Microfiber cloth is attached, with an opening on one margin to permit insertion of a finger, to a backing formed by articles of regularly worn clothing, including shirt tails, the tip of neckties, scarves, sweaters, pants or other clothing article, making the microfiber cloth more accessible and ready to use for cleaning surfaces of personal devices without risk to soil any exposed surface of the backing.
MICROFIBER CLEANING CLOTH
CLOTHING ARTICLE AND METHOD OF ASSEMBLY

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] The present application is a continuation-in-part application of co-pending application Ser. No. 13/707,361 filed Dec. 6, 2012, now U.S. Pat. No. ___ . This application also claims benefit under 35 USC 119(e) of U.S. provisional Application No. 61/566,245, filed on Dec. 8, 2011, titled “Microfiber Cleaning Cloth Clothing Article and Method of Assembly,” the content of which is incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] This invention relates to methods and apparatus for cleaning smooth surfaces of personal devices such as cell phone screens, eye glasses, electronic screens and the like.

[0003] Microfiber cloth has been developed for cleaning smooth surfaces. Examples of products in which such surfaces are found include eyeglasses, cell phones, MP3 players, computers, televisions and other articles with display screens. A microfiber cloth is designed to attract dust and remove oil on contact with the glass surface.

[0004] It is a common practice to use shirttails and the like to clean glass surfaces by brushing or wiping them with a towel. However, convenient this may be, this method is often unsatisfactory because the fabric of clothing is unsuitable to clean glass surfaces, spreading contaminants instead of removing oil and dust.

[0005] What is needed is an effective and convenient method and device for casual cleaning of glass surfaces.

BRIEF SUMMARY OF THE INVENTION

[0006] According to the invention, a piece of microfiber cloth is attached to an article of fabric having another purpose, such as an article of regularly worn clothing. The attachment sites include a shirt tail, a necktie, pants, pockets, lapels, scarves or other clothing article that is regularly worn, making the microfiber cloth more accessible and ready to use for cleaning glass surfaces of personal devices. Microfiber cloth is attached to clothing in convenient and unobtrusive locations using an attachment medium, such as a heat-activated adhesive interlayer or iron-on cloth piece. The cloth piece is preferably shaped to fit the shape of the clothing area that serves as a support base or backing.

[0007] In a particular embodiment, the microfiber cloth patch is attached on all but a portion of one side to the triangular tip of a necktie, the patch shaped to conform to the tip of the necktie, the patch having an unattached margin so as to form a pocket under the tip of the necktie, the pocket opening being on a side of the patch. This structure permits a user to insert a finger under the tip of the necktie and adjacent the inside of the patch so that the finger may stroke the surface to be cleaned through the cleaning side of the patch without soiling the tip of the necktie.

[0008] The article of clothing is transformed into a cleaning cloth when the microfiber piece is attached to the article of clothing. The pocket configuration may be used in other embodiments, such as on a shirt tail.

[0009] The method of attachment is preferably by means of a heat activated adhesive sheet, but the edges of the pocket opening may be attached to the underlying material, such as by thread.

[0010] The invention will be better understood by reference to the following detailed description in connection with accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is an exploded view of a generic structure according to the invention.

[0012] FIG. 2A is a perspective view of the article prior to attachment.

[0013] FIG. 2B is a magnified view of one embodiment of the invention incorporated into a shirt.

[0014] FIG. 3 is a perspective view of another embodiment of the invention incorporated into a neckline, showing an opening in a margin forming a pocket.

[0015] FIG. 4 is a magnified view of another embodiment of the invention incorporated into the handle strap of a handbag.

[0016] FIG. 5 is a magnified view of another embodiment of the invention incorporated into a representative pocket such as a pant pocket forming a protective cover.

[0017] FIG. 6 is a top view of another embodiment incorporated into a carried article that encloses the cleaning cloth.

DETAILED DESCRIPTION OF THE INVENTION

[0018] FIG. 1 is a depiction of a generalized embodiment of the invention. Herein, a microfiber cloth 12 is attached to a fabric backing or substrate 14 of clothing by means of an interlayer of a heat activated sheet 16, namely an iron-on cloth sheet. The invention could be provided as a kit comprising the microfiber cloth sheet 12 and the heat-activated sheet 16 both suitably pre-priced or cut to size to match a particular attachment site of a substrate. While various types of microfiber cloths are known and available, the preferred type for this purpose is a lightweight microfiber sheet that is flat woven fabric designed for leaving a streak-free finish on glass. The weave of split polyester/polyamide blend microfiber yarn is designed for absorption while leaving no lint. Split fibers create open spaces in the fiber which give absorbability. Specifications are 80% polyester/20% polyamide; denier: 0.1-0.2; weight: 200 grams per square meter.

[0019] It is conventional wisdom that a microfiber cloth cannot be ironed because of the risk of fusing and thus clogging the split fibers. To address and overcome this problem, the iron-on sheet 16 and the substrate 14 are placed between the heat source (hot iron) and the microfiber cloth 12, the assembly is placed on a cold heat sink, and the heat source is applied at the lowest effective heat setting for the shortest effective time. Alternatively, heat is applied only to the margins of the cloth sheet 12 and its heat-sensitive backing 16, leaving the untreated center area of the cloth sheet of sufficient size for the cleaning function, and providing a space for forming a pocket where an opening 17 between adjoining sides of the cloth 12 provides access to the interior of the pocket. The untreated center area can be protected by a layer of heat-insulative material (not shown) that is smaller than the extent of the side margins of the iron-on attachment cloth 12. While sewing is an alternative, the preferred embodiment is as an iron-on attachment cloth 12. Loops 13, 15 of thread sewing the corners of the pocket opening 17 to the underlying backing 14 may provide extra strength against separation, and a void 19 in the iron-on sheet 16 may provide an assured void adjacent the pocket opening 17. The pocket opening 17 may be a chord with endpoints at between about one-half to about
one-third of the distance from opposite corners of a square patch of the cloth 12. If the endpoint is more than about one-half along the length of the margin, then there is little room for a finger or fingers to be inserted. It is less than one-third, bonding strength of the backing is sacrificed. However, if the bonding strength is adequate, endpoints may be at the opposite corners of the cloth 12 without departing from the spirit and scope of the invention.

[0020] FIG. 2A is an example of the microfiber cloth 12 with the Adhesive sheet 16 or layer pre-attached. In the example of FIG. 2A, the attachment site of the microfiber cloth 12 is the tail 18 of a shirt 20 or like blouse or sweater. There is provided an optional pocket opening 17 optionally secured at its corners by thread loops 13 and 15.

[0021] FIG. 3 illustrates the example of a necktie 22 wherein a shaped piece of microfiber cloth 12 according to the invention is attached to the end 24 of the necktie 22, hidden but readily accessible to a user and having a pocket opening 17 with optional thread attachments 13, 15 adjacent the ends of opening 17.

[0022] FIG. 4 is an example of a microfiber cloth 12 incorporated into the shoulder strap 26 of a handbag 28, including a computer bag or the like.

[0023] FIG. 5 shows an example of a microfiber cloth 12 attached to a pocket 30 of a pant 32 in which it is cut to the shape of the pocket 30. The pocket, when closed, thus covers and protects the microfiber cloth 12. A pocket-sized device, such as a cell phone, may have its screen cleaned merely by placing it in the pocket 30 with the screen facing the cloth and then rubbing the screen against the sheet, backed by the body of the wearer.

[0024] FIG. 6 depicts a portable article 34 planar in shape with a front cover 36 and a back cover 38 that can be opened along margins 40 and 42 to expose a microfiber cloth 12 adhering to one of the cover 36, 38. The article 34 with protective covers may have a hole 44 that is used to hold the article closed by means of a strap 46 looped through the hole 44. Releasing the strap 46 opens the article 34.

[0025] Articles to which a microfiber sheet 12 may be attached flush to provide a cleaning medium for screens and the like include shirt tails, scarves, sweaters, pants, ties, gloves, purses, lapels, bags or other articles and clothing that are regularly worn or carried, making the microfiber cloth more accessible and ready to use.

[0026] Adhesives and attachment media that could be used include, but are not limited to: Iron-on adhesive tape, liquid iron-on adhesive, superglue, hot glue, epoxy, liquid cement, sewn thread, etc. It is preferred and has been determined that the iron-on adhesive tape is preferred for convenience and longevity.

[0027] The invention has been explained with reference to specific embodiments. The claims are incorporated into the description of the invention. Other embodiments will be evident to those of skill in the art. It is therefore not intended that the invention be limited, except as indicated by the appended claims.

What is claimed is:
1. An article comprising:
   a microfiber cloth shaped for flush attachment to an area of a fabric substrate, the fabric substrate having a primary use other than for cleaning; and
   an attachment medium adjoining the microfiber cloth to a mating surface of the fabric substrate to form a cleaning article incorporated into the substrate for cleaning a personal device having a smooth surface, the microfiber cloth having a pocket opening of sufficient size to permit the insertion of a finger.

2. The article according to claim 1 wherein the attachment medium is a heat-activated adhesive.

3. The article according to claim 1 wherein the attachment medium is a heat-activated adhesive and further including threads attaching the microfiber cloth to the substrate adjacent edges of the pocket opening.

4. The article according to claim 2 wherein the adhesive is a backing sheet.

5. The article of claim 1 wherein the fabric substrate is a shirt tail.

6. The article of claim 1 wherein the fabric substrate is a necktie.

7. The article of claim 1 wherein the fabric substrate is a pocket.

8. An article comprising:
   a microfiber cloth shaped for flush attachment to an area of a fabric substrate of a backing at the tip of a necktie;
   an attachment medium comprising a heat-sensitive adhesive adjoining the microfiber cloth to a mating surface of the fabric substrate to form a cleaning article on the back of the tip of the necktie and including a pocket opening in a margin of the microfiber cloth of sufficient size to permit the insertion of a finger so that a personal device can be cleaned with the microfiber cloth on the back of the tip of the necktie without soiling the front of the necktie.

9. A method for forming a cleaning article comprising:
   placing a heat-activated adhesive medium sheet upon a mating surface of a fabric article, the adhesive medium sheet being shaped to conform with the mating surface of the fabric article;
   placing the microfiber cloth sheet upon the heat-activated medium sheet, the microfiber cloth sheet being shaped to conform with the mating surface of the fabric article with an opening along one margin for insertion of a finger; thereafter placing a heat-insulative material sheet against the microfiber cloth sheet to cover the microfiber cloth sheet, the heat-insulative material being smaller than the extent of margins of the microfiber cloth sheet;
   applying sufficient heat to activate the heat-activated adhesive medium at at least the margins of the microfiber cloth sheet, while leaving at least a portion of one margin open in order to attach the microfiber cloth sheet flush to the mating surface of the fabric article with the adhesive medium sheet to add a cleaning element to the fabric article having a pocket for insertion of a finger.

10. The method according to claim 9 wherein the attaching is by heating the adhesive as a heat-activated adhesive sheet with a hot iron.

11. The method according to claim 9 wherein the attaching is by heating the adhesive as a heat-activated adhesive sheet with a hot iron, and sewing edges of the one margin to the mating surface.

13. An article for cleaning smooth surfaces comprising:
   a fabric article;
   a microfiber cloth sheet; and
   a heat-activated adhesive medium sheet, the microfiber cloth sheet being attached to the fabric article by:
   placing the heat-activated adhesive medium sheet upon a mating surface of a fabric article, the adhesive medium sheet being shaped to conform with the mating surface of the fabric article;
placing the microfiber cloth sheet upon the heat-activated medium sheet, the microfiber cloth sheet being shaped to conform with the mating surface of the fabric article by placing an opening along one margin for insertion of a finger; thereafter placing a heat-insulative material sheet against the microfiber cloth sheet to cover the microfiber cloth sheet, the heat-insulative material being smaller than the extent of margins of the microfiber cloth sheet; applying sufficient heat to activate the heat-activated adhesive medium at at least the margins of the microfiber cloth sheet in order to attach the microfiber cloth sheet flush to the mating surface of the fabric article to add a cleaning element to the fabric article; the fabric article selected from the group consisting of a necktie, a shirt, a blouse, a handbag, an accessory tag, a pocket, a trouser.

14. An article for cleaning smooth surfaces comprising:
   a fabric article; and
   a microfiber cloth sheet suitable for use in cleaning, the microfiber cloth sheet having on one side a coating of a heat-activated adhesive, the microfiber cloth sheet being attached to the fabric article by:
   placing the microfiber cloth sheet with its side with the heat-activated medium against the fabric article, the microfiber cloth sheet being shaped to conform with the mating surface of the fabric article with an opening along one margin for insertion of a finger; thereafter placing a heat-insulative material sheet against the microfiber cloth sheet to cover the microfiber cloth sheet, the heat-insulative material being smaller than the extent of margins of the microfiber cloth sheet; applying sufficient heat to activate the heat-activated adhesive medium at at least the margins of the microfiber cloth sheet in order to attach the microfiber cloth sheet flush to the mating surface of the fabric article to add a cleaning element to the fabric article; the fabric article selected from the group consisting of a necktie, a shirt, a blouse, a handbag, an accessory tag, a pocket, a trouser.

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