A new combination cleaning tool construction wherein the same can be utilized for cleaning surfaces, in particular, glass surfaces such as windshields. In particular the invention described herein provides a new combination cleaning tool construction wherein the same can be utilized for cleaning surfaces, in particular, glass surfaces such as windshields or the like, with corner portions.
COMBINATION CLEANING TOOL WITH FLEXIBLE HEAD

BACKGROUND

The use of windshield cleaning tools is known in the prior art. More specifically, windshield cleaning tools hereinafter devised and utilized are known to consist basically of familiar, expected and obvious structural configurations, notwithstanding the myriad of designs encompassed by the crowded prior art which have been developed for the fulfillment of countless objectives and requirements. Some examples of known cleaning tools include those found in U.S. Pat. No. 3,938,535; U.S. Pat. No. 4,893,370; U.S. Pat. No. Des. 327,146; U.S. Pat. No. 3,307,212; U.S. Pat. No. 913,304; and U.S. Pat. No. 5,363,528.

While these devices fulfill their respective, particular objectives and requirements, the aforementioned patents do not disclose a new combination cleaning tool. The invention described herein departs from the conventional concepts and designs of the prior art, and in so doing provides an apparatus primarily developed for the purpose of cleaning surfaces, in particular, glass surfaces such as windshields which typically include corners that cannot be cleaned by the aforementioned cleaning tools. The invention described herein is also configured to clean other surfaces, such as floors and walls that include corner portions.

SUMMARY

In view of the foregoing disadvantages inherent in the known types of windshield cleaning tools now present in the prior art, the invention herein provides a new combination cleaning tool construction wherein the same can be utilized for cleaning surfaces, especially glass surfaces such as windshields. In particular the invention described herein provides a new combination cleaning tool construction wherein the same can be utilized for cleaning surfaces, in particular, glass surfaces such as windshields or the like, with corner portions.

These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be made to the accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood in view of the detailed description and referred drawings wherein:

FIG. 1 is a perspective view of a prior art squeegee and cleaning tool.
FIG. 2 is a perspective view of one embodiment of a cleaning tool.
FIG. 3 is a perspective view of one alternative embodiment of a cleaning tool.
FIG. 4 is a perspective view of one alternative embodiment of a cleaning tool.
FIG. 5 is a perspective view of one alternative embodiment of a cleaning tool.
FIG. 6 is a top plan cut-away view of the head portion of a cleaning tool.
FIG. 7 is a perspective view of a portion of one embodiment of a cleaning tool.
FIG. 8 is a perspective view of a head portion and an external fluid delivery means.
FIG. 9 is a cross-section view of a handle portion and an internally disposed pump.

DETAILED DESCRIPTION

With reference now to the drawings, and in particular to FIGS. 1 which describes a prior art cleaning tool designated by the reference numeral 10. Rigid cleaning tools 10 of the prior art generally comprise a handle 11 with an inflexible head portion 12 coupled to the proximal end 30 of handle 11. An elongate flexible squeegee blade 13 is coupled to the inflexible head portion 12. Inflexible head portion 12 generally comprises a sponge member 14.

Referring now to FIGS. 2-5 which illustrate several example embodiments of a resilient cleaning tool 20 which comprise a handle 25 having a proximal end 30 and an opposed distal end 35 and a longitudinal axis extending therebetween. The handle 25 has a length defined between proximal end 30 and distal end 35 of the handle 25 preferably greater than about 6 inches. Referring to FIG. 2 where handle 25 is at least about 12 inches in length. In this example embodiment, handle is between 12 and 36 inches in length. In a preferred embodiment, handle will be about 24 inches in length. Referring now to FIGS. 3-5 where handle is between about 6 inches and 12 inches in length.

It should also be appreciated that handle 25 may include a telescopic portion to allow cleaning tool 20 to extend the length of handle 25. In these example embodiments the telescoping function may be initiated by any number of known means. In an exemplary embodiment, fastening ring disposed on the outer circumference of handle 25 may be loosened, thereby extending handle 25. Once the handle portion is released to a sufficient length, fastening ring may be tightened to secure the extended handle while the cleaning tool is in use. In other related embodiments, a telescoping handle assembly includes an inner and outer telescoping handle sections. The inner section has an outer surface positioned along a substantial portion of the inner surface of outer section. The outer section may optionally include locking teeth that are fixed axially in position along the length of the outer section and that are resiliently movable between a locked condition disposed in one of the grooves on the inner section and an unlocked condition.

In other related embodiments, handle assembly includes a locking sleeve movable in a first rotational direction to apply inwardly directed force to prevent telescopic movement of the inner section relative to the outer section. The locking sleeve is movable in a second rotational direction, opposite the first direction, to enable the telescopic movement of the inner section relative to the outer section.

Referring again to FIGS. 2-5, handle 25 is shown with a cylindrical outer configuration and a circular or oval transverse cross section. As best shown in FIGS. 2-4, handle...
is generally perpendicular to the longitudinal axis of the handle 25. Although handle 25 could be configured with an angle as shown in FIG. 5. The relative angle, style and design are within the knowledge of one of ordinary skill in the art. Turning again to FIGS. 2-5 where handle 25 has a gripping portion 40 adjacent the distal end 35 of the handle 25. The gripping portion 40 is designed for grasping by a hand of a user. In preferred embodiments, the gripping portion 40 may include an ergonomic design to improve the relative ease at which a user can grasp gripping portion 40 to reduce unnecessary strain for the user.

[0021] Resilient cleaning tool 20 may also include a spray pump 45 which generally includes a reservoir 50 and a nozzle 55 in fluid communication with a conduit tubing 60. FIG. 2 shows when example embodiment of spray pump 45 where reservoir 50 is mechanically coupled to handle 25 via a bracket 65. It should be appreciated that the type of securement means are well known to those skilled in the art. Still referring to FIG. 2, reservoir 50 can be refilled by removing lid 70 and placing a cleaning solution therein. Nozzle 55 is moveably attached to handle 25 to allow a user to position nozzle 55 adjacent sponge member 14.

[0022] As shown in FIGS. 3-5, reservoir 50, nozzle 55 and conduit tubing (located in the internal cavity of reservoir 50) are similar to that of a hairspray pump. Reservoir 50 is attached to handle 25 via a generally medial clasp 85 to allow a user to removeably attach reservoir 50. This removable feature allows for a user to conveniently refill or replace reservoir 50 when needed. Turning specifically to FIG. 3 which shows spray pump 45 in a generally parallel configuration relative to handle 25. Alternatively, FIGS. 4 and 5, describe a spray pump 45 in a generally perpendicular configuration relative to handle 25.

[0023] Referring now to FIG. 8 which discloses nozzle 55 transverse through a surface of handle 25 in a manner that provides the terminal end of nozzle 55 to be adjacent to sponge member 14. In at least this example embodiment, nozzle 55 is positioned in a manner to spray sponge member 14 to provide sufficient wetting to allow a user to clean the interior surface of a window or other surface in need thereof. It should be appreciated that this close proximity is also advantageous as the spray pump does not need to use excess cleaning solution to achieve a clean surface. Although FIG. 8 is shown with nozzle 55 adjacent to sponge member 14, the precise location and orientation may vary. In one alternative embodiment, nozzle 55 is positioned in a manner that will allow nozzle to be directed toward an area above (or below) head portion 22 which will allow the cleaning solution to be directly sprayed on a surface needing to be cleaned.

[0024] Referring now to FIGS. 2-8 where various views and embodiments of a flexible head portion 22 are shown. Flexible head portion 22 is coupled to the distal end 35 of handle 25. Preferably, the head portion 22 is generally configured in a manner that will include a pair of opposite ends 30, 35, and a longitudinal axis extending therebetween. Flexible head portion 22 is illustrated showing a substantially perpendicular relationship with proximal end 30 of handle 25. Referring now to FIG. 6 which illustrates a cross-section view of head portion 22 surrounded by sponge member 14. The cross-section of the head portion 22 is a structure that provides the flexibility to operate resilient cleaning tool 20 in corners and the like. As shown in FIG. 6, head portion 22 is a spring. The head portion 22 structure should be sturdy enough to hold a generally horizontal position when not in use (i.e. FIGS. 2-5 and 8), but flexible to allow for use in corners and the like when sufficient force is applied (i.e. FIG. 7). Any material that will provide the resilient features of head portion 22 as described herein are within the scope of the invention.

[0025] The length of the sponge member 14 is substantially similar to the length of head portion 22. In other related embodiments, sponge member 14 is at most about equal in length to elongate member in use. In other embodiments, the length of sponge member 14 is about one-half the length of the handle 25. In another exemplary embodiment, the length of the head portion 22 is greater than about 4 inches to permit cleaning of an adequate amount of a windshield corner to be cleaned without the need for multiple passes.

[0026] The resilient cleaning tool 20 may optionally include a squeegee blade which is connected to the head portion 22. In use, the squeegee blade is designed for drawing across a surface to remove water from the surface. The squeegee blade ideally comprises a resiliently flexible rubber or plastic material. The squeegee blade has a pair of opposite ends and a length defined between the ends of the squeegee blade. The squeegee blade has a generally triangular cross section transverse the length of the squeegee blade. The length of the squeegee blade extends between the ends of the head portion. Preferably, the length of the squeegee blade is extended generally perpendicular to the longitudinal axis of the handle 25 and generally parallel to the longitudinal axis of the head portion 22.

[0027] In at least the embodiments described herein, the length of the optional squeegee blade extends across more than one-half of the length of the head portion 22. It should be appreciated that in order to support the squeegee action of removing water along a surface enough rigidity must be provided. In embodiments where a squeegee is desired, a head bracket 80 may also be used to provide a base structure for squeegee blade to be attached thereto. In at least these example embodiments, head bracket 80 is in mechanical communication with at least the proximal end 30 and/or head portion 22. In other related embodiments, squeegee blade is attached directly to head portion 22. The length of the squeegee blade extends across essentially the entire length of the head portion 22 or head bracket 80 depending on the desired configuration.

[0028] Sponge member 14 is coupled to the head portion 22 and is manufactured for absorbing fluid therein. The sponge member 14 has an exterior surface extending around the lateral ends of the head portion 22. The length of the sponge member 14 extends generally across the entire length of the head portion 22. The sponge member 14, as shown in FIGS. 2-8 has a generally semi-circular transverse cross section generally perpendicular to the longitudinal axis of the head portion 22. The transverse cross-section of the sponge member 14 preferably extends over a substantial portion of head portion 22. Preferably, the sponge member 14 has a fabric material, such as a mesh netting, over the exterior surface of the sponge member 14 adapted for aiding scrubbing off of debris from a surface, such as a window surface. Cleaning tool 20 may optionally include scrubbing pads.

[0029] Referring now to FIG. 9, which discloses a substantial portion of spray pump 45 located within the internal cavity of handle 25. In this embodiment, reservoir 50 is accessible by removing a portion of handle 25 from resilient cleaning tool 20 to access lid 70. Still referring now to FIG. 9, where the transverse cross-section of the gripping portion 40 has a diameter greater than a diameter of the transverse cross-
section of the handle. Preferably, the distal end 35 of the handle 25 also has threaded bore (not shown) therein. The threaded bore is designed for threadably receiving a threaded end of a gripping portion 40 when access to the interior cavity of handle 25 is desired.

In use, the cleaning tool 20 is designed for cleaning surfaces, in particular glass surfaces such as a windshield, and also clean portions of these glass surfaces that may also include corners or bends that an inflexible head portion 12 cannot readily clean. Additional surfaces are also contemplated, such as floors, walls and mirrors.

In use, the sponge member 14 is soaked in a cleaning fluid such as water mixed with a soap detergent or windshield wiper fluid and then run over the windshield to wet the windshield. Sponge member 14, which is shown with a scrubbing fabric material covering sponge member 14 outer surface, is then rubbed over debris on the windshield to loosen and remove the debris from the windshield. Finally, the squeegee blade 75 is then run over the windshield to remove the fluid and loosen debris from the windshield.

In another exemplary use, resilient cleaning tool 20 will include a spray pump 45 that will spray a sufficient amount of cleaning solution onto (or into) sponge member 14 to allow for the cleaning of a surface. When a user desires to spray cleaning solution from nozzle 55, the user will activate spray pump 45 using a switch 90, as shown in FIGS. 2 and 9. Although no single application is preferred, switch 90 may activate spray pump 45 via electronic or manual means. In example embodiments utilizing an electric means resilient cleaning tool 20 may also be equipped with a battery.

As previously mentioned, nozzle 55 may be positioned in a manner that will allow nozzle 55 to be directed toward an area above (or below) head portion 22 which will allow the cleaning solution to be directly sprayed on a surface needing to be cleaned. Head portion 22 is passed along surface and may also be pressed into corners and difficult to reach areas on a surface where the head portion 22 and sponge member 14 can clean the window, or surface, adjacent a frame structure.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

Various embodiments of the invention have been described above for purposes of illustrating the details thereof and to enable one of ordinary skill in the art to make and use the invention. The details and features of the disclosed embodiment[s] are not intended to be limiting, as many variations and modifications will be readily apparent to those of skill in the art. Accordingly, the scope of the present disclosure is intended to be interpreted broadly and to include all variations and modifications coming within the scope and spirit of the appended claims and their legal equivalents.

1 claim:
1. A cleaning tool comprising:
- a handle having opposite proximal and distal ends, and a longitudinal axis extending between said ends of said handle; and
- a flexible head portion being integrally related to said proximal end of said handle, said head portion having a pair of opposite ends and a longitudinal axis extending therebetween.
2. The cleaning tool of claim 1 further comprising a head bracket attached to said proximal end of said handle and wherein said head bracket is further coupled to said flexible head portion.
3. The cleaning tool of claim 1 further comprising a resiliently compressible sponge member being coupled to said flexible head portion, said sponge member disposed about a substantial portion of said head portion.
4. The cleaning tool of claim 3 further comprising a pair of resiliently compressible scrubbing pads for scrubbing debris off of a surface, wherein one of said scrubbing pads being coupled to one of said ends of said sponge member, another of said scrubbing pads being coupled to another of said ends of said sponge member.
5. The cleaning tool of claim 1 further comprising a pair of resiliently compressible scrubbing pads for scrubbing debris off of a surface, wherein one of said scrubbing pads being coupled to one of said ends of said head portion, another of said scrubbing pads being coupled to another of said ends of said head portion.
6. The cleaning tool of claim 1 further comprising an elongate resiliently flexible squeegee blade being disposed on said head portion; said squeegee blade having a pair of opposite ends and a length defined between said ends.
7. The cleaning tool of claim 1 wherein said handle has a gripping portion adjacent said proximal end of said handle.
8. The cleaning tool of claim 1 further comprising a spray pump wherein said spray pump comprises a reservoir, a nozzle and tubing therebetween.
9. The cleaning tool of claim 8 wherein a substantial portion of said spray pump being disposed within said handle.
10. The cleaning tool of claim 8 wherein a substantial portion of said spray pump being disposed outside said handle.
11. The method of using a cleaning device comprising the steps of:
- Positioning the cleaning device of claim 1 upon a surface to be cleaned wherein said surface having a corner portion;
- Pressing said cleaning device towards said corner wherein upon pressing said cleaning device said head portion will clean a substantial portion of said surface.
12. The method of claim 11 wherein said cleaning tool further comprises a head bracket attached to said distal end of said handle and wherein said head bracket is further coupled to said flexible head portion.
13. The method of claim 11 wherein said cleaning tool further comprises a resiliently compressible sponge member being coupled to said flexible head portion, said sponge member disposed about a substantial portion of said head portion.
14. The method of claim 13 wherein said cleaning tool further comprises a pair of resiliently compressible scrubbing pads for scrubbing debris off of a surface, wherein one of said scrubbing pads being coupled to one of said ends of said sponge member, another of said scrubbing pads being coupled to another of said ends of said sponge member.
15. The method of claim 11 wherein said cleaning tool further comprises a pair of resiliently compressible scrubbing pads for scrubbing debris off of a surface, wherein one of said scrubbing pads being coupled to one of said ends of said head portion, another of said scrubbing pads being coupled to another of said ends of said head portion.

16. The method of claim 11 wherein said cleaning tool further comprises an elongate resiliently flexible squeegee blade being disposed on said head portion; said squeegee blade having a pair of opposite ends and a length defined between said ends.

17. The method of claim 11 wherein said surface is selected from a group consisting of a window, a windshield, a floor, a wall and a mirror.

18. The method of claim 11 wherein said cleaning tool further comprises a spray pump wherein said spray pump comprises a reservoir, a nozzle and tubing therebetween.

19. The cleaning tool of claim 18 wherein a substantial portion of said spray pump being disposed within said handle.

20. The cleaning tool of claim 18 wherein a substantial portion of said spray pump being disposed outside said handle.

21. The method of claim 18 further comprising the step of spraying the contents of said spray pump on said surface prior to said pressing said cleaning device towards said corner.

22. A cleaning tool comprising: a flexible head portion being capable of attachment to a cleaning handle, said head portion having a pair of opposite ends and a longitudinal axis extending therebetween and a resiliently compressible cleaning surface being disposed on said flexible head portion, said resiliently compressible cleaning surface covering a substantial portion of said flexible head portion.

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