MULTI-POSITIONAL CLEANING DEVICES

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ABSTRACT
Multi-positional cleaning devices are provided. The devices have a handle, a blade holder, and a pivoting assembly. The pivoting assembly allows the handle and blade holder to be pivoted with respect to one another about a pivot axis to at least two predetermined angular positions. The pivot axis is parallel to a blade edge. The multi-positional devices can find use with a blade subassembly that has a carriage holding the blade, where the carriage cooperates with the holder to secure the blade in the holder in an easily removable manner.
MULTI-POSITIONAL CLEANING DEVICES
CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 61/987,521 that was filed on May 2, 2014. In addition, this application is a continuation of U.S. application Ser. No. 29/489,097 and a continuation of U.S. application Ser. No. 29/489,004 that were filed on Apr. 25, 2014. The contents of all of which are incorporated by reference herein.

BACKGROUND OF THE INVENTION

1. Field of the Invention
The present disclosure is related to cleaning devices such as cleaning devices for windows, including scrapers. More particularly, the present disclosure is related to cleaning devices that can be secured in one of a number of different angular positions.

2. Description of Related Art
Cleaning devices such as scrapers are often used to scrape a window or other hard, flat surfaces to remove debris from the surface. In the example of window scrapers, these devices generally have a handle or gripping portion and a blade, typically made of metal. The scrapers are used in various commercial and residential applications such as, but not limited to, window cleaning, paint removal, gum removal, label removal, and others.

Without wishing to be bound by any particular theory, it is believed that the angle of incidence of the blade with respect to the surface being cleaned should be reduced to maximize the cleaning effect, while minimizing the risk of scratching or marring the surface with the blade.

Additionally, the metal blade is often replaceable in such scrapers to ensure a sharp edge is presented to the surface being cleaned. Thus, the ease of replacement of the metal blade can be important features for such devices.

In certain applications, the users can attach the window cleaning device to an extension handle or pole. In these situations, a device with a blade that is angled with respect to the handle is required to provide the desired angle of incidence of the blade with respect to the surface. However when the devices are used without extension handles or poles, the devices have a blade that is not angled with respect to the handle to provide the desired angle of incidence of the blade with respect to the surface. Thus, users of prior art window cleaning devices have been required to carry two different devices—one for hand use and one for pole use.

Accordingly, it has been determined by the present disclosure that there is a need for cleaning devices that improve upon, overcome, alleviate, and/or mitigate one or more of the aforementioned and other deleterious effects of prior art devices.

BRIEF SUMMARY OF THE INVENTION
Multi-positional cleaning devices are provided. The devices have a handle, a blade holder, and a pivoting assembly. The pivoting assembly allows the handle and blade holder to be pivoted with respect to one another about a pivot axis to at least two predetermined angular positions. The pivot axis is parallel to an edge of the blade.

Multi-positional cleaning devices are provided that find use with a blade subassembly that has a carriage holding the blade, where the carriage cooperates with the holder to secure the blade in the holder in an easily removable manner.

Multi-positional cleaning devices are also provided that find use with a holder that has a spring clip that removably retains a handle of the holder and includes a holster to retain the blade. The holster includes one or more guides that mitigate blade dulling and scarring of the holster.

In some embodiments alone or in combination with any of the above mentioned embodiments, the pivoting assembly includes a boss extending from the holder, the boss having a through hole and two catch members, each catch member defining one of the two predetermined angular positions.

In some embodiments alone or in combination with any of the above mentioned embodiments, the handle further includes a through hole perpendicular to the handle axis, the pivot axis being defined through a connector positioned in the through holes of the boss and the handle.

In some embodiments alone or in combination with any of the above mentioned embodiments, the pivoting assembly further includes a locking button having a catch member and a biasing spring, the biasing spring acting on the handle to normally bias the catch member to a locked position into engagement with one of the two catch members of the boss to secure the pivoting assembly in one of the two predetermined angular positions.

In some embodiments alone or in combination with any of the above mentioned embodiments, the locking button is slideably received in a channel defined in handle between the locked position and an unlocked position in which the catch member is not biased into engagement with either of the two catch members.

In some embodiments alone or in combination with any of the above mentioned embodiments, the pivoting assembly further includes a pair of caps secured to handle, each cap of the pair of caps concealing opposing ends of the connector.

In some embodiments alone or in combination with any of the above mentioned embodiments, the locking button has two catch members such that, in the locked position, the two catch members of the locking button surround one the two catch members of the boss.

In some embodiments alone or in combination with any of the above mentioned embodiments, the two catch members of the locking button, when in the locked position, abut four surfaces of the boss, the four surfaces comprising opposing sides of the one of the two catch members of the boss that is surrounded, a facing surface of the catch member of the boss that is not surrounded, and a remaining edge of the boss.

In some embodiments alone or in combination with any of the above mentioned embodiments, the boss includes a metallic insert that is co-molded into the blade holder.

In some embodiments alone or in combination with any of the above mentioned embodiments, the holder includes acrylonitrile butadiene styrene and the metallic insert of the boss includes a material selected from the group consisting of zinc die cast, aluminum die cast, machined steel, and machined aluminum.

In some embodiments alone or in combination with any of the above mentioned embodiments, the blade subassembly further includes a carriage, the blade and the...
carriage including at least one cooperating feature that ensure that the blade is positioned on the carriage in a desired orientation and position.

[0023] In some embodiments alone or in combination with any of the afore and/or aft mentioned embodiments, the at least one cooperating feature includes a protrusion depending from the carriage and an opening through the blade.

[0024] In some embodiments alone or in combination with any of the afore and/or aft mentioned embodiments, the blade holder includes a slot having an open end on a first edge and a closed end at an opposite edge, the open end receiving the protrusion of the carriage so that the subassembly slides within the blade holder until the protrusion abuts the closed end.

[0025] In some embodiments alone or in combination with any of the afore and/or aft mentioned embodiments, the carriage further includes a flexible tang, which secures the carriage in the blade holder when the carriage is at a position close to a maximum insertion position.

[0026] In some embodiments alone or in combination with any of the afore and/or aft mentioned embodiments, the tang includes an edge that prevents withdrawal of the carriage from the holder when the tang is in an un-deflected position but allows withdrawal of the carriage from the blade holder when the tang is in a deflected position.

[0027] In some embodiments alone or in combination with any of the afore and/or aft mentioned embodiments, the blade holder includes a slot having an open end on a first edge and a closed end at an opposite edge and the carriage includes a protrusion, the open end receiving the protrusion of the carriage so that the carriage slides within the blade holder until the protrusion abuts the closed end.

[0028] In some embodiments alone or in combination with any of the afore and/or aft mentioned embodiments, the carriage further includes a flexible tang, which secures the carriage in the blade holder when the carriage is at a maximum insertion position.

[0029] In some embodiments alone or in combination with any of the afore and/or aft mentioned embodiments, the tang includes an edge that prevents withdrawal of the carriage from the holder when the tang is in an un-deflected position but allows withdrawal of the carriage from the blade holder when the tang is in a deflected position.

[0030] A multi-positional cleaning device is also provided that includes a scraper blade, a blade carriage, and a blade holder. The scraper blade has a cleaning edge and an opening through the blade. The blade carriage has a first protrusion and a second protrusion. The first protrusion extends through the opening when the blade is positioned on carriage in a desired orientation and position. The blade holder has a first slot and a second slot, each having an open end on a first edge and a closed end at an opposite edge. The open end of the first slot receives the first protrusion of the blade carriage so that the blade carriage slides within the blade holder until the first protrusion abuts the closed end of the first slot. Similarly, the open end of the second slot receives the second protrusion of the blade carriage so that the blade carriage slides within the blade holder until the second protrusion abuts the closed end of the second slot.

[0031] In some embodiments alone or in combination with any of the afore and/or aft mentioned embodiments, the blade carriage further includes a flexible tang with an edge that prevents withdrawal of the blade carriage from the blade holder when the tang is in an un-deflected position but allows withdrawal of the blade carriage from the blade holder when the tang is in a deflected position.

[0032] The above-described and other features and advantages of the present disclosure will be appreciated and understood by those skilled in the art from the following detailed description, drawings, and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] FIG. 1 is a perspective view of an exemplary embodiment of a cleaning device according to the present disclosure;

[0034] FIG. 2 is an exploded perspective view of the device of FIG. 1;

[0035] FIG. 3 is a partial perspective view of the device of FIG. 3 illustrating a portion of a pivoting assembly;

[0036] FIG. 4 is a perspective view of a locking button of the pivoting assembly of FIG. 3;

[0037] FIG. 5 is a first perspective view of a handle of the device of FIG. 1;

[0038] FIG. 6 is a second, opposite perspective view of the handle of FIG. 1;

[0039] FIG. 7 is a top perspective view of the handle of FIG. 1;

[0040] FIG. 8 is a partial front view of the device of FIG. 1 with certain portions omitted to illustrate the locking button in a first or locked position;

[0041] FIG. 9 is a partial front view of the device of FIG. 8 illustrating the locking button in a second or unlocked position;

[0042] FIG. 10 is a perspective view of a blade subassembly of the device of FIG. 1;

[0043] FIG. 11 is a perspective view of a blade of the blade subassembly of FIG. 10;

[0044] FIG. 12 is a front view of a carriage of the blade subassembly of FIG. 10;

[0045] FIG. 13 is a side view of the blade subassembly of FIG. 10;

[0046] FIG. 14 is a partial perspective view of a blade holder of the device of FIG. 1;

[0047] FIG. 15 is a front view illustrating the blade subassembly before insertion into the blade holder;

[0048] FIG. 16 is a front view illustrating the blade subassembly after insertion into the blade holder;

[0049] FIG. 17 is a perspective view of the device of FIG. 1 in use with a protective cover;

[0050] FIG. 18 is a perspective view of the protective cover of FIG. 17;

[0051] FIG. 19 is a front perspective view of a carrying holster for use with the device of FIG. 1; and

[0052] FIG. 20 is a rear perspective view of the carrying holster of FIG. 19.

DETAILED DESCRIPTION OF THE INVENTION

[0053] Referring to the drawings and in particular to FIGS. 1 and 2, an exemplary embodiment of a cleaning device, illustrated as a scraper, according to the present disclosure is shown and is generally referred to by reference numeral 10. Device 10 has a handle 12, a blade holder 14, and a pivoting assembly 16.

[0054] Blade holder 14 receives a blade subassembly 18, which includes a blade 20 and a carriage 22, such that the subassembly can be locked in position in the holder but can be removed for blade replacement. In some embodiments,
device 10 can include a protective cover 24, which can be secured on holder 14 in such a manner to cover the exposed blade 20 before use, but can be removed from the holder. [0055] Advantageously, device 10 is configured, by way of pivoting assembly 16, to easily allow blade holder 12 to be pivoted or rotated with respect to handle 10 about a pivot axis 26 to a number of different positions and lock the blade holder in these positions. Device 10 has been designed so that pivoting assembly 16 has a minimum number of components that can be easily molded and assembled.

[0056] Additionally, device 10 is configured to easily allow blade subassembly 18 to be removed from and reinstalled into blade holder 14. Once subassembly 18 has been removed from blade holder 14, blade 20 can be removed from carriage 22 and replaced with a new blade or reversed to use second side of a double sided blade. Then, the subassembly 18 can be reinstalled into blade holder 14.

[0057] Device 10 can be grasped by handle 12 manipulated so that a cleaning edge 28 of blade 20 moves across a surface being cleaned. Additionally, device 10 is configured so that handle 12 can be secured to an extension pole (not shown) in a known manner such as, but not limited to, a threaded connection, a press-fit connection, or a locking connection as described in Applicants' own U.S. Pat. No. 7,413,366, the contents of which are incorporated herein by reference. Accordingly, handle 12 can be made of any material having the desired strength and rigidity such as, but not limited to, polypropylene (PP).

[0058] The pivoting and locking of handle 12 and blade holder 14 with respect to one another via pivoting assembly 16 is described with simultaneous reference to FIGS. 1-9.

[0059] As will be described in more detail below, pivoting assembly 16 defines pivot axis 26 through handle 12 such that is perpendicular to a handle axis 30 and parallel to edge 28 of blade 20.

[0060] Pivoting assembly 16 includes portions of handle 12, holder 14, and other components described below, which cooperate to selectively lock the handle and holder in one of several angular positions. For purposes of clarity, pivoting assembly 16 is described herein as having two predetermined positions. Of course, it is contemplated by the present disclosure for pivoting assembly 16 to be configured to provide more than two predetermined positions.

[0061] Pivoting assembly 16 includes a boss 32 extending from holder 14. In the illustrated embodiment, boss 32 is a metallic insert that is co-molded into holder 14. Holder 14 can be made of any material having sufficient strength and rigidity such as, but not limited to, acrylonitrile butadiene styrene (ABS). Similarly, boss 32 be made of any material having sufficient strength and rigidity such as, but not limited to, zinc die cast, aluminum die cast, machined steel, machined aluminum, and others.

[0062] Of course, it is contemplated by the present disclosure for boss 32 to be made of the same material as holder 14 and/or for the boss to be secured to the holder using a physical connector, an adhesive connector, a thermal connector, and any combinations thereof.

[0063] Additionally, handle 12 and/or holder 14 can include one or more over-molded regions 34 of high grip material such as, but not limited to, thermoplastic rubber (TPR).

[0064] Pivoting assembly 16 also includes a through hole 36, an assembly locating member 38, and one or more lock or catch members 40 (two shown) defined in boss 32. Each catch member 40 defines a predetermined angular position of the assembly. Thus, in embodiments of pivoting assembly 16 having more than two predetermined positions, boss 32 would have more than two catch members 40.

[0065] Pivoting assembly 16 includes a through hole 42, an assembly locating member 44, and a channel 46 defined in handle 12. During assembly, assembly locating members 38, 44 are mated with one another with holes 36, 42 concentric to one another. In this manner, handle 12 and holder 14 are pivotally secured to one another with a bolt 48 received through the concentrically aligned holes 36, 42, with the bolt secured in place with a nut 50. Pivot axis 26 is defined through a centerline (not shown) of concentrically aligned holes, bolt, and nut (36, 42, 48, 50).

[0066] Pivoting assembly 16 further includes a locking button 52 having a lock or catch member 54 and a biasing spring 56. As will be described in more detail below, lock or catch member 54 of button 52 cooperates with the lock or catch members 40 of boss 32 to secure pivoting assembly 16 in the predetermined positions.

[0067] Locking button 52 is slideably received in channel 46 defined in handle 12 with biasing spring 56 between the button and the handle. In some embodiments, pivoting assembly 16 can include a cap 58 secured to handle 12 in any desired manner such as, but not limited to, a press fit connection, adhesive, ultrasonic weld, and others. Here, cap 58 covers or conceals nut 50 from view. Pivoting assembly 16 can also include a separate cap 60, which conceals bolt 48 from view. Cap 60 can also be secured to handle 12 in any desired manner such as, but not limited to, a press fit connection, adhesive, ultrasonic weld, and others.

[0068] The locking and unlocking of pivoting assembly 16 described with simultaneous reference to FIGS. 8 and 9. Here, handle 12 has been hidden from view for ease of description.

[0069] Button 52 is shown in FIG. 8 in a first or locked position and in FIG. 9 in a second or unlocked position. In the locked position, spring 56 biases button 52 so that catch members 40, 54 are engaged with one another, securing pivoting assembly 16 in a first predetermined position.

[0070] When it is desired to pivot handle 12 and holder 14 with respect to one another, a user can exert an unlocking force 62 on the button 52 sufficient to overcome the spring force of spring 56. Unlocking force 62 also causes button 52 to slide within channel 46 until catch members 40, 54 are disengaged from one another. While applying unlocking force 62, handle 12 and holder 14 can be pivoted with respect to one another about axis 26 to change the angle between the handle and the holder.

[0071] When it is desired to relock pivoting assembly 16, the user stops exerting unlocking force 62 on button 52 so that spring 56 exerts a return force 64 on the button, causing the button to slide within channel 46 until catch members 40, 54 are reengaged with one another in the second position.

[0072] Returning for a moment to FIGS. 3 and 4, button 52 is shown in a preferred embodiment having at least two catch members 54 and boss 32 is shown having two catch members 40. In this embodiment, pivoting assembly 16 defines two angular or pivoted positions between handle 12 and holder 14—namely one position suitable for use of device 10 without an extension pole (e.g., about 0 degrees) and one position suitable for use of the device with an extension pole (e.g., about 30 degrees). Moreover in each angular position, the two catch members 54 surround one of the two catch members 40 so
that catch members 54 abut four surfaces within boss 32—namely the opposing sides of the catch member 40 that is surrounded, the facing surface of the catch member 40 that is not surrounded, and a remaining edge of boss 32. This preferred structure of pivoting assembly 106 ensures sufficient rigidity to lock or maintain the pivoting assembly at the desired position.

It has been determined by the present disclosure that the simple construction of pivoting assembly 106 can be provided with a minimum number of parts, separates the direction of unlocking force 62 from the direction of pivoting, and provides a clean, easy to use system for the user, while providing the necessary strength to maintain the assembly at the desired pivoted position.

Returning now to FIG. 1, device 10 further includes blade subassembly 18, which can be easily removed from and reinserted into holder 14. Blade subassembly 18 and its cooperation with holder 14 are described with simultaneous reference to FIGS. 10-14.

As discussed above, blade subassembly 18 includes blade 20 and carriage 22. Blade 20 and carriage 22 preferably include at least one, and preferably more than one, cooperating features 70 that ensure that the blade is positioned on carriage in a desired orientation and position. In the illustrated embodiment, blade 20 is shown with feature 70 as three openings and carriage 22 is shown with feature 70 as a corresponding number of protrusions. When blade 20 is received on carriage 22, the openings and protrusions 70 cooperate to ensure the desired orientation and position of the blade on the carriage.

Of course, it is contemplated by the present disclosure for blade 20 and carriage 22 to have any desired feature or features that ensure the desired orientation and position of the blade on the carriage. Additionally, it is contemplated by the present disclosure for features 70 to be positioned and configured so that blade 20 can be reversed—namely can have two edges 28—with only one edge being exposed for use at a time.

Holder 14, as shown in FIG. 14, includes a slot 72 that receives protrusions 70. Slot 72 has an open end 74 on a first edge 76 of the holder and a closed end 78 at an opposite edge 80 of the holder. Protrusion 70 of carriage 22 are received in slot 72 through open end 74 so that subassembly 18 can be sliding within holder 14 until the protrusion abuts closed end 78. In this manner, protrusion 70 and closed end 78 cooperate to define a maximum insertion position of subassembly 18 in holder 14.

In some embodiments, as also shown in FIGS. 14 and 15, device 10 can include other cooperating members to align and position subassembly 18 in holder 14. For example, carriage 22 can include one or more protrusions 80 that are similarly received in slot 82 of holder 14, where slot 82 has open end 84 and closed end 88 as discussed above.

Accordingly, device 10 can use protrusions 70 to align and position subassembly 18 in holder 14, can use protrusions 80 to align and position the subassembly in the holder, or use both protrusions 70 and 80 to align and position the subassembly in the holder.

Again, protrusions 70 and/or 80 and closed ends 78 and/or 88 cooperate to define a maximum insertion position of subassembly 18 in holder 14. Subassembly 18 further includes a flexible tang 90 (seen in FIG. 12) defined on carriage 22, which secures the carriage in holder 14 when at the maximum insertion position.

Carriage 22 is made of a material having sufficient flexibility to allow tang 90 to deflect or bend as the carriage is slid into holder 14, but return to an un-deflected position once the carriage has been received in holder 14 at or just prior to the maximum insertion position. Tang 90 includes an edge 92, which can prevent withdrawal of carriage 22 from holder 14 when the tang is in the un-deflected position but allows withdrawal of the carriage from the holder 14 when the tang is in the deflected position.

The insertion and withdrawal of subassembly 18 from holder 14 is shown in more detail with simultaneous reference to FIGS. 15 and 16. Subassembly 18 is shown before insertion into holder 14 in FIG. 15 and after insertion in FIG. 16.

Subassembly 18 is inserted into holder 14 in an insertion direction 94, where tang 90 is on the leading edge of carriage 22 as it enters the holder. As carriage 22 slides within holder 14, tang 90 is deflected until the carriage has been received in the holder 14 at the maximum insertion position at which point the resilience of the tang is sufficient to return the tang to the un-deflected position with edge 92 preventing withdrawal of the carriage from the holder in a direction opposite to the insertion direction 94.

When it is desired to withdraw carriage 22 from holder 14, the user merely applies a removal force 96 to tang 90 to return the tang to its deflected state while pushing the carriage in a direction opposite to the insertion direction 94.

Carriage 22 can be made of any material having sufficient resiliency to allow the aforementioned deflection of tang 90. In some embodiments, carriage 22 can be made of molded polymers such as, but not limited to, nylon.

Thus, device 10 is configured, by way of subassembly 18, to easily allow blade 20 to be removed from and reinserted into holder 14, but with a minimum number of components that can be easily molded and assembled.

Referring now to FIGS. 17 and 18, device 10 is illustrated in use with protective cover 24. Cover 24 is removably secured on holder 14 in any desired manner. For example, in the illustrated embodiment cover 24 includes protrusions 96 on the cover and indentations 98 (FIG. 15) on the holder.

In some instances, it may be desired for the user to carry device 10 on their person while working or hanging on a wall or tool cart. Accordingly, device 10 finds use with a holder 100 shown in FIGS. 19 and 20. Holder 100 has a first spring clip 102 that releasably retains handle 12 of device 10, while blade 20 of the device is received—with or without cover 24 and in any pivoted position—in a holster 104. Holder 100 can also have a second spring clip 106 that releasably secures the holder to the user—such as to the user’s belt.

First and second clips 102, 106 can be made of any material having sufficient resiliency to perform the desired function, namely to releasably retain handle 12 of device 10 or secure the holder 100 to the user.

Clips 102, 106 can be integrally molded as a piece unit with holster 104.

Alternately, one or more of the clips 102, 106 can be separately formed from but connected to holster 104. Here, clips 102 and/or 106 can be secured to holster 104 in any desired manner such as a physical connector, an adhesive connector, a thermal connector, and any combinations thereof. For example, clips 102, 106 can be made of molded polymer such as, but not limited to, polyoxymethylene.
(POM), also known as acetal, while holster 104 is made of molded polymer such as, but not limited to, polypropylene (PP).

When holder 100 is used with device 10 having cover 24 removed, edge 28 of blade 20 can catch on or mar the molded polymer material of holster 104 as the device is inserted into the holster. Advantageously, holster 104 further includes one or more guides 108 (one shown) that are made of a material of sufficient hardness so as to not be marred by blade 20. For example, guide 108 can be made of metal such as, but not limited to, stainless steel. Guide 108 can be co-molded with holster 104 or can be secured to the holster in any desired manner such as, but not limited to, a physical connector, an adhesive connector, a thermal connector, and any combinations thereof.

Without wishing to be bound by any particular theory, it is believed that having a single guide 108 that spans the entire contact area of edge 28 of blade 20 mitigates not only marring of holster 104, but also mitigates duffing and uneven wear on the edge.

It should also be noted that the terms “first”, “second”, “third”, “upper”, “lower”, and the like may be used herein to modify various elements. These modifiers do not imply a spatial, sequential, or hierarchical order to the modified elements unless specifically stated.

While the present disclosure has been described with reference to one or more exemplary embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the present disclosure. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the disclosure without departing from the scope thereof. Therefore, it is intended that the present disclosure not be limited to the particular embodiment(s) disclosed as the best mode contemplated, but that the disclosure will include all embodiments falling within the scope of the appended claims.

What is claimed is:

1. A multi-positional cleaning device, comprising:
   a blade holder;
   a handle;
   a blade with a cleaning edge; and
   a pivot assembly securing the handle and the blade holder to one another so that the handle and the blade holder pivot with respect to one another about a pivot axis that is parallel to the cleaning edge.

2. The multi-positional cleaning device of claim 1, wherein the handle has a handle axis and the pivot assembly secures the handle and the blade holder to one another so that the pivot axis is both perpendicular to the handle axis and parallel to the cleaning edge.

3. The multi-positional cleaning device of claim 1, wherein the blade is a scraper blade and the cleaning edge is a sharp edge.

4. The multi-positional cleaning device of claim 1, wherein the pivot assembly releasably secures the handle and the blade holder in only two different predetermined angular positions.

5. The multi-positional cleaning device of claim 2, wherein the pivoting assembly comprises a boss extending from the holder, the boss having a through hole and two or more first catch members, each of the two or more first catch members defining one of the two or more predetermined angular positions.

6. The multi-positional cleaning device of claim 5, wherein the handle further comprises a through hole perpendicular to the handle axis, the pivot axis being defined through a connector positioned in the through holes of the boss and the handle.

7. The multi-positional cleaning device of claim 6, wherein the pivoting assembly further comprises a locking button having a second catch member and a biasing spring, the biasing spring acting on the handle to normally bias the second catch member to a locked position into engagement with at least one of the two or more first catch members to secure the pivoting assembly in one of the two or more predetermined angular positions.

8. The multi-positional cleaning device of claim 5, wherein the locking button is slideably received in a channel defined in the handle between the locked position and an unlocked position in which the second catch member is not biased into engagement with any of the two or more first catch members.

9. The multi-positional cleaning device of claim 8, wherein the pivoting assembly further comprises a pair of caps secured to handle, each cap of the pair of caps concealing opposing ends of the connector.

10. The multi-positional cleaning device of claim 7, wherein the locking button has two second catch members and the boss has two first catch members such that, in the locked position, the two second catch members of the locking button surround one of the two first catch members of the boss.

11. The multi-positional cleaning device of claim 10, wherein, in the locked position, the two second catch members of the locking button abut four surfaces of the boss, the four surfaces comprising opposing sides of the one of the two first catch members of the boss that is surrounded, a facing surface of the catch member of the boss that is not surrounded, and a remaining edge of the boss.

12. The multi-positional cleaning device of claim 1, wherein the boss comprises a metallic insert that is co-molded into the holder.

13. The multi-positional cleaning device of claim 12, wherein the holder comprises acrylonitrile butadiene styrene and the metallic insert of the boss comprises a material selected from the group consisting of zinc die cast, aluminum die cast, machined steel, and machined aluminum.

14. The multi-positional cleaning device of claim 12, further comprising a blade subassembly having the blade, the blade subassembly being removably secured in the blade holder.

15. The multi-positional cleaning device of claim 14, wherein the blade subassembly further comprises a carriage, the scraper blade and the carriage including at least one cooperating feature that ensure that the blade is positioned on the carriage in a desired orientation and/or position.

16. A multi-positional cleaning device, comprising:
   a scraper blade with an edge and an opening through the scraper blade;
   a blade carriage having a first protrusion and a second protrusion, the first protrusion extending through the opening when the scraper blade is positioned on carriage in a desired orientation and position; and
   a blade holder having a first slot and a second slot, each having an open end on a first edge and a closed end at an
opposite edge, the open end of the first slot receiving the first protrusion of the blade carriage so that the blade carriage slides within the blade holder until the first protrusion abuts the closed end of the first slot, and the open end of the second slot receiving the second protrusion of the blade carriage so that the blade carriage slides within the blade holder until the second protrusion abuts the closed end of the second slot.

17. The multi-positional cleaning device of claim 16, wherein the blade carriage further comprises a flexible tang with an edge that prevents withdrawal of the blade carriage from the blade holder when the tang is in an undeﬂected position but allows withdrawal of the blade carriage from the blade holder when the tang is in a deﬂected position.

18. A method of cleaning a surface, comprising:
adjusting a cleaning device so that a blade holder has a ﬁrst angular position with respect to a handle about a pivot axis, the pivot axis being parallel to a cleaning edge of a blade received by the blade holder; and
moving a cleaning edge of the cleaning device across the surface to be cleaned while grasping the handle in the ﬁrst angular position; or
adjusting the cleaning device so that the blade holder has a second angular position with respect to the handle about the pivot axis; and
moving the cleaning edge of the cleaning device across the surface to be cleaned while grasping an extension pole secured to the handle in the second angular position.

19. The method of claim 18, wherein either the ﬁrst or second angular position is about 0 degrees.

20. The method of claim 18, wherein either the ﬁrst or second angular position is about 30 degrees.

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