



US 20070071535A1

(19) **United States**(12) **Patent Application Publication****Young et al.**(10) **Pub. No.: US 2007/0071535 A1**(43) **Pub. Date: Mar. 29, 2007**(54) **CLEANING APPARATUS AND METHOD OF CLEANING****Publication Classification**(51) **Int. Cl.***A47L 13/00* (2006.01)*A47L 1/08* (2006.01)(52) **U.S. Cl.** **401/138; 401/137**(75) Inventors: **James V. Young**, St. Louis, MO (US);
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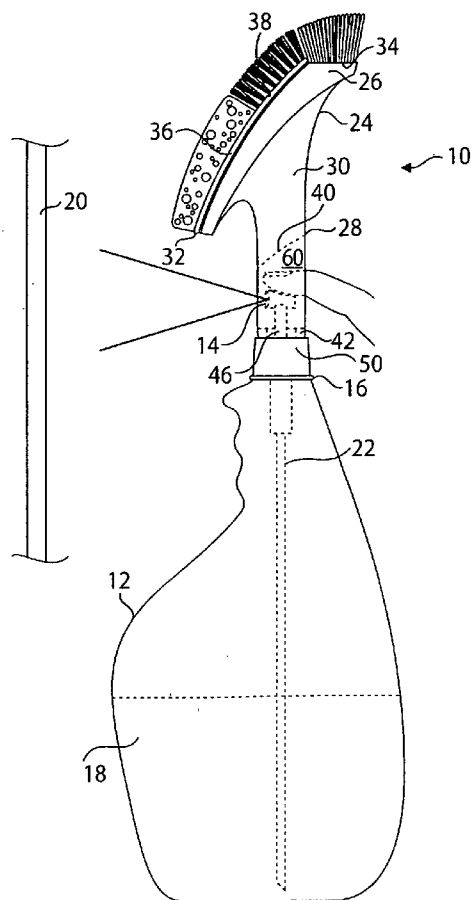
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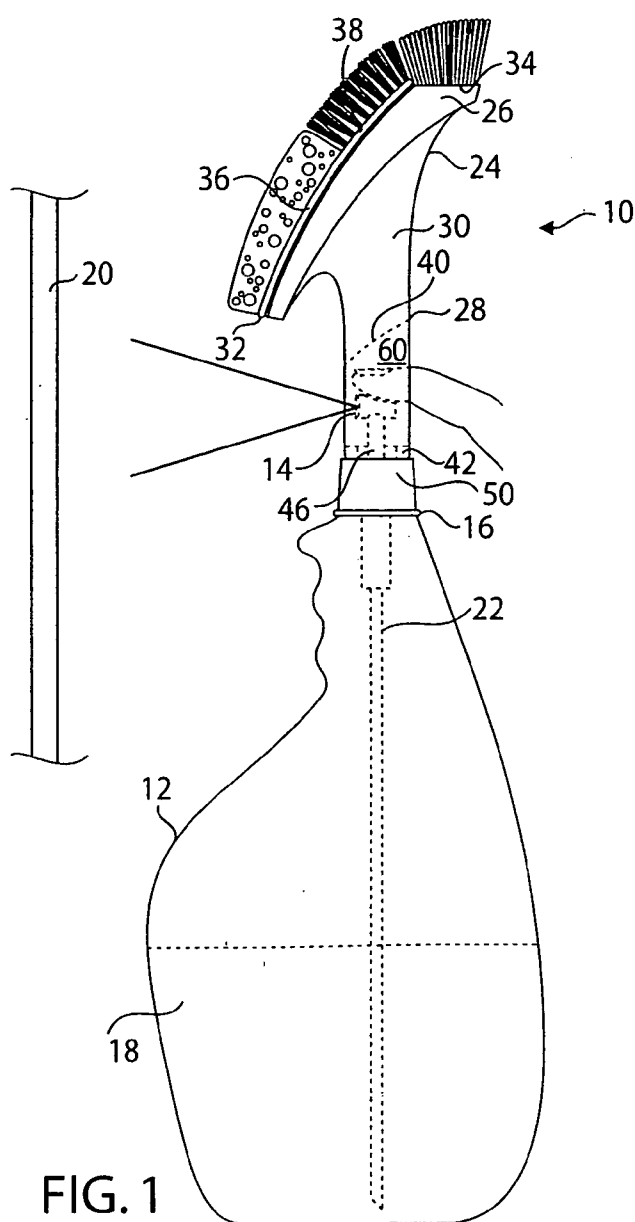
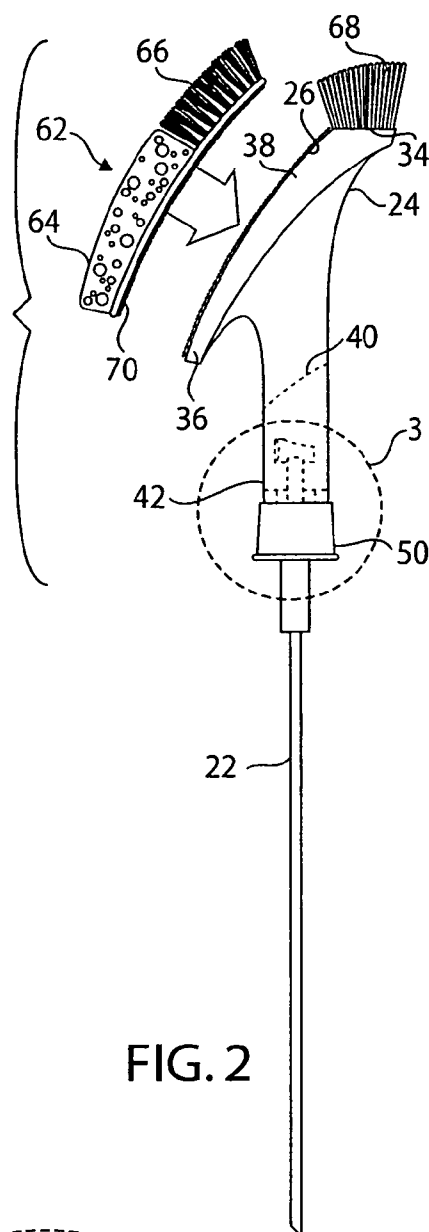
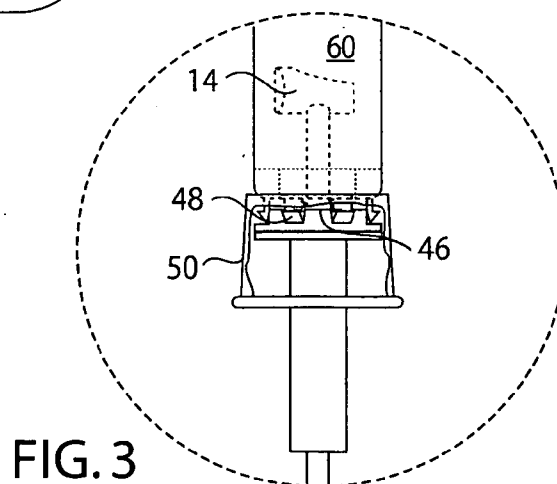
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ST. LOUIS, MO 63131-3615 (US)**(73) Assignee: **XG-3D**(21) Appl. No.: **11/527,275**(22) Filed: **Sep. 26, 2006****Related U.S. Application Data**

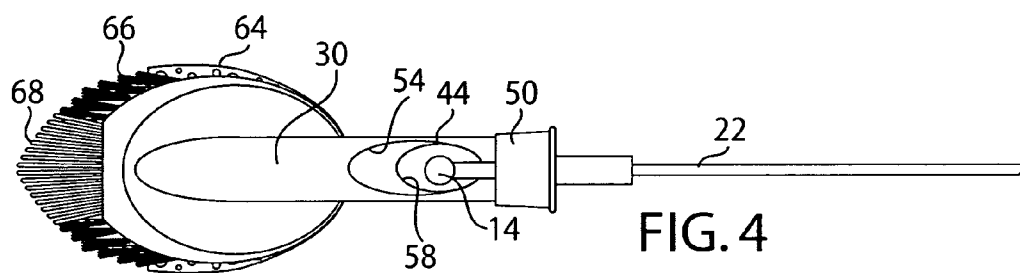
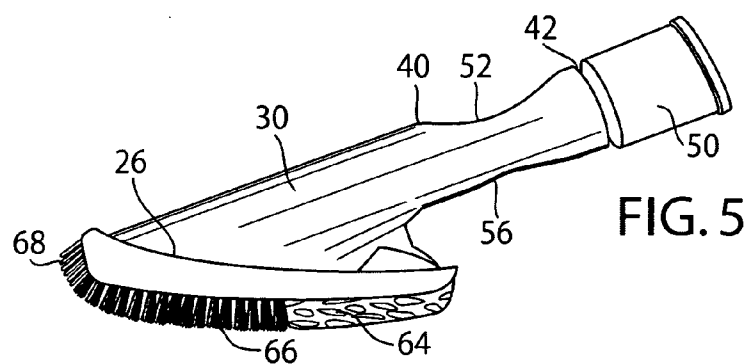
(60) Provisional application No. 60/720,629, filed on Sep. 26, 2005.

(57) **ABSTRACT**

A cleaning apparatus and method of cleaning. The cleaning apparatus comprises a housing having a base, a neck and a handle disposed between the base and neck. The base includes a first portion and a second portion, wherein the first portion further has a first section and a second section, which are angled with respect to each other. The neck has a top, a bottom, opposing sides wherein one side of the opposing sides includes an access aperture defined therethrough and another side of the opposing sides includes a discharge aperture defined therethrough. The access aperture and the discharge aperture define a channel through the neck wherein the neck removeably attaches to the top of the spray bottle to position the spray nozzle within the channel. A user accesses and activates the spray nozzle through the access aperture of the neck and the spray nozzle in response discharges the cleaning solution through and beyond the discharge aperture of the neck onto the contaminated surface.







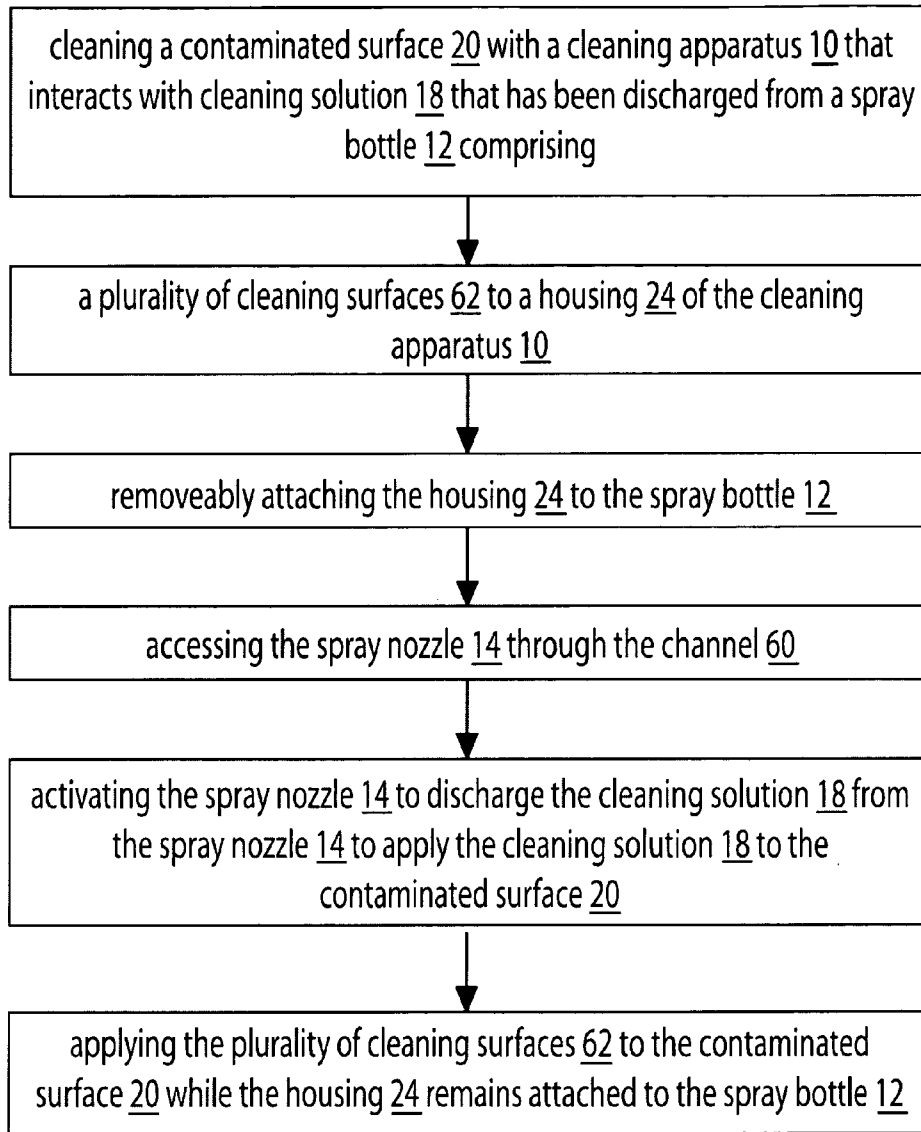


FIG. 6

CLEANING APPARATUS AND METHOD OF CLEANING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. patent application No. 60/720,629 filed Sep. 26, 2005 and is incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH

[0002] Not Applicable

BACKGROUND OF THE DISCLOSURE

[0003] This disclosure relates to a cleaning apparatus and a method of cleaning a contaminated surface, and in particular, to a cleaning apparatus having a plurality of cleaning surfaces wherein the cleaning apparatus removeably attaches to a conventional spray bottle while allowing access to a spray nozzle of the spray bottle.

[0004] Conventional spray bottles use a nozzle assembly to discharge cleaning solution from the interior of the spray bottle to a contaminated surface. The user activates the nozzle by pressing a finger on the spray nozzle. Some spray bottles position a sponge pad in front of the spray nozzle or in contact with the nozzle. Upon activation, in these bottles, the spray nozzle discharges the cleaning solution into the sponge pad. This configuration, however, leads to a non-uniform distribution of the cleaning solution within the sponge pad since the sponge prevents the stream of discharged cleaning solution from dispersing upon leaving the spray nozzle. Additionally, this configuration allows the discharged cleaning solution to evaporate from the sponge pad. Furthermore, this configuration allows the sponge pad to deteriorate faster since some of the cleaning solution remains on the sponge pad after use of the sponge pad.

[0005] FIG. 1 is side elevational view of the cleaning apparatus constructed in accordance with and embodying the present disclosure illustrating the cleaning apparatus attached to a conventional spray bottle;

[0006] FIG. 2 is a partial view of FIG. 1 illustrating a base, a plurality of cleaning surfaces, a handle and a neck of the cleaning apparatus of the present disclosure;

[0007] FIG. 3 is a detail view of the neck of FIG. 2 illustrating a spray nozzle of the spray bottle positioned within the neck;

[0008] FIG. 4 is a back partial view of the cleaning apparatus of FIG. 2;

[0009] FIG. 5 is a perspective view of the cleaning apparatus constructed in accordance with and embodying the present disclosure; and

[0010] FIG. 6 is a flowchart illustrating a method of cleaning the contaminated surface with the cleaning apparatus of the present disclosure.

[0011] Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

SUMMARY

[0012] This disclosure relates to a cleaning apparatus and a method of cleaning a contaminated surface, and in par-

ticular, to a cleaning apparatus having a plurality of cleaning surfaces wherein the cleaning apparatus removeably attaches to a conventional spray bottle while allowing access to a spray nozzle of the spray bottle.

[0013] The cleaning apparatus comprises a housing having a base, a neck and a handle disposed between the base and neck. The base includes a first portion and a second portion, wherein the first portion further has a first section and a second section that are angled with respect to each other. The neck has a top, a bottom and opposing sides wherein one side of the opposing sides includes an access aperture defined therethrough and another side of the opposing sides includes a discharge aperture defined therethrough. The access aperture and the discharge aperture define a channel through the neck wherein the neck removeably attaches to the top of the spray bottle to position the spray nozzle within the channel. A user accesses and activates the spray nozzle through the access aperture of the neck and the spray nozzle in response discharges the cleaning solution through and beyond the discharge aperture of the neck onto the contaminated surface.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] The following detailed description illustrates the disclosure by way of example and not by way of limitation. The description clearly enables one skilled in the art to make and use the disclosure, describes several embodiments, adaptations, variations, alternatives, and uses of the disclosure, including what is presently believed to be the best mode of carrying out the disclosure.

[0015] Referring now to the drawings, a cleaning apparatus 10 constructed according to the principles of the present disclosure is shown. The cleaning apparatus 10 is particularly adapted for removeably attaching to conventional spray bottles 12 that use a spray nozzle 14 (FIG. 1). These spray nozzles 14 extend from a bottle top 16 of the spray bottle 12 to discharge cleaning solution 18 onto a contaminated surface 20. The spray nozzle 14 operatively connects with the cleaning solution 18 via a spray tube 22 as commonly known. The cleaning apparatus 10 of the present disclosure comprises a housing 24 that includes a base 26, a neck 28 and a handle 30 wherein the handle 30 is disposed between the base 26 and the neck 28. The housing 24 is configured to removeably attach to the bottle top 16 of the spray bottle 12 as will be discussed. In one embodiment, the housing 24 comprises a molded one-piece construction.

[0016] The base 26 has a first portion 32 and a second portion 34. The first portion 32 further includes a first section 36 and a second section 38 which may be angled with respect to each other. In one embodiment, the first section 36 and the second section 38 are angularly positioned with respect to the handle 30 to form a curved surface for the first portion 32. The second portion 34 may be planarly positioned with respect to the bottle top 16. In an embodiment, the second portion 34 may angularly position with respect to the bottle top 16.

[0017] As shown in FIGS. 1 and 2, the handle 30 extends from the neck 28 in a co-axial direction with respect to the spray bottle 12. The handle 30 may also extend in an angular direction with respect to the spray bottle 12. The handle 30 includes ergo dynamic features to allow the user to comfortably grasp the handle 30.

[0018] The neck 28 comprises a top 40, a bottom 42 and opposing sides 44 (FIG. 4). Turning to FIG. 3, the bottom 42 includes a nozzle aperture 46 defined therethrough, which is configured to allow the spray nozzle 14 to extend through the nozzle aperture 46 and to allow the spray nozzle 14 to position within the neck 28. The nozzle aperture 46 may be sized to allow the entire spray nozzle 14 to pass through and into the neck 28. The nozzle aperture 46 may also be sized to allow the spray tube 22 to pass through and into the spray bottle 12. The bottom 42 further includes a fastener 48 that is configured to attach to the bottle top 16. As shown in FIG. 3, the fastener 48 includes clamps that engage with an existing cap of the bottle top 16. Still further in one embodiment, the fastener 48 includes a threaded coupling which mates with existing threads of the bottle top 16.

[0019] Turning to FIGS. 4 and 5, one side 52 of the opposing sides 44 includes an access aperture 54 defined therethrough and another side 56 of the opposing sides 44 includes a discharge aperture 58 defined therethrough. The access aperture 54 and the discharge aperture 58 define a channel 60 (FIG. 1) through the neck 28. The access aperture 54 has a larger size than the discharge aperture 58. As such, the channel 60 tapers toward the discharge aperture 58. In one embodiment, the access aperture 54 and the discharge aperture 58 are elliptical shaped.

[0020] As illustrated in FIG. 1, since the spray nozzle 14 extends through the nozzle aperture 46 of the bottom 42, the spray nozzle 14 is positioned within the channel 60 of the neck 28. The access aperture 54 allows the user's finger to access and to activate the spray nozzle 14. In response, the spray nozzle 14 discharges the cleaning solution 18 through and beyond the discharge aperture 58 and onto the contaminated surface 20.

[0021] Turning to FIG. 2, the cleaning apparatus 10 further comprises a plurality of cleaning surfaces 62 which attach to the base 26 of the housing 24. In one embodiment, the plurality of cleaning surfaces 62 comprises a first cleaning surface 64, a second cleaning surface 66 and a third cleaning surface 68. The first cleaning surface 64 removeably attaches to the first section 36 of the first portion 32, wherein the first cleaning surface 64 may comprise an integral sponge for blotting. The second cleaning surface 66 removeably attaches to the second section 38 of the first portion 32, wherein the second cleaning surface 66 may comprise a soft bristle brush surface for mild scrubbing. The third cleaning surface 68 attaches to the second portion 34 of the base 26, wherein the third cleaning surface 68 may comprise a hard bristle surface for more rigorous cleaning. In one embodiment, the third cleaning surface 68 may removeably attach to the second portion 34.

[0022] The first cleaning surface 64 and the second cleaning surface 66 may be integral with a pad 70, such as a hook and loop pad, which removeably fastens to base 26. In one embodiment, the first cleaning surface 64 and the second cleaning surface 66 may be integrally molded with pad 70. In another embodiment, the pad 70 comprises molded engagement means (not shown) such as, but not limited to, clips, brackets, twists or snaps, wherein the base 26 includes an integrally molded reciprocating engagement means (not shown) to engage with the pad 70. As such, the assembly of the first cleaning surface 64 and the second cleaning surface 66 can be easily removed for hygienic disposal. Because of

this easy removability, replacement surfaces 64, 66 can be sold as a replacement unit for convenient attachment to the base. Since the first cleaning surface 64 and the second cleaning surface 66 are angled at opposite planes, the soft bristle cleaning surface 66 and a sponge cleaning surface 64 are mounted for maximum user control and selective application of either surface for effective cleaning.

[0023] The cleaning apparatus 10 of the present disclosure provides a method of cleaning the contaminated surface 20 for removal or improvement of most common spots which includes spots such as but not limited to: chocolate, coffee, cosmetics, crayon, creams, floor wax, food spots, grass, grease, inks, juices, lipstick, liquor, oils, pet spots, shoe polish, tar, urine and vomit. During operation, the user inserts the spray nozzle 14 through the nozzle aperture 46 in order to position the spray nozzle 14 within the channel 60 of the neck 28 of the cleaning apparatus 10. The user may also insert the spray tube 22 through the nozzle aperture 46 to position the spray tube 22 within the spray bottle 12. The spray nozzle 14 is positioned in the channel 60 such that the discharge end 72 of the spray nozzle 14 is positioned toward the discharge aperture 58 of the neck 28. The user then fastens the bottom 42 of the neck 28 to the bottle top 16 of the spray bottle 12 via the fastener 48.

[0024] The user attaches the plurality of cleaning surfaces 62 to the housing 24. In an embodiment, the user removeably attaches the first cleaning surface 64 and the second cleaning surface 66 to the base 26 via the removable pad 70. Once fastened, the cleaning apparatus 10 positions the sponge pad of the first cleaning surface 64, and the soft bristle of the second cleaning surface 66 along the curved surface of the base 26. As noted, the hard bristles of the third cleaning surface 68 are positioned on the second portion 34 of the base 26.

[0025] The user then points the spray nozzle 14 toward the contaminated surface 20 and inserts a finger through the access aperture 54 to contact and to activate the spray nozzle 14. The user then activates the spray nozzle 14 to discharge the cleaning solution 18 through and beyond the discharge aperture 58 of the neck 28 to apply the cleaning solution 18 onto the contaminated surface 20. Due to the ergo dynamic design of the handle 30, the user can then conveniently grasp the handle 30 and apply at least one of the plurality of cleaning surfaces 62 to the contaminated surface 20 while the housing 24 remains attached to the spray bottle 12. Since the sponge pad and soft bristle pad are mounted at opposite angles on the base 26, the user achieves maximum control and selective application of either the sponge pad of the first cleaning surface 64 or the soft bristles of the second cleaning surface 66 to the contaminated surface 20 for effective cleaning. Furthermore, the user may apply the hard bristles of the third cleaning surface 68 against the contaminated surface 20. After repeated use, the user may also replace the plurality of cleaning surfaces 62 with another plurality of cleaning surfaces 62.

[0026] As such, the cleaning apparatus 10 is a custom attachment that can replace the conventional bottle cap 50. This cleaning apparatus 10 can be a "value added" purchase to current dispenser bottle packages. The cleaning apparatus 10 is completely self-contained and provides the consumer with everything they need for effective, hygienic spot/stain removal. The cleaning apparatus 10 is designed as an

attachment with the cap that screws onto the typical spray bottle **12** of cleaning solution **18**. The molded housing **24** includes an integral sponge for blotting and soft bristle brush surface for mild scrubbing. The commercially available spray nozzle **14** is located within the neck **28** of the molded housing **24** and is accessed through a finger-sized aperture **46** in the neck **28**. The spray nozzle **14** can then be activated with depression by the user's finger to spray cleaning solution on the soiled surface. The spray bottle **12** and the spray nozzle **14** are commercially available components and can be purchased for unit assembly on the open exchange market.

[0027] Located on the front leading edge of the cleaning apparatus **10** is a hard bristle surface for more vigorous cleaning. The soft bristle pad and the sponge pad are attached with a hook and loop material and both pads can be removed easily for hygienic disposal. Replacement pads are available for purchase and easily attach to the underside housing with the same hook and loop material. The soft bristle pad and foam pad are mounted to opposite angled planes for maximum user control and selective application of either plane surface for effective cleaning.

[0028] In view of the above, it will be seen that the several objects of the disclosure are achieved and other advantageous results are obtained. As various changes could be made in the above constructions without departing from the scope of the disclosure, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

1. In a conventional spray bottle having a spray nozzle extending from a top of the spray bottle such that the spray nozzle discharges cleaning solution onto a contaminated surface, the improvement being a cleaning apparatus which removeably attaches to the spray bottle, the improvement, comprising:

a housing having a base, a neck and a handle disposed between the base and neck, the base having a first portion and a second portion, the first portion further having a first section and a second section which are angled with respect to each other, the neck having a top, a bottom and opposing sides wherein one side of the opposing sides includes an access aperture defined therethrough and another side of the opposing sides includes a discharge aperture defined therethrough, the access aperture and the discharge aperture defining a channel through the neck wherein the neck removeably attaches to the top of the spray bottle to position the spray nozzle within the channel such that a user accesses and activates the spray nozzle through the access aperture of the neck and the spray nozzle in response discharges the cleaning solution through and beyond the discharge aperture of the neck onto the contaminated surface.

2. The improvement of claim 1 further comprising a plurality of cleaning surfaces which attach to the base.

3. The improvement of claim 2 wherein the plurality of cleaning surfaces comprises a first cleaning surface, a second cleaning surface and a third cleaning surface.

4. The improvement of claim 3 wherein the first cleaning surface removeably attaches to the first section of the first portion.

5. The improvement of claim 3 wherein the second cleaning surface removeably attaches to the second section of the first portion.

6. The improvement of claim 3 wherein the third cleaning surface attaches to the second portion of the base.

7. The improvement of claim 3 further comprising a pad wherein the first cleaning surface and the second cleaning surface are integrated with the pad such that the pad attaches to the first portion of the base.

8. The improvement of claim 1 wherein the first section and the second section are angularly positioned with respect to the handle to form a curved surface.

9. The improvement of claim 1 wherein the second portion is planarly positioned with respect to the neck.

10. The improvement of claim 1 wherein the access aperture is sized larger than the discharge aperture.

11. The improvement of claim 10 wherein the channel chamfers within the neck.

12. The improvement of claim 1 wherein the neck further comprises a fastener that removeably attaches to the top of the spray bottle.

13. A cleaning apparatus that removeably fastens with a conventional spray bottle that has a spray nozzle which discharges cleaning solution onto a contaminated surface, the cleaning apparatus, comprising:

a housing having a base, a neck and a handle disposed between the base and the neck, the base having a first portion and a second portion, the first portion further having a first section and a second section which are angled with respect to each other, the neck having a top, a bottom and opposing sides wherein one side of the opposing sides includes an access aperture defined therethrough and another side of the opposing sides includes a discharge aperture defined therethrough, the access aperture and the discharge aperture defining a channel through the neck wherein the neck removeably attaches to the top of the spray bottle to position the spray nozzle within the channel such that a user accesses and activates the spray nozzle through the access aperture of the neck and the spray nozzle in response discharges the cleaning solution through and beyond the discharge aperture of the neck onto the contaminated surface; and

a plurality of cleaning surfaces which attach to the base wherein a first cleaning surface removeably attaches to the first section of the first portion, a second cleaning surface removeably attaches to the second section of the first portion and third cleaning surface attaches to the second portion of the base such that the user applies the plurality of cleaning surfaces to the contaminated surface.

14. The cleaning apparatus of claim 13 wherein the first section and the second section are angularly positioned with respect to the handle to form a curved surface.

15. The cleaning apparatus of claim 13 wherein the second portion is planarly positioned with respect to the neck.

16. The cleaning apparatus of claim 13 wherein the access aperture is sized larger than the discharge aperture.

17. The cleaning apparatus of claim 16 wherein the channel chamfers within the neck.

18. The cleaning apparatus of claim 13 wherein the neck further comprises a fastener that removeably attaches to the top of the spray bottle.

19. A method of cleaning a surface with a cleaning apparatus that interacts with cleaning solution that has been discharged from a spray bottle, comprising:

attaching a plurality of cleaning surfaces to a housing of the cleaning apparatus;

removeably attaching the housing to the spray bottle;

positioning a spray nozzle of the spray bottle within a channel of the housing;

accessing the spray nozzle through the channel;

activating the spray nozzle to discharge the cleaning solution from the spray nozzle to apply the cleaning solution to the contaminated surface; and

applying the plurality of cleaning surfaces to the contaminated surface while the housing remains attached to the spray bottle.

20. The method according to claim 19 further comprising replacing the plurality of cleaning surfaces with another plurality of cleaning surfaces.

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