Vitamin E, Avocado oil,
Omega-6, silk wheat proteins, oat proteins, Saffloweroil, Sunflower seed oil, Pennyroyal
and comfrey oil, Hydrolyzed Oat protein, Aloe Vera, Glycerin, Oatmeal, Chamomile
Extract, Castor oil, Omega-3, Cranberry seed oil, Kava extract, Papaya leaf extract and
the like. In some applications, flea control agents may also be included in the dry
formulation. Substances for use as part of the dry formulation mixture in any of the
embodiments described herein for use in grooming pets or other animals should be
compatible with the PEG + glycerin as the dry formulation base component. In a typical
case, the flea control additive will be present in the dry formulation in small amounts, and
will be non-toxic to pets and humans. In some embodiments of a pet brush, both the
fragrance control and flea control agents may be included in the dry formulation mixture.

Figures 22, 23, and 24 illustrate isometric views of another embodiment of the invention
configured as a roller device. Figures 23 and 24 depict alternate structures of a
mechanism for controlling the rotation of the roller portion of the device. Roller device
340 as shown in Figure 22 includes a main shaft 330 having a handle portion 332 at one
end, a roller portion 354 and a knob 346 attached to the end of the main shaft 330
opposite the handle portion 332. The main shaft 300 and handle 332 may be formed as
a unit of molded plastic such as ABS, polypropylene, high density polyethylene and the
like. An outer fabric layer 360 is wrapped around the roller 354. The fabric layer 360
may be wrapped around the roller 354 several times as will be described. The fabric
layer 360, also known as dispensing component 360, is coated with the dry formulation
fragrance 355 over all of the fabric 360 except for a narrow band at each end of the fabric
360. In some embodiments, one or both uncoated regions may be omitted. The knob
346 controls a brake mechanism to be described. Some fragrance control agents
(alternatively: odor neutralization agents) for use with the roller devices 340 and 380, and
other embodiments of the dispensing devices described herein may be selected from the
list including Vitamin E, Avocado oil, Omega-6, silk wheat proteins, oat proteins,
Safflower oil, Sunflower seed oil, Pennyroyal and comfrey oil, Hydrolyzed Oat protein,
Aloe Vera, Glycerin, Oatmeal, Chamomile Extract, Castor oil, Omega-3, Cranberry seed oil, Kava extract, Papaya leaf extract and the like.

Figure 23 illustrates an exploded view of the roller device 340 that employs a viscous bushing 342 to provide a brake upon the rotation of the roller 354. The main shaft 330 includes a handle portion 332, a spindle 334 to support the roller 354, and a bushing support 336 having a square (preferably but not so limited) cross section. A threaded hole 338 is provided in the end of the bushing support 336. The viscous bushing 342 has a square bore 344 through its center that enables it to be fitted upon the bushing support 336. The bushing 342 may also include first and second ridges 345 along its outer surface, which are oriented parallel with the longitudinal axis of the main shaft 330. The ridges 345 key the outer portion of the bushing to grooves 358 within the inner bore 356 of the roller 330 as will be described. After installation of the roller 354 on to the main shaft 330, aligning the first and second ridges 345 on the viscous bushing 342 with corresponding first and second grooves 358 within the bore 356 of the roller 354 to key the roller 354 with the outer, rotating portion of the viscous bushing 342. A retaining washer 350 having a square hole 352 in its center is installed over the distal end of the bushing support 336. The knob 346, which has a screw 348 attached to the underside of the knob 346, is threaded into the hole 338 in the end of the bushing support 336 to secure the roller 354 on the main shaft 330 of the roller device 340.

Continuing with Figure 23, the fabric layer 360 is shown partially unwrapped to depict several features of the fabric layer 360. As in previously described embodiments, the fabric layer 360 may preferably be a hydrophilic, non-woven, spun bonded polypropylene fabric having a weight in the range of 100 to 200 g/m² or its equivalent. The outer surface of the fabric 360 is coated with the dry formulation fragrance 355. The fabric layer may be lightly scored or perforated along lateral lines 360 at intervals approximating the circumference of the roller 354 to enable convenient tear-off of segments 364 of the fabric layer 360 that are depleted of the dry formulation fragrance 355. Further, the inner surface of the fabric layer 360 may be coated with a low tack adhesive in the regions 361 on each segment 364 of the fabric layer 360. In operation, the viscous bushing 342 retards the rotation of the roller 354 in a controlled manner as the roller device 340 is rolled against a target surface to transfer the dry formulation fragrance to the target.
surface. In selecting the characteristics or specifications for the viscous bushing, persons skilled in the art will understand the need to balance the amount of braking imparted by the viscous bushing with the ease of use of the roller device. The viscous bushing prevents the roller from free wheeling, which may allow uneven or incorrect amounts of the dry formulation fragrance to be applied to the target surface.

Figure 24 illustrates an exploded view of the roller device 380 that employs a friction brake assembly to retard the rotation of the roller 354. The main shaft 370 includes a handle portion 372, a spindle 376 having a square (preferably but not so limited) cross section to support the roller 354. A threaded hole 378 is provided in the end of the spindle 376 to receive the screw 348 attached to the knob 346. After installation of the roller 354 on to the spindle 376, a compression spring 386 and a retaining washer 382 having a square hole 384 in its center are installed over the distal end of the spindle 376. The knob 346 is screwed into the threaded hole 378 in the end of the spindle 376 to secure the roller 354 on the main shaft 370 of the roller device 380. The knob 346 may be fully tightened against the proximate end of the roller 354 or lightly tightened against the end of the roller 354, or tightened to an intermediate position to adjust the amount of retarding pressure applied to the end of the roller 354. The amount of retarding pressure is regulated by the tension in the compression spring 386 to control the rotation of the roller 354 in the same manner as described for the embodiment depicted in Figure 23.

Continuing with Figure 24, the fabric layer 360 is shown partially unwrapped to depict several features of the fabric layer 360. As in previously described embodiments, the fabric layer 360 may preferably be a hydrophilic, non-woven, spun bonded polypropylene fabric having a weight in the range of 100 to 200 g/m² or its equivalent. The outer surface of the fabric 360 is coated with the dry formulation fragrance 365. The fabric layer 360 may be lightly scored or perforated along lateral lines 368 at intervals approximating the circumference of the roller 354 to enable convenient tear-off of segments 364 of the fabric layer 360 that are depleted of the dry formulation fragrance 365. Further, the inner surface of the fabric layer 360 may be coated with a low tack adhesive in the regions 367 on each segment 364 of the fabric layer 360. In operation, the friction brake assembly - retaining washer 382, compression spring 386, and
adjustment knob 346 - retards the rotation of the roller 354 in a controlled manner as the roller device 340 is rolled against a target surface to transfer the dry formulation fragrance to the target surface. In selecting the characteristics or specifications for the compression spring 386, persons skilled in the art will understand the need to balance the amount of braking imparted by the spring 386 with the ease of use of the roller device 380. The tension in the spring 386 applied against the end of the roller 354 via the retaining washer 382 prevents the roller from free wheeling, which may allow uneven or incorrect amounts of the dry formulation fragrance to be applied to the target surface.

Figures 25 and 26 illustrate isometric views of another embodiment of the invention configured as an insole device 400. The assembled insole device 400 is shown in Figure 25 and includes an insole 402 having a stack 412 of one or more layers of a dispensing component 404 preferably made from a hydrophilic, non-woven, spun bonded polypropylene fabric having a weight of approximately 100 g/m². The underside 410 of the insole 402 may be coated with a low tack adhesive 414 to facilitate installation in a shoe. As shown in exploded view Figure 26 each layer 404 is coated with a dry formulation fragrance 406 on an upper side in the figure and may be coated on an underside with a low tack adhesive 414 as shown on the up-turned underside of the top layer 416. Inserted within a person's shoe, the action of the user's foot against the coating transfers or dispenses the dry formulation fragrance from the layer of the dispensing component 404 to the sole of the user's foot. The low tack adhesive 414 enables each layer 404 to be removed as its dry formulation fragrance 406 is depleted from use. The insole 402 may be formed of latex foam, a non-liquid gel, sponge rubber, neoprene, vinyl, or the well-known Poron®, the registered name for a urethane cushioning material available from Rogers Corporation, Rogers, CT 06263.

Figures 27 through 30 illustrate plan views of several other embodiments of the invention similar to the embodiment depicted in Figures 8, 9, and 10. These are configured as wipes for applying the dry formulation fragrance to various surfaces as will be described. They are preferably constructed of somewhat heavier materials to withstand uses that are more vigorous or forceful than the typical light duty use as a clothing wipe (the embodiments of Figures 4 - 10, for example). These embodiments are in basic form two-layer devices in which an outer surface of the carrier layer - i.e., the active layer - is
coated with the dry formulation fragrance. The second layer may be attached to the active layer along several edges by stitches, welding, adhesives, etc. to form a finger mitt (Figures 27 and 28), a hand mitt (Figure 29), or a glove (Figure 30) for the user's hand. As shown in Figures 27 and 28, the finger mitt is open at two opposite ends to accommodate a user's fingers. The hand mitt and glove of Figures 29 and 30 are open at only one end to enable insertion of the user's hand.

Figures 27 and 28 illustrate a finger mitt that is similar to the applicator shown in Figures 8-10 except that the finger mitt 430 of Figures 27 and 28 is larger to accommodate four fingers of a person's hand. The larger surface area contains a greater coated area that enables dispensing the dry formulation fragrance more easily to a larger area of clothing, hair, or other target surface. Because of its greater utility, the applicator of Figures 27 and 28 may alternatively carry a dry formulation fragrance that is adapted to a wider variety of target surfaces, or, by replacing or augmenting the fragrance component of the dry formulation, may be used to dispense or deliver other useful substances to the target surfaces. The applicator 430 is formed of a first layer 432 and a second layer 434, which may be shaped as shown in Figures 27 and 28 and may be stitched or welded together along two opposite edges as indicated at dashed lines 436 and 438. Both first and second layers 432, 434 may be formed from a hydrophilic, non-woven, spun bonded polypropylene fabric having an approximate weight of 100 to 200 g/m² or even heavier as necessary for the stress of applying the dry formulation fragrance to textured or rough target surfaces. Some embodiments may employ heavier fabric in the 160 to 300 g/m² range. The first or "active" layer 432 is coated on an outer surface with the dry formulation fragrance 440. In some variations of this embodiment, a plurality of "active" layers may be stacked on the insole 402, each coated with the dry formulation fragrance 440 on an outer surface and a low tack adhesive on an inner surface to hold the layers together until a layer with a depleted coating 440 is removed to refresh the applicator 430. As a further variation, the coating 440 of the active layer 432 may be omitted along a narrow band at one or more edges of the active layer 432 to facilitate removal of a depleted active layer.

Figures 29 and 30 illustrate two exemplary variations of the basic applicator 430 depicted in Figures 27 and 28, wherein the size and shape of the applicator is scaled up to
accommodate a person's entire hand for use in dispensing a dry formulation fragrance or other additive to larger surfaces, textured or rough surfaces, or target surfaces that require substances other than fragrances to be applied. Such surfaces may require fabric of heavier weights ranging from 100 g/m² to 200 g/m² or more, for example. Both the hand mitt 450 and the glove 470 are constructed of two layers of the hydrophilic, non-woven, spun bonded polypropylene fabric recommended as the dispensing component for the other embodiments of the wipes and dispensing devices. The two layers, a first "active" layer 452, 472 (respectively on the mitt 450 and glove 470) that is coated with the dry formulation fragrance (or other additive) 458, 478 (respectively) and a second, back side layer 454, 474 (respectively) to provide an enclosure 460, 480 (respectively) for the user's hand, are attached together along the outer edges of the mitt 450 or glove 470 using stitches or welding as indicated by the line 456 on the mitt 450 and the line 476 on the glove 470. A hem 462, 482 may be applied around the open side or end of the mitt 450 or glove 470.

Some illustrative examples of use of the embodiments shown in Figures 29 and 30 include the following. The mitt 450 and glove 470 are well suited to dispensing a dry formulation fragrance or other useful dry formulation substances to furnishings in offices, residences, vehicle interiors and the like. For example, a dry wipe for household surfaces may be adapted to freshening the surfaces of any and all articles found in homes or offices without limitation such as tables, counters, cabinets, chests, chairs, sofas, bedding, rugs or carpets, lamps, appliances, TV and electronic equipment, baskets for laundry and trash, and decorative objects. Fragrances adapted for household dry wipes may preferably be provided with an outdoor "fresh air" scent or, for another example, the ever-popular lemon scent frequently used in wet wipe formulations.

In a further example of a dry wipe in a mitt-sized applicator as depicted in Figure 29 and adapted to uses on pets - dogs, cats, rodents, even pet birds, for example - such a wipe may have a fragrance adapted to the particular animal, one for dogs, another for cats, perhaps unscented for animals that might be sensitive to particular fragrances, etc. Further, the bottom layer of the applicator may have a texture or a rough, nappy surface, or be configured with an array of bristles (as in a brush) so that it more readily picks up particles of dust or hair, etc. during use while freshening a surface.
Yet another example of a dry wipe as shown in Figures 29 and 30 may be configured for use to neutralize the odors that accumulate or otherwise become deposited on the interior surfaces of an automobile, truck, aircraft or other vehicle. The bottom layer of the applicator and the fragrance used may be provided in several versions, each adapted to use with a different kind of surface that might be encountered in the interior of the vehicle, such as fabrics of different textures, leather, hard, polished trim surfaces, etc.

Referring to Figures 31 and 32 there is illustrated a underside plan view and an exploded view respectively of an alternate to the embodiment depicted in Figures 19, 20, and 21 (a comb-style embodiment) that is adapted from the embodiment shown in Figures 11 to 16. The adaptation provides a pet wipe apparatus that employs a stationary roller-like cartridge in a pet brush style of housing that provides a wipe action to the target surface - a pet's fur coat. The pet wipe brush 500 includes a brush housing 502 that may be molded of thermoplastic or stamped from sheet metal. The other parts of the brush 500 except the fabric covering the cartridge may similarly be molded of a thermoplastic material. The fabric dispensing component 532 may be preferably made from a hydrophilic, non-woven, spun bonded polypropylene fabric having a weight of approximately 100 g/m² to 200 g/m². The cartridge 510 may have several layers of the dispensing component fabric 532 wrapped around it, and further be scored or perforated at intervals corresponding to the width of a single face of the triangular cartridge 510. The scoring or perforations 536, which are coincident with the edges of the wiping surface of the cartridge 510 in the figure, enable used or depleted section of the dispensing component fabric 532 to be torn off to expose a fresh face. The underside of the housing is open but includes rectangular seats 504 for receiving replaceable bristle inserts 506, each equipped with an array of bristles 508, which may be removed for cleaning or replacing with alternate bristle forms. The bristles 508 are distributed within the entire area of the bristle inserts 506. Between the bristle inserts 506 is a central space wherein resides a cartridge 510 that is wrapped with a fabric dispensing component 532 as in the other embodiments described herein. The fabric dispensing component 532 includes a dry formulation fragrance 534 or other additive deposited on its surface. The dry formulation fragrance 534 may be dispensed by wiping against a target surface during a grooming activity using the brush 500.
Continuing with Figure 31, the cartridge 510 may be supported axially on first and second non-rotating pivot posts 512, one at each end of the cartridge 510. Each pivot post is supported in a non-round receptacle 521 at a first end of the housing 502 and at a second end opposite the first end within a similar non-round receptacle 520 formed in an inner side 518 of a retaining lever 516. The retaining lever 516 includes a fulcrum 522 that enables it to rock with the aid of a flat spring 530 that retains the retaining lever 516 within an opening 524 in the end of the housing 502. The first and second legs of the spring 530 may be embedded or otherwise attached to the underside of the lever 516 and the adjacent surface of the housing 502 respectively. The retaining lever 516 is provided to enable removal of the cartridge 510 to rotate it to expose a fresh side of the dispensing component 532 for further use. In operation the lever 516 is rocked on its fulcrum 522 to free the pivot post 512 from the pivot post receptacle 520 so that the cartridge 510 may be tilted, lifted out and rotated 120 degrees, and reinserted into the central space between the first and second bristle inserts 506, 506. In the exemplary embodiment, the cartridge 510 has a triangular cross section, so it requires a rotation of 120 degrees to position a fresh face in the wiping path. The receptacles 520 are the same shape as the pivot posts 512 and the cartridge 510 so that the cartridge remains in place during use when the retaining lever 516 is held in its released position by the spring 530.

While the inventions heretofore described have been shown in only several illustrative forms, it is not thus limited but is susceptible to other various changes and modifications from those depicted and described without departing from the spirit thereof. Materials and processes described for fabrication of the illustrated embodiments may vary within the normal range of equivalents as known in the arts. As one example, fragrance control agents as described for the embodiments of Figures 19 - 24 may be used interchangeably with other fragrance components described elsewhere in this Specification. Similarly, other additive agents may be substituted for the fragrance component and delivered to a target surface using the dry formulation concepts illustrated herein. Alternatives for the PEG and glycerin mixture suggested herein may exist or may become available in the future, and may be suitable as long as they remain dry as deposited on the dispensing component and dry as delivered to the target surface.
In other alternatives, substitutes for the fragrance component may as readily be used to accomplish other uses, including but not limited to insect repellants, sun screens, skin conditioners, surfactants or cleaners, antistatic coatings, coloring agents, and the like. The percentage proportion of such ingredients may vary from as little as 0.05% to as much as 50% depending on the application.

Thus, as broadly defined, the present invention of a dry formulation fragrance delivery system, which may be useful as a grooming aid or in other applications in which the delivery system described herein and set forth in the following claims may be adapted to delivering other agents, may be characterized in its most basic form as comprising: a dispensing device having a dispensing component; and a dry formulation deposited on the dispensing component, the dry formulation comprising a mixture of polyethylene glycol (PEG), glycerin, and a fragrance component or other agent in a preferred but not limiting embodiment.
Claims

1. A dry formulation fragrance delivery system useful as a grooming aid, the delivery system comprising:
   a dispensing device having a dispensing component; and
   a dry formulation deposited on said dispensing component, said dry formulation comprising a mixture of polyethylene glycol (PEG), glycerin, and a fragrance component.

2. The grooming aid of Claim 1, wherein said dry formulation is formed as a mixture of approximately 80 to 90 weight percent polyethylene glycol (PEG) and approximately 6 to 16 weight percent glycerin and approximately 0.5 to 10 weight percent fragrance component, all weight percentages being based on the total weight of the dry formulation; wherein
   said PEG has a molecular weight of approximately 3000 grams/mole to 5000 grams/mole; and
   said fragrance component is formed as a blend of at least one essential oil and at least one aroma compound.

3. The grooming aid of Claim 1, wherein:
   said mixture is dry as deposited on said dispensing component and dry as dispensed from said dispensing component during and after said grooming.

4. The grooming aid of Claim 1, wherein said dispensing device comprises:
   a brush formed of a body, an array of bristles disposed on a first side of said body, a rotating adjustment knob extending from a first end thereof and a handle extending from a second end thereof; and
   a rotatable dispensing component controlled by said adjustment knob and disposed within a longitudinal opening through said body from said first side to a second opposite side of said body.
5. The grooming aid of Claim 4, wherein said brush comprises:
a paddle style hair brush having flexible pin-shaped bristles disposed in a pattern of
bristles surrounding said opening on said first side of said body in an array having an
approximate density between 10 and 20 bristles per square inch.

6. The grooming aid of Claim 4, wherein:
said flexible pin-shaped bristles each have a diameter exceeding 0.010 inch and are
formed of nylon.

7. The grooming aid of Claim 4, wherein said rotatable dispensing component comprises:
a removable cylindrical tube disposed on a axle and wrapped with at least one layer of
a fabric upon which said dry formulation is deposited to be dispensed during use of said
grooming aid.

8. The grooming aid of Claim 7, said fabric comprising:
a length of non-woven fabric having a low-tack adhesive on one side and wrapped in a
plurality of layers around said cylindrical tube, said length pre-scored at defined
segments to enable tear-off of a segment depleted of said dry formulation.

9. The grooming aid of Claim 8, said non-woven fabric comprising:
edges that are uncoated with said low-tack adhesive.

10. The grooming aid of Claim 7, wherein said axle comprises:
a splined tube supported on first and second conical pivots aligned with a longitudinal
axis of said brush at respective first and second ends of said opening, said splined tube
disposed within said cylindrical tube by way of an interference fit.

11. The grooming aid of Claim 10, further comprising:
a brake acting in cooperation with said rotating adjustment knob disposed at a first end
of said body for controlling rotation of said dispensing component.
12. The grooming aid of Claim 11, wherein said brake further comprises:
an assembly including said rotating adjustment knob coupled to said conical pivot at said
first end of said opening, said knob operable through a threaded bore to permit
adjustment of friction between said conical pivot and a proximate end of said hollow axle.

13. The grooming aid of Claim 11, wherein said brake further comprises:
an assembly including said rotating adjustment knob configured with a keyed shaft
disposed through a flexible detent shroud and into a proximate end of said splined tube
for indexing a rotational disposition of said dispensing component;
wherein said detent shroud includes resilient stops and is supported within said first end
of said body of said brush.

14. The grooming aid of Claim 4, wherein:
said adjustment knob is coupled to said rotatable dispensing component to control
rotation of said dispensing component.

15. The grooming aid of Claim 4, wherein said handle comprises:
a hollow tube for storing a spare removable roller; and
a cap for closing a distal end of said handle.

16. The grooming aid of Claim 1, wherein said dispensing device comprises:
a brush formed of a body, an array of bristles disposed on a first side of said body, and
a handle extending from a second end thereof; and
a rotatable dispensing component disposed within a longitudinal opening disposed
through a central portion of said first side of said body.
17. The grooming aid of Claim 1, wherein said dispensing device comprises:
a brush formed of a body, an array of bristles disposed on a first side of said body, and
a handle extending from a second end thereof;
said body formed of first and second shells corresponding to said first and second sides,
having a longitudinal window opening in said first shell and an access slot disposed
through an edge of said body along and proximate a side of said window opening; and
a renewable dispensing component disposed within said window opening in said first
shell and installable through said access slot.

18. The grooming aid of Claim 17, wherein said brush comprises:
a paddle style hair brush having flexible pin-shaped bristles disposed in a pattern of
bristles surrounding said window opening on said first side of said body in an array
having an approximate density between 10 and 20 bristles per square inch.

19. The grooming aid of Claim 18, wherein:
said flexible pin-shaped bristles each have a diameter exceeding 0.010 inch and are
formed of nylon.

20. The grooming aid of Claim 17, wherein said renewable dispensing component
comprises:
a removable resilient insert cartridge having at least one fabric layer segment upon which
said dry formulation is deposited to be dispensed during use of said grooming aid.

21. The grooming aid of Claim 20, said resilient insert cartridge comprising:
an elongated, U-shaped member having a grasping tab extending from a free side edge
of said U-shaped member such that a convex surface of said U-shaped member
protrudes through said window opening and said grasping tab extends through said
access slot in said body when said insert cartridge is installed within said body.
22. The grooming aid of Claim 20, said fabric layer segment comprising:
a sheet of non-woven fabric coated on an outer side thereof with said dry formulation, and coated on an underside thereof with a low tack adhesive to enable stacking in a plurality of fabric layer segments upon a convex surface of said resilient insert cartridge.

23. The grooming aid of Claim 22, said non-woven fabric comprising:
at least one edge of said fabric layer segment that is uncoated with said low-tack adhesive.

24. The grooming aid of Claim 1, wherein said dispensing device comprises:
an elongate member having an axle portion and a handle portion;
a roller disposed on said axle portion; and
a dispensing component formed of a fabric surrounding an outer surface of said roller, said dispensing component including at least one layer of said fabric, said fabric having said dry formulation deposited on an outer surface thereof.

25. The grooming aid of Claim 24, further comprising:
an adjustment mechanism disposed on a first end of said elongate member that cooperates with said roller to hold it in a stationary orientation until said roller needs to be advanced to expose fresh formulation.

26. The grooming aid of Claim 25, wherein said adjustment mechanism comprises:
a viscous rotation damper to retard rotation of said roller until adjustment of the orientation of said roller; and
a knob coupled to said damper for adjusting said roller.

27. The grooming aid of Claim 25, wherein said adjustment mechanism comprises:
a brake mechanism coupled to said axle portion and operated by an adjustment knob, for retarding rotation of said roller until advancement of the orientation of said roller is desired.
28. The grooming aid of Claim 27, wherein further:
said brake mechanism applies friction between said roller and said axle portion of said elongate member.

29. The grooming aid of Claim 24, said dispensing component further comprising:
a non-woven fabric having said dry formulation deposited on an outer surface thereof
and a low tack adhesive deposited on an inner surface thereof.

30. The grooming aid of Claim 24, wherein:
said fabric dispensing component is disposed around said roller in multiple layers, and
scored across the width of said fabric at ends of said fabric of each layer to enable
removal of a layer depleted of said dry formulation.

31. The grooming aid of Claim 29, said non-woven fabric comprising:
at least one edge of said non-woven fabric is uncoated with said low-tack adhesive.

32. A dry formulation fragrance control, comprising:
a dispensing insole having a dispensing component; and
a dry formulation formed as a mixture of polyethylene glycol (PEG), glycerin, and a fragrance, said mixture deposited on said dispensing component.

33. The fragrance control of Claim 32, said dispensing insole comprising:
a three-layer assembly, in order, of an insole pad, a low tack adhesive layer, and at least one said dispensing component formed from a fabric layer, said assembly shaped to fit within a shoe.

34. The fragrance control of Claim 32, said insole pad comprising:
a thin insole material selected from the group consisting of a non-woven fabric, leather, felt, and silicone sheet.
35. The fragrance control of Claim 32, said insole pad comprising:
a resilient insole material selected from the group consisting of foam rubber, synthetic rubber, natural rubber, gel-filled rubber, and silicone sheet.

36. The fragrance control of Claim 32, said insole pad comprising:
a peel-off backing sheet, a low tack adhesive layer, and at least one said dispensing component formed from a fabric layer, said assembly shaped to fit within a shoe.

37. The fragrance control of Claim 32, said dispensing component comprising:
a sheet of non-woven fabric coated on an underside thereof with said low tack adhesive and having substantially the same outline shape as said insole pad.

38. The fragrance control of Claim 32, wherein:
said dispensing component is configured to enable stacking in a plurality of layers upon said insole pad.

39. A dry formulation fragrance control, comprising:
a dispensing component; and
a dry formulation formed as a mixture of polyethylene glycol (PEG), glycerin, and a fragrance, said mixture deposited on said dispensing component.

40. The fragrance control of Claim 39, said dispensing component comprising:
a sheet of non-woven fabric coated on an underside thereof with a low tack adhesive and having substantially the same outline shape as an insole for a person's shoe.

41. The fragrance control of Claim 39, wherein:
said dispensing component is configured to enable stacking in a plurality of layers within a person's shoe.
42. The grooming aid of Claim 1, wherein said dispensing device comprises:
a two-layer assembly of a first fabric dispensing layer and a second fabric body layer,
wherein said first layer includes said dry formulation deposited thereon.

43. The grooming aid of Claim 42, said two-layer assembly comprising:
a clothing/pet/furniture/skin wipe configured for receiving four fingers of a user's hand
between said first and second layers of said assembly.

44. The grooming aid of Claim 42, said two-layer assembly comprising:
a clothing/pet/furniture/skin wipe glove configured for receiving a user's hand within said
glove between said first and second layers of said assembly.

45. The grooming aid of Claim 42, said two-layer assembly comprising:
a clothing/pet/furniture/skin wipe mitten configured for receiving a user's hand within said
mitten between said first and second layers of said assembly.

46. The grooming aid of Claim 1, wherein said dispensing device comprises:
a body member having a transverse slot extending from a top to a bottom surface
thereof, a handle extending from one side thereof, and an array of bristles disposed on
said bottom surface of said body on each side of said slot;
a comb having a plurality of tines, said comb removably secured within said transverse
slot, and said tines extending past said bottom surface of said body between first and
second portions of said array of bristles; and
a dispensing component formed of a fabric affixed to at least one of first and second
outer faces of said comb, said fabric having said dry formulation deposited on an outer
surface thereof.

47. The grooming aid of Claim 46, said comb comprising:
first and second resilient pawls (hooks) configured to engage corresponding teeth
(edges) disposed on said body adjacent first and second ends of said slot.
48. The grooming aid of Claim 46, said bristles comprising: flexible bristle material selected from the group consisting of boar bristle, horsehair, nylon, thermoplastic, and stainless steel.

49. The grooming aid of Claim 1, wherein said dispensing device comprises: a body member having a substantially rectangular opening therethrough, a handle extending from one side thereof, and an array of bristles disposed on an underside of said body and surrounding said opening; a spool disposed within said opening and supported on fixed axial stubs; and a dispensing component formed of a fabric surrounding an outer surface of said spool, said fabric having said dry formulation deposited on an outer surface thereof.

50. The grooming aid of Claim 49, said body member comprising: keyed sockets disposed at opposite ends of said opening for receiving said fixed axial stubs of said spool within said opening.

51. The grooming aid of Claim 49, said spool comprising: a spool body having a cross section substantially based on a plane figure selected from the group consisting of a circle, square, rectangle, triangle, pentagon, hexagon, heptagon, and octagon.

52. The grooming aid of Claim 51, said spool body comprising: a body having a substantially triangular cross section.

53. The grooming aid of Claim 52, said triangular cross section comprising: an equilateral triangle having rounded apexes.

54. The grooming aid of Claim 52, said triangular cross section comprising: a closed triangular figure having curved sides and a constant diameter (derived from a Reuleaux triangle).
55. The grooming aid of Claim 49, said dispensing component comprising:
a plurality of layers of said fabric surrounding said spool, said fabric scored at intervals
wherein each successive layer is removable.

56. The grooming aid of Claim 55, wherein further:
said fabric is scored at intervals coinciding with an apex of said spool.

57. The grooming aid of Claim 49, said body comprising:
a latch attached to one side of said body along an axis of said spool, configured as a
rocking lever and having a keyed receptacle in a first end to receive a correspondingly
keyed axle stub for preventing rotation of said spool when said latch is disposed in a
locking position.

58. The grooming aid of Claim 1, said wherein dispensing device comprises:
an under layer and a carrier layer substantially congruent with said under layer, said
layers bonded together along first and second opposite edges thereof, thereby creating
a space therebetween such that at least four fingers of a user's hand can be inserted
through said space.

59. The grooming aid of Claim 58, wherein said under layer and carrier layer comprise:
a non-woven or spun-bonded polypropylene fabric having a weight within the range 100
to 200 grams/square meter.

60. The grooming aid of Claim 58, wherein said layers are bonded together by a process
selected from the group consisting of sewing, hot welding, cementing, binding, and
stapling.

61. The grooming aid of Claim 58, wherein said dry formulation comprises:
a mixture of polyethylene glycol and glycerin in combination with a fragrance component.
62. A method of delivering a fragrance to a surface, comprising the steps of:
configuring a dispensing device having a dispensing component for receiving a dry
formulation containing a fragrance component;
producing said dry formulation from a mixture of approximately 80 to 90 weight percent
polyethylene glycol (PEG) and approximately 6 to 16 weight percent glycerin as a carrier
component and approximately 0.5 to 10 weight percent of a fragrance component, all
weight percentages being based on the total weight of the dry formulation; and
applying said dry formulation to said dispensing surface of said dispensing device.

63. The method of Claim 62, further comprising the steps of:
engaging said dispensing device with a target surface; and
manipulating said dispensing device to cause an amount of said fragrance component
to be deposited onto said target surface in a non-liquid form, without leaving a residue
of stain or significant traces of said dry formulation.

64. A fragrance delivery system useful as a grooming aid, the delivery system
comprising:
a dispensing device having a dispensing component; and
a dry formulation formed as a mixture of approximately 80 to 90 weight percent
polyethylene glycol (PEG) and approximately 6 to 16 weight percent glycerin and
approximately 0.5 to 10 weight percent fragrance component, all weight percentages
being based on the total weight of the dry formulation; wherein
said mixture is dry as deposited on said dispensing component and dry as dispensed
from said dispensing component during and after said grooming.

65. The grooming aid of Claim 1, wherein:
an insect repellant is substituted for said fragrance component.

66. The grooming aid of Claim 1, wherein:
a sun screen product is substituted for said fragrance component.

67. The grooming aid of Claim 1, wherein:
a skin conditioner is substituted for said fragrance component.
68. The grooming aid of Claim 1, wherein:
an antistatic agent is substituted for said fragrance component.

69. The grooming aid of Claim 1, wherein:
a surfactant or cleaner is substituted for said fragrance component.

70. The grooming aid of Claim 1, wherein:
a coloring agent is substituted for said fragrance component.
FIG. 1

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BRAND

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TO SCORE...
INSERT FINGERS IN POCKET,
WIPE GENTLY ACROSS
CLOTHING

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FIG. 2

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**INTERNATIONAL SEARCH REPORT**

**International application No.**
PCT/US 13/32471

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(8) - A61K 8/30; A61Q 13/00, 15/00 (2013.01)
USPC - 424/76.4, 65; 514/786

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

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): A61K 8/30; 8/18, 8/30; 47/32; A61Q 13/00, 15/00 (2013.01)
USPC: 424/76.4, 65, 400, 401, 409, 448, 484; 514/786, 772.3, 772.6, 772, 772.4

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

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

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 5830487 A (KLOFTA, TJ et al.), November 3, 1998; column 2, lines 63-67; column 3, lines 5-63; column 4, lines 35-41; column 9, lines 16-29; column 20, lines 17-20</td>
<td>1, 3, 39, 42</td>
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<tr>
<td>Y</td>
<td>US 6238682 B1 (KLOFTA, TJ et al.), May 29, 2001; column 17, lines 12-42</td>
<td>2, 62, 64</td>
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<td>Y</td>
<td>US 20060225233 A1 (MCKAY, WD), October 12, 2006; figures 4, 11, 15; paragraphs [0025], [0051], [0064], [0065], [0076], [0077], [0080]</td>
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<td>Y</td>
<td>US 20070227044 A1 (MAXSON, FS), October 4, 2007; figures 1a-3b; paragraphs [0022]-[0025]</td>
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<td>Y</td>
<td>WO 2007111927 A2 (KUSIN, B), October 4, 2007; figure 2; page 4, lines 18-21</td>
<td>43*-5, 58-61</td>
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<td>Y</td>
<td>US 8232276 B2 (BURNETT, KM et al.), July 31, 2012; column 2, lines 43-45; column 3, lines 20-24</td>
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<td>A</td>
<td>US 7845360 B2 (WALTERS, M et al.), December 7, 2010; figure 3; column 6, lines 10-27</td>
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</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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- "P" document published prior to the international filing date but later than the priority date claimed
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- "&" document member of the same patent family

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**Name and mailing address of the ISA/US**
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