Disclosed herein is a device for treating surfaces, and cleaning and/or polishing surfaces. The device comprises a hollow member having an open end adapted for the insertion of two or more fingers. The hollow member is defined between a first sheet layer which includes an elastic layer and a second sheet layer including a fibrous nonwoven web layer having an exposed surface. The fibrous nonwoven web layer is impregnated on at least a portion of the exposed surface with a treating composition such as a buffing, cleaning or polishing composition.
DEVICE FOR TREATING SURFACES

BACKGROUND OF THE INVENTION

[0001] Various combinations of articles have been used for the cleaning, buffing and polishing of hard surfaced materials. Cleaning and polishing “kits” may typically comprise three separate components. For example, such kits may comprise a container, such as a bottle or tin, to hold the cleaning composition or polishing composition, an applicator to deliver the composition to the hard surface and to spread the composition on the surface, and a polishing article used to remove a cleaning composition and/or buff a polishing composition into the surface while removing excess polishing composition. As a specific example, a shoe polishing “kit” may consist of a tin or other container of shoe wax or polish, a small brush, a sponge or a first cloth to be used as the polish applicator, and a second larger brush or second cloth to be used for polishing or buffing the waxed shoe surface to a shiny appearance.

[0002] However, such cleaning/polishing kits as described above are bulky and consume valuable space, particularly when a user is traveling and the actual need is only for a small touch-up application of cleaner and/or polish to attend to a surface blemish obtained during travel. Also, it is possible for one or more of the various components of such cleaning or polishing kits to become separated and lost from the others, rendering the kit essentially useless. Furthermore, such cleaning/polishing kits are designed for many instances of use, and where the kit is only infrequently used the cleaning and/or polishing composition is subject to spoilage or desiccation, such that only a few uses are obtained before the remainder of the kit must be discarded as waste.

[0003] Therefore, the need exists for a self-contained, all in one treating device which is capable of holding an impregnated treating composition such as a cleaning and/or polishing composition, and then delivering the treating composition to a surface to be cleaned and/or polished, and then further capable of being utilized to buff or polish the surface. In addition, it would be highly advantageous for such a treating device to be provided as a single-use item which is constructed in such a manner which is consistent with the costs dictated by the disposable applications for items which are utilized in limited- or single-use disposable products.

SUMMARY OF THE INVENTION

[0004] To be written. Summary is a re-writing of finalized claims language.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 illustrates a fibrous nonwoven web layer which has been bonded with a point unbounded bonding pattern.

[0006] FIG. 2 illustrates an exemplary engraved thermal bonding calendar suitable for providing a point unbounded bonding pattern to a web material.

[0007] FIG. 3 schematically illustrates a device for treating surfaces according to an embodiment of the invention.

[0008] FIG. 4 schematically illustrates a device for treating surfaces according to another embodiment of the invention.

DEFINITIONS

[0009] As used herein and in the claims, the term “comprising” is inclusive or open-ended and does not exclude additional unrecited elements, compositional components, or method steps. Accordingly, the term “comprising” encompasses the more restrictive terms “consisting essentially of” and “consisting of”.

[0010] As used herein the term “polymer” generally includes but is not limited to, homopolymers, copolymers, such as for example, block, graft, random and alternating copolymers, terpolymers, etc. and blends and modifications thereof. Furthermore, unless otherwise specifically limited, the term “polymer” shall include all possible geometrical configurations of the material. These configurations include, but are not limited to isotactic, syndiotactic and random symmetries. As used herein the term “thermoplastic” or “thermoplastic polymer” refers to polymers that will soften and flow or melt when heat and/or pressure are applied, the changes being reversible.

[0011] As used herein, the terms “elastic” and “elastomeric” are generally used to refer to a material that, upon application of a force, is stretchable to a stretched, biased length which is at least about 133%, or one and a third times, its relaxed, unstretched length, and which upon release of the stretching, biasing force will recover at least about 50% of its elongation. By way of example only, an elastic material having a relaxed, unstretched length of 10 centimeters may be elongated to at least about 13.3 centimeters by the application of a stretching or biasing force. Upon release of the stretching or biasing force the elastic material will recover to a length of not more than 11.65 centimeters.

[0012] As used herein the term “fibers” refers to both staple length fibers and substantially continuous filaments, unless otherwise indicated. As used herein the term “substantially continuous” with respect to a filament or fiber means a filament or fiber having a length much greater than its diameter, for example having a length to diameter ratio in excess of about 15,000 to 1, and desirably in excess of 50,000 to 1.

[0013] As used herein the term “monocomponent” filament refers to a filament formed from one or more extruders using only one polymer. This is not meant to exclude filaments formed from one polymer to which small amounts of additives have been added for color, anti-static properties, lubrication, hydrophilicity, etc.

[0014] As used herein the term “multicomponent filaments” refers to filaments that have been formed from at least two component polymers, or the same polymer with different properties or additives, extruded from separate extruders but spun together to form one filament. Multicomponent filaments are also sometimes referred to as conjugate filaments or bicomponent filaments, although more than two components may be used. The polymers are arranged in substantially constantly positioned distinct zones across the cross-section of the multicomponent filaments and extend continuously along the length of the multicomponent filaments. The configuration of such a multicomponent filament may be, for example, a concentric or eccentric sheath/core arrangement wherein one polymer is surrounded by another, or may be a side by side arrangement, an “islands-in-the-sea” arrangement, or arranged as pie-wedge shapes or as
stripes on a round, oval or rectangular cross-section filament, or other configurations. Multicomponent filaments are taught in U.S. Pat. No. 5,108,820 to Kaneko et al. and U.S. Pat. No. 5,336,552 to Strack et al. Conjugate fibers are also taught in U.S. Pat. No. 5,382,400 to Pike et al. and may be used to produce crimp in the fibers by using the differential rates of expansion and contraction of the two (or more) polymers. For two component filaments, the polymers may be present in ratios of 75/25, 50/50, 25/75 or any other desired ratios. In addition, any given component of a multicomponent filament may desirably comprise two or more polymers as a multicomponent blend component.

[0015] As used herein the terms “bicistous filament” or “multicistous filament” refer to a filament formed from at least two polymers, or the same polymer with different properties or additives, extruded from the same extruder as a blend. Multicomponent filaments do not have the polymer components arranged in substantially constantly positioned distinct zones across the cross-section of the multicomponent filaments; the polymer components may form fibrils or protofilaments that start and end at random.

[0016] As used herein the terms “nonwoven web” or “nonwoven fabric” refer to a web having a structure of individual filaments or filaments that are interlaid, but not in an identifiable manner as in a knitted or woven fabric. Nonwoven fabrics or webs have been formed from many processes such as for example, meltblowing processes, spunbonding processes, airlaying processes, and carded web processes. The basis weight of nonwoven fabrics is usually expressed in grams per square meter (gsm) or ounces of material per square yard (osy) and the filament diameters useful are usually expressed in microns. (Note that to convert from osy to gsm, multiply osy by 33.91).

[0017] The terms “spunbond” or “spunbond nonwoven web” refer to a nonwoven fiber or filament material of small diameter filaments that are formed by extruding molten thermoplastic polymer as filaments from a plurality of capillaries of a spinneret. The extruded filaments are cooled while being drawn by an eductive or other well known drawing mechanism. The drawn filaments are deposited or laid onto a forming surface in a generally random manner to form a loosely entangled filament web, and then the laid filament web is subjected to a bonding process to impart physical integrity and dimensional stability. The production of spunbond fabrics is disclosed, for example, in U.S. Pat. No. 4,340,563 to Appel et al., U.S. Pat. No. 3,692,618 to Dorschner et al., and U.S. Pat. No. 3,802,817 to Matsuaki et al. Typically, spunbond fibers or filaments have a weight-per-unit-length in excess of about 1 denier and up to about 6 denier or higher, although both finer and heavier spunbond filaments can be produced. In terms of filament diameter, spunbond filaments often have an average diameter of larger than 7 microns, and more particularly between about 10 and about 25 microns, and up to about 30 microns or more.

[0018] As used herein the term “meltblown fibers” means fibers or microfibers formed by extruding a molten thermoplastic material through a plurality of fine, usually circular, die capillaries as molten threads or filaments or fibers into converging high velocity gas (e.g. air) streams that attenuate the fibers of molten thermoplastic material to reduce their diameter. Thereafter, the meltblown fibers are carried by the high velocity gas stream and are deposited on a collecting surface to form a web of randomly dispersed meltblown fibers. Such a process is disclosed, for example, in U.S. Pat. No. 3,849,241 to Buntin. Meltblown fibers may be continuous or discontinuous, are often smaller than 10 microns in average diameter and are frequently smaller than 7 or even 5 microns in average diameter, and are generally tacky when deposited onto a collecting surface.

[0019] As used herein “carded webs” refers to nonwoven webs formed by carding processes as are known to those skilled in the art and further described, for example, in coassigned U.S. Pat. No. 4,488,928 to Alkhkan and Schmidt which is incorporated herein in its entirety by reference. Briefly, carding processes involve starting with staple fibers in a bulky batt that is combed or otherwise treated to provide a web of generally uniform basis weight.

[0020] As used herein, “thermal point bonding” involves passing a fabric or web of fibers or other sheet layer material to be bonded between a heated calender roll and an anvil roll. The calender roll is usually, though not always, patterned on its surface in some way so that the entire fabric is not bonded across its entire surface. As a result, various patterns for calender rolls have been developed for functional as well as aesthetic reasons. One example of a pattern has points and is the Hansen Pennings or “H&P” pattern with about a 30% bond area with about 200 bonds/square inch as taught in U.S. Pat. No. 3,855,046 to Hansen and Pennings. The H&F pattern has square point or pin bonding areas wherein each pin has a side dimension of 0.038 inches (0.965 mm), a spacing of 0.070 inches (1.778 mm) between pins, and a depth of bonding of 0.023 inches (0.584 mm). The resulting pattern has a bonded area of about 29.5%. Another typical point bonding pattern is the expanded Hansen and Pennings or “EHP” bond pattern which produces a 15% bond area with a square pin having a side dimension of 0.037 inches (0.94 mm), a pin spacing of 0.097 inches (2.464 mm) and a depth of 0.039 inches (0.991 mm). Other common patterns include a high density diamond or “HDD pattern”, which comprises point bonds having about 460 pins per square inch (about 71 pins per square centimeter) for a bond area of about 15% to about 23% and a wire weave pattern looking as the name suggests, e.g. like a window screen. Typically, the percent bonding area varies from around 10% to around 30% or more of the area of the fabric or laminate web. Another known thermal calendering bonding method is the “pattern unbounded” or “point unbounded” or “PUB” bonding as taught in U.S. Pat. No. 5,858,515 to Stokes et al., wherein continuous bonded areas define a plurality of discrete unbounded areas. Thermal bonding (point bonding or point-unbonding) imparts integrity to individual layers by bonding fibers within the layer and/or for laminates of multiple layers, such thermal bonding holds the layers together to form a cohesive laminate material.

DETAILED DESCRIPTION OF THE INVENTION

[0021] The present invention provides a device for treating surfaces which may be usefully employed to deliver or apply a cleaning, waxing, polishing and/or other composition to the surface, and then also utilized to buff the surface in order to clean the surface and/or polish it. The device for treating surfaces comprises a hollow member which has an open end that is adapted for the insertion of two or more fingers of a user.
The hollow member is defined between a first sheet layer and a second sheet layer, and the first and second sheet layers are bonded together along at least a substantial portion of the periphery of the treating device, except leaving one open end for finger insertion, to form the hollow member. The first sheet layer comprises an elastic layer, and the second sheet layer comprises a fibrous nonwoven web layer, and the fibrous nonwoven web layer is pre-impregnated on at least a portion of its surface with an impregnant such as a treating composition to be delivered to the surface which is to be cleaned and/or polished.

The invention will be described with reference to the following description and Figures which illustrate certain embodiments. It will be apparent to those skilled in the art that these embodiments do not represent the full scope of the invention which is broadly applicable in the form of variations and equivalents as may be embraced by the claims appended hereto. Furthermore, features described or illustrated as part of one embodiment may be used with another embodiment to yield still a further embodiment. It is intended that the scope of the claims extend to all such variations and equivalents.

As stated, the device for treating surfaces comprises a first sheet layer having at least one elastic layer. It is anticipated that in use the treating device will be subjected to vigorous rubbing motions both as the user delivers the treating composition to the surface and then as the user proceeds to buff the surface to clean and/or polish it. The first and second sheet layers of the treating device when bonded together define the hollow member in such a way that the insertion of fingers into the treating device should, at least to a small degree, stretch or elongate the elastic layer of the first sheet layer. Because elastic materials have the dual properties of stretchability and recovery, the recovery force of the elastic layer will maintain a certain amount of tension on the fingers of the user. Therefore, the elastic layer acts to make the treating device more form-fitting, and helps to keep the treating device in place on the fingers of the user during vigorous rubbing.

The elastic layer may be a single layer such as an elastic cast or blown film layer or an elastic foam layer, or a fibrous elastic layer such as an elastic meltblown layer or an elastic spunbond layer. In general, the elastic layer may have a basis weight of from about 7 gsm to about 68 gsm, or greater. More desirably, the elastic layer may have a basis weight from about 7 gsm to about 34 gsm. Because elastic materials are often expensive to produce, the elastic layer is desirably of as low basis weight as is possible while still providing the desired properties of stretch and recovery to the first sheet layer.

Many elastomeric polymers are known to be suitable for forming fibers, foams and films. Elastic polymers useful may be any suitable elastomeric fiber or film forming resin including, for example, elastic polyesters, elastic polyurethanes, elastic polyamides, elastic co-polymers of ethylene and at least one vinyl monomer, block copolymers, and elastic polyolefins. Examples of elastic block copolymers include those having the general formula A-B-A' or A-B, where A and A' are each a thermoplastic polymer endblock that contains a styrenic moiety such as a poly (vinyl arene) and where B is an elastomeric polymer midblock such as a conjugated diene or a lower alkene polymer such as for example polystyrene-poly(ethylene-butylene)-polystyrene block copolymers. Also included are polymers composed of an A-B-A-B tetra block copolymer, as discussed in U.S. Pat. No. 5,332,613 to Taylor et al. An example of such a tetra block copolymer is a styrene-poly(ethylene-propylene)-styrene-poly(ethylene-propylene) or SESEP block copolymer. These A-B-A' and A-B-A-B copolymers are available in several different formulations from the Kraton Polymers of Houston, Tex. under the trade designation KRATON®.

Examples of elastic polyolefins include ultra-low density elastic polypropylenes and polyethylene, such as those produced by “single-site” or “metallocene” catalysis methods. Such polymers are commercially available from the Dow Chemical Company of Midland, Mich. under the trade name ENGAGE®, and described in U.S. Pat. Nos. 5,278,272 and 5,272,236 to Lai et al. entitled “Elastic Substantially Linear Olefin Polymers”. Also useful are certain elastomeric polypropylenes such as are described, for example, in U.S. Pat. No. 5,539,056 to Yang et al. and U.S. Pat. No. 5,596,052 to Resconi et al., incorporated herein by reference in their entireties, and polyethylene such as AFFINITY® EG 8200 from Dow Chemical of Midland, Mich. as well as EXACT® 4049, 4011 and 4041 from Exxon of Houston, Tex., as well as blends. It may also be desirable for the elastic layer to be breathable, capable of passing vapors and/or gases, and breathable microporous elastic films containing fillers as are described in, for example, U.S. Pat. Nos. 6,015,764 and 6,111,163 to McCorrumbuck and Hafler, U.S. Pat. No. 5,932,407 to Moynan and Milicevic, and in U.S. Pat. No. 6,461,457 to Taylor and Martin, all incorporated herein by reference in their entireties, may desirably be utilized.

Elastic layers, whether selected from films, foams or fibrous layers, may have unpleasant tactile aesthetic properties, such as feeling rubbery or tacky to the touch, making them unpleasant and uncomfortable against the skin of the user. Fibrous webs produced from non-elastic polymers, on the other hand, often have better tactile, comfort and aesthetic properties, feeling smoother and less tacky in skin-contacting uses. The tactile aesthetic properties of the elastic layer of the first sheet layer can therefore be improved by “facing” the elastic layer, that is, by forming a laminate of the elastic layer with one or more non-elastic, extensible materials, such as nonwoven fibrous webs, on the surface of the elastic layer which is to contact the user’s skin. In addition, because the elastic layer by itself may have low resistance to rupturing or tearing, especially if forces are applied in a direction perpendicular to the plane of the fibrous layer, it may be highly desirable to face the elastic layer of the first sheet layer with one or more non-elastic fibrous layers in order to provide additional structural integrity to the first sheet layer and help reduce possible in-use tears of the first sheet layer. Such a fibrous facing layer may be any fibrous layer capable of extension in at least one direction, such as nonwoven web materials, textile materials or knitted materials. However, for ease and speed of production and due to their relatively low cost, nonwoven web materials are highly suitable for use in the first sheet layer as a facing layer to the elastic layer, where such one or more facing layers are desired. A facing layer may desirably be joined or bonded to the elastic layer by such methods as are known in the art, for example by thermal bonding, adhesive bonding, ultrasonic bonding and the like, or by extrusion lamination where the fibrous facing layer is joined to the elastic layer just after
extrusion of the elastic layer, while the elastic polymer of the elastic layer is still in a molten or semi-molten state.

[0029] Polymers suitable for making a fibrous facing layer include those polymers known to be generally suitable for making nonwoven webs such as spunbond, meltblown, carded webs and the like, and include for example polyolefins, polyester, polyamides, polycarbonates and copolymers and blends thereof. It should be noted that the polymer or polymers may desirably contain other additives such as processing aids or treatment compositions to impart desired properties to the filaments, residual amounts of solvents, pigments or colorants and the like.

[0030] Suitable polyolefins include polyethylene, e.g., high density polyethylene, medium density polyethylene, low density polyethylene and linear low density polyethylene;

[0031] polypropylene, e.g., isotactic polypropylene, syndiotactic polypropylene, blends of isotactic polypropylene and atactic polypropylene; polybutylene, e.g., poly(1-butene) and poly(2-butene); polypentene, e.g., poly(1-pentene) and poly(2-pentene); poly(3-methyl-1-pentene); poly(4-methyl-1-pentene); and copolymers and blends thereof. Suitable copolymers include random and block copolymers prepared from two or more different unsaturated olefin monomers, such as ethylene/propylene and ethylene/butylene copolymers. Suitable polyamides include nylon 6, nylon 6/6, nylon 4/6, nylon 11, nylon 12, nylon 6/10, nylon 6/12, nylon 12/12, copolymers of caprolactam and alkylene oxide diamines, and the like, as well as blends and copolymers thereof. Suitable polyesters include poly(lactic) and poly(lactic acid) polymers as well as polyethylene terephthalate, polybutylene terephthalate, polyetramethylene terephthalate, polycyclohexylene-1,4-dimethyleneterephthalate, and isoterephthal copolymers thereof, as well as blends thereof. Nonwoven fibrous webs formed from non-elastic polymers such as, for example, polyolefins are generally considered non-elastic. This lack of elasticity may restrict these nonwoven web materials to applications where elasticity is not required or desirable.

[0032] When non-elastic nonwoven webs are laminated to an elastic layer, the resulting laminate material may also be too restricted in its elastic properties. Therefore, where it is desirable to face the elastic layer with one or more non-elastic material layers, care should be taken to use a non-elastic material which is at least somewhat extensible in the direction of desired stretch and recovery of the first sheet layer. For example, carded webs of staple fibers as are known in the art are generally known to have considerably greater fiber orientation in the machine direction or “MD” than in the cross machine direction or “CD”. Because more of the fibers are aligned in the MD, the carded web tends to have more extensibility in the CD than in the MD. In addition, utilizing low basis weights for a nonwoven web selected as a facing material may allow for greater extensibility, whether such nonwoven web layer is a spunbond web, a meltblown web, a carded web, etc.

[0033] Generally speaking, the basis weight of a nonwoven web facing layer may be from about 7 gsm or less up to 68 gsm or more; however, in order to reduce cost of the overall device for treating surfaces it is desirable to use the lightest weight of facing material capable of producing the desired aesthetic and/or structural result. More particularly, a facing layer used in the first sheet layer may have a basis weight from about 7 gsm or less to about 34 gsm, and still more particularly, from about 7 gsm to about 21 gsm. Other embodiments are possible. For example, where the primary reason for facing the elastic layer with a non-elastic layer is to avoid the tacky feel of the elastomer, the elastic layer may be faced with a light “dusting” of meltblown fibers produced from non-elastic polymer, and such dustings of meltblown fibers may be substantially lower in basis weight, such as 5 gsm, 3 gsm, 2 gsm or lighter.

[0034] Other laminate materials which include the elastic layer of the first sheet layer may be desirable. For example, elastic laminate materials of elastic and non-elastic materials have also been made by bonding the non-elastic material or web to an elastic material in a manner that allows the entire laminate or composite material to stretch or elongate so it can be used in disposable products. In one such laminate material, disclosed, for example, by Vander Wielen et al. U.S. Pat. No. 4,720,415, incorporated herein by reference in its entirety, a non-elastic web material is bonded to an elastic material while the elastic material is held stretched, so that when the elastic material is released, the non-elastic web material gathers between the bond locations, and the resulting elastic laminate material is stretchable to the extent that the non-elastic web material gathered between the bond locations allows the elastic material to elongate.

[0035] In another such elastic laminate material, disclosed for example by U.S. Pat. Nos. 5,336,545, 5,226,992, 4,981,747 and 4,965,122 to Morman, all incorporated herein by reference in their entirety, the non-elastic web material is necked (that is, is elongated in one direction, usually the machine direction, causing roulges to form across the web) and is joined to the elastic material while in the non-elastic material in the necked or elongated condition. The non-elastic material is then able to be extended in the direction perpendicular to the direction of necking, allowing for extensibility of the laminate. Such laminates may be referred to as “necked-bonded laminates” or “NBL”.

[0036] When utilizing any of the above-mentioned elastic laminate materials as the elastic layer of the first sheet layer, in order to achieve the desired aesthetic and skin comfort properties it is desirable that the side of the elastic layer which is faced with the fibrous web material be oriented toward the inside surface of the hollow member of the treating device. However, such elastic laminate materials are also known to be made in tri-laminate or multi-layer laminate form, that is, wherein the elastic layer is faced on each side with one or more fibrous web materials. Such other laminate forms are also highly suitable for use in or as the first sheet layer and it may be desired to have to also have the outside-facing side of the first sheet layer faced with a non-elastic fibrous layer to avoid the possibility of the elastic layer sticking to other surfaces such as other treating devices or the packaging in which and individual treating device is provided.

[0037] As stated, the device for treating surfaces further comprises a second sheet layer having at least one fibrous nonwoven web layer. The fibrous nonwoven web layer is an outer layer of the treating device and has an exposed surface,
and should be capable of accepting a treating composition, and later delivering at least some of the treating composition to the surface which is to be cleaned and/or polished by the user of the treating device. In addition to holding and delivering the treating composition, the fibrous nonwoven web layer is also intended for use in buffering the desired surface to be cleaned and/or polished. Suitable fibrous nonwoven web layers for use in the second sheet layer include the fibrous webs discussed above, such as spunbond nonwoven webs of substantially continuous filaments or fibers and bonded carded webs of staple length fibers. Generally, the second sheet layer and/or the fibrous nonwoven web layer comprised by the second sheet layer may have a basis weight of from about 7 gsm or less to about 340 gsm, or even greater. The basis weight selected for the fibrous nonwoven web layer will depend on a number of factors, including the type and amount of treating composition desired to be delivered, the types of surfaces desired to be cleaned and/or polished with an embodiment of the treating device, etc. More desirably, the fibrous nonwoven web layer may have a basis weight from about 17 gsm to about 170 gsm, and still more desirably from about 17 gsm to about 100 gsm. the fibers of the fibrous nonwoven web layer may be mono- or multicomponent, multiconstituent, crimped or uncrimped, or substantially round in cross section or be shaped fibers, or be mixtures of any of the foregoing.

[0038] The characteristics or physical properties of fibrous nonwoven webs are controlled, at least in part, by the density or openness of the fabric. Generally speaking, fibrous nonwoven webs made from crimped filaments or fibers have a lower density, higher loft and improved resiliency compared to similar nonwoven webs of uncrimped filaments. Such a lofty, low density fibrous nonwoven web layer may be particularly desirable for use in the second sheet layer depending on the ultimate purpose of the device for treating surfaces and/or the type of treating composition to be used with the treating device.

[0039] By way of example, where the treating composition selected is a low viscosity fluid such as, for example, an aqueous or alcohol based cleaning composition, a denser or flatter, less lofty fibrous nonwoven web layer may suffice. However, for other uses a less dense or more lofty structure fibrous nonwoven web layer, one having a more open volume structure, may be more desirable. For example, a more lofty structure may be particularly desirable where the treating composition to be delivered to the surface is desired to be a heavier composition such as a high viscosity fluid or a paste, or various waxes, or polishing compounds, or where it is desirable to deliver larger amounts of cleaning or polishing compounds than can be contained within the web structure of a less lofty nonwoven web.

[0040] Various methods of crimping melt-spun multicomponent filaments are known in the art. As disclosed in U.S. Pat. Nos. 3,595,731 and 3,423,266 to Davies et al., incorporated herein by reference in their entireties, bicomponent fibers or filaments may be mechanically crimped and the resultant fibers formed into a nonwoven web or, if the appropriate polymers are used, a latent helical crimp produced by bicomponent fibers or filaments may be activated by heat treatment of the formed web. Alternatively, as disclosed in U.S. Pat. No. 5,382,400 to Pike et al., incorporated herein by reference in its entirety, the heat treatment may be used to activate the latent helical crimp in the fibers or filaments before the fibers or filaments have been formed into a nonwoven web. In addition, lofty fibrous nonwoven web layers may be desirable for use in the second sheet layer where it is desired to emboss or otherwise impart surface characteristics to the outer facing surface of the second sheet layer.

[0041] Bonding of the fibrous nonwoven web layer which is to be used in the second sheet layer may be performed by any method known to be suitable for bonding such nonwoven webs, such as for example by thermally point-bonding or spot-bonding the nonwoven web as described above. Alternatively, where the fibers are multicomponent fibers having component polymers with differing melting points, through-air bonder such as are well known to those skilled in the art may be advantageously utilized. Generally speaking, a through-air bonder directs a stream of heated air through the web of continuous multicomponent fibers thereby forming inter-fiber bonds by desirably utilizing heated air having a temperature at or above the polymer melting temperature of a lower melting polymer component and below the melting temperature of a higher melting polymer component. As still other alternatives, the fibrous nonwoven web layer may be bonded by utilizing other means as are known in the art such as for example adhesive bonding, ultrasonic bonding or entanglement bonding such as hydroentangling or needling. While the type of bonding utilized is not critical, because the intended use for the treating device is rubbing the outer surface of the second sheet layer against other surfaces to be cleaned and/or polished, it is important that the fibrous nonwoven web layer be bonded or consolidated sufficiently to avoid excess abrading or "fuzzing" of the fibrous nonwoven web layer during such rubbing or buffing.

[0042] Although not required, a particularly suitable bonding method for the fibrous nonwoven web layer includes bonding known as "point unbonded" or "pattern unbonded" or "PUB" bonding, such as is taught in U.S. Pat. No. 5,858,515 to Stokes et al., incorporated herein by reference in its entirety. As disclosed in U.S. Pat. No. 5,858,515 one or both calender rolls of a thermal bonding apparatus is engraved such that its surface comprises a continuous pattern of bonded land areas defining a plurality of discrete openings, apertures or holes. Each of the openings in the surface of the roll or rolls forms a discrete unbonded area in the surface of the nonwoven web material, in which the fibers of the web are substantially or completely unbonded. The fibers within the discrete unbonded areas are dimensionally stabilized by the continuous bonded areas that encircle or surround each unbonded area, and the unbonded areas afford spaces between fibers within the unbonded areas.

[0043] Referring now to FIGS. 1 and 2, a fibrous nonwoven material bonded by such a point unbonded method is shown generally designated 4 in FIG. 1. The nonwoven material 4 comprises continuous bonded areas 6 which define a plurality of discrete, dimensionally-stabilized unbonded areas 8. In FIG. 2 is shown an exemplary calender roll 10 having a point-unbonded surface engraving having continuous land areas 16 defining a plurality of discrete openings or apertures 18. The continuous bonded areas 6 correspond to the continuous land areas 16 shown in FIG. 2 on the exemplary calender roll 10. The unbonded areas 8
of nonwoven web 4 correspond to the discrete openings or apertures 18 on the exemplary calender roll 10.

[0044] Within the continuous bonded areas 6, the fibers of the nonwoven material are bonded or fused together and desirably are substantially non-fibrous and may, for example, comprise a film-like area. In the unbonded areas 8, the fibers of the nonwoven material are substantially or completely free of bonding or fusing such that they retain their open fibrous structure. Where a point unbonded bonding method is selected, it should be noted that the size, shape, number, and configuration of openings 18 can be varied to meet the particular end-use requirements of the fibrous nonwoven web layer and/or treating device. The degree of bonding imparted to the fibrous nonwoven web layer by the continuous land areas 16 can be expressed as a percent bond area, i.e., the portion of the area of at least one surface of the fibrous nonwoven web layer which is occupied by the continuous bonded areas designated in FIG. 1 by reference numeral 6. Alternatively, this may be expressed in terms of the percent unbonded area, that is, the percent portion of the fibrous nonwoven web layer comprising unbonded fibers available to accept (and later deliver to a surface) the treating composition, and available for buffing of the desired surface. Stated generally, the lower limit on the percent bond area suitable for the fibrous nonwoven web layer (or, alternatively the upper limit on the percent unbonded area) is the point at which the fibers pull-out or fuzzing excessively reduces the surface integrity and durability of the pattern-unbonded material. For applications where a low to moderate amount of abrasion or fuzzing is acceptable, this percent unbonded area may suitably be as high as about 85 percent, or higher. For other applications where the possibility of abrasion or fuzzing of the fibrous nonwoven web layer is less desirable, fibrous nonwoven web layers having percent unbonded areas ranging from about 80 percent to about 50, or even less, may be suitable.

[0045] The device for treating may also desirably include a liquid barrier material capable of preventing flow-through of the treating composition onto a user’s fingers. Where a liquid barrier material is used it should be positioned between the user’s fingers and the fibrous nonwoven web layer of the second sheet layer. Suitable liquid barrier materials include cast and blown films, which may also suitably be breathable films, and nonwoven web materials such as spunbond layers and meltblown layers as are known in the art and are described above. The basis weight of barrier material may be from about 7 gsm or less up to 68 gsm or more; however, in order to reduce cost of the overall treating device it is desirable to use the lightest weight of barrier material which is necessary for preventing or substantially reducing flow-through of treating composition. More particularly, a layer of barrier material may have a basis weight from about 7 gsm or less to about 34 gsm, and still more particularly, from about 7 gsm to about 21 gsm. Other embodiments are possible. For example, where the desired treating composition is a heavy or viscous fluid, or a wax or paste, that is, a treating composition having less tendency to flow, the requirements for a barrier material may be minimal and in such situations the barrier function may be provided for by only a light “dusting” of meltblown fibers of 17 gsm or less. Depending on need, such dustings of meltblown fibers may be substantially lower in basis weight and ranging from about 2 gsm to about 15 gsm.

[0046] While the liquid barrier material may be provided as a layer situated between the first sheet layer and the second sheet layer, it may be more desirable to have the liquid barrier material incorporated into or bonded onto the second sheet layer itself, so as to avoid the possibility of accidental finger insertion on the wrong side of the barrier layer, i.e., between the second sheet layer and the barrier layer. Therefore, the liquid barrier material may be provided to the second sheet layer as a laminate material wherein the laminate material incorporates both the fibrous nonwoven web layer and the liquid barrier material. Where the liquid barrier material is a fibrous web, such as a meltblown layer, such a laminate may desirably comprise only the fibrous nonwoven web layer and the meltblown liquid barrier material.

[0047] Such a laminate construction of the second sheet layer may desirably further comprise a skin-contacting layer or facing layer having more cloth-like aesthetic characteristics than meltblown webs or films selected as the barrier material, in which case the laminate may be provided as a three (or more) layer laminate comprising the fibrous nonwoven web layer and a skin-contacting layer with the meltblown or film liquid barrier material interposed between. The skin contacting layer may be any material layer provided to reduce the tacky feel of the barrier material against the skin, and may be such as those described above with respect to the skin contacting/facing layer which may be used in the first sheet layer. Such multilayer laminates of the second sheet layer including the fibrous nonwoven web layer may be bonded together by methods as are known in the art and described above, such as by thermal point bonding, point unbonding, adhesive bonding, ultrasonic bonding, and the like. Particular examples of multilayer laminate construction for the second sheet layer include spunbond-film-spunbond laminates as are known in the art and spunbond-meltblown-spunbond laminates such as are described in U.S. Pat. Nos. 4,041,203 and 4,766,029 to Brock et al., U.S. Pat. No. 5,464,688 to Timmons et al. and U.S. Pat. No. 5,169,706 to Collier et al., all of which are incorporated herein by reference in their entireties.

[0048] As was mentioned, it may be desirable for a barrier layer to be breathable, that is, to act as a barrier to passage of liquids yet allow the passage of water vapor and/or gases. A liquid barrier layer which is also breathable may provide increased in-use comfort to the user by allowing passage of water vapor. Nonwoven barrier materials such as meltblown barrier layers are generally capable of allowing passage of water vapor and gasses but film materials may act as a barrier to these as well. However, breathable films may be used such as are known in the art, such as microporous filled films and breathable monolithic films. Exemplary breathable films and film-nonwoven laminate materials are described in, for example, U.S. Pat. No. 6,114,024 to Forte, U.S. Pat. No. 6,309,736 to McCormack et al., and U.S. Pat. No. 6,037,281 to Mathis et al., all incorporated herein by reference in their entireties.

[0049] In addition, it should be noted that although it was stated above that the fibrous nonwoven web layer of the second sheet layer should itself be bonded to provide structural integrity and abrasion resistance, where the second sheet layer comprises a laminate material including the fibrous nonwoven web layer, the fibrous nonwoven web layer need not necessarily be bonded prior to the lamination
bonding step. As another alternative, prior to being laminate bonded the fibrous nonwoven web layer may be only lightly bonded, or bonded with a low bonding area method, in order to avoid having the final form of the fibrous nonwoven web layer in the laminate being bonded to a greater extent than desired.

[0050] It should further be noted that the fibrous nonwoven web layer, whether provided to the second sheet layer as a laminate with a liquid barrier material or not, may itself be a multi-layer structure. For example, a spunbond fibrous nonwoven web layer may be produced on a multi-spin bank machine where a subsequent spin bank deposits fibers atop a layer of just-deposited fibers from a previous spin bank. In this situation, the various layers of deposited fibers in the fibrous nonwoven web layer may be the same, or they may be different in basis weight and/or in terms of the composition, type, size, level of crimp, and/or shape of the fibers produced. As another example, the fibrous nonwoven web layer may be provided as two or more individually produced layers of spunbond, carded web, etc. which have been bonded together to form the fibrous nonwoven web layer, and these individually produced layers may differ in terms of production method, basis weight, composition, and fibers as discussed above.

[0051] Once the desired configuration and materials of the first sheet layer and second sheet layer have been selected, the first and second sheet layers are bonded together along at least a substantial portion of the periphery of the treating device, except leaving one open end for finger insertion, to form the hollow member. As stated, the hollow member should be large enough to allow for insertion of two or more fingers into the treating device. The first and second sheet layer may be bonded together by any known methods, such as for example by stitch bonding, thermal bonding in points or in lines, ultrasonic bonding or adhesive bonding. It may be desirable for the treating device to be configured such that the proximal end of the device (the end nearest the user’s hand, i.e., the open end of the device where the fingers begin insertion) is somewhat wider than the distal end of the device (i.e. the end nearest the tips of the user’s fingers when the device is worn).

[0052] Turning to FIG. 3, there is schematically illustrated in perspective view a device for treating surfaces according to an embodiment of the invention. In FIG. 3, the treating device, designated generally 20, comprises the first sheet layer 22 and the second sheet layer 24. The first sheet layer and the second sheet layer are bonded together around their respective peripheral edges by intermittent sewing bonds 26 as shown. As described above, the sewing bonds may be performed by thermal bonding, adhesive bonding, ultrasonic bonding or the like, and need not necessarily be intermittent bonds as shown. The first and second sheet layers may be first cut to the desired size and shape and then bonded together along the periphery of the cut shapes. Alternatively, the first and second sheet layers may be first bonded together to form the general shape of the hollow member and treating device, and then additional material may be trimmed off of the first and second sheet layers around the periphery of the bonds to give the treating device its final desired shape. In addition, although not depicted in FIG. 3, it may be desirable to allow a certain length of material from one or both of the first or second sheet layers to remain along the distal edge of the treating device. Such remaining material may be advantageously employed to fit within small spaces or cracks or crevices of the surface to be cleaned or polished, and may desirably extend from about 1 to about 10 millimeters, and more desirably from about 1 to about 5 millimeters, from the distal end bonding sites.

[0053] The treating device is open at one end to form a cavity or hollow member 28 which is open nearest the proximal end of the device 20, to permit insertion of the fingers of the user. As shown, the treating device 20 in FIG. 3 is wider at the proximal end of the device than at the distal end of the device, although this is not required. Although also not required, it may in addition be desirable for ease of donning for the second sheet layer 24 to be longer than the first sheet layer 22 as is shown in FIG. 1, so that a user may employ the additional length of the second sheet layer 24 as a gripping or pulling tab as the treating device 20 is drawn on over the fingers. Where it is desired to have such a pulling tab portion available, either first sheet layer 22 or second sheet layer 24 may be supplied as the longer portion. However, from a practical standpoint where it is desired to have a longer portion it is more desirable for the longer portion to be the second sheet layer, because the delivery of treating composition and subsequent buffing or polishing are to be accomplished by the second sheet layer.

[0054] As described above, the first sheet layer comprises an elastic layer such as a fibrous or film layer of an elastomeric polymer and may additionally comprise one or more fibrous non-elastic layers, such as a fibrous facing layer as a skin-contacting layer to increase the comfort of the user, and in addition may desirably also have an outside facing non-elastic layer. The second sheet layer comprises a fibrous nonwoven web layer and as described above may additionally comprise a layer of barrier material and/or additional fibrous layers such as other nonwoven web layers.

[0055] Also shown in FIG. 3 is an additional optional bonding line 30 which partially bisects the cavity 28 by bonding first sheet layer 22 to second sheet layer 24 along or near the longitudinal axis of the treating device 20, placed approximately at the midline of the treating device. Bonding line 30 acts to separate the hollow member into separate hollow chambers or sleeves for the user’s individual fingers. Such a separation may be desirable to avoid the possibility of the treating device 20 rotating about the user’s fingers in situations where the treating device 20 is to be used with vigorous side-to-side buffing or scrubbing motions. Bonding line 30 may be supplied as a continuous bond line running the entire length of the longitudinal axis of the treating device (of the first sheet layer, where the first sheet layer is shorter), or a substantial portion of the length of the treating device, or may be a series of intermittent bonds, or may even simply be a single point where the first sheet layer and second sheet layer are bonded together to partially separate the hollow member into individual finger chambers or sleeves. Bonding line 30 may be produced by any of the lamination bonding methods described above, such as by thermal bonding, ultrasonic bonding, stitch bonding, adhesive bonding or the like. It should be noted that stitch bonding may be more desirable where the second sheet layer 24 of treating device 20 also comprises a layer of barrier material.

[0056] As stated, the optional bonding line 30 may run the entire length of the treating device. However, it may be
desirable for ease of donning for the user to be able to grip and lift the proximal end of the first sheet layer with the non-insertion hand, so that the fingers to be inserted may more readily be slipped under the first sheet layer and into the individual finger chambers or sleeves. Therefore, it may be desirable that optional bonding line 30 run from approximately the distal end of the treating device to no more than about 75 percent of the length of the first sheet layer. It may be still more desirable of the optional bonding line 30 to run from approximately the distal end of the treating device to no more than about 50 percent of the length of the first sheet layer.

[0057] FIG. 4 schematically illustrates in perspective view another embodiment of the device for treating surfaces according to an embodiment of the invention. In FIG. 4 the treating device, designated generally 40, is configured to allow for insertion of three fingers of a user. Treating device 40 comprises the second sheet layer 44 bonded to a first sheet layer (not visible in FIG. 4) by intermittent bonds 46 shown around approximately three-fourths of the periphery of the treating device 40. The treating device 40 shown in FIG. 4 also comprises additional optional bonding lines 48 and 50 which partially divide the treating device along lines approximately parallel to the longitudinal axis and which act to provide separate hollow chambers or sleeves for each of three individual fingers. As stated above, such optional bonding lines may be supplied as substantially continuous bond lines as shown or may be an array of intermittent bonds, or may each be single points where the first and second sheet layers are bonded together to partially separate the treating device and provide individual finger chambers or sleeves.

[0058] The treating device 40 shown in FIG. 4 comprises a second sheet layer 44 which has been bonded by a point bonded thermal bond method as was described above. In FIG. 4 the second sheet layer 44 comprises a plurality of unbonded regions 52 defined by the substantially continuous bonded region 54. As described above, such bond patterns are not limited to the particular size, shape or number of bonded areas shown. While a point unbonded bonding pattern is not required for the fibrous nonwoven web layer of the second sheet layer, it provides certain advantages. As stated, a point unbonded bonding pattern may increase the abrasion resistance of the fibrous nonwoven web layer and reduce the amount of fiber pull-out or fuzzing caused during buffing operations by the user. Use of a point unbonded bonding pattern may also provide surface texture to the fibrous nonwoven web layer of the second sheet layer, particularly where a lofty web material is selected for the fibrous nonwoven web layer, wherein the unbonded regions 52 represent raised bumps or dots of web material which extend upwardly, relative to the continuous bonded region 54, from the flat plane of the fibrous nonwoven web layer.

[0059] In addition, because the unbonded areas 52 afford spaces between fibers within the unbonded areas, this space or volume provided between the fibers may provide discrete “pockets” beneficial for accepting and holding a treating composition in place.

[0060] However, no matter what type of bonding is selected for the fibrous nonwoven web layer of the second sheet layer, the fibrous nonwoven web layer is provided pre-impregnated with a treating composition which may then be delivered to the surface which is to be cleaned and/or polished by the user of the treating device. While for certain applications it may be desirable for the entirety of the outer surface of the fibrous nonwoven web layer to be pre-impregnated, and the entire outer surface of the fibrous nonwoven web layer may be used for both delivery of the treating composition and subsequent buffing, it may be more desirable for only a portion, a “delivery zone”, to be impregnated, leaving at least another portion of the fibrous nonwoven web layer which is substantially free of treating composition which may be used for buffing after the treating composition has been applied by rubbing of the delivery zone upon the surface to be cleaned and/or polished. As a particular example, where it is desired to use the treating device 40 for applying a shoe polish as the treating composition, the delivery zone portion of the fibrous nonwoven web layer impregnated with the shoe polish is used to apply the polish and the portion which is substantially free of the treating composition may be used to remove excess polish, buff and/or shine the shoe.

[0061] Shown in FIG. 4, such a delivery zone is designated by bracket A on the second sheet layer 44 of the treating device and this portion is shown as a shaded area. As stated, the delivery zone is provided as a pre-impregnated portion of the fibrous nonwoven web layer of the second sheet layer which contains the desired treating composition for delivery to the surface to be cleaned and/or polished. The remainder of the outer surface of the fibrous nonwoven web layer of the second sheet layer, designated by bracket B in FIG. 4, may be free of or substantially free of treating composition. Note that the relative sizes of the portions of the fibrous nonwoven web layers denoted by brackets A and B, the impregnated and non-impregnated portions, may be quite different depending on the desired amounts of treating composition to be held and delivered, the desired amount of surface available for treating composition-free buffing, etc.

[0062] The type and amount of treating composition to be pre-impregnated on the fibrous nonwoven web layer will depend on the end-use desired for the treating device. Examples include cleaning compositions such as soaps or detergents and polishing or shining compounds such as waxes, pastes and polishes. Such treating compositions may be aqueous or alcohol based, oily or emulsions and may further comprise or be laden with mild abrasives such as particulate matter as an aid to cleaning and/or polishing. By way of example, the treating composition may be a composition for shining shoes. By “composition for shining shoes” what is meant is any treating composition for cleaning, polishing and/or shining shoes and may include without limitation such as soaps, desalting liquids, pigmented or unpigmented pastes, waxes, oils, silicone oils and waxes, etc. In addition, such treating compositions may be delivered as encapsulated or microencapsulated compositions which are released when the treating device is pressed or rubbed against the surface to be treated, cleaned and/or polished. That is, the treating composition may be coated with or entrapped within another material or mixture of materials. Methods for encapsulating liquids, gases or other materials such as for example by spray drying, spray chilling and cooling, extrusion, fluidized bed coating, liposome entrapment, rotational suspension separation are known in the art.

[0063] It is anticipated that the treating device of the present invention can be placed in various packaging mate-
rials, such as film or foil packets, film foil laminates, metallized films, multi-layered plastic films, and the like after manufacture and prior to being shipped and sold. Such packaging is desirable to help preserve the materials used in the manufacture of the treating device and also to help preserve the treating composition impregnated on the fibrous nonwoven web layer of the second sheet layer. It is further anticipated that the treating device may be provided in individual packaging. However, whether provided as individual treating devices or as a plurality, it may be desirable to avoid contacting non-impregnated portions of the treating device with the treating composition. Therefore, it may be desirable to provide the treating device in a folded configuration such that the delivery zone is folded in face-to-face relation upon itself. Returning briefly to FIG. 4 for purposes of illustration, this may be accomplished by folding the fibrous nonwoven web layer upon itself approximately along the longitudinal midline.

Alternatively, the fibrous nonwoven web layer may be folded upon itself along a transverse line approximately half-way down the length extent of the delivery zone, i.e., about half way down the portion shown bracketed by bracket A. As still another alternative, and particularly wherever the delivery zone is small compared to the non-impregnated portion of the treating device, the fibrous nonwoven web layer may be folded upon itself along a transverse line near the bottom of the length extent of the delivery zone, i.e., approximately at the bottom of the portion shown bracketed by bracket A in FIG. 4. In this case, although a certain amount of the treating composition may flow onto the non-impregnated portion under the folded area, a substantial remainder of the non-impregnated portion will still remain free of treating composition. As still further alternatives, whether or not the treating device is provided in a folded configuration, it may be desirable for the delivery zone to be provided as a covered portion of the treatment device, such as by being covered by a release paper to be removed by the user prior to use. Such release papers are well known in the art and may be polymeric films, metal foils or metallized film foils, waxed papers, etc.

EXAMPLES

Example 1

A device for treating surfaces designed to accept two fingers of a user similar to the one illustrated in FIG. 3 was constructed in accordance with the description above. The first sheet layer comprised a necked bonded laminate material (that is, a nonwoven-elastic film-nonwoven laminate material) such as is described above. The two nonwoven layers were approximately 14 gsm polypropylene spunbond layers which were necked and then extrusion laminated to both sides of the elastic film. The elastic film was a 34 gsm ethylene-octene copolymer plastomer film available from Dow Chemical Company of Midland, Mich. under the trade name AFFINITY EG 8200.

The second sheet layer comprised a multilayer laminate including a fibrous nonwoven web layer, a film layer as a liquid barrier material, and a nonwoven facing layer. The fibrous nonwoven web layer itself comprised a bicomponent crimpep fiber spunbond layer having approximately 126 gsm basis weight, and which was through-air bonded. The bicomponent fibers were in a side-by-side component configuration with polyethylene as one component and polypropylene as the other, in approximately a 50-50 component ratio. This fibrous nonwoven web layer was produced substantially in accordance with teachings of U.S. Pat. No. 5,382,400 to Pike et al. as mentioned above and the web layer was consolidated via through air bonding. The film layer was a 18 gsm polyethylene film with Catalloy® skin layers to assist bonding of the film to the fibrous nonwoven webs. Catalloy® polymer is an olefinic multistep reactor product available from Montell USA, Inc. of Wilmington, Del. wherein an amorphous ethylene propylene random copolymer is molecularly dispersed in a predominantly semi-crystalline high-percent propylene monomer/low-percent ethylene monomer continuous matrix, an example of which is described in U.S. Pat. No. 5,300,365 to Ogale. The inside facing layer was also a bicomponent spunbond layer the same as the fibrous nonwoven web layer above except it was 14 gsm rather than 126 gsm. These three layers were laid atop one another in the order described and bonded together into a laminate material for the second sheet layer by point unbonding such as is described above.

The first sheet layer and second sheet layer were then interposed in a face-to-face relationship (with the 14 gsm polypropylene spunbond layer of the second sheet layer in contact with the first sheet layer) and were seam-bonded together by ultrasonic bonding using a Branson 9200W ultrasonic welder available from the Branson Ultrasone Corporation of Danbury, Conn., to form a hollow member between the first and second sheet layers configured to accept two fingers of a user. The treating device had a tapered configuration as is described above wherein the distal end of the device was narrower than the proximal or finger insertion end of the device. The overall dimensions of the treating device were about 4 centimeters wide at the distal end, 7 centimeters wide at the proximal end, and about 9.7 centimeters in length. As illustrated in FIG. 3, the first sheet layer was provided as a slightly shorter layer than the second sheet layer and so measured 7.8 centimeters in length, running from the distal end of the device towards the proximal end. Also as is illustrated in FIG. 3, the optional bonding line was provided to partially divide the hollow member into two individual finger sleeves by ultrasonically bonding the first and second sheet layers together along the longitudinal midline of the device from the distal end to a distance approximately 35 millimeters from the proximal end of the first sheet layer.

A treating composition was pre-impregnated onto approximately one half of the fibrous nonwoven web layer of the second sheet layer to form a delivery zone on the distal end of the fibrous nonwoven web layer. By distal end, what is meant is that the delivery zone comprised that portion of the fibrous nonwoven web layer running longitudinally from the seam-bonded narrow distal end or “top” of the treating device down to about 5 centimeters from the seam-bonded top of the treating device. The treating composition was a black touch-up shoe-polishing compound available under the trade name KIWI® and commercially available from Sara Lee Household & Body Care USA, Exton, Pa.

The index and middle fingers of one hand were then inserted into the open end of the shoe-polish impregnated treating device and the treating device was pulled over and onto the fingers by gripping and pulling with the longer
provided portion of the second sheet layer. The treating device was used to successfully apply and spread the shoe polish on the surface of a shoe. Then, the non-impregnated portion of the fibrous nonwoven web layer of the second sheet layer was used to buff the shoe by rubbing the fibrous nonwoven web layer against the shoe in a vigorous side-to-side motion, until the surface of the shoe took on a well-shined appearance. The elastic layer of the first sheet layer held the treating device snugly in place during both the delivery of the shoe polish and subsequent buffing operations.

Example 2

[0070] A device for treating surfaces designed to accept three fingers of a user similar to the one illustrated in FIG. 4 was constructed in accordance with the description above.

[0071] The first sheet layer and second sheet layer were constructed from the same materials as described with respect to Example 1, and the first and second sheet layers were bonded together to form a hollow member between the first and second sheet layers configured to accept three fingers of a user. The overall dimensions of the treating device were about 4.5 centimeters wide at the distal end, 8 centimeters wide at the proximal end, and about 9.7 centimeters in length. As described with respect to Example 1, the first sheet layer was provided as a slightly shorter layer than the second sheet layer and so measured 7.8 centimeters in length.

[0072] In addition, the treating device of Example 2 was provided with longitudinal additional optional bonding lines to which partially divided the treating device along lines approximately parallel to the longitudinal axis, to provide three separate hollow chambers or sleeves for each of three individual fingers. As in Example 1, these optional bonding lines ran only a portion of the length of the treating device, running from the distal end to a distance approximately 35 millimeters from the proximal end of the first sheet layer.

[0073] The fibrous nonwoven web layer of the treating device of Example 2 was also impregnated on its top half with the same shoe polish, and then the index, middle, and ring fingers of one hand were inserted into the open end of hollow member of the shoe-polish impregnated treating device and the treating device was pulled over and onto the fingers by gripping and pulling with the longer provided portion of the second sheet layer. The treating device was then used to successfully apply and spread the shoe polish on the surface of another shoe and the shoe was successfully buffed and shined using the non-impregnated portion of the fibrous nonwoven web layer.

[0074] The self-contained, all in one device for treating surfaces is highly suited to delivering or applying a cleaning, waxing, polishing and/or other treating composition to a surface, and then buffing the surface in order to clean the surface and/or polish it. In addition, it is advantageously capable of being provided as a single-use item which is constructed in such a manner which is consistent with the costs dictated by the disposable applications for items which are utilized in limited- or single-use disposable products. As still a further advantage, the treating device of the invention is small and lightweight, and therefore is easily portable. Where packaged individually or in low item count packages, the device for treating surfaces may readily be carried in a user’s pocket, purse or wallet until needed for use, which is especially advantageous for travelers when, for example, the treating device is impregnated with a treating composition designed to be a composition for shining shoes.

[0075] While various patents have been incorporated herein by reference, to the extent there is any inconsistency between incorporated material and that of the written specification, the written specification shall control. In addition, while the invention has been described in detail with respect to specific embodiments thereof, it will be apparent to those skilled in the art that various alterations, modifications and other changes may be made to the invention without departing from the spirit and scope of the present invention. It is therefore intended that the claims cover all such modifications, alterations and other changes encompassed by the appended claims.

1. A device for treating surfaces, said device comprising a hollow member having an open end adapted for the insertion of two or more fingers, said hollow member defined between a first sheet layer and a second sheet layer, said first sheet layer comprising an elastic layer, and said second sheet layer comprising a fibrous nonwoven web layer having an exposed surface, wherein said fibrous nonwoven web layer contains on at least a portion of said exposed surface thereof a treating composition.

2. The device of claim 1 wherein said fibrous nonwoven web layer further comprises a substantially treating composition-free portion.

3. The device of claim 1 wherein said elastic layer is selected from elastic films and elastic fibrous layers.

4. The device of claim 1 wherein said first sheet layer is a multilayer laminate material comprising at least one fibrous web layer bonded to said elastic layer.

5. The device of claim 4 wherein said first sheet layer is a multilayer laminate material comprising at least one fibrous web layer bonded to each side of said elastic layer.

6. The device of claim 1 wherein said second sheet layer is a laminate material comprising at least one barrier layer bonded to said fibrous nonwoven web layer.

7. The device of claim 5 wherein said second sheet layer is a laminate material comprising at least one barrier layer bonded to said fibrous nonwoven web layer.

8. The device of claim 6 wherein said barrier layer is selected from film layers and nonwoven web layers.

9. The device of claim 8 wherein said barrier layer is a meltblown layer.

10. The device of claim 8 wherein said barrier layer is a thermoplastic film layer.

11. The device of claim 6 wherein said second sheet layer further comprises at least one additional fibrous web layer adjacent said barrier layer on the side of said barrier layer opposite said fibrous nonwoven web layer.

12. The device of claim 7 wherein said second sheet layer further comprises at least one additional fibrous web layer adjacent said barrier layer on the side of said barrier layer opposite said fibrous nonwoven web layer.

13. The device of claim 2 wherein said device is provided in a folded configuration wherein said impregnated portion of said fibrous nonwoven web is folded in a face-to-face relationship with itself.

14. The device of claim 2 wherein said device is provided in a folded configuration wherein said impregnated portion of said fibrous nonwoven web is folded in a face-to-face relationship with itself.
relationship with said substantially treating composition-free portion of said fibrous nonwoven web.

15. The device of claim 1 having a longitudinal axis and a transverse axis, wherein said first sheet layer and said second sheet layer are bonded to each other along at least one bond line along at least a portion of a line substantially parallel to said longitudinal axis to provide at least partial separation of said hollow member into individual hollow chambers.

16. The device of claim 1 wherein said fibrous nonwoven web layer is bonded with a point unbonded bonding pattern.

17. The device of claim 6 wherein said second sheet layer is bonded with a point unbonded bonding pattern.

18. The device of claim 11 wherein said second sheet layer is bonded with a point unbonded bonding pattern.

19. The device of claim 12 wherein said second sheet layer is bonded with a point unbonded bonding pattern.

20. The device of claim 1 wherein said treating composition is a composition for shining shoes.

21. The device of claim 6 wherein said treating composition is a composition for shining shoes.

22. The device of claim 16 wherein said treating composition is a composition for shining shoes.

23. The device of claim 19 wherein said treating composition is a composition for shining shoes.

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