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Cleaner case

Abstract

A cleaner case includes a textile in the form of a pouch with an open end, where the textile includes an elastic outer layer and a soft fabric inner layer attached or chemically bonded to the elastic outer layer. The inside circumference of the cleaner case at its open end is smaller than the circumference of a portable electronics device that the cleaner case is constructed to hold.

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Claims

1. A cleaner case comprising a textile in the form of a pouch with an open end, wherein said textile comprises: an elastic outer layer of said textile; and a soft knit fabric inner layer of said textile, chemically bonded to said elastic outer layer; wherein the inside circumference of said pouch at its said open end is smaller than the circumference of a portable electronics device that the cleaner case is constructed to hold.
2. The cleaner case of claim 1 wherein said textile is a coated textile.
3. The cleaner case of claim 1, wherein the textile is form fitted to fit the shape of a portable electronics device.
4. The cleaner case of claim 2, wherein said elastic outer layer is a polyvinyl chloride and said soft knit fabric inner layer is a knit polyester.
5. The cleaner case of claim 2, wherein the textile is form fitted to fit the shape of a portable electronics device.
6. A method for making a cleaner case comprising the steps of: Taking the measurements of a portable electronics device; Preparing and folding a single piece of coated textile to have the same relative measurements as the portable electronics device and the addition of a sewing margin, such textile comprising an elastic layer on the outside of the fold chemically bonded to a soft knit fabric inner layer on the inside of the fold; Sewing the sides of said coated textile together to create a pouch with a single open end and a seam on either side, the inside of said pouch at a cross section of said open end having a smaller circumference than the portable electronics device.

Description

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority from U.S. Provisional Patent Application No. 60/925,527, filed on Apr. 21, 2007, which is incorporated by reference.

FIELD OF INVENTION

[0002] The present invention is directed towards a case for cleaning and protecting portable electronic devices.

BACKGROUND OF INVENTION

[0003] The use of portable electronic devices such as mobile phones, personal digital assistants, portable media players, cameras, notebook computers, and handheld digital gaming devices has become an integral part of the modern life style.

[0004] Such devices are typically made with a variety of different materials. The size, looks, and finishes often come with fragile outer surface to achieve the premium sophisticated feeling when held in hands and to improve the way of interaction with these devices, sometimes offering interaction through touching, tracking, pinching, etc., instead of push buttons.

[0005] Users tend to carry around portable electronic devices throughout the day, often in pockets, carrying bags, purses, briefcases, etc., causing the devices to come in contact with dust, small particles, moisture, and other materials that can wear on their respective surfaces. Such devices also come in regular contact with hard or rough items such as keys, coins, pens, the surface of a carrying bag, and other objects that could wear or scratch the surface. The devices are generally designed to be operated by hand, which brings about even further wear in forms such as fingerprint marks, sweat, and grease marks.

[0006] Without being cleaned on a regular basis, the device will generally endure permanent surface damage, and in many cases, malfunctioning, due to scratches, dust, and moisture. Furthermore, without adequate protection, portable electronic devices are vulnerable to damage from impact, and other external forces.

[0007] For simple protection of portable electronics devices, there are various types of carrying cases on the market, typically called "sleeves". Holders on the market are sold with sizes that are not form fitted and leave small gaps adjacent to the devices they house, allowing dust particles and moisture to enter into them and wear on the devices, even when protected. These holders are also not elastically form fitted, and thus they either require that the open end be sealed when the device is within it, or else they allow the device to fall out of them when turned upside down. Furthermore, the holders on the market are designed to protect, but not clean, the portable electronics devices that they house.

[0008] In order to maintain the functionality and cosmetic appeal of a portable electronic device over a long period of time, such device must be protected when carried, and must be wiped clean periodically. Therefore, a need exists for a holder that is designed to protect a portable electronics device from wear and tear, and that also is designed to itself clean such a device whenever it is inserted or removed from such a holder.

SUMMARY OF THE INVENTION

[0009] The present invention is designed to overcome the deficiencies of the prior art described above with a simple design that serves both the function of form-fitted protection from wear, and the function of periodic cleaning of a portable electronics device.

[0010] The invention is a protective case for electronic devices, which cleans and polishes a device when such device is inserted into or drawn from the case. The cleaner case has more than one layer, held together. The layers may be bonded together or held together in another appropriate manner, such as with stitching. If there are only the two layers bonded together, they may be described as a single layer with different material on either side.

[0011] One of the layers must be an elastic layer, and the other layer is of a material suitable for cleaning and polishing. The cleaner case can be produced in various sizes, and should be produced to mimic the outer dimensions of various portable electronic devices, each style of cleaner case designed with an inner circumference of dimensions slightly smaller than those of its respective device, so that the tension of the stretched elastic layer squeezes the cleaner case snugly against the surface of the device.

[0012] The tension of the squeezing elastic layer thus prevents dust and moisture from coming in contact with the portable electronics device within the cleaner case, since the surface is firmly covered, all except for the side of the device exposed to the opening of the cleaner case.

[0013] The opening on each cleaner case style, or sometimes additional openings, may be designed to allow peripherals to connect to the device (e.g. headphones, USB cord, etc.).

[0014] An optional feature of the cleaner case is a loop of fabric or other material attached to the outer surface of the cleaner case, which can be used to hang peripherals (e.g. headphones) or else to connect to a hook or other such device for hanging the case from trousers, a carrying bag, etc.

[0015] Aside from elasticity, the cleaning and polishing function, and aesthetic appearance, appropriate fabrics to make a cleaner case are best chosen where the fabrics would be able to absorb heat from a portable electronics device and thus keep it cool. Since it is generally preferable to have as small of a sleeve as possible when designing any holder for a portable electronics device, the cleaner case's size aesthetic is best achieved with a minimal, sleek profile. Aesthetically, the best made of the cleaner case, therefore, has a single opening at one end, without any flap or cover over such opening, where the portable electronics device may be inserted into and removed from such opening. A user would generally prefer to insert the device in a direction whereby connection ports face the opening, so that peripherals can be connected without removing the device from the cleaner case, or so that an antenna or other such extension may poke out of such opening. Where this is impossible, a cleaner case may be designed with additional openings.

[0016] One embodiment of the cleaner case is made with a fabric of two layers bonded into a single layer, the outer surface of the cleaner case being of water resistant polyvinyl chloride ("pvc"), leather look alike, and the inner surface of the cleaner case of a brushed knit, similar to cloth used for cleaning eye glasses. The fabric must have very good elasticity, and cut and sewn to take the exact shape, form, and the size of the device it is made to hold, with adjustments made to allow for tension, as described above. As in jewelry casting, the outer shape, size and form is duplicated and the fabric is engineered (pattern making, cutting, sewing) to mimic that exact shape of the device.

BRIEF DESCRIPTION OF DRAWINGS

[0017] For the purpose of illustrating the invention, there is shown in the accompanying drawings certain embodiments of the invention; it being understood that the invention is not intended to be limited to a particular embodiment, especially since each style of the invention must be custom designed to fit a particular type of portable electronics device. The invention is not intended to be limited to the precise arrangements and instrumentalities shown, as the invention is a case made uniquely for each shape and type of the device, thus the shape and the construction of case made for each type of device can differ and visually look different from case made for some other device. The cases illustrated here have same front and back, so either side can be front or back.

[0018] FIGS. 1 through 5 illustrate an embodiment of the cleaner case for a type of device in the shape of a rectangular parallelepiped, with peripheral jacks one of the device's smallest sides, so that the device could be inserted with the jacks exposed through the cleaner case's opening.

[0019] FIG. 1 is a top perspective view showing an opening at the left side of FIG. 1 (the top), a side seam along the length of FIG. 1, and some construction detail at the right side of FIG. 1, perpendicular to the side seam, giving the case a side panel. Through the opening, it is shown that the cleaner case is hollow, and the intent is for a portable electronics device to be inserted into the hollow. The surface facing the hollow—the inside of the cleaner case—is made of a cloth suitable for cleaning, such as a brush knit as used for cleaning glasses. The outer surface of the cleaner case, which includes all of material not facing the inside of the cleaner case—though preferably bonded to material on the inside surface—is made of an elastic material, preferably a water-resistant pvc, leather look alike. Not shown in this figure is the thickness of the material itself, which is to be as thin as possible while preserving the properties of the cleaning layer and the elastic layer, though the material's thickness on different embodiments may be made to vary for aesthetic purposes, or for the functional purposes of water-resistance or heat absorption.

[0020] FIG. 2 is a bottom perspective view showing the bottom of the case (opposite from the opening shown in FIG. 1), a side seam, and construction detail at the bottom perpendicular to the side seam, giving this embodiment of the case a side panel. FIG. 2 also shows the front of the optimal loop, shown at the far end of FIG. 2 near the opening (which is not shown in FIG. 2). The loop is an accessory to the cleaner case, but not a necessary component. The loop shown in FIG. 2 is turned and laid parallel to side panel, sewn perpendicular to the side seam. There is a space between the loop and the side wall of the cleaner case, with the side seam shown in FIG. 2 running under the loop. The space cannot be seen in FIG. 2.

[0021] FIG. 3 is a side perspective view showing the side panel, the seam in the middle of the side panel, and the construction detail at the bottom perpendicular to side seam which gives the case its side panel. FIG. 3 also shows the optional loop, but from an angle in which the space between the visible side of the loop in FIG. 3 and the outer surface of the cleaner case, with the seam running under the loop. FIG. 3 shows the opening of the cleaner case, with the loop, in this embodiment, located by the opening. It is preferable for the loop to be located near an opening, so that, if desirable, peripherals can be pulled through the loop in order to keep them from getting unplugged. FIG. 3 also shows the inside of the case, where the seams are turned inside and sewn together.

[0022] FIG. 4 is a standing perspective view, showing the optional loop, the side panel, one front or back side of the case, the inside of the case, and how the seams are turned inside and sewn together.

[0023] FIG. 5 is a top perspective view, showing the inside of the case, the seam appearance from the inside, the loop, and the top opening. The hollow inside of the case is more clear from FIG. 5 than from the previous figures, and the optional loop is visible in FIG. 5 as a loop, with space between the side of the loop and the outer surface of the cleaner case outside. In FIG. 5, the shaded area is the inside of the cleaner case, made of a cleaning cloth (e.g. a brush knit), and the enclosed white area on the top shows the outer surface of the cleaner case, made of an elastic material. When the materials on the inside and outside of the cleaner case are bonded together, the two layers appear to be a single layer, though clearly of different material on the inside and outside of the cleaner case.

[0024] FIGS. 6 through 10 show the case for a type of device shaped with oval or round edges at the bottom. These figures illustrate how the cleaner case can be engineered to fit different device shapes, such as one without corners at the bottom.

[0025] FIG. 6 is a perspective view from the bottom of the cleaner case—bottom meaning the side opposite from the opening.

[0026] FIG. 7 is a three dimensional standing view, with opening facing upwards

[0027] FIG. 8 is a view from the side the loop is sewn to the case.

[0028] FIG. 9 is a top perspective view, showing the inside of the case, the seam appearance from the inside and the loop.

[0029] FIG. 10 is a bottom perspective view of the case.

DETAILED DESCRIPTION OF THE DRAWINGS

[0030] The present invention as illustrated in FIGS. 1 through 10 is directed to a textile having an elastic outer layer 1 chemically bonded to a cleaning soft fabric inner layer 2, such textile being cut and folded to fit the shape of a particular type of portable electronics device.

[0031] When such textile is cut and folded over during construction of the present invention, its final form is established by connecting the folded sides of the invention with at least one an attachment 3 such as sewn thread. At 3, the seam of such an attachment is displayed. The cut and folding of the cleaner case to establish the final form includes an opening (see FIGS. 1, 3-5, 7-9) into which the applicable portable electronics device may be inserted.

[0032] The dimensions of the inside of a cleaner case must be slightly smaller than the portable electronics device that it is constructed for, but large enough so that the cleaner case can be stretched to fit over the applicable portable electronics device. One way to construct the cleaner case is by making the outer layer 1 to be the exact same circumference as the portable electronics device the cleaner case is made for, so that the inner circumference of the inner layer 2 would necessarily be smaller than the circumference of the portable electronics device, making it necessary to stretch the elastic textile to insert the portable electronics device into the present invention, thereby creating a tension that pushes the cleaning fabric 2 against the portable electronics device within the present invention and thereby cleans it when the portable electronics device is inserted or removed from the cleaner case.

[0033] As displayed in 1 through 5, one embodiment of the cleaner case consists of a front panel added with or incorporating half of the side panel width to each side of the front side. Also added to the front panel dimensions are the width of the bottom panel, continuing this one piece construction to add a back panel incorporating half of the side panel width to each side of the back panel, and the sewing margin is added to where the sewing is required. In this way, the entire cleaner case is made of a single, continuous piece of fabric, with the sides sewn together.

[0034] An optional loop 4 may be attached (e.g. sewn) to the cleaner case near the opening, in a way that it forms the optional loop, shown in FIGS. 2 through 10, at 4. The optional loop is used for the device's peripheral cables/wires (e.g. headphone, power cord, etc.) which can be passed through the loop attached to the present invention, and be connected to the device inside the case, securing the connection of the cable to the device, so that it does not stand off if pulled accidentally. If the device, while in the case with a cable attached to the device passed through the loop of the case, is accidentally dropped, a fall may be prevented because the tension of the cable/wire's pull is distributed to the loop. Also the optional loop 4 can be used as to attach an external clippy/hook/etc. to hold the cleaner case in place (e.g. by connecting to a trouser loop, a hand bag, etc.), and can in this way allow hands free carrying of the device in the cleaner case.

[0035] The present invention, during its construction, is constructed in a form individual and unique to each of the shape, measurements, and form of each of various models of portable electronics device. An opening side of the case from which the device can be drawn out is often, but not limited to, the topside of the device (as in FIG. 4) facing upwards and placed in hands when utilized. The open end (e.g. top of FIG. 4) in some cases can be determined to the side of the device that has antenna or connection ports, so that such device can be connected to cables or peripherals without withdrawing the device out of the case. If the shape of the portable electronics device is proportionately similar at the top and the bottom, the device can be placed into the case in either direction (upside up or upside down) depending upon the use of the peripherals to be connected to the portable electronics device.

[0036] The cleaner case's primary functions, cleaning and protecting, are based upon the fabric and the construction. The fabric of the inside surface 2 must be made of a material appropriate for cleaning different surfaces such as glass, display, metal, plastic, and others found on portable electronics devices, when such material is pulled tightly to and dragged across such surfaces. A soft, brushed knit fabric would be appropriate for the inside surface.

[0037] This tight pulling is a function of the elastic material of the outer surface 1, which is stretched to fit over a portable electronics device, so that a force of tension pushes the cleaner tightly against the surface of the portable electronics device. The force of tension requires that the cleaner case be slightly stretched to fit over a portable electronics device, and therefore the inner circumference of the cleaner case must be slightly smaller than the circumference of the device to be inserted into it. This construction causes a device to be automatically cleaned whenever such device is inserted or removed from it.

[0038] The tension created by the stretched elastic material 1 causes a friction between the device inserted into the cleaner case and the inner surface 2 of the cleaner case, which is why the cleaner case's inner surface 2 must be of a soft fabric suitable for cleaning and polishing, whereas a hard or rough material would damage the surface of the device. In a preferable embodiment, the inner surface 2 of the cleaner case would be made of a brush knit, similar to tool used for cleaning eyeglasses. The elastic tension pressing against the surface of the device as the device is pushed in or pulled out of the cleaner case rubs the fabric of the inner surface 2 against the surface of the device, cleaning it.

[0039] In a preferable embodiment of the cleaner case, the elastic outer layer 1 is made of a coated textile, specifically polymeric materials coating rubbers 1, bonded on a knitted cleaning fabric 2, or attached to non-woven fabrics by coating methods such as knife coating, roll coating, dip coating, transfer coating, rotary screen printing, calendaring, or hot melt coating. Some such coated textiles are pleather and synthetic leather.

[0040] The outer layer 1 is chemically bonded to a brush knit fabric of the inner layer 2 that can be used for cleaning the surfaces of electronic devices.

[0041] For the cleaning fabric inner layer 2, a knit fabric with a soft feel, brushed for smoothness, with soft microfibers, would not scratch a portable electronics device but would wipe it clean and polish it. The material on the inside surface 2 of the cleaner case should also have elastic properties, to stay bonded or attached to the elastic outer layer 1 without tearing or breaking when the cleaner case is stretched.

[0042] In a preferred embodiment, the material on the inside surface 2 is resistant toward dirt, lint, and small particles, and does not attract them or retain dirt, lint, or small particles.

[0043] In one embodiment, the outer layer 1 is water resistant and heat soluble. This embodiment has the ability to keep portable electronics devices relatively cool. The properties depend upon the choice of fabrics. For example, knit polyester used as the inside fabric 2 works as a good water absorbent because the case is form fitted and in constant contact with the device, and the knit polyester wipes off any moisture from the device. This helps to minimize malfunctioning by the device that may occur from its coming in contact with moisture or metal items such as keys or coins. Other such fabric choices, one for the outer layer 1 and one for the inner layer 2, exhibiting such properties are already well known in the art.

[0044] In a preferred embodiment, the cleaner case is made a textile of polyvinyl chloride (pvc) 1 bonded to a brushed polyester knit 2. The pvc is exposed on the outer surface of the cleaner case, while the brushed polyester knit covers the inside surface of the cleaner case. Since the 1 and 2 are bonded together, the present invention can be described as having two layers, 1 and 2, or else the present invention can be described as having one bonded layer making up the whole textile, with one material on the outside 1 and one on the inside 2.

[0045] In one embodiment of the present invention, the bonded material is a blend made of 16.5% pvc, and 83.6% polyester. The weight per square meter for this embodiment is 368 (GSM) gm (ASTM D3776-96), and the thickness of this prototype is 0.65 mm.

[0046] Some portable electronics devices may have peripheral jacks in more than one place. For such circumstances, there are embodiments of the present invention constructed with extra holes, in addition to the main opening, created to allow external connections or protruding components (e.g. an antenna). Mobile devices, for example, tend to have buttons in a variety of places. Additional holes or cuttings made into the cleaner case become more useful for mobile phones, so, for example, allow a user to pick up the phone while it is in case, and be able to reach the mic and speaker through such holes. Though additional holes can be helpful, minimizing the size and number of such holes maximizes the cleaner case's primary functions of cleaning and protecting.

[0047] The textile described above, in certain embodiments of the cleaner case of FIGS. 1 through 5, is a single piece of fabric, folded over, with the sides sewn together at 3, seams ending at a bottom panel, in order to create the side panels, and an opening at the end opposite the bottom panel. The front and the back of such embodiments of the present invention are one continuous piece of the textile described above, folded over, with the bottom panel between them positioned perpendicular to each of the front and back. The side panel measurements are added to the front and back sides of the invention. The textile is folded in half and sides are sewn together at 3, side panels are not formed yet. The bottom stitch perpendicular to the side seam gives the case its shape of side panels. Though such embodiments are made with a one-piece construction, the cleaner case may also be made of two or more pieces sewn together. This is especially preferable to achieve certain aesthetic goals, such as having multiple colors or other surface ornamentation such as prints applique patchwork.

[0048] Embodiments of the present invention such as those shown in FIGS. 6 through 10 are made for a portable electronics device with a round bottom and no edges, and so the embodiments of the present invention for such a portable electronics device also has a round bottom, replicating the shape of the device. For a rounded cleaner case, however, the fabric is must be shaped with engineering, using its elastic properties to stretch it, rather than simply sewing it together.

Images

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